

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**

Application of San Diego Gas & Electric
Company (U 902-M) to adopt Energy
Efficiency Rolling Portfolio Business Plan
Pursuant to Decision 16-08-019.

Application 17-01-____
(Filed January 17, 2017)

**APPLICATION OF SAN DIEGO GAS & ELECTRIC COMPANY (U 902-M) TO
ADOPT ENERGY EFFICIENCY ROLLING PORTFOLIO BUSINESS PLAN**

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January 17, 2017

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Pursuant to Article 2 of the Commission’s Rules of Practice and Procedure, Decision (“D.”) 15-10-028 and D.16-08-019, and the amended scoping ruling,¹ San Diego Gas & Electric Company (“SDG&E”) submits this application for adoption of its Energy Efficiency Rolling Portfolio Business Plan (“Business Plan”). This application also seeks clarification of certain Commission policies to facilitate adoption of the Business Plan.

I. INTRODUCTION

A. Content and Format of this application

This application includes the following:

- SDG&E’s Business Plan, including supporting appendices, which is Exhibit 1 to this application;²
- Joint utility proposal for a Statewide Administration Approach, which is Exhibit 2 to this application.
- Also, the application is supported by the prepared direct testimony of George Katsufrakis and Athena Besa. Mr. Katsufrakis adopts the Business Plan, save Appendix A, as his testimony; Ms. Besa adopts Appendix A as her testimony. While not appended to the filed application, this testimony is served concurrently with the application and is accessible at the link provided through the Notice of Availability filed herewith.

¹ *Assigned Commissioner and Administrative Law Judge’s Ruling and Amended Scoping Memorandum (Regarding Phase III of R.13-11-005)* at 12 (November 2, 2016).

² Because of the large file size of this exhibit, it is not appended to this application but is made available on a website posting through a Notice of Availability per Rule 1.9(d).

In addition, this application has an executed verification as required by Rule 2.1 immediately following the signature page.

B. Basis for this application

The energy efficiency (“EE”) rolling portfolios rulemaking (“R.”) 13-11-005 “... contemplated moving away from triennial review towards a ‘rolling’ review of EE program portfolios.”³ The Commission has described the business plan concept as follows:

Business Plan -- [Program Administrator] PA and stakeholder developed, PAs file periodically via application for Commission review; explains at a high level of abstraction how PAs will achieve the goals of the Commission’s strategic plan; leads to a Commission guidance decision adopting the business plan and setting budget expectations to be more fully developed in annual budget filings.⁴

D.15-10-028 and D.16-08-019 detailed the Commission’s expectations for the business plan’s substantive content. The Commission provided additional guidance on content in Appendix 3 of D.15-10-028 entitled “Business Plan Template, Business Plan Guidance.” SDG&E’s Business Plan follows the Commission’s guidance to provide a high-level discussion of how SDG&E will achieve the Commission’s statewide energy efficiency goals and strategies. SDG&E will leave the more granular details to the Commission’s Annual Budget and Implementation Plan processes.⁵ SDG&E outlines the structure of the Business Plan in the following section.

C. Business Plan Summary

The Business Plan consists of an executive summary and ten chapters, plus supporting appendices, which describe SDG&E’s vision for energy efficiency program delivery for the

³ D.15-10-028 at 3.

⁴ *Id.* at 43. SDG&E is a Program Administrator, or PA.

⁵ *See id.*

period 2018 – 2025. SDG&E has developed this Business Plan to chart a course towards achieving zero net energy (“ZNE”) and doubling EE savings. The plan details the market, regulatory climate, and legislative environment that informed the goals and strategies described therein.

With ZNE Readiness as an organizing principle, SDG&E’s vision is to create an energy efficiency portfolio that enables customers to choose the most effective methods of achieving their energy needs. The strategies described in the Business Plan are aimed at moving customers to ZNE as quickly as possible. SDG&E’s strategies will increase energy efficiency by reducing barriers to implementation, raising customer awareness, and increasing participation, by focusing on the following themes:

- Supporting State policy goals to double energy efficiency;
- Providing innovative solutions to customer needs;
- Improving customer experience;
- Maximizing the value of our energy efficiency portfolio; and
- Positioning energy efficiency for success in a more integrated resource acquisition structure.

The Business Plan begins with an Executive Summary. Each chapter of the Business Plan is summarized in the sections below.

The executive summary gives an overview of the missions, goals, and strategies to achieve SDG&E’s EE vision as set forth in each chapter of the Business Plan. The executive summary (at Figure 0.1, p. 4) also describes SDG&E’s annual EE savings goals:

SDG&E Annualized EE Portfolio Savings Goals

	Short-Term (2018- 2020)	Mid-Term (2021- 2023)	Long-Term (2024- 2025)
GWh	236-238	223-214	214
MW	44-45	43	44
MM Therms	3.9-4.0	3.7-3.8	3.8

Consistent with the Commission’s direction, SDG&E has proposed savings goals over the business plan period that will allow a cost effective portfolio *without a budget increase*. The methodology used to determine the savings targets can be found in The Business Plan’s Appendix B – Budget and Savings Methodology. *SDG&E proposes to keep its future budgets equal to that authorized in 2016.*⁶ The methodology used to determine the proposed annual budget is also found in Appendix B. SDG&E proposes the annual energy efficiency budget listed as follows (from Business Plan Figure 0.2, p. 4):

SDG&E Annualized EE Portfolio Budgets

Short-Term 2018-2020	Mid-Term 2021-2023	Long-Term 2024-2025
\$116,456,309	\$116,456,309	\$116,456,309

In addition to SDG&E’s EE portfolio budget, SDG&E proposes to continue successful Integrated Demand-Side Management (“IDSM”) activities that include coordinated and integrated offerings with Demand Response (“DR”) and Water Energy Nexus activities. All Water Energy Nexus activities and measures as approved by the Commission will be funded with Energy Efficiency monies. With respect to DR-related activities such as comprehensive

⁶ D.15-01-002 corrected errors in budgets adopted for EE program administrators for 2015 forward. This decision lists SDG&E’s authorized 2015 budget as \$116,456,000 (Figure 6, p. 4). D.14-10-046 (at. 31-32) states that 2015 budgets shall remain in place until the Commission provides superseding direction.

energy management surveys, audits, behavior programs and local marketing, education and outreach efforts, SDG&E proposes to continue these DR activities using electric DR funds. Consistent with what has previously been approved by the Commission (most recently in D.14-10-046), and requested in SDG&E’s 2017 EE Annual Advice Letter Advice Letter 2951-E/2512-G, SDG&E requests an IDSM DR budget of \$4.640 million.

Total Proposed Annualized Budget (\$000)

Category	Electric Demand Response Funds	Electric Energy Efficiency Funds	Natural Gas Public Purpose Funds	Total Energy Efficiency Funds
Program Funds	\$4,640	\$100,619	\$11,179	\$111,798
EM&V	N/A	\$4,192	\$466	\$4,658
Total	\$4,640	\$104,811	\$11,645	\$116,456

D. Business Plan chapters

1. Portfolio Overview

This chapter presents an overview of SDG&E’s portfolio. The overview provides context for each sector’s goals and strategies. This overview includes:

- A characterization of SDG&E’s market;
- Additional factors that impact the energy efficiency (EE) portfolio;
- SDG&E’s approach to statewide programs;
- Solicitation strategies; and
- Portfolio budgets, goals and cost effectiveness.

2. Residential Sector

SDG&E’s mission for this sector is to empower customers by providing the tools and program offerings to assist on their path to ZNE. Residential strategies include:

- Make energy efficiency products and services more accessible.
- Empower customers to better manage their energy usage.
- Promote increased value of assets, generated by energy efficiency and ZNE, to property owners.
- Promote the benefits of renting in an energy efficient building to tenants.

- Identify influential stakeholders that will allow the expansion of market opportunities and efficiencies.

3. Commercial Sector

SDG&E’s mission for this sector is to help customers achieve ZNE by providing enhanced self-help tools, program options and targeted, expert assistance. The strategies employed to accomplish this include:

- Transform tenant energy savings into asset value for property owners.
- Provide a simple, yet comprehensive, customized energy management solution for the hard-to-reach small commercial segment.
- Create an online platform to facilitate cross-promotion and encourage engagement.
- Expand the platform’s scope and capabilities to encourage customers to advance along the energy adoption curve.
- Transition statewide Heating, Ventilation, and Air Conditioning (“HVAC”) program to work with manufacturers on more efficient design.
- Explore the expansion of various procurement vehicles and intervention strategies to find targeted, deeper, or incremental savings.

4. Public Sector

SDG&E’s strategy here is to empower the public sector by equipping leaders with knowledge and tools, tailoring solutions for their needs and helping to influence the communities they serve. Specifically:

- Equip leaders with knowledge and tools to make informed decisions.
- Collaborate and share best practices with key players.
- Tailor offerings to meet the unique needs of public customers.
- Develop a public sector customer action plan to facilitate participation.
- Equip public sector customers with the tools they need to succeed in Climate Action Planning.
- Enable EE projects through financial solutions.
- Demonstrate EE value through enhanced Marketing, Education & Outreach (“ME&O”).
- Encourage progress beyond existing code levels.

The Business Plan's goals in this regard are:

- Education — Empower Leaders by equipping them with knowledge and tools to make informed EE decisions.
- Penetration — Eliminate Barriers to Public Sector Participation by developing tailored solutions and financing options.
- Savings — Influence Private Sector EE Activities through reach codes and engagement.

5. Industrial Sector

The plan's industrial mission is to educate and enable customers by providing targeted energy tools, and strategic energy management offerings. The plan aims to double the industrial sector's energy efficiency savings. To achieve this, the plan proposes a strategy to:

- Add value by bringing external industry expertise that will drive customer participation in programs and encourage customers on a continued path towards deeper savings.
- Unlock deeper savings through Strategic Energy Management ("SEM")⁷ offerings.
- Target customers at the Port of San Diego per Assembly Bill ("AB") 628.

6. Agricultural Sector

The Business Plan states a mission to identify strategic experts to grow the savings in the sector while also addressing water/energy nexus. The plan's goals for this sector are:

- Savings — Double the energy efficiency savings by the agricultural sector.
- Innovation — Provide the agricultural sector a solution addressing the water/energy nexus.

The plan's strategy to accomplish these is to expand the use of third parties to develop and deliver intervention strategies, and to leverage SEM.

⁷ SEM is a set of energy use principles and practices emphasizing continuous improvements in energy management and energy efficiency in industrial and agricultural facilities.

7. Emerging Technologies⁸

SDG&E will support implementation of the statewide Emerging Technologies programs (“ETP”) by assisting Southern California Edison Company for electric, Southern California Gas Company for gas, and any third parties contracted for ETP implementation, with carrying out their responsibilities within SDG&E’s service territory, and will help ensure that SDG&E’s customers’ interests are well-represented. SDG&E will continue to provide guidance and feedback to overall ETP strategies in addition to activities and issues pertinent to SDG&E’s needs and interests. Finally, SDG&E staff will serve as expert local resources for statewide programs staff to ensure that their development and implementation of energy efficiency and demand response programs (whether local or third-party implemented) have access to ETP-produced information about the latest technological innovations, so that they may offer measures with verifiable savings to customers seeking to reduce energy use.

8. Workforce Education and Training

SDG&E’s mission is to facilitate, support, and provide subject-matter expertise for the transfer of energy efficiency knowledge and skills to the industry across all sectors, balancing the needs of the State, customers, and our communities. To accomplish this mission, SDG&E has established the following Workforce Education & Training sector goals:

- Prepare Workforce to Meet California’s Goal of Doubling Energy Efficiency Savings by 2030.
- Design and Deliver Workforce, Education and Training Programs that Help SDG&E’s Energy Efficiency Sectors Achieve Savings Goals.

⁸ Business Plan Chapters 7-10 are “cross-cutting” in that they affect the other sectors. These sectors are also subject to statewide administration. SDG&E’s mission is the same for these cross-cutting sectors: To support portfolio objectives and advance the cause of energy efficiency in the State.

- Support the Development of an Energy Efficiency Workforce Through Statewide Programs that Focus on Career Awareness and Inclusion of Disadvantaged Workers.

To successfully accomplish the energy efficiency potential of California and its own market, the Business Plan describes how SDG&E will coordinate with appropriate organizations throughout the state to further workforce education specific to energy efficiency. The strategies proposed in the Business Plan will expand the existing programs, supplement them, and drive participation in them.

9. Finance

SDG&E will both support implementation of the statewide financing pilots and locally implement the On-Bill Financing (“OBF”) subprogram. OBF offers interest-free, unsecured, on-the-utility-bill loans that work in conjunction with utility energy efficiency programs. It is designed primarily to facilitate the purchase and installation of qualified energy efficiency measures by non-residential customers who may lack up-front capital to invest in real and sustainable long-term energy cost reductions.

SDG&E staff will also serve as local resources for the company’s programs staff to ensure that their development and implementation of energy efficiency programs (whether local or third-party implemented) incorporates relevant finance components.

10. Codes and Standards

SDG&E will both support implementation of the statewide C&S subprograms and locally implement the reach codes⁹ and compliance improvement subprograms. To support

⁹ Reach codes are “codes that direct contractors to construct buildings significantly more energy efficient than required by conventional building codes.” *California Energy Efficiency Strategic Plan: January 2011 Update*, California Public Utilities Commission and California Energy Commission, p. 121. Available at: http://www.energy.ca.gov/ab758/documents/CAEnergyEfficiencyStrategicPlan_Jan2011.pdf.

implementation of the advocacy subprograms, SDG&E staff will assist the selected statewide implementer(s) in carrying out their responsibilities within SDG&E's service territory and help ensure that SDG&E's ratepayers' interests are well represented. SDG&E staff will also serve as local resources for its programs staff to ensure that development and implementation of energy efficiency programs (whether local or third-party implemented) incorporates past and future updates to codes and standards. Finally, working jointly with SDG&E's local government partnerships group, SDG&E staff will support municipalities interested in pursuing reach codes and with their compliance improvement activities.

11. Appendices

In addition, the Business Plan is supported by six Appendices:

- Appendix A: Commission Clarifications Needed for a Successful Business Plan.
- Appendix B: Budget and Savings Methodology
- Appendix C: SDG&E Evaluation, Measurement & Verification (EM&V) Activities
- Appendix D: Business Plan Structure
- Appendix E: Business Plan Review Checklist
- Appendix F: External Stakeholder Observations

II. COMMISSION GUIDANCE OR CLARIFICATION REQUESTED

The Business Plan includes assumptions based on clarifications or changes in existing Commission direction. In Appendix A, SDG&E details why it considers such clarifications essential to increasing cost effective energy efficiency savings towards meeting Senate Bill ("SB") 350 energy efficiency goals, and to improving the efficacy of program delivery. For the reasons discussed in Appendix A, the application requests commission clarification or guidance on the following issues:

A. Confirm a 1.0 cost-effectiveness threshold

The Total Resource Cost (“TRC”) and Program Administrator Cost (“PAC”) test estimates should exceed a 1.0 cost-effectiveness threshold for 2018, as was the case for prior years.

B. Approve SDG&E’s statewide administrator assignments

SDG&E proposes that it be the statewide program administrator for the following three programs:

1. Upstream/Midstream HVAC;
2. Midstream Plug Load and Appliances (“PLA”); and
3. Residential Quality Installation / Quality Maintenance (“QI/QM”) (Downstream Pilot).

C. Add EE to Independent Evaluator and Procurement Review Group Oversight

SDG&E requests that its existing Procurement Review Group (“PRG”) and Independent Evaluator (“IE”) process used for electric procurement be modified to include review of competitive solicitations for EE products.

D. Commission Should Confirm its Direction that Joint Utility Statewide Administration Contracting is Subject to the State Action Antitrust Defense

SDG&E requests that the Commission reiterate its findings regarding State Action Doctrine defense to an antitrust action articulated in D.10-12-054, ordering paragraph 8, which allow the utilities to engage in certain joint energy efficiency activities which are consistent with state policy and actively supervised by the Commission.

III. STATUTORY AND PROCEDURAL REQUIREMENTS

A. Rule 2.1(a) – (c)

In accordance with Rule 2.1(a) – (c) of the Commission’s Rules and Practice and Procedure, SDG&E provides the following information:

1. Rule 2.1(a) – Legal Name

SDG&E is a corporation organized and existing under the laws of the State of California. SDG&E is engaged in the business of providing electric service in a portion of Orange County and electric and gas service in San Diego County. The exact legal name of the Applicant is San Diego Gas & Electric Company. SDG&E’s principal place of business is 8330 Century Park Court, San Diego, California 92123. SDG&E’s attorney in this matter is E. Gregory Barnes.

2. Rule 2.1(b) – Correspondence

Correspondence or communications regarding this Application should be addressed to

E. Gregory Barnes
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3. Rule 2.1(c) – categorization, hearings and schedule

a. Proposed Category of Proceeding

Pursuant to Rule 7.1, SDG&E requests that this application be categorized as ratesetting as defined in Rule 1.3(e), as the most appropriate of the available categories, although the application will have no effect on SDG&E’s rates.

b. Need for hearings (Rule 2.1 (c))

SDG&E submits that the Commission should not set this matter for hearing, because, pursuant to D.15-10-028 and D.16-08-019, this application is being filed for the primary purpose of submitting SDG&E’s Business Plan, which is a high-level view of SDG&E’s plan to meet the Commission’s EE-related goals and strategies. As it has done in R.13-11-005, the Commission can receive stakeholder input through the commenting process. In addition, with respect to the

Commission guidance and clarification sought in this application (and detailed in Appendix A to the Business Plan), any policy issues implicated by this request can be examined and resolved through written comments. In addition, SDG&E is not requesting any incremental increase in its energy efficiency budget at this time, thereby raising no issues of incremental cost recovery from ratepayers that would necessitate customer noticing and public hearings, or requiring a record developed through evidentiary hearings.

c. Issues to be considered

The issues to be considered are described in this application the accompanying Business Plan attached hereto as Exhibit 1.

d. Proposed schedule

<u>ITEM</u>	<u>DATE</u>
Application filed	January 17, 2017
Protests or Responses/Replies filed	+30 days from Daily Calendar /+15 days
Prehearing Conference	February 2017
Parties' Comments (Testimony if needed)	Late March 2017
Reply Comments (Rebuttal Testimony if needed)	April 2017
Briefs (if needed)	April/May 2017
Proposed and Final Decision	Late June 2017

B. Rule 2.2 – Articles of Incorporation

A copy of SDG&E's Restated Articles of Incorporation as last amended, presently in effect and certified by the California Secretary of State, was previously filed with the Commission on September 10, 2014 in connection with SDG&E Application No. 14-09-008, and is incorporated herein by reference.

C. Rule 3.2 – Not applicable to this application

Rule 3.2 applies to applications “for authority to increase rates, or to implement changes that would result in increased rates.” Because this application does not seek authority to increase rates, or to implement changes that would result in increased rates, Rule 3.2 is not applicable. Therefore, SDG&E does not intend to undertake the notification efforts provided by this rule.

IV. SERVICE

This is a new application. No service list has been established. Accordingly, SDG&E will serve this application, testimony and related exhibits on parties to the service list for R.13-11-005. Hard copies will be sent via FedEx to Chief Administrative Law Judge Karen V. Clopton.

V. CONCLUSION

WHEREFORE, SDG&E requests that the Commission grant SDG&E’s application, as described herein.

Respectfully submitted,

/s/ E. Gregory Barnes

E. Gregory Barnes

Attorney for

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January 17, 2017


VERIFICATION

I, Scott B. Crider, declare the following:

I am an officer of San Diego Gas & Electric Company and am authorized to make this Verification on its behalf. I am informed and believe that the matters stated in the foregoing APPLICATION OF SAN DIEGO GAS & ELECTRIC COMPANY (U 902 E) TO ADOPT ENERGY EFFICIENCY ROLLING PORTFOLIO BUSINESS PLAN PURSUANT TO DECISION 16-08-019 are true to my own knowledge, except as to matters which are therein stated on information and belief, and as to those matters I believe them to be true.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Executed this 13th day of January 2017, at San Diego, California.



SCOTT B. CRIDER
Vice President, Customer Services

SAN DIEGO GAS & ELECTRIC COMPANY

EXHIBIT 1

SDG&E Energy Efficiency Business Plan, “Building a Better Energy Efficient Future, 2018-2025” (January 2017)

Because of the large file size of this exhibit, it is not appended to this application for purposes of service but is made available on a website posting through the Notice of Availability.

BUILDING A BETTER ENERGY EFFICIENT FUTURE

SDG&E's Energy Efficiency Business Plan
2018-2025 | January 2017



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00 EXECUTIVE SUMMARY



“Energy efficiency is the least cost, most reliable, and most environmentally-sensitive resource, and minimizes our contribution to climate change.”

– *California Long Term Energy Efficiency Strategic Plan*

Purpose

San Diego Gas and Electric (SDG&E) has developed this business plan to chart a course towards achieving zero net energy (ZNE) and doubling energy efficiency (EE) savings. This plan details the market, regulatory climate, and legislative environment that informed the goals, strategies, and tactics described herein. Evidenced by the statistics presented in the service territory sidebar, SDG&E is considerably smaller than other California investor-owned utilities. SDG&E’s customers are primarily residential and small commercial, with very few industrial or agricultural customers.

The SDG&E Service Territory



- 4,100 square miles in San Diego and southern Orange counties
- 3.6 million customers
- 1.4 million electric and 873,000 natural gas meters
- Mostly three climate zones (7, 10, & 14)
- Approximately 80% of gas and electric consumption comes from residential and commercial sectors

SDG&E's Energy Efficiency Vision

With Zero Net Energy (ZNE) Readiness as an organizing principle, SDG&E's vision is to create an energy efficiency portfolio that enables customers to choose the most effective methods of achieving their energy needs. The strategies described within this business plan are aimed at moving the customers along the path to ZNE as quickly as possible. With a focus on the following themes, SDG&E's strategies will increase energy efficiency by reducing barriers to implementation, raising customer awareness, and increasing participation:

- Supporting State policy goals to double energy efficiency
- Providing innovative solutions to customer needs
- Improving customer experience
- Maximizing the value of our energy efficiency portfolio
- Positioning energy efficiency for success in a more integrated resource acquisition structure

Figure 0.1 SDG&E Annualized EE Portfolio Savings Goals

	Short-Term 2018-2020	Mid-Term 2021-2023	Long-Term 2024-2025
GWh	236-238	223-214	214
MW	44-45	43	44
MMTherms	3.9-4.0	3.7-3.8	3.8

Missions, Goals, & Strategies

For each sector, SDG&E has developed goals and strategies to achieve its vision. The following three pages provide a summary of these missions, goals, and strategies.

Savings Goals

Consistent with the CPUC's direction, SDG&E has proposed savings goals over the business plan period that will allow a cost effective portfolio without a budget increase. The methodology used to determine the savings goals can be found in Appendix B - Budget and Savings Methodology. SDG&E proposes the annual energy efficiency savings goals listed in **Figure 0.1**.

Figure 0.2 SDG&E Annualized EE Portfolio Budgets

	Short-Term 2018-2020	Mid-Term 2021-2023	Long-Term 2024-2025
Annual Budget	\$116,456,309	\$116,456,309	\$116,456,309

Budget and Cost Effectiveness

SDG&E is proposing to keep its future budgets equal to that of 2016. This annual amount may be adjusted based on outcomes of this and related proceedings and the realization of potential efficiency savings. The methodology used to determine the proposed annual budget can be found in *Appendix B - Budget and Savings Methodology*. SDG&E proposes the annual energy efficiency budget listed in **Figure 0.2**.

In addition to SDG&E's EE portfolio budget, SDG&E's proposes to continue successful Integrated Demand-Side Management (IDSM) activities that include coordinated and integrated offerings with Demand Response (DR) and Water Energy Nexus activities. All Water Nexus activities and measures as approved by the Commission will be funded with Energy Efficiency monies. With respect to DR-related activities such as comprehensive energy management surveys, audits, behavior programs and local marketing, education and outreach efforts, SDG&E proposes to continue these DR- activities using electric DR funds. Consistent with what had previously been approved by the Commission and most recently in D.14-10-046 and requested in SDG&E's 2017 EE Annual Advice Letter Advice Letter 2951-E/2512-G, SDG&E requests that the IDSM DR budget be \$4.640 million.

SDG&E ENERGY EFFICIENCY MISSIONS

CHAPTER
02

RESIDENTIAL MISSION

Empowering customers by providing the tools, program offerings and access to assistance on their path to zero net energy.



03

COMMERCIAL MISSION

Help customers achieve zero net energy by providing enhanced self-help tools, program options, and targeted, expert assistance.



04

PUBLIC MISSION

Empower the public sector by equipping leaders with knowledge and tools, tailoring solutions for their needs and helping to influence the communities they serve.



05

INDUSTRIAL MISSION

Educate and enable customers by providing targeted energy tools, and strategic energy management offerings.



06

AGRICULTURE MISSION

Identify strategic experts to grow the savings in the sector while also addressing water/energy nexus.



07-10

CROSS-CUTTING MISSION

Support portfolio objectives and advance the cause of energy efficiency in the State.



SDG&E ENERGY EFFICIENCY GOALS

CHAPTER

02

RESIDENTIAL GOALS

GOAL 1: SAVINGS – Increase Energy Efficiency Savings in the Residential Sector Through an Improved Customer Experience.

GOAL 2: PENETRATION – Increase Energy Efficiency Participation in the Multifamily Sector.

GOAL 3: INNOVATION – Continue to Innovate by Executing New Approaches to the Market.

03

COMMERCIAL GOALS

GOAL 1: PENETRATION – Improve the Energy Efficiency Penetration in the Property Management Market.

GOAL 2: SAVINGS – Increase Savings Through an Improved Customer Experience.

GOAL 3: INNOVATION – Maximize Savings and Efficiency by Executing New Approaches.

04

PUBLIC GOALS

GOAL 1: EDUCATION – Empower Leaders by Equipping Them with Knowledge and Tools to Make Informed EE Decisions.

GOAL 2: PENETRATION – Eliminate Barriers to Public Sector Participation by Developing Tailored Solutions and Financing Options.

GOAL 3: SAVINGS – Influence Private Sector EE Activities Through Reach Codes and Engagement.

05

INDUSTRIAL GOALS

GOAL 1: SAVINGS – Double the Energy Efficiency Participation by the Industrial Sector.

06

AGRICULTURE GOALS

GOAL 1: SAVINGS – Double the Energy Efficiency Participation by the Agricultural Sector.

GOAL 2: INNOVATION – Provide the Agricultural Sector an Offering to Address the Water/Energy Nexus.

CHAPTER

02

RESIDENTIAL STRATEGIES

- Make energy efficiency products and services **more accessible**.
- **Empower customers** to better manage their energy usage.
- **Promote increased value of asset**, generated by energy efficiency and ZNE, to property owners.
- **Promote the benefits of renting in an energy efficient building** to tenants.
- **Identify influential stakeholders** that will allow the expansion of market opportunities / efficiencies.

03

COMMERCIAL STRATEGIES

- **Transform tenant energy savings into an asset value** for property owners.
- Provide a simple, yet comprehensive, **customized energy management solution** for this hard-to-reach segment.
- Create an online platform to **facilitate cross-promotion and encourage engagement**.
- Expand the platform's scope and capabilities to encourage customers to **advance along the energy adoption curve**.
- Transition SW HVAC Program to **work with manufacturers on more efficient design**.
- Expand various procurement vehicles and intervention strategies to **find targeted, deeper, or incremental savings**.

04

PUBLIC STRATEGIES

- **Equip leaders** with knowledge and tools to make informed decisions.
- **Collaborate and share best practices** with key players.
- Tailor offerings to **meet the unique needs** of public customers.
- Develop a **public sector customer action plan** to facilitate participation.
- Equip public customers with the tools they need to succeed in **Climate Action Planning**.
- Enable EE projects through **financial solutions**.
- Demonstrate EE value through **enhanced Marketing, Education & Outreach**.
- Encourage progress beyond existing code levels.

05

INDUSTRIAL STRATEGIES

- Add value by **bringing external industry expertise** that will drive customer participation in programs and encourage customers on continued path towards deeper savings.
- Unlock deeper savings through **Strategic Energy Management** offering.
- Target **customers at the Port of San Diego** per AB 628.

06

AGRICULTURE STRATEGIES

- **Expand the use of third parties** to develop and deliver intervention strategies.
- **Leverage Strategic Energy Management**.
- Work with third parties to **incorporate embedded energy savings in offerings**.

01 PORTFOLIO OVERVIEW



Portfolio Overview

This chapter presents an overview of SDG&E's energy efficiency (EE) portfolio. The overview provides context for each sector's goals and strategies. This overview includes:

- A characterization of SDG&E's market;
- Additional factors that impact the EE portfolio;
- SDG&E's approach to statewide programs;
- Solicitation strategies, and
- Portfolio budgets, goals and cost effectiveness.

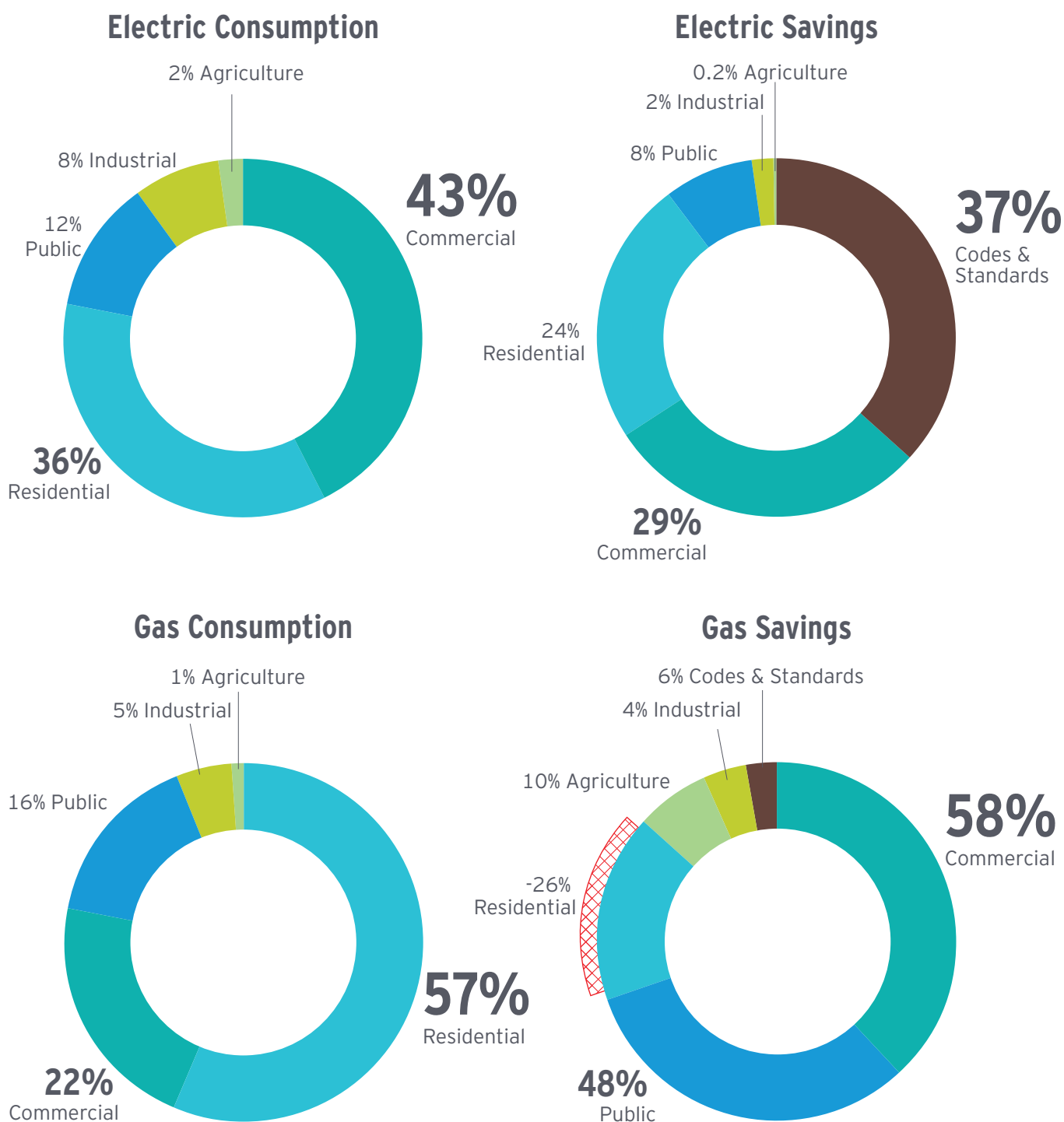
Market Characterization

To understand the market context applicable to this business plan, it is helpful to review SDG&E's recent service territory's historical electricity and gas consumption and energy efficiency savings.

During 2013-2015, SDG&E's customers consumed, on an annual basis, approximately 21,000 GWh and 485 million therms. As shown in **Figure 1.1**, the residential and commercial sectors are SDG&E's largest and accounted for 79% of total gas and 79% of total electric consumption. Not surprisingly, SDG&E's electric energy savings also came primarily from the residential and commercial sectors. SDG&E's natural gas savings, however, were strikingly different from its electric savings. Almost all therm savings came from the commercial and public sectors. Due to the interactive effects from large amounts of lighting savings, the residential sector's contribution to therm savings is actually negative.

Figure 1.1 SDG&E 2013-2015 Average Annual Consumption / Total Energy Efficiency Savings by Sector

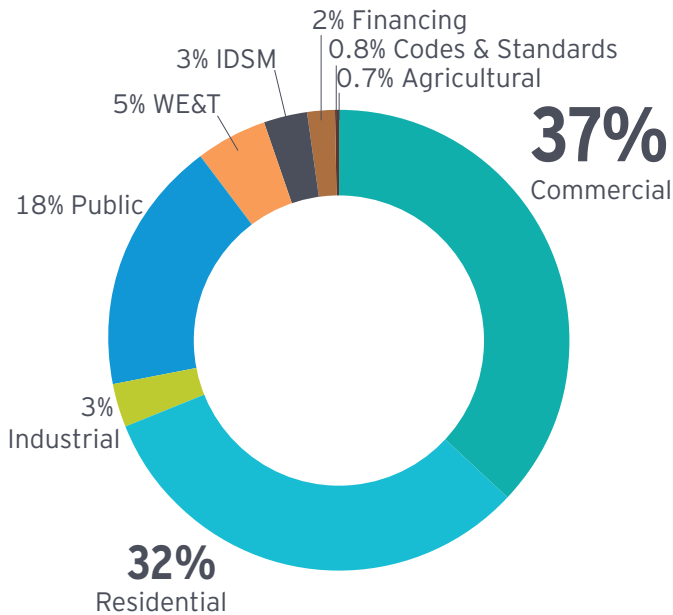
Source: Energy Consumption Data Management System, California Energy Commission, <http://ecdms.energy.ca.gov/gasbyplan.aspx>.
SDG&E 2013-2015 Monthly Energy Efficiency Program Report, December 2015 – Table 1.6.



Considering which sectors drive electricity and gas consumption and energy efficiency savings, it is not surprising that SDG&E spends more than two-thirds of its EE budget on the commercial and residential sectors. **Figure 1.2** shows the relative energy efficiency spending by sector.

Figure 1.2 2013-2015 Energy Efficiency Portfolio Spending by Sector

Source: SDG&E 2013-2015 Monthly Energy Efficiency Program Report, December 2015 - Table 1.6.



To further understand the market in which SDG&E's energy efficiency programs operate, it is important to also assess forecasted energy savings potential. Going forward, most of SDG&E's electric energy savings potential continues to come from lighting and HVAC (heating, ventilation, and air conditioning); but, the emergence of additional end-uses such as whole building and plug-loads, as shown in **Figure 1.3** will also provide significant savings opportunities.

Evidenced by **Figure 1.4**, savings from domestic hot water (SHW) measures will continue to drive SDG&E gas energy savings potential. Whole building will make a growing contribution to overall potential until 2021, when it's potential drops and stays relatively flat through 2024. To achieve overall gas savings, the portfolio will have to overcome the continuing interactive effects from lighting measures by focusing on those end-uses that provide the most gas savings.

Figure 1.3 Market Savings Potential by End-Use (GWh)

Source: 2015 Navigant Market Potential Study.

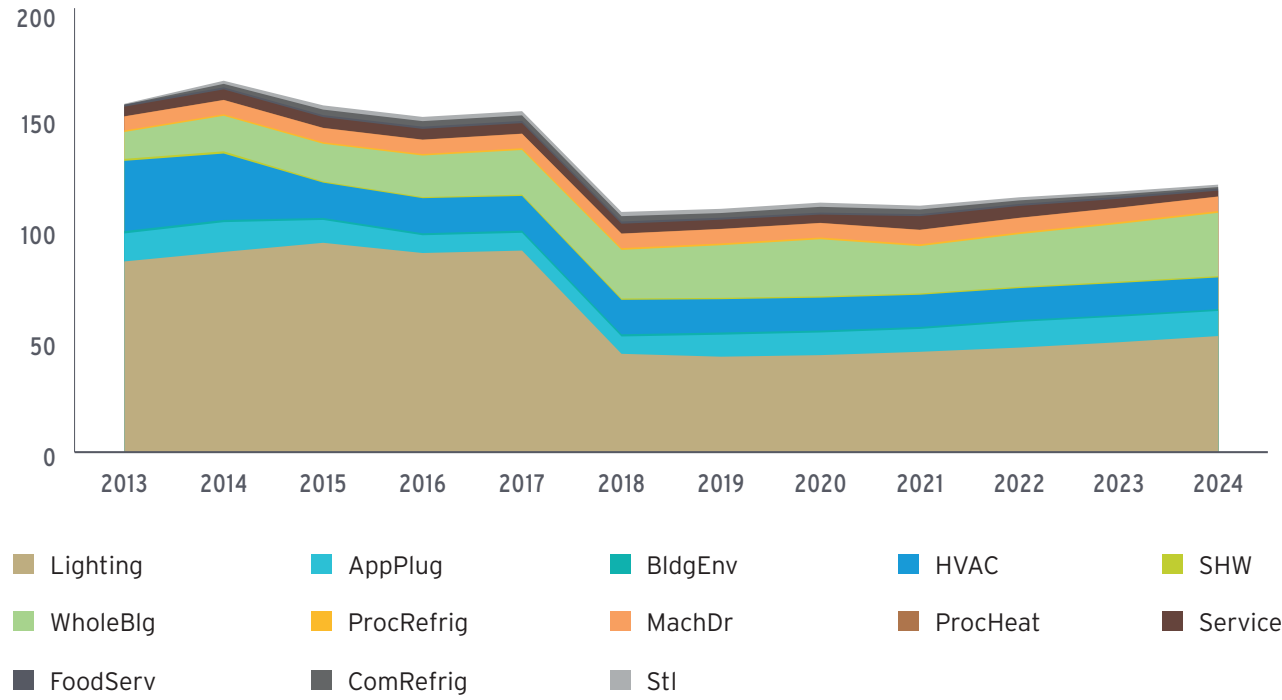
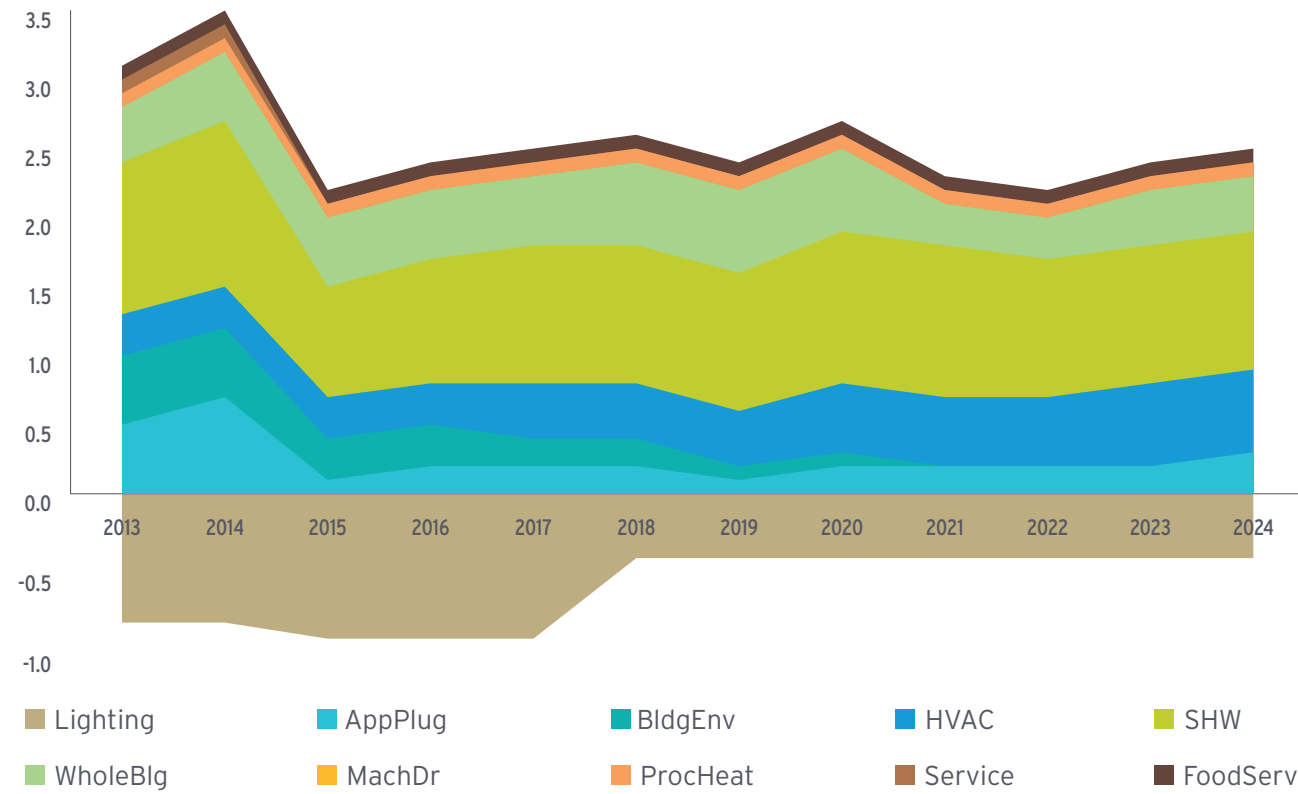


Figure 1.4 Market Savings Potential by End-Use (MMTherms)

Source: 2015 Navigant Market Potential Study.



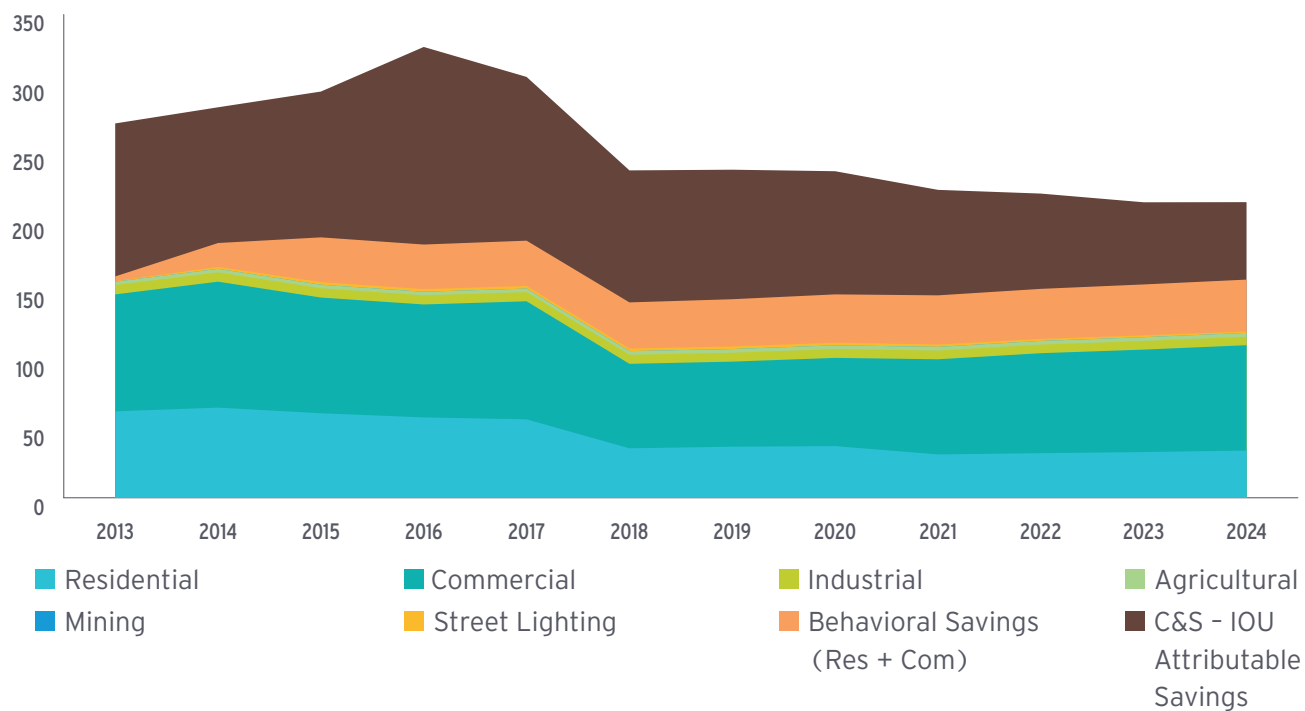
Overall electricity savings potential decreases modestly over time after a fairly steep reduction from 2016 to 2018. As presented in **Figure 1.5**, although electricity savings potential from Codes & Standards (C&S) will taper off after 2017, the component still produces the largest potential until 2021. From that point forward, the Commercial sector contributes the most savings potential. Residential and Behavioral opportunities also contribute significantly to overall potential over the study's time horizon, remaining fairly steady between 2017 and 2024.

Figure 1.6 shows gas market potential increases over the period covered by this business plan with most sectors maintaining fairly steady amounts of potential after 2018. Overall potential increases between 2015 and 2020, particularly for Commercial and Codes & Standards. The greatest gas savings potential also comes from Commercial and Behavioral measures, following by Residential and Codes & Standards.

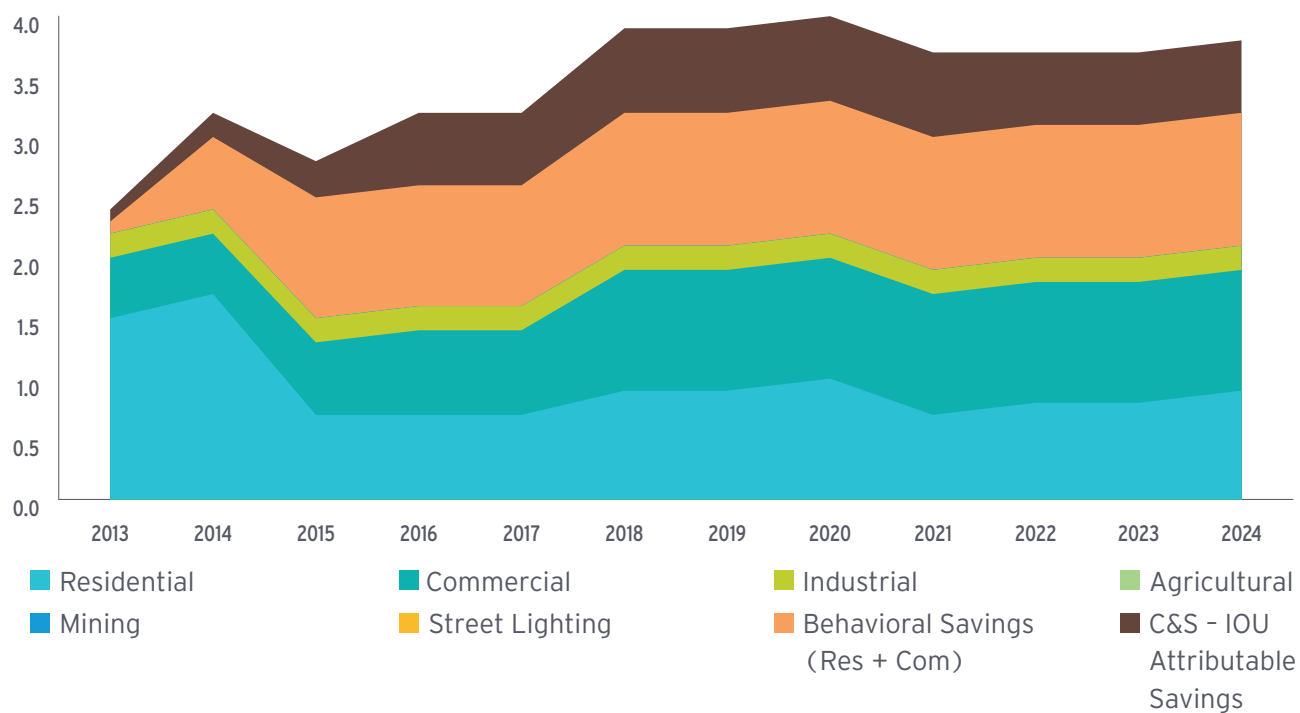
To summarize, it is clear that the residential and commercial sectors will continue to be prominent contributors of savings to SDG&E's portfolio and, therefore, are the focus of a significant portion of SDG&E's strategies and tactics.

Figure 1.5 Market Savings Potential by Sector (GWh)

Source: 2015 Navigant Market Potential Study.

**Figure 1.6** Market Savings Potential by Sector (Therms)

Source: 2015 Navigant Market Potential Study.



Legislative Mandates

A key element of planning for the future of energy efficiency is addressing recent state legislative actions. Each chapter of the business plan discusses how this legislation, specifically, Senate Bill (SB) 350 and Assembly Bills (AB) 628, 793, 758, and 802, help shape SDG&E's sector approaches.

SDG&E developed sector goals and strategies to capture additional savings beyond those achieved by existing program designs. Such strategies include increasing energy savings as required by SB 350. **Figure 1.7** provides an overview of key legislation that impacts energy efficiency and outlines which sectors incorporate responses to them.

Note that SDG&E also reviewed and incorporated the findings and recommendations discussed in various CPUC documents, including the California Long Term Energy Efficiency Strategic Plan (CALTEESP), various Action Plans, Process Evaluations, and guidance documents. Finally, SDG&E received additional guidance from stakeholders via the California Energy Efficiency Coordinating Committee (CAEECC) process. A detailed summary of their feedback and how they are addressed is included as *Appendix F* to this plan.

Figure 1.7 Sectors Addressing Legislative Action

Legislation	Sector								
	Res	Com	Ind	Ag	Pub	ET	WET	Fin	C&S
SB 350 <ul style="list-style-type: none"> Requires doubling EE by 2030 CEC adopt responsible contractor policy Workforce development and job training in disadvantaged communities 	✓	✓	✓	✓	✓	✓	✓	✓	✓
AB 628 <ul style="list-style-type: none"> Authorizes ports to create energy management plans with utilities 			✓		✓				
AB 758 <ul style="list-style-type: none"> Existing Buildings Energy Efficiency Action Plan 	✓	✓			✓		✓	✓	✓
AB 793 <ul style="list-style-type: none"> Utilities provide incentives/educate residential and small commercial customers re: energy management technology 	✓	✓				✓	✓		
AB 802 <ul style="list-style-type: none"> Sets requirements for building benchmarking Authorizes utilities to provide incentives for savings based on current energy usage 	✓	✓	✓	✓	✓	✓	✓		✓

Resource Integration

SDG&E's business plan vision will not only achieve deeper EE savings in each sector, but it will position EE for success in a more integrated resource acquisition structure where EE competes with demand response, renewables, energy storage, and other distributed energy resources (DERs) to meet resource needs consistent with state policy goals. The CPUC's Integrated Resource Planning (IRP) and Integrated Distributed Energy Resources (IDER) proceedings (R.16-02-007 and R.14-10-003, respectively) are currently evaluating how to maximize the value of DERs, including EE, by establishing procurement targets and evaluating DERs in a more integrated fashion. EE is California's preferred clean energy resource, as reflected by the "loading order" established by Pub. Util. Code § 701.1 (b).

SDG&E intends to leverage its business plan to ensure that the value of EE is realized in this more integrated resource procurement environment. For example, relying more heavily on third party solicitations to achieve energy efficiency savings and utilizing pay-for-performance contract structures could potentially enable EE to better transition into a product that competes successfully in this more integrated environment. SDG&E is fully engaged in the relevant CPUC proceedings with the goal of helping to ensure the successful integration of EE with other procurement activities. Given the system-wide portfolio of DERs that will be necessary to achieve the State's policy goals under SB 350, SDG&E recognizes that energy efficiency is a critical tool that will be relied upon to meet greenhouse gas emission reduction targets in the most cost-effective manner possible.

Evolving Rate Structures

SDG&E's business plan envisions maximizing the value of its EE portfolio for customers who are transitioning to new rate structures, including time-of-use (TOU) rates. It is critical that as the state moves forward into the next decade, its rate design policies are carefully crafted to maintain the current momentum toward realization of a sustainable energy future. This energy future incorporates increasing amounts of cost-effective DERs that rely on an advanced, safe and reliable electric grid, while minimizing costs to utility customers.

Only through explicit and transparent rate design with accurate price signals can SDG&E encourage conservation and energy efficiency while maintaining affordability for all customers. Once customers are able to see and be guided to make economically-efficient decisions by accurate energy price signals, they will realize benefits for behaviors that lower the cost of energy service for all customers. The EE portfolio described in SDG&E's business plan will help to provide customers with the options they need to respond appropriately to correct price signals.

Statewide Program Administration

Per D.16-08-019, all upstream and midstream programs, and those with market transformation objectives will be delivered uniformly throughout the four investor-owned utility (IOU) service territories, and overseen by a single statewide program administrator.^{1,2} The proposed statewide program administrators are listed below in **Figure 1.8**. The plan for each affected program can be found within the statewide program administrator's business plan.

¹ "Decision Providing Guidance for Initial Energy Efficiency Rolling Portfolio Business Plans," California Public Utilities Commission, Decision 16-08-019, August 18, 2016, p. 2.

² As described in Appendix C, SDG&E requests that the Commission reiterate its findings regarding State Action Doctrine defense to an antitrust action articulated in D.10-12-054 OP 8 that would allow the utilities to engage in certain joint energy efficiency activities which are consistent with state policy and supervised by the Commission.

Figure 1.8 Proposed Statewide Program Administrator Assignments for Upstream and Midstream Programs

Statewide Program Administrator	Program
PG&E	<ul style="list-style-type: none"> • Codes & Standards • Building Codes Advocacy • Appliance Standards Advocacy
PG&E	Financing Pilots
PG&E	<ul style="list-style-type: none"> • Workforce Education & Training • K-12 Connections
SCE	Commercial New Construction – Savings by Design
SCE	Emerging Technologies – Electric
SCE	<ul style="list-style-type: none"> • Lighting • Primary Lighting • Lighting Innovations • Lighting Market Transformation
SDG&E	HVAC – Residential and Commercial Upstream
SDG&E	Plug Load and Appliance (PLA)
SoCalGas	Emerging Technologies – Gas
SoCalGas	Residential New Construction

Figure 1.9 Proposed Statewide Program Administrator Assignments for Downstream Programs

Statewide Program Administrator	Program
PG&E	Career and Workforce Readiness
PG&E	Indoor Agriculture
SCE	Wastewater Pumping
SDG&E	Residential HVAC Quality Installation/Quality Maintenance (QI/QM)

In addition to upstream, midstream and programs with market transformation objectives, D16.08.019 also requires that PAs implement statewide four downstream pilots. **Figure 1.9** below outlines the proposed pilots and PA assignments for these downstream programs.

SDG&E Administered Programs

As the proposed statewide program administrator for the following programs, SDG&E's business plan includes proposals for:

- Residential and Commercial HVAC (Upstream & Midstream);
- Residential HVAC QI/QM, and
- Plug Load and Appliance.

Residential and Commercial Upstream HVAC

Program Overview

The California IOUs invest tens of millions of dollars each year in HVAC energy efficiency measures. The upstream HVAC program provides hundreds of dollars per ton to distributors for stocking and installation of high SEER (Seasonal Energy Efficiency Ratio) (≥ 16) units. The current program design, while moderately successful, has seen very low realization rates (18%) for air cooled units, which account for most of the units that participate in upstream programs. Recommendations from the most recent impact evaluation³ suggest that SDG&E should:

- Set program efficiency criteria for full-load and part-load combinations. Pre-identify units that meet the criteria such that savings claims are tied back to make and model numbers collected by participating distributors.
- Work with distributors to obtain extended performance maps that can be used in future simulations. DEER updates are limited by the availability of information from manufacturers, and the upstream program may be in a better position to obtain this information.
- Develop methods to obtain evidence that the economizer is fully functional before dispersing the final incentive payment. Obtain acceptance testing data for the technician to assure a functioning economizer that includes documenting economizer functionality with video/photographic evidence.

Although modest gains can be achieved by working with distributors and installers to insure the most efficient units are installed and that these units operate as designed throughout their lifetimes, SDG&E believes that greater savings opportunities exist by working further upstream with manufacturers and industry professionals. New opportunities become possible as SDG&E launches an upstream HVAC program for all of California. With California's market power and its key partnerships with other large energy efficiency organizations, like the Northwest Energy Efficiency Alliance, a non-profit organization working to accelerate energy efficiency in the Pacific Northwest, SDG&E will be better positioned to transform the HVAC market.

Program Approach and Sample Tactics

Initially, the Upstream HVAC program will look similar to the current offering, which is primarily a distributor stocking program. In parallel, SDG&E will pursue ways to move the program focus to upstream incentives directed at manufacturers who design systems for California that increase energy efficiency and incorporate proactive customer alerts. Specifically, SDG&E will look for opportunities in the following areas.

Refrigerant Charge

The California IOUs have offered refrigerant charge programs for some many years because, "Studies have shown that more than 50 percent of all air conditioners suffer from improper charge or air flow problems, causing them to operate 10 to 20 percent less efficiently than expected."⁴ These programs have produced savings, but additional savings may be achieved by proactively alerting customers as soon as the problem occurs.

³ Impact Evaluation of 2013-14 Upstream HVAC Programs (HVAC1), DNV GL, March 1, 2016.

⁴ http://aceee.org/files/proceedings/2008/data/papers/3_514.pdf.

Economizer

Properly functioning economizers are a great energy efficiency measure, but the recent load impact study performed by DNV GL showed that only 75% of economizers were operational shortly after install. Anecdotal evidence suggests that, over time, and without proper maintenance, the number of properly functioning economizers drops to near zero. In addition to fault detection, an upstream program should investigate working with manufacturers to add economizers to smaller tonnage units.

Sample Tactics:

1. Work with the Air Conditioning, Heating and Refrigeration Institute (AHRI) to develop a new technology designed for hot/dry climate conditions, resulting in a California SEER.
2. Increased manufacturer spending on Research & Development of high efficiency equipment, fault detection diagnostic integration, and smart device compatibility. Incentivizing manufacturers to modify HVAC design/diagnostics to add user alerts.
 - a. User alerts when refrigerant charge is too low or too high. Engage customers with alerts that are communicated to customer devices ranging from smart phones to energy management systems. These alerts would be similar to the “Check Engine” light on automobile dashboards that would alert customers to an immediate problem that requires attention.
 - b. User alerts for economizer fault detection. The idea, again, is to provide a user friendly call to action to repair one of the more fragile components of an HVAC system – the economizer.

Solicitation Strategy⁵

SDG&E will lead the statewide request for proposals (RFP) effort for the Residential and Commercial Upstream and Midstream HVAC program. This effort will require participation by all funding IOUs, and will draw input from relevant stakeholders that do not present a conflict of interest, including the utilization of the existing energy efficiency peer review group and an independent evaluator in 2017 until the Commission adopts an alternative process, such as the one SDG&E describes in Appendix C.⁶ The RFP will call for proposals to address the primary objectives outlined above. The IOUs will consider a variety of implementation options, including scenarios that involve one or more statewide implementers.

Transition Timeline⁷

The RFP process will begin once SDG&E’s business plans are approved by the Commission. The first phase of SDG&E’s solicitations is slated for the third quarter of 2017.⁸ SDG&E will collaborate and coordinate with the other funding PAs to plan and execute the statewide strategy to achieve cost savings as well as operational efficiencies. Upon selection of the program implementer(s), draft implementation plans will be presented through the CAEECC process to gather stakeholder feedback.

⁵ D.16-08-019 at OP 13.

⁶ As described in Appendix C, SDG&E believes that its existing Procurement Review Group and Independent Evaluator process used for electric procurement should be modified to include review of competitive solicitations for energy efficiency products.

⁷ D.16-08-019 at OP 14 Program administrators shall ensure a smooth transition between existing energy efficiency programs activities and the changes outlined in this decision, to be proposed in the business plans due January 15, 2017, minimizing program disruptions and avoiding any funding hiatus for ongoing efforts or partnership.

⁸ Assuming approval of business plans, full funding by all IOUs and determination of solicitation oversight.

Proposed Metrics and Schedule for Reviewing Performance⁹

The following metrics are illustrative and will be finalized with the selected implementer (s).

1. Increase in savings
2. Reduced IOU cost

Statewide Plug Load and Appliance

Program Overview

As the proposed statewide lead for the midstream PLA program, SDG&E will partner with implementer (s) to engage manufacturers, distributors, retailers and other influential market participants to develop comprehensive and innovative initiatives that reduce energy usage across technologies with high savings potential. SDG&E intends to consider multiple intervention strategies for program delivery including, but not limited to, Retail Products Platform (RPP), point-of-sale (POS) or a hybrid approach. Additionally, upstream and midstream partnerships will be leveraged to increase the visibility and eventually decrease the cost of energy management technology. SDG&E also intends to collaborate with those key market actors to increase demand for national connectivity standards and protocols, which will ultimately improve adoption and customer experience for those technologies. Finally, SDG&E intends to partner with manufacturers to incorporate 'smart' technologies into products that may enable demand response capabilities as California transitions to time-of-use pricing.

Program Objective(s)¹⁰

Statewide administration of a midstream and upstream Plug Load and Appliance program can elevate access of efficient end-use products while facilitating emerging energy management technologies. SDG&E will:

- Maximize the program's cost effectiveness;
- Streamline business processes, and
- Partner with manufacturers, distributors, retailers and other influential market participants.

Solicitation Strategy¹¹

SDG&E will lead the statewide RFP effort for the Statewide PLA program. This effort will require participation by all funding IOUs, and will draw input from relevant stakeholders that do not present a conflict of interest. The RFP will call for proposals to address the primary objectives outlined above. The IOUs will consider implementation options, including scenarios that involve one or more statewide implementers.

⁹ D.16-08-019 at Conclusions of Law (COL) 55 (The business plans should include specific metrics by which progress towards objectives may be assessed, and a schedule for reviewing results against performance indicators on a regular recurring basis, for statewide programs.)

¹⁰ D.16-08-019 at OP 13.

¹¹ D.16-08-019 at OP 13.

Transition Timeline¹²

The RFP process will begin once SDG&E's business plans are approved by the Commission. The first phase of solicitations for SDG&E is slated for the third quarter of 2017.¹³ SDG&E will collaborate and coordinate with the other funding PAs to plan and execute the statewide strategy to achieve cost savings as well as operational efficiencies. Upon selection of the program implementer(s), the draft implementation plan will be presented through the CAEECC process to gather stakeholder feedback.

Proposed Metrics

The following metrics are illustrative and will be finalized with the selected implementer(s).

1. Increase in savings from Plug Load and Appliance technologies
2. Reduced IOU cost

Residential QI/QM

Program Overview

The rapid growth of air conditioning in California homes has made it one of the state's largest energy consuming end-uses and the single largest contributor to peak demand. Activities designed to improve HVAC efficiency, therefore, provide a significant opportunity to improve energy efficiency and reduce peak power demand. Historically, programs that have targeted maintenance and installation aspects of the HVAC market have been plagued with poor cost effectiveness, low realization rates, and minimal market participation. This has resulted in mixed opinions and interest from the HVAC industry.

In alignment with the California Long Term EE Strategic Plan,¹⁴ SDG&E will seek to overcome the barriers that have caused program performance issues in the past. This strategy will employ a five-point approach:

1. Improve HVAC system performance to generate greater savings for customers;
2. Enhance requirements to insure that only qualified contractors can participate;
3. Simplify the assessment and measurement approach to optimize cost effectiveness;
4. Employ a pay for performance approach to align incentives with savings, and
5. Create value propositions that address and overcome the "run to fail" mentality for equipment maintenance and installation.

In addition to the changes described above, these efforts will result in customers increasingly valuing the improved health and safety and lower maintenance or replacement costs better HVAC systems can provide.

Program Objective(s) and Approach¹⁵

The primary objectives of the SDG&E Residential HVAC program, in partnership with HVAC industry, are to:

- Ensure HVAC measures included in the program are cost-effective, save energy and lower peak demand;
- Assist industry with developing a clear value proposition for a profitable HVAC business based on Quality Installation and Quality Maintenance, and
- Promote increasing Customer awareness of the value of Quality Installation and Maintenance which leads to higher system performance, optimal air flow, reduce duct leakage, and improved indoor air quality.

¹² D.16-08-019 at OP 14.

¹³ Assuming approval of business plans, full funding by all IOUs and determination of solicitation oversight.

¹⁴ CALTEESP, Section 1.

¹⁵ D.16-08-019 at OP 13 (Each utility program administrator shall include in its business plan filing the objectives and metrics that will be met with each statewide or third-party program or subprogram, whether solicitation will be conducted, and the functional activities that are proposed to be conducted statewide.)

Solicitation Strategy¹⁶

SDG&E will lead the statewide RFP effort for the Residential HVAC QI/QM program. This effort will require participation by all funding IOUs, and will draw input from relevant stakeholders that do not present a conflict of interest. The RFP will call for proposals for tactics to address the primary objectives outlined above.

The IOUs will consider implementation options, including scenarios that involve one or more statewide implementers.

Since SDG&E is also the Statewide Administrator for upstream and midstream HVAC, this provides an opportunity to take a holistic approach to ensure that all channels (upstream, midstream and downstream) are fully integrated and complimentary to maximize both energy and cost savings through economies of scale. A solicitation will be issued to garner innovative program ideas from external experts.

Transition Timeline¹⁷

The RFP process will begin once SDG&E's business plans are approved by the Commission. The first phase of solicitations for SDG&E is slated for the third quarter of 2017.¹⁸ SDG&E will collaborate and coordinate with the other funding PAs to plan and execute the statewide strategy to achieve cost savings as well as operational efficiencies. Upon selection of the program implementer(s), the draft implementation plan will be presented through the CAEECC process to gather stakeholder feedback.

Proposed Metrics and Schedule for Reviewing Performance¹⁹

The following metrics are illustrative and will be finalized with the selected implementer(s).

1. Increase in savings
2. Reduced IOU cost

Sourcing Strategy and Transition Plan

One consistent theme suggested by stakeholders in their feedback is for the Program Administrators to look to third parties to bring innovation, expertise, and cost efficiencies to the portfolio. As a result, SDG&E has created an outsourcing strategy that both responds to this stakeholder input, as well as to the latest CPUC direction. SDG&E will begin actively seeking new third-party energy efficiency programs in 2017 with a ramp up of solicitations through 2018 and 2019 to achieve a threshold of at least the 60% third-party programs by 2020, as required by D.16-08-019.²⁰ **Figure 1.10** shows this plan, based on the assumption of a third quarter 2017 start upon approval of business plans. Solicitations by sector and percentages are outlined here to illustrate the proposed timeline and staging.

¹⁹ D.16-08-019 at COL 55 (The business plans should include specific metrics by which progress towards objectives may be assessed, and a schedule for reviewing results against performance indicators on a regular recurring basis, for statewide programs.)

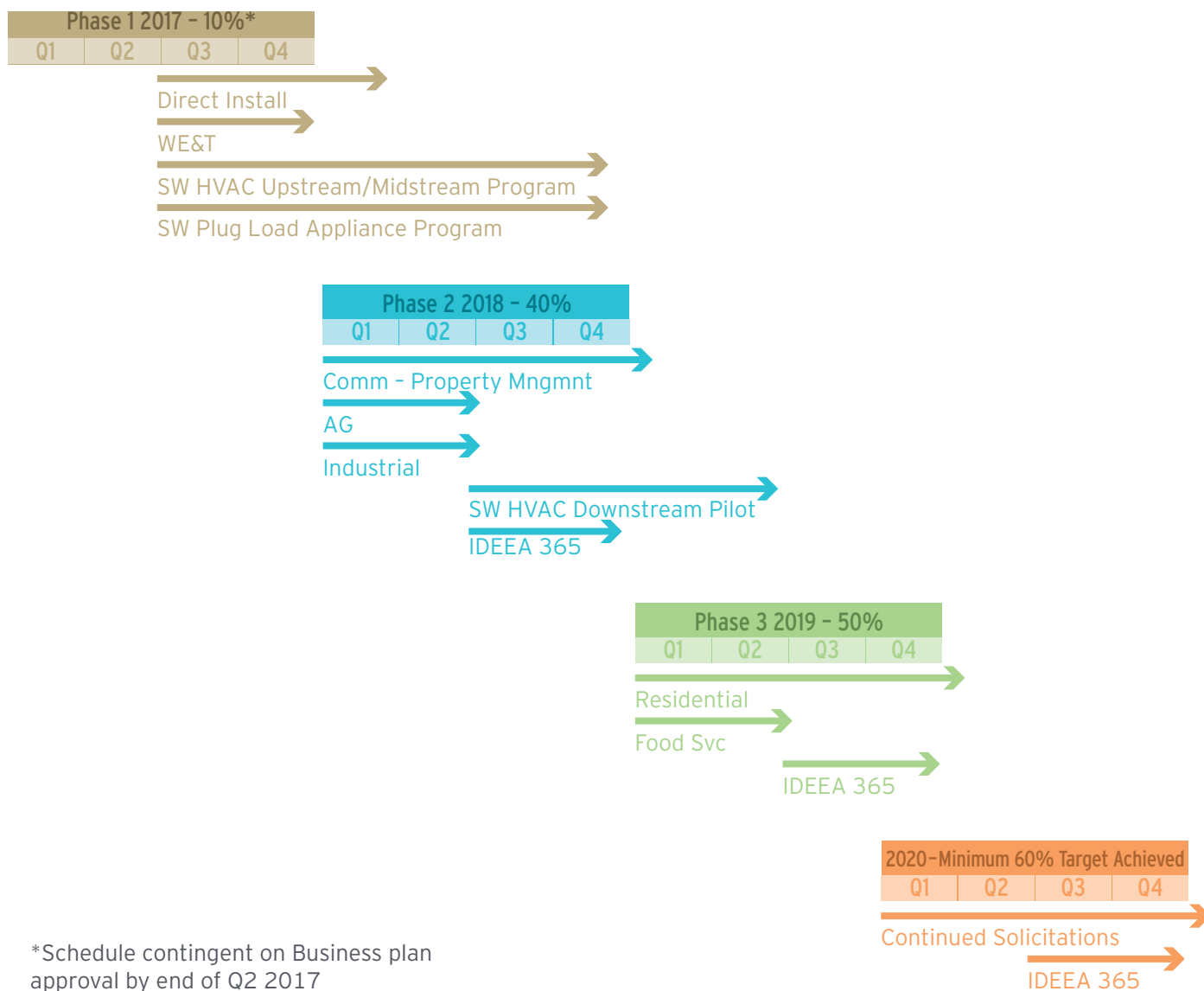
²⁰ D.16-08-19 OP 10 provides that, in order for a program to be designated as "third party," it must be "proposed, designed, implemented, and delivered by non-utility personnel under contract to a utility program administrator." D.16-08-19 OP 11 goes on to state that "going forward," each IOU program administrator must maintain its existing 20% third party program requirement under the new definition set forth in OP 10. Certain of SDG&E's existing third party contracts do not adhere to this new definition of "third party." For this reason, SDG&E intends to rebid these contracts in 2017 to align with the new "third party" definition in order to maintain compliance with the existing 20% third party requirement. Notwithstanding this temporary policy issue, SDG&E intends to achieve the Commission's 60% third party requirement, under the new definition of "third party," by the end of 2020.

¹⁶ D.16-08-019 at OP 13.

¹⁷ D.16-08-019 at OP 14 Program administrators shall ensure a smooth transition between existing energy efficiency programs activities and the changes outlined in this decision, to be proposed in the business plans due January 15, 2017, minimizing program disruptions and avoiding any funding hiatus for ongoing efforts or partnership.)

¹⁸ Assuming approval of business plans and full funding by all IOUs.

Figure 1.10 Sourcing and Transition Plan



Solicitation Approach

In addition to meeting the 60% threshold, the objective of the solicitations will be to seek new programs that meet SDG&E portfolio needs and are proposed, designed, implemented, and delivered by non-utility personnel under contract to SDG&E. These sourcing opportunities for programs will add qualified implementers and service providers to streamline program delivery services and reduce program delivery costs. SDG&E will also continue to look for innovation and new technologies through the IDEEA 365 selection process. SDG&E will continue to utilize “best value” practices, including a peer review group and independent evaluator, to ensure competitive pricing through contract negotiations that require the delivery of cost efficient programs which meet energy savings targets and the aggressive goals set for the PA's and the state.²¹

SDG&E proposes a ‘phased approach’ to these solicitations, which will take into consideration the future potential of energy efficiency, market trends, legislative direction, regulatory guidance and, most importantly, customers’ needs. These phases will include the not only the solicitations for the various sectors, but solicitations for the agreed-upon statewide programs and IDEEA 365 selections. The phases will focus on the areas outlined below:

- **Phase 1** – The initial phase of the SDG&E transition plan has a proposed start of third quarter 2017. During this phase, SDG&E will begin the process with third-party program solicitations for direct install-programs targeted at small and medium business customers and Workforce Education & Training initiatives. Concurrently, SDG&E will begin the sourcing effort for both the Statewide Upstream and Midstream HVAC and the Statewide Plug Load and Appliance programs, to solicit qualified implementers to support the operation of these
- programs on a statewide basis. It is anticipated that these activities will account for a small percentage of approximately 10 % of the portfolio in 2017, as final vendor selection, contract development and negotiation and beginning implementation of programs will most likely take place in 2018.
- **Phase 2** – In the second phase of the transition, assuming approval of the business plan, SDG&E will complete negotiations and program start of those solicitations that began in 2017, and begin the solicitations to meet third-party program requirements for various sectors in the portfolio. These efforts will include the Commercial, Agriculture, and Industrial Sectors. In addition to sector-level sourcing, the solicitation in support of the Statewide Downstream HVAC Pilot program is expected to begin in the third quarter of 2018. SDG&E will also continue its innovative solicitations with a fifth “request for abstracts” (RFA) and contract award and implementation in 2018. This will account for approximately 30% of the portfolio and deliver a cumulative total of 40%.
- **Phase 3** – In the third phase, SDG&E will continue to solicit implementers for program designs and implementation proposals for the SDG&E Residential Sector, as well as for Food Service-focused programs and another IDEEA 365 RFA to bring more new and innovative program ideas into the portfolio. At the close of Phase 3 (in 2019), SDG&E proposes to have approximately 50% of its portfolio assigned to third-party programs.
- **Phase 4** – During Phase 4 (2020), SDG&E will continue solicitations to achieve the minimum threshold of 60% of the portfolio by year-end. As a result of ongoing solicitations, vendor selections, contract negotiations and awards, SDG&E will achieve the minimum requirement of 60% of the portfolio.

²¹SDG&E plans to use the existing energy efficiency peer review group and an independent evaluator in 2017 until the Commission adopts an alternative process, such as the one SDG&E describes in Appendix C. SDG&E believes that its existing Procurement Review Group and Independent Evaluator process used for electric procurement should be modified to include review of competitive solicitations for energy efficiency products.

In developing this proposed phased solicitation approach, SDG&E hopes to provide potential third-party implementers the time they need to develop concepts for programs and program designs, and to allow participation in all solicitation efforts by many different implementers across the territory. This will increase opportunities for innovation and enhance competition. It should be noted that SDG&E will also perform this solicitation process with the definition of 'third-party' program implementation in mind; however, during the contract development, negotiation and implementation of the successful proposals, SDG&E will utilize supply management best practices as well as utility personnel expertise and input from stakeholders to achieve the best possible energy efficiency program outcomes.

In 2020 and beyond, SDG&E will remain dedicated to identifying gaps in the portfolio offerings, rebidding contracts and developing solicitations to meet mid and long-term strategies of this plan. The solicitation process may result in additional third party programs that exceed the minimum requirements while continuing to follow 'best value' practices.

Contract Terms

It is also important to note that SDG&E will develop the appropriate contract templates based on input from the procurement and legal teams and successful models utilized in other areas of the company. The plan will ensure that the terms and conditions, payment structures and Key Performance Indicators (KPIs) are included in the solicitation packages and as part of contract negotiations moving forward.

SDG&E Customer Programs Operations and Portfolio Oversight

SDG&E further notes that, as a result of D.16-08-019, the IOUs' focus will now shift from program design and implementation to program administration. SDG&E will focus on understanding the true needs of the service territory and its customers and communicating those needs to new program implementers. As allowed by the Commission, SDG&E will also continue its role as energy efficiency portfolio designer and will maintain discretion over the portfolio with respect to budgets and budget allocations, again based on the territory's needs. As stated in this business plan, SDG&E will continue to analyze the all of its programs to understand how each is performing and fits in the portfolio and to better understand which program administrative responsibilities (such as direct customer outreach and rebate processing) should remain with the utility to meet the overall customer's needs. SDG&E personnel will take on a greater role as contract managers and collaborators for program implementers for the newly defined third-party programs. For example, as is noted in the solicitation approach, SDG&E will collaborate with the other IOUs, implementers and stakeholders during the program solicitations, selection process, and program design and implementation. It is expected that the roles and responsibilities of the program administrator will be further defined and adjusted as programs come into the portfolio.

Portfolio Oversight

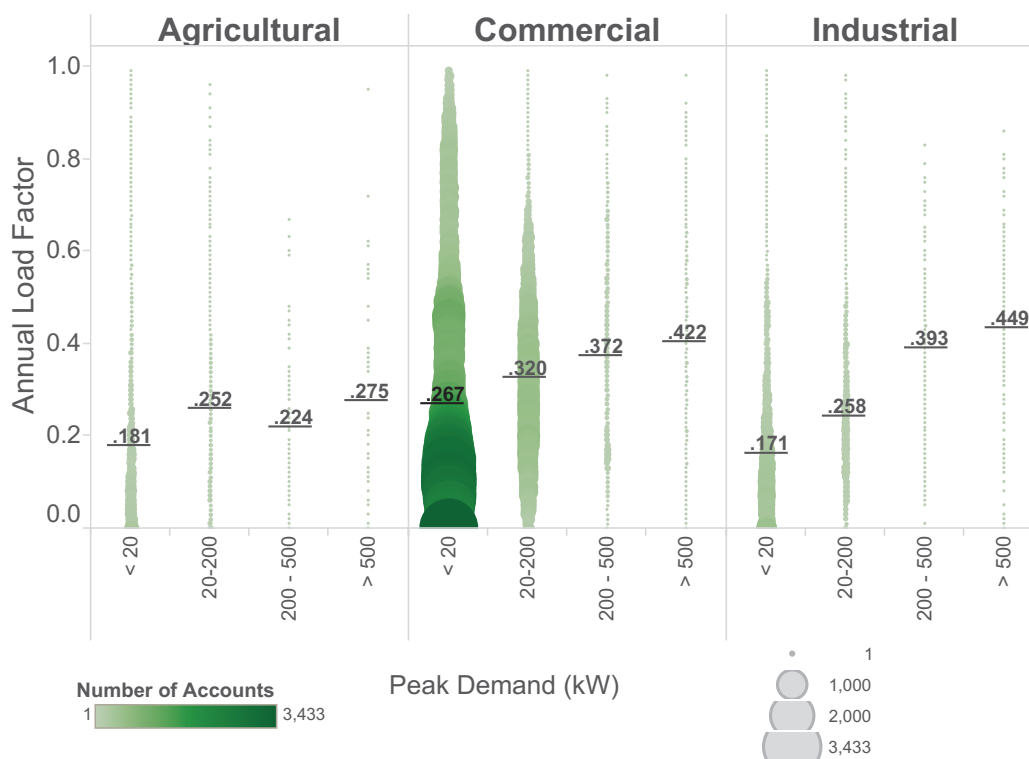
SDG&E will retain the responsibility to administer its energy efficiency portfolio, including the need to ensure that ratepayer funds are properly utilized. This responsibility requires a portfolio and program oversight role, including performing inspections, engineering review, quality assurance and quality control (QA/QC), and effective contract management. Additionally, SDG&E will continue to leverage its established infrastructure which includes rebate processing, and the utilization of information technology (IT) systems to track program participation. This will enable SDG&E to continue to provide accurate and timely reporting to the Commission.

Load Factor Impact on EE Adoption

The SDG&E service territory has characteristics that distinguish it from the rest of California. San Diego is made up of small businesses in a temperate climate and this distinction may result in EE measures that are not as cost effective in the service territory as they would be for other IOUs. Due to these demographic and climactic characteristics and load factor considerations, many of SDG&E's customers may be "Zero Net Energy (ZNE) Ready" before other customers in the state. Load factor can be used to provide insights into how a customer uses energy. Load factors near 1.0 are an indication of a facility that operates with a near constant electric load, 24-hours a day, 365 days a year. Conversely, low load factors generally indicate electric loads that are: 1) seasonal, 2) active during limited hours/week and/or, 3) heavily dependent on weather. For example, a business that operates at a fairly consistent load for 8 hours a day, five days a week would have a load factor below 0.25.

Annual Load factor is a ratio of a customer's annual consumption compared to their theoretical maximum consumption where that maximum consumption is calculated by multiplying their annual peak demand by 8,760 hours/year.

Figure 1.11 SDG&E Non-Residential Load Factor Summary



SDG&E performed a load factor analysis to better understand its customers and their likelihood to participate in EE. This analysis indicates that, because the large number of smaller customers, SDG&E's average customer load factor may be relatively low as compared to that of other California IOUs. This has implications for SDG&E customer participation in EE activities and their path to ZNE.

Figure 1.11 shows the distribution of SDG&E customer's load factors by sector and peak demand. The dark color and width of the Commercial <20 kW bar indicates a high concentration of small commercial customers.

An analysis of this data shows a correlation between customer's peak demand and their load factor (i.e. larger customers generally have higher load factors). This also suggests that larger customers tend to have longer operating hours. Another understandable trend is that the Agricultural sector has the lowest load factor and the large Industrial segment has the highest load factor. Recognizing that a lot of agricultural load is seasonal (water pumping, post-harvest cooling), it is not surprising that this sector has the lowest average load factors. Additionally, it makes sense that the Industrial sector would have the largest average load factors. Industrial customers tend to have the highest operating hours and, because of their processing lines, it is the sector with the most consistent electrical loads.

Impact of Load Factor on Cost Effectiveness and Zero Net Energy Ready

Energy efficiency savings increase when measures have high usage because the high usage means the efficiency savings are accumulated over more hours. This is supported by the well-known audit practice of identifying EE opportunities by looking at a customer's "largest slices of usage" pie chart. Measures that produce higher operational savings result in shorter paybacks; these are generally the more cost effective measures. Because of load factor's positive correlation with electric usage, one can infer that customers with low load factors have longer paybacks; therefore, EE measures for these customers are not as cost effective.

In addition to and because of these low load factors, SDG&E's customers may be ZNE Ready sooner than customers with higher load factors. Logic suggests that customers would perform the most cost effective EE retrofits first, followed by the next most cost effective retrofits. Customers would continue to perform EE retrofits until the effective cost of the EE retrofit is more expensive than procuring clean energy. In this example, the definition of ZNE Ready is implementing all of cost effective EE (i.e. less expensive than renewables). Because SDG&E customers are mostly small and medium business, ZNE Ready could happen a lot sooner than in other territories/climates. Further research on ZNE Readiness is needed to support customers through their energy efficiency journey. SDG&E will continue to investigate the impact of low load factors on being ZNE Ready.

Figure 1.12 SDG&E Annualized EE Portfolio Savings Goals

	Near-Term 2018-2020	Mid-Term 2021-2023	Long-Term 2024-2025
GWh	236-238	223-214	214
MW	44-45	43	44
MMTherms	3.9-4.0	3.7-3.8	3.8

Savings Goals

Consistent with the CPUC's direction, SDG&E has proposed savings goals over the business plan period that will allow a cost effective portfolio without a budget increase. SDG&E proposes the annual energy efficiency savings goals listed in **Figure 1.12**.

Figure 1.13 SDG&E Annualized EE Portfolio Budgets

For details on budget development see *Appendix B – Budget and Savings Methodology*.

	Near-Term 2018-2020	Mid-Term 2021-2023	Long-Term 2024-2025
Annual Budget	\$116,456,309	\$116,456,309	\$116,456,309

Figure 1.14 SDG&E Total Proposed Annualized Budget (\$000)

Category	Electric Demand Response Funds	Electric Energy Efficiency Funds	Natural Gas Public Purpose Funds	Total Energy Efficiency Funds
Program Funds	\$4,640	\$100,619	\$11,179	\$111,798
EM&V	N/A	\$4,192	\$466	\$4,658
Total	\$4,640	\$104,811	\$11,645	\$116,456

Budget and Cost Effectiveness

SDG&E is proposing a cost effective plan for 2018 that will achieve a TRC of 1.02 and 1.20, with and without Codes & Standards program savings, respectively.²² The proposed 2018 portfolio will achieve a PAC of 1.19 and 2.18, with and without Codes and Standards, respectively. SDG&E's proposal keeps its future EE budgets equal to the 2016 budget. This annual amount may be adjust based on the outcomes of this and related proceedings, and the ability to realize energy efficiency savings consistent with estimated market potential. The methodology used to determine the proposed annual budget can be found in *Appendix B – Budget and Savings Methodology*. SDG&E proposes the annual EE budget listed in **Figure 1.13**. This budget will achieve the EE goals set by the CPUC for SDG&E's customers and provide a cost effective portfolio for ratepayers.

In addition to SDG&E's EE portfolio budget, SDG&E's proposes to continue successful Integrated Demand-Side Management (IDSM) activities that include coordinated and integrated offerings with Demand Response (DR) and Water Energy Nexus activities. All Water Nexus activities and measures as approved by the Commission will be funded with Energy Efficiency monies.²³ With respect to DR-related activities such as comprehensive energy management surveys, audits, behavior programs and local marketing, education and outreach efforts, SDG&E proposes to continue these DR- activities using electric DR funds. Consistent with what had previously been approved by the Commission and most recently in D.14-08-046 and requested in SDG&E's 2017 EE Annual Advice Letter Advice Letter 2951-E/2512-G, SDG&E requests that the IDSM DR budget be \$4.640 million. This request and the EM&V budget are shown in **Figure 1.14**.

²²As described in Appendix C, SDG&E requests that the Commission extend its waiver of the 1.25 TRC threshold requirement (see D.14-08-046) to the 2018 Business Plan to account for new challenges observed in the planning process. Notwithstanding these challenges, SDG&E is committed to maintaining the cost-effectiveness of its portfolio.

²³D.14-08-046 (at pages 90-93) discusses the 2013-2014 water-energy nexus pilot programs continued EE funding for them.

Portfolio Financial Oversight

Energy Efficiency Balancing Accounts

SDG&E records collections and portfolio expenses for its electric EE funds in its Post-1997 Electric Energy Efficiency Balancing Account (PEEEBA). Similarly it records its collections and portfolio expenses for its gas EE funds in its Post-2005 Gas Energy Efficiency Balancing Account (PGEEBA). The status of these balancing accounts is reported monthly to the Commission.

SDG&E also maintains a gas and electric balancing account to record the difference between ratepayer funding and actual loans provided to customers participating in SDG&E's On-Bill Financing (OBF) program authorized by Decision (D.) 09-09-047. Other "program" costs associated with the OBF program are recorded in PEEEEBA and PGEEBA, for electric and gas expenses, respectively.

General Accounting Practices

SDG&E's EE accounting practices for managing its EE portfolio conform to its company's corporate financial and accounting policies. In addition, SDG&E has developed specific policies and procedures that describe its EE management's responsibilities to maintain internal controls in order to provide reasonable assurance that Commission policies and requirements are met and that SDG&E's financial reports to the Commission are reliable.

D.15-10-028 has currently deferred accounting issues²⁴ to Phase III of R.13-11-005²⁵ and therefore, the accounting and reporting status quo will continue. SDG&E expenditure reporting currently comports with existing Commission requirements contained in its EE Policy Manual.²⁶ SDG&E manages to various caps and targets and acceptable cost categories as defined in the EE Policy Manual Appendix F. SDG&E cooperates with the Commission's Utility Audit, Finance and Compliance Branch (UAFCB) in its annual review of SDG&E's EE expenditures. SDG&E develops appropriate revisions to its internal policies and procedures in response to relevant UAFCB findings and observations.

SDG&E looks forward to working with the Commission and stakeholders to assess and update existing EE policy and accounting framework to better address future needs.

²⁴D.15-10-028 at 89.

²⁵Assigned Commissioner and Administrative Law Judge's Ruling and Amended Scoping Memorandum, November 2, 2016 at 10.

²⁶Energy Efficiency Policy Manual Version 5, July 2013.

02 RESIDENTIAL SECTOR



OUR MISSION

Empowering customers by providing the tools, program offerings, and access to assistance on their path to zero net energy.

Chapter Summary

As one of the most recognized brands in San Diego and with a reputation for reliability and service, SDG&E serves its single family and multifamily residential customers as a trusted energy advisor to continue to achieve California's significant energy reduction goals. The residential sector is SDG&E's second largest customer group after the commercial sector with 1.3M accounts. Residential customers consume over a third of all electricity and over half of all natural gas in San Diego County and thus are a critical component in SDG&E's plans to meet Senate Bill 350's objective of doubling energy efficiency savings.

Traditionally, financial constraints are the largest reasons customers cite for not being able to incorporate the most energy efficient measures into their homes.¹ While SDG&E offered a large number of rebates and services to its customers, there was not a clear path for the customers to advance towards zero net energy (ZNE).

Analysis and stakeholder feedback supports simplifying participation, creating awareness, and encouraging engagement. As a result, SDG&E intends for its program offerings to be more widely adopted by customers while elevating and simplifying the customer experience.

This business plan describes SDG&E's plans to further encourage customers to continue on the path towards ZNE, as well as provide dynamic solutions as customers transition to time-of-use (TOU) rates. This chapter will discuss residential energy trends and describe how SDG&E will expand its behavioral programs and provide customers with enhanced online self-service capability.

Consistent with the California Long Term Energy Efficiency Strategic Plan (CALTEESP), SDG&E's vision for the residential sector is to create the foundation for an innovative, integrated, and sustainable energy future for customers. SDG&E's mission for the residential sector is to empower customers by providing the tools, program offerings, and access to assistance needed on their path to ZNE. To accomplish this mission,

¹ Whole House Retrofit Impact Evaluation – Evaluation of Energy Upgrade California Programs (CPU0093.01) Published September 9, 2014.

The Past, Present, and Future of RESIDENTIAL ENERGY EFFICIENCY

MARKET CHARACTERIZATION

PAST & PRESENT



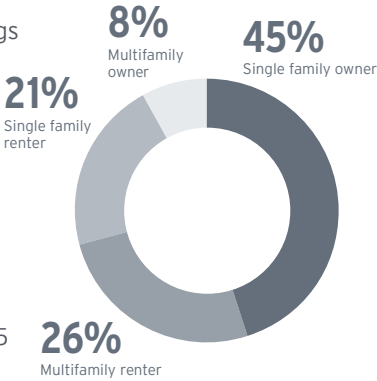
FUTURE

One of SDG&E's largest sectors

- 36% of total electric consumption
- 32% of EE spending
- 24% of electric EE savings



1.3 million accounts
1.2 million customers



7% of customers participated in 2013-2015 downstream EE programs



66% of electric consumption is comprised of plug loads



Demand convenience

Desire for solar and electric vehicle continues to grow

Potential savings for most end-uses will decline from 57 GWh in 2017 to 36 GWh in 2018 due to code changes



Plug loads in California are forecasted to grow to 77% of residential consumption by 2024

Home management systems

will become a logical technology to make customers' lives simpler and improve customer satisfaction



Self-generation is expected to reduce peak demand by 380 MW by 2024

Number of customers with **solar generation and electric vehicles** will continue to grow



Electric vehicles are expected to increase electricity consumption by ~1,200 GWh by 2024

DELIVERY APPROACH

Program offerings were **primarily driven by rebates** for dozens of individual measures and multiple rebate tiers



Individual rebates have been reduced to five measures

Recent focus has been on the behavioral program and the direct install program



There has been a continued **expansion of behavioral programs** due to consistent proven results and potential

Leverage data from behavioral programs to provide customized solutions and assistance



Single pathway and integration of programs

Empower customers to use energy intelligently by providing data



Self-serve options to increase program participation

Personalized recommendations
Expansion of behavioral programs

Leverage a platform to drive customers through the adoption curve to achieve zero net energy

Citations for data presented on this figure are included throughout the chapter.

SDG&E has established the following residential sector goals:

- **Residential Goal 1:** Increase Energy Efficiency Savings in the Residential Sector Through an Improved Customer Experience.
- **Residential Goal 2:** Increase Energy Efficiency Participation in the Multifamily Sector.
- **Residential Goal 3:** Continue to Innovate by Executing New Approaches to the Market.²

In addition to the goals above, this plan identifies strategies that will help complement existing offerings and move customers to the next level of comprehensive and sustained energy efficiency engagement.

Approach to Achieve Residential Sector Goals

The primary focus for SDG&E's residential sector is to develop a common pathway that meets customers where they are on their journey to achieving their energy goals and encourages them towards ZNE, while providing a more seamless customer experience. Our customers increasingly value energy cost savings, conservation, and home improvements that are simple and easy to understand.³ Much of the approach discussed in greater detail below is geared towards reaching the objectives of the Residential Zero Net Energy Action Plan.⁴ The customer journey will include participation in behavioral programs that will leverage data to provide customized solutions and assistance.

With this business plan, SDG&E seeks to:

- Facilitate, sustain, and transform the long-term delivery and adoption of energy efficient products and services for single and multifamily dwellings;
- Cultivate, promote, and sustain lasting energy efficient behavioral changes by residential customers; and

- Meet customers' energy efficiency adoption preferences through offerings that range from single-measure incentives to more comprehensive approaches.

SDG&E's market analysis and stakeholders have identified a number of consistent barriers for this sector. SDG&E has analyzed these barriers and considered the direction set by the CALTEESP to determine the goals needed in order to establish a unified, achievable framework that will yield concrete results in support of the mission and vision of the residential sector. These barriers are discussed in the tables below and explored further in the market characterization section.

In summary, the barriers for this sector can be characterized by these statements:

- Efficient products can be more expensive and may offer a low return on investment (ROI), which leads to a low adoption rate of high efficiency products. Customer feedback has shown that cost savings are the largest driver for customers to invest in new products.⁵ Educating customers on the economic value associated with investing in energy efficient products will be a key component to increased customer participation.
- Some customers are confused by the number of programs and entry points, which may be a cause of low overall customer participation.⁶ Moving forward, creating a simple pathway and integration of programs will become a key component for SDG&E.
- Increasing efficiency levels required by codes and standards leads to a smaller pool of cost effective measures. It is important to explore other opportunities through avenues such as the ideation process, engineering data, technology improvements, market innovation, and behavioral interventions.

² Goals will be further refined and include measurable metrics upon completion of the potential study.

³ Source: Residential Direct Install Focus Groups, June 2015.

⁴ New Residential Zero Net Energy Action Plan 2015-2020, June 2015.

⁵ SDG&E Residential Direct Install Focus Groups, June 2015.

⁶ Process Evaluation of the SDG&E 2006- 08 Residential Customer Programs, ECONorthwest, Feb 15, 2008 and anecdotal feedback.

Figure 2.1 Residential Market Characteristics and Problems Overcome by Goals

Problem	Targeted by Strategies Supporting Goals			
	Goal	Customer Size	Market Segments	End-Uses
<ul style="list-style-type: none"> • Energy efficiency typically competes with other priorities • EE is not a top focus for many customers • Many energy efficient products have a higher cost and low ROI 	Increase Energy Efficiency Savings in the Residential Sector Through Improved Customer Experience by Providing Engaging Self-Service Tools and Data-Driven Insights	All	All	Lighting, Plug Loads, Building Envelope, HVAC, Hot Water, Whole Building
<ul style="list-style-type: none"> • Facility operators understand and can identify the energy efficiency upgrades needed, but do not have the authority to make the decisions • Multiple decision makers (property owner, property manager, tenant) make it difficult for a comprehensive uptake in program participation in multifamily properties • Split-incentive continues to be challenging (tenants pay for utilities, property owners receive less benefits from energy-efficiency improvements) • Energy efficiency is often not a priority for property owners/managers • Lending laws and current program requirements related to On-Bill Financing may not be ideal for multifamily retrofit opportunities 	Increase Energy Efficiency Participation in the Multifamily Sector Through an Approach Targeting Both Tenants and Property Owners	All	Multifamily owners and renters	Lighting, Plug Loads, Building Envelope, HVAC, Hot Water, Whole Building
<p>The energy efficiency industry has the potential to see significant change in the next decade</p>	Continue to Innovate by Executing New Approaches to the Market	All	All	Lighting, Plug Loads, Building Envelope, HVAC, Hot Water, Whole Building

- Electric vehicle adoption and solar generation are increasing which leads to a unique and diverse foundation of usage characteristics in the service territory. There will be a need for better segmentation to leverage and personalize the recommendations for this evolving customer base.

Each of these has influenced the goals and strategies selected for this business plan and may impact tactics used in the future. **Figure 2.1**, on the previous page, summarizes the linkage between the problems (or barriers) that have been identified through the stakeholder process and through market analysis and the goals that have been created.

This section outlines the overarching goals that set the direction for SDG&E's residential sector, as well as the key strategies and tactics that support those goals. SDG&E's residential sector goals are:

- **Residential Goal 1:** Increase Energy Efficiency Savings in the Residential Sector Through Improved Customer Experience by Providing Engaging Self-Service Tools and Data-Driven Insights.
- **Residential Goal 2:** Increase Energy Efficiency Participation in the Multifamily Sector Through an Approach Targeting Both Tenants and Property Owners.
- **Residential Goal 3:** Continue to Innovate by Executing New Approaches to the Market.

These goals and the existing core program components will be used to reach savings goals based upon approved budgets. **Figures 2.2 and 2.3** outline the proposed energy efficiency goals and budget for SDG&E's residential sector. The majority of the savings is expected to come from behavioral-type programs as the potential savings for other residential measures decline. Bringing awareness to customers, increasing their engagement with self-service tools that simplify the journey to ZNE, and partnering with key stakeholders will be increasingly important for this sector that have proven to be successful. Current offerings that are not effective will be replaced or modified.

Figure 2.2 Residential Sector Annualized Savings Goals

	Short-Term 2018-2020	Mid-Term 2021-2023	Long-Term 2024-2025
GWh	69-72	66-69	70
MW	5	5	4
MMTherms	2	2	2

Figure 2.3 Residential Sector Annualized Budget

	Short-Term 2018-2020	Mid-Term 2021-2023	Long-Term 2024-2025
Annual Budget	\$48,507,957	\$48,507,957	\$48,507,957

Overview of Current Offerings

To date, the California IOUs have employed a number of residential energy efficiency programs that are in various stages of maturity and availability across the state. The IOUs are working to integrate all of these programs to coordinate efforts and increase comprehensiveness of measure delivery when feasible. **Figure 2.4** details SDG&E's residential offerings and highlights how existing, modified, and new offerings support the goals.

Figure 2.4 Overview of Current and New Offerings

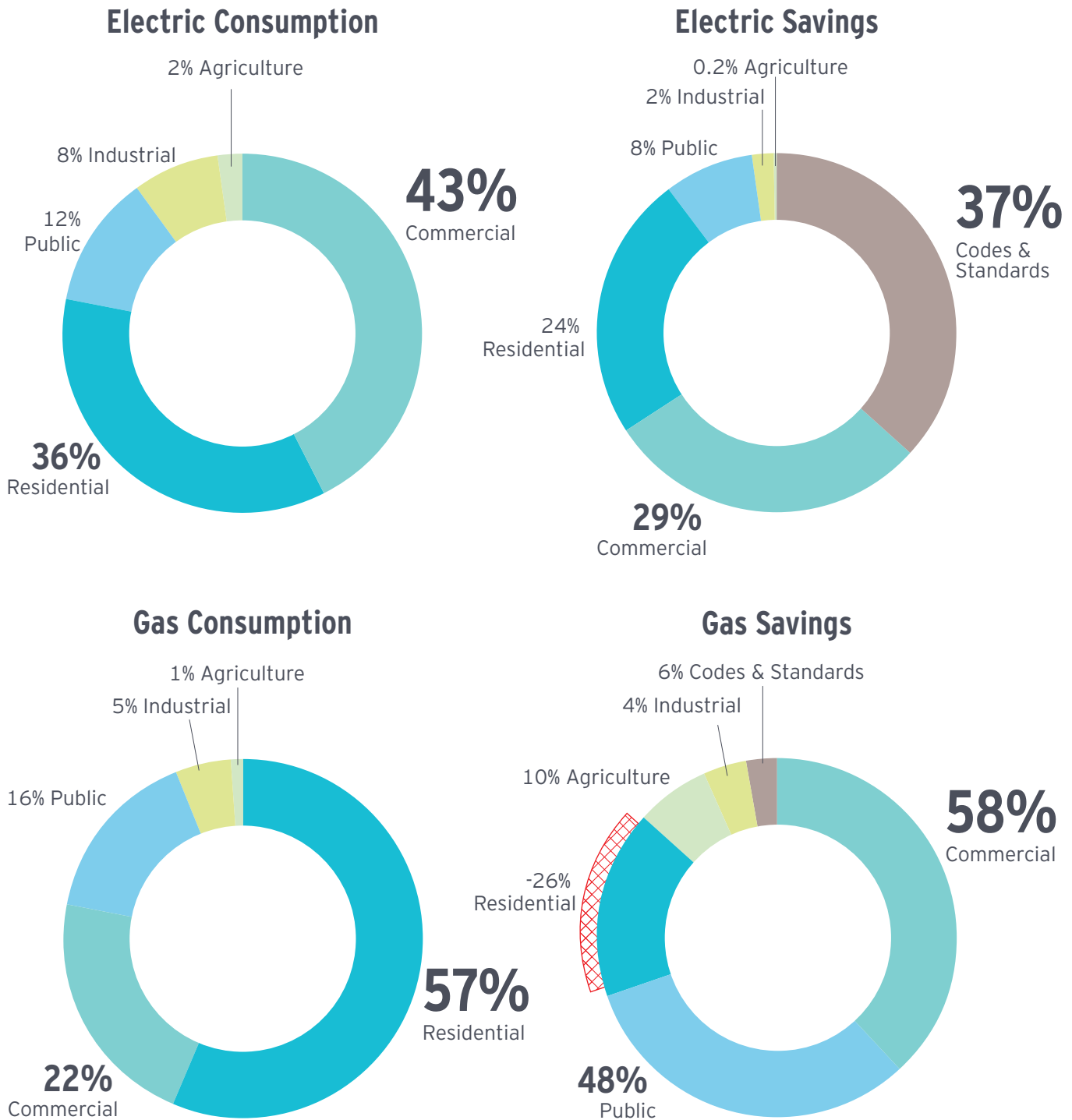
Goal	Strategy	Sample Tactics	New, Existing, Modified	Short, Mid, Long-Term
Increase Energy Efficiency Savings in the Residential Sector Through an Improved Customer Experience Led by Engaging Self-Service Tools and Data-Driven Insights	Make energy efficiency products and services more accessible	Develop an online platform (“web portal”) to promote efficient products and services while capturing customer participation and efficiency opportunities	New	Mid
		Customer Education	Modified	Short
		Home Energy Management Systems	New	Short
	Empower customers to better manage their energy use	Utilize market segmentation and big data	Modified	Short
Increase Multifamily Participation in EE	Promote increased value of asset, generated by energy efficiency and ZNE, to property owners	Alternative incentives	New	Mid
		Educate owners	Modified	Short
	Promote the benefits of renting in an energy efficient building to tenants	Promote the value of efficient buildings in ads	New	Short
Execute New Approaches	Identify influential stakeholders that will allow the expansion of market opportunities / efficiencies	Educate and incentivize contractors	New	Mid
		Offer direct install services	Modified	Mid
		Connect customers with financing	Modified	Short
		Engage real estate professionals to promote EE	New	Short

Market Characterization

The residential sector is SDG&E’s second largest energy efficiency portfolio segment in terms of consumption and spending. SDG&E provides electricity and gas service to over 1.3 million residential accounts in San Diego and southern Orange County, including single family and multifamily dwellings of all types.

Figure 2.5 SDG&E 2013-2015 Average Annual Consumption / Total Energy Efficiency Savings, by Sector

Source: Consumption: Energy Consumption Data Management System, CEC, <http://ecdms.energy.ca.gov/elecbyplan.aspx>, <http://ecdms.energy.ca.gov/gasbyplan.aspx>. Savings: SDG&E EE Program Data, 2013-2015.



From 2013-2015, this sector represented 36% of SDG&E customers' total electric energy consumption and 57% of total gas consumption (**Figure 2.5**). For the same period, the residential sector represented 24% of SDG&E's portfolio electric savings and -26% of portfolio gas savings (**Figure 2.5**). The negative savings result from the fact that the residential sector installs a lot of efficient (LED and CFL) lighting, which puts off less heat than traditional incandescents, thereby requiring customers to use more gas to heat their homes. The residential sector accounts for 32% of portfolio energy efficiency spending (**Figure 2.6**).

As illustrated in **Figure 2.5** and **Figure 2.6**, it is clear that the residential sector's consumption, as well as SDG&E's energy efficiency spending, far outpace the resulting savings. This represents a gap that SDG&E seeks to fill with this plan.

In the future, residential electricity consumption is expected to increase, as shown in **Figure 2.7**. While water heating, HVAC, and lighting savings potential will remain relatively constant, electric vehicle and plug load consumption are expected to increase. In fact, plug loads and miscellaneous electric equipment load is expected to account for 77% of residential demand growth between 2015 and 2024.

Figure 2.6 SDG&E 2013-2015 Total Energy Efficiency Spending by Sector

Source: SDG&E EE Program Data, 2013-2015.

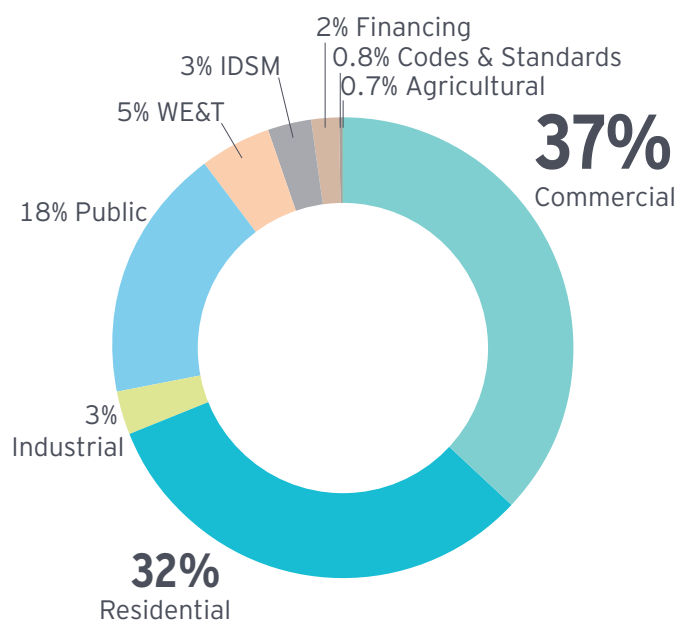


Figure 2.7 California Residential Electricity Growth Forecast

Source: Plug-In Equipment Efficiency: A Key Strategy to Help Achieve California's Carbon Reduction and Clean Energy Goals; NRDC Issue Brief.

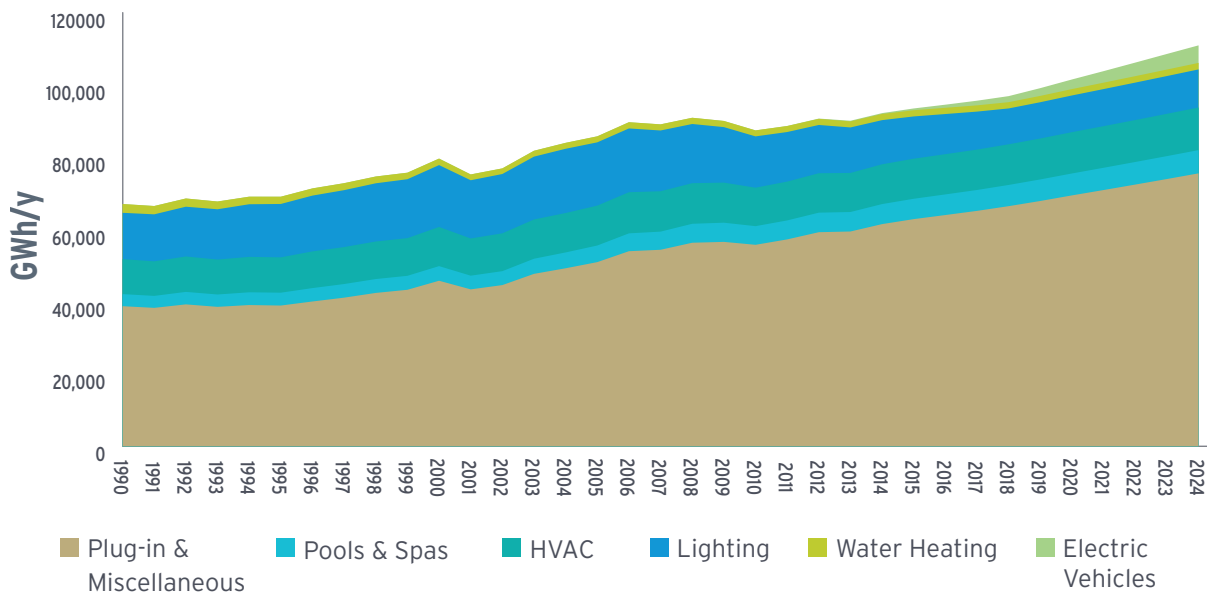
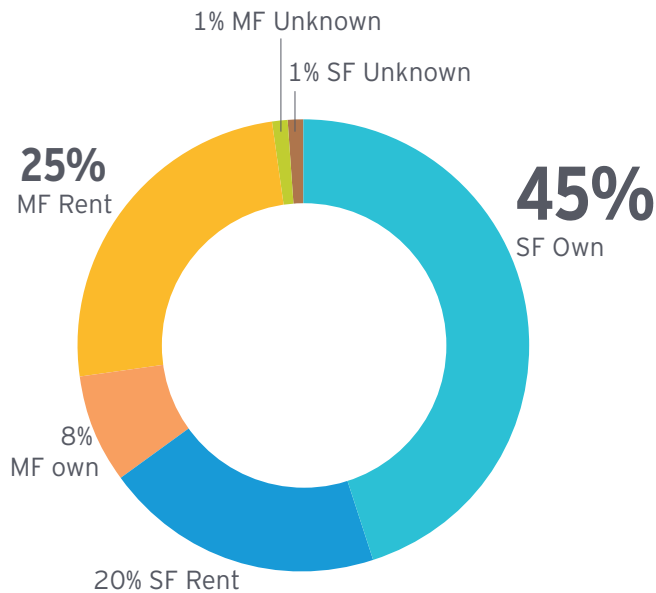


Figure 2.8 SDG&E Residential Customer Types of Residences

Source: SDG&E EE Program Data, 2013-2015



Market Segments

Through an analysis of customer data, SDG&E has categorized its residential accounts by number of units and ownership status, which yields four customer segments: single family owners, single family renters, multifamily owners, and multifamily renters. **Figure 2.8** shows that the majority of SDG&E's residential customers are single family owners (45%), and the next largest group consists of multifamily renters (26%).

The Joint Center for Housing Studies of Harvard University noted several of the unique challenges that renters have relative to owners:

"Owner-occupied housing consumes more energy per unit, but rental housing uses more energy per square foot of living area. Owner-occupied homes are typically double the size of rental units (2,051 versus 924 square feet). As a result, energy use per square foot is higher for renters than for owners living in most types of structures, as well as overall.

Several factors may contribute to these differences. One is the number of people per household. Although renter households included 2.4 persons and owner households 2.6 persons on average in 2009, the average number within each structure-type category was higher for renters. In single-family detached homes, for example, renter households consisted of 3.2 people on average, while owner households included 2.7. In structures with five or more units, household size averaged 2.0 among renters and 1.6 among owners.

Thus, rental units typically have less space per person than owner units. The larger number of household members relative to area in renter households may lead to higher consumption of energy per square foot for other uses, such as water heating, lighting, and refrigerators, and other appliances."⁷

The intensity of energy use is lower in owner-occupied housing than in rental housing of the same vintage. Energy use per square foot is about 10% lower in owner-occupied housing than in rentals built since 1980, but among units built before 1940, owner-occupied homes consume 35% less energy per square foot. This suggests that there have been more energy efficiency improvements made to owner-occupied housing than to rental housing since those structures were built. It also underscores the great potential for efficiency improvements to older rental buildings.

Rental property owners make decisions about features that affect energy efficiency, including the quality of appliances, insulation, windows, and doors. Tenants, in contrast, make choices about energy use such as turning lights on or off, setting the thermostat, or deciding what water temperature to use for showering or washing clothes. Thus it is important to be cognizant of these characteristics when offering solutions for renters and owners, as their priorities are often disparate.

⁷ Reducing Energy Costs in Rental Housing: The Need and the Potential, by Michael Carliner, Joint Center for Housing Studies of Harvard University, Research Brief 13-2, December 2013.

Figure 2.9 2013-2015 Consumption by Customer Segment

Source: SDG&E EE Program Data, 2013-2015.

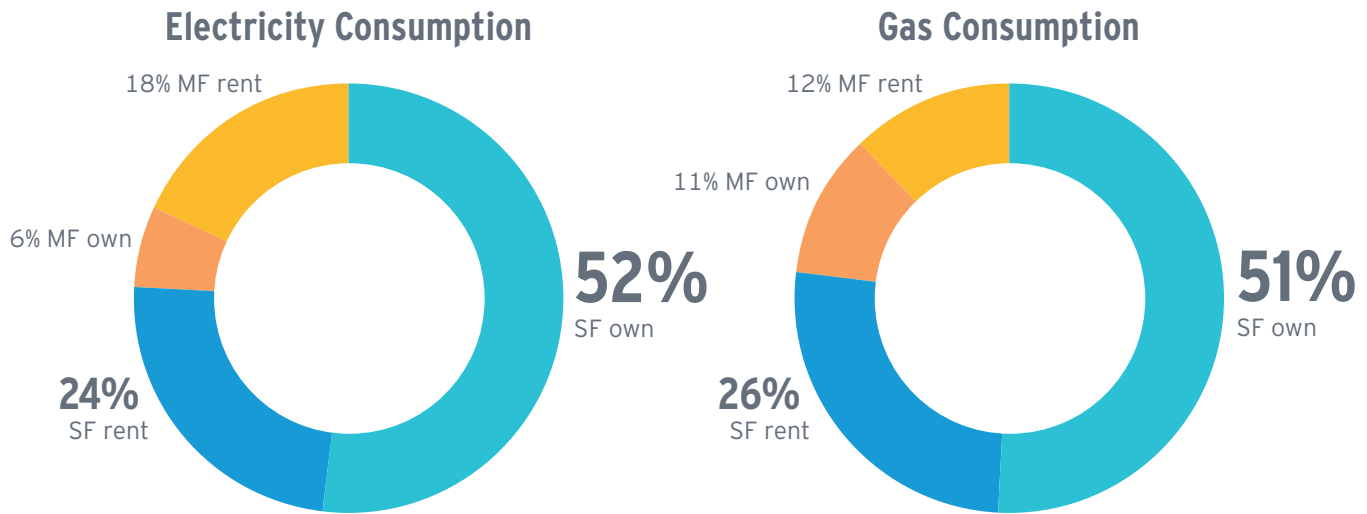
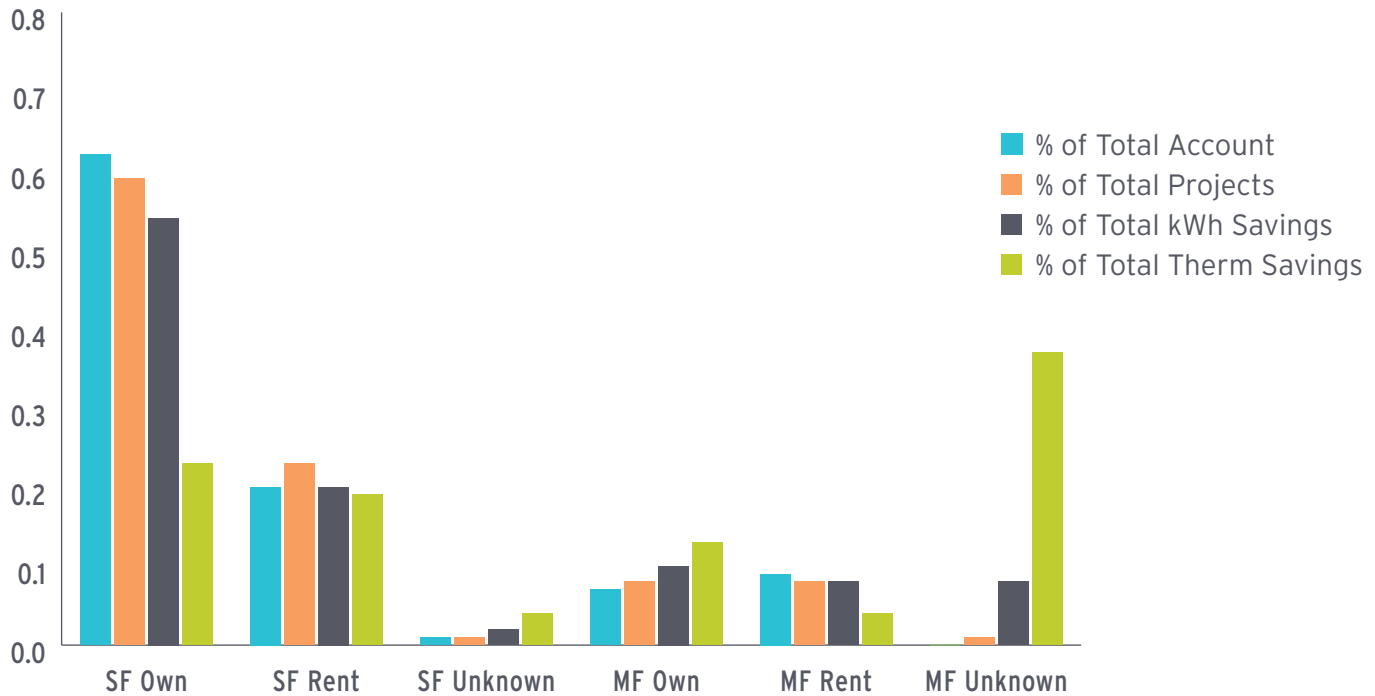


Figure 2.9, shows residential consumption by customer segment. Based on this figure, it is clear that the single family home owner segment consumes the most electricity and gas, while the multifamily owners consume the least.

Figure 2.10 shows that single family owners had the most customer accounts, completed the most projects, and achieved the most electric savings, followed by single family renters. The multifamily sector (owners and renters) accounts for a combined 17% of completed energy efficiency projects, not including participation through SDG&E's Energy Savings Assistance program. SDG&E data shows that single family owners comprise the majority of our segment population, consume more than half the electricity, participate at a higher rate in programs, and save the most. Therefore, it will be important to continue to engage this segment with highly targeted offerings.

Figure 2.10 Historical Savings, Projects, and Accounts by Customer Segment

Source: SDG&E EE Program Data, 2013-2015. Note: SF and MF Unknown are customers that we do not have record if they own or rent. Much of the MF unknown came from the California Advanced Home Program (New Construction).



Sector End-Uses

Statewide, as shown in **Figure 2.11**, the electric end-uses with the highest consumption in the residential sector are lighting, refrigeration, and audio / video /office equipment.⁸ Approximately two-thirds of the residential sector electric consumption comes from plug loads.⁹ For natural gas, water heating and space heating are the highest consuming end-uses. Through the goals and strategies presented in this business plan, SDG&E will target the highest consuming segments and end-uses to achieve the goals of the CALTEESP.

Figure 2.12 illustrates the historical spending with associated electric and gas savings by end-use. A few important points should be highlighted. First, while indoor lighting has historically received the greatest share of incentive dollars and electric savings, it has resulted in a disproportionate therm addition due to the interactive effects from newer lighting technologies. Appliance incentives, while relatively smaller, follow much the same pattern. SDG&E's HVAC incentives, on the other hand, have traditionally provided positive benefits both for electricity and gas. Water heating offsets some of the therms losses realized by lighting, at a small relative cost.

⁸ Plug-In Equipment Efficiency: A Key Strategy to Help Achieve California's Carbon Reduction and Clean Energy Goals, NRDC Issue Brief, IB 15-02-D, April 2015.

⁹ Ibid.

Figure 2.11 California Residential Sector Electric and Gas Consumption by End-Use

Source: Plug-In Equipment Efficiency: A Key Strategy to Help Achieve California's Carbon Reduction and Clean Energy Goals, NRDC Issue Brief, IB 15-02-D, April 2015.

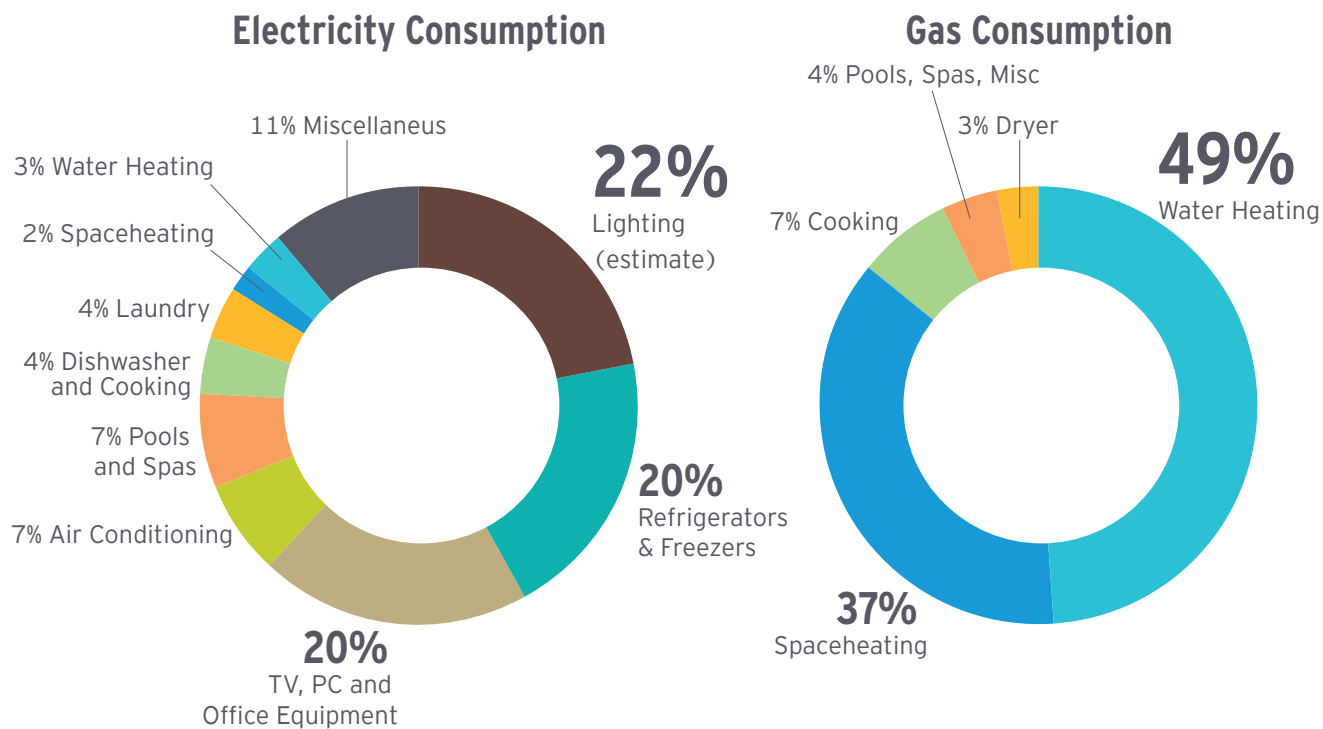
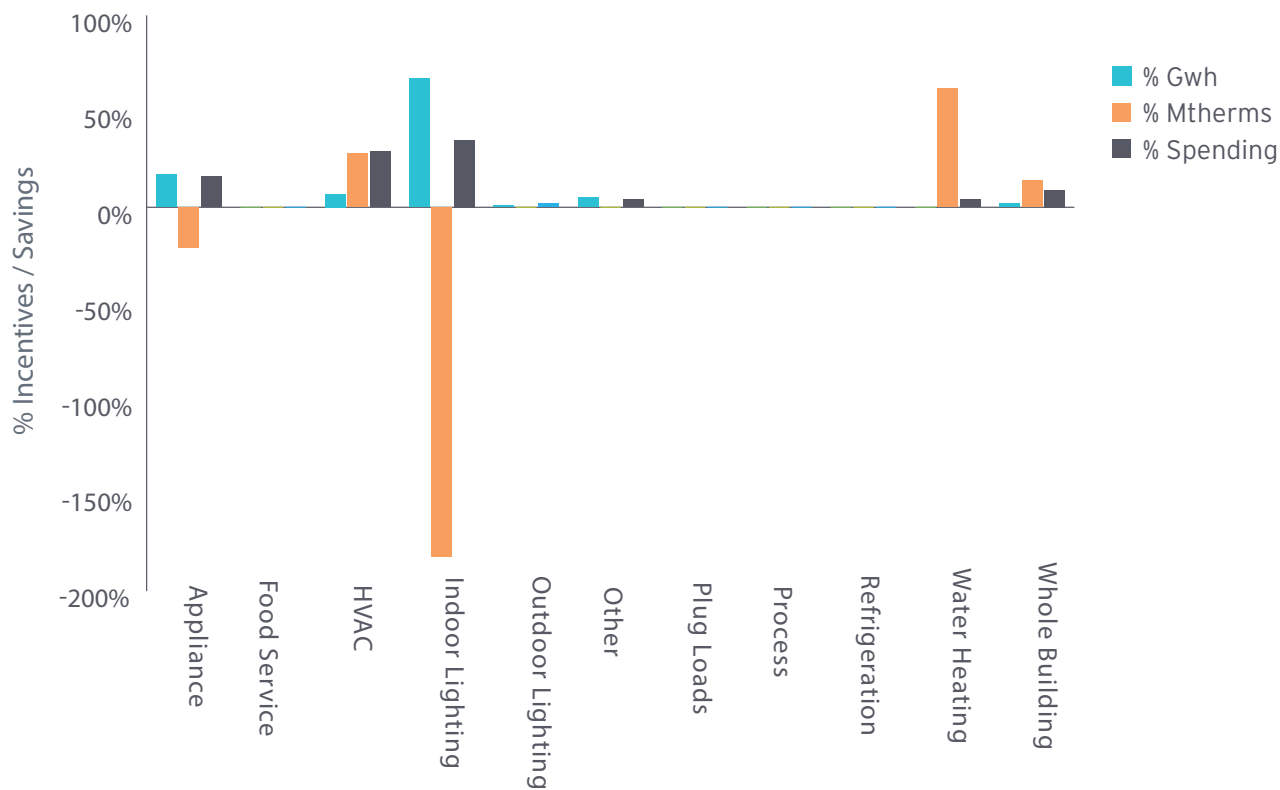


Figure 2.12 Historical Residential Sector Spending and Savings by End-Use

Source: SDG&E EE Program Data, 2013-2015.



Energy Efficiency Potential

The 2015 Navigant Market Potential Study predicts that the new building codes for residential buildings taking effect in 2017 will reduce residential energy efficiency potential from approximately 57 GWh in 2017 to less than 36 GWh by 2018¹⁰, not including potential from behavioral programs. Code changes will have significant impacts on new construction; in fact, studies suggest that “single family homes built to the 2016 standards will use about 28 percent less energy for lighting, heating, cooling, ventilation, and water heating than those built to the 2013 standards.”¹¹ Although significant potential will be lost to these code changes for both new construction and existing buildings, new opportunities such as behavioral programs can augment future savings up to 36 GWh annually in 2024.¹²

Figure 2.13 shows the market savings potential for electric and gas usage. As the potential for savings from the whole building category declines, the potential for certain end uses increase building envelope, HVAC, and plug loads increase. It will become important to have strong strategies in place to capitalize on that potential. For example, addressing the potential for HVAC end use can be done through the offering of smart thermostats and the statewide HVAC efforts.

Future Trends

There are both upward and downward pressures expected to impact energy usage in the residential sector in the future. Overall, the sector will experience an increase in consumption due to plug loads and electric vehicles¹³ and a decrease in savings potential due to the market transformational effects of code changes and appliance standards. Therefore, it will be increasingly important to expand upon the behavioral program and promote innovative technologies in order to help customers become aware of and manage their consumption effectively. Statewide, plug loads are expected to increase from 66% of residential consumption to 77% by 2024.¹⁴

¹⁰Energy Efficiency Potential and Goals Study for 2015 and Beyond, Stage 1 Final Report (“2015 Navigant Market Potential Study”), Navigant Consulting, Prepared for the California Public Utilities Commission, September 25, 2015.

¹¹2016_Building_Energy_Efficiency_standards_FAQ.pdf.

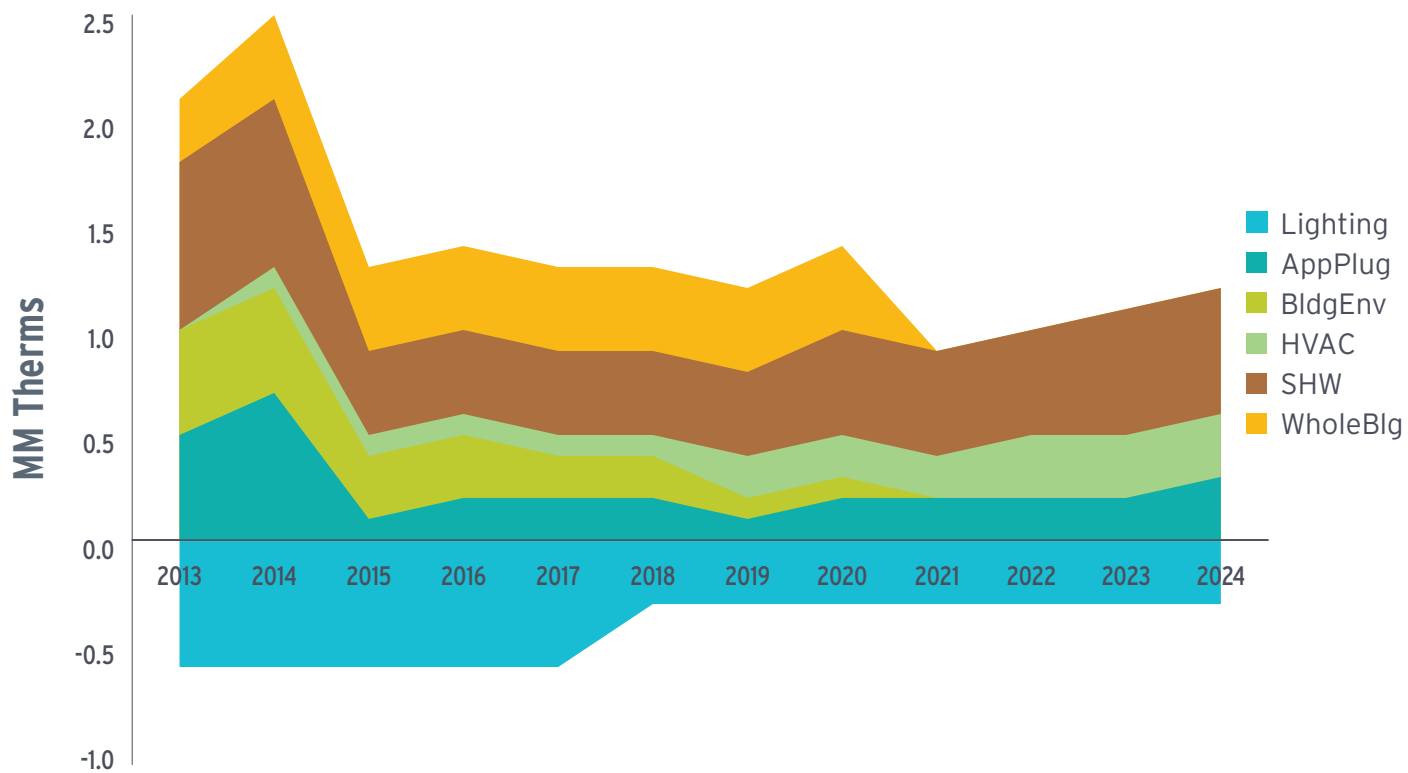
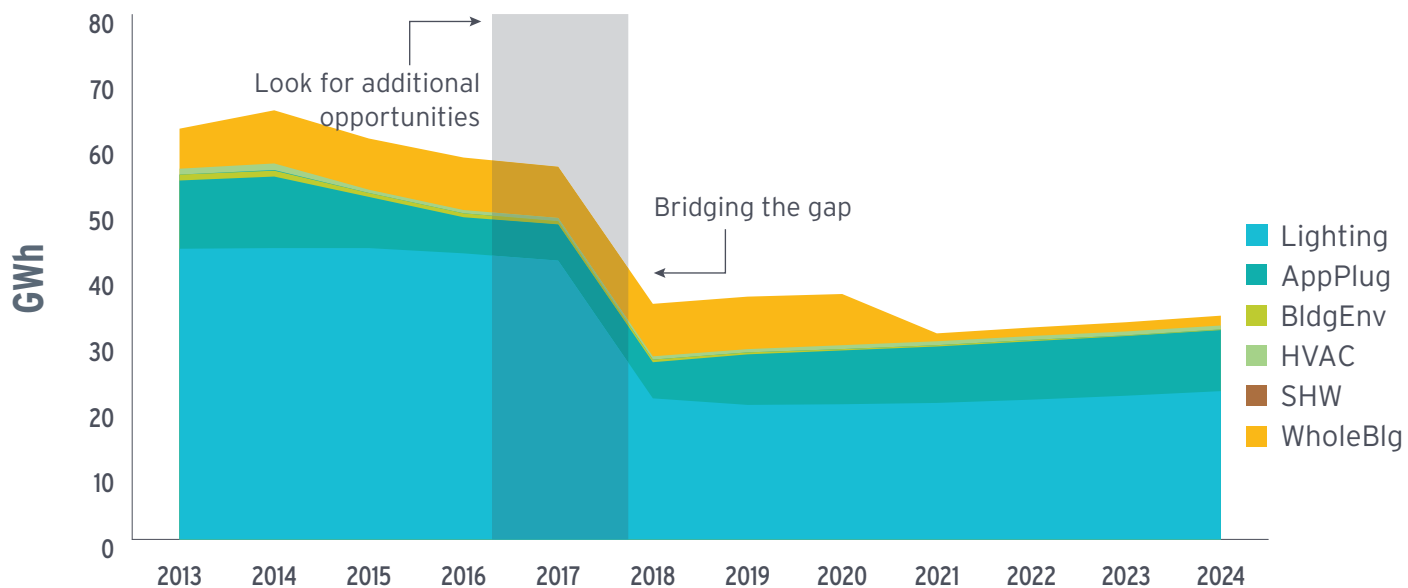
¹²2015 Navigant Market Potential Study.

¹³Plug-In Equipment Efficiency: A Key Strategy to Help Achieve California’s Carbon Reduction and Clean Energy Goals; NRDC Issue Brief and 2015 IEPR Electric and Natural Gas Demand Forecast, mid demand case.

¹⁴Plug-In Equipment Efficiency: A Key Strategy to Help Achieve California’s Carbon Reduction and Clean Energy Goals; NRDC Issue Brief.

Figure 2.13 SDG&E Residential Sector Incremental Market Potential

Source: 2015 Navigant Market Potential Study.



Legislative Drivers

Each chapter of the business plan discusses the ways recently adopted legislation, specifically, Senate Bill (SB) 350 and Assembly Bills (AB) 793, 758 and 802, help shape SDG&E's sector approaches. SB 350 calls for a doubling of energy efficiency savings during the term of this business plan. The CPUC has provided initial guidance implementing these directives and SDG&E and the other PAs will continue to work with the CPUC to determine the most efficient means of complying with the new legislative mandates. SDG&E believes that the strategies outlined below will complement the recently adopted legislation. Going forward, specific tactics and their processes will be adjusted as needed to meet the legislative directives and any further direction from the CPUC.

The residential sector will play an important role in enabling SDG&E to achieve SB 350's doubling goal. Efforts to involve residential sector customers in energy efficiency activities will focus on providing self-service tools and actionable information that spurs customers to modify behaviors and pursue paths to achieving ZNE.

AB 793 requires that utilities offer their residential and small/medium business customers ways to benefit from energy management technologies. Residential customers will be armed with better information about and tools to manage their energy use through expansion of the Company's smart thermostat offerings and an array of new products under consideration for implementation. Working with the Company's Emerging Technology group and third-party implementers, SDG&E will look to integrate even more technologies that can help save energy.

The residential sector strategies respond directly to the Existing Buildings Energy Action Plan's (AB 758) Strategies 4.1.2 and 3.4.2 by increasing the Company's engagement in the residential real estate market and seeking to increase building value through energy efficiency and other ZNE technologies.

The strategy also responds to the benchmarking components of AB 802 by planning pilots and trials to that explore alternative incentive structures based on benchmarking portfolios of properties. This may involve, where appropriate, third-party program providers in helping design offerings that can inform landlords, tenants and homeowners about how their buildings compare to similar structures. Third parties will also be engaged to help create programs that allow customers to leverage opportunities created by AB 802's approach to baselines. These opportunities will also incorporate pay-for-performance techniques to incentivize deeper savings. **Figure 2.14** summarizes SDG&E residential sector efforts to comply with legislative mandates.

Goals, Strategies, and Tactics

It is important to address some of the trends that affect the residential is sector's growing consumption, and also address why there may be low participation in some of the existing programs developed to help customers save energy. Energy efficiency typically competes with other priorities and is not a top focus for many residential customers. Additionally, many energy efficient products have a high cost and low ROI; therefore, it is incumbent upon SDG&E to elevate awareness, engagement and participation through an enhanced customer experience.

Figure 2.14 Policy Drivers in the Residential Sector

Policy Driver	Specific Requirement / Guidance	Business Plan Response
SB 350 – Clean Energy and Pollution Reduction Act of 2015	Achieve a cumulative doubling of savings in electricity and gas retail customers final end uses by 1/1/30	<ul style="list-style-type: none"> • Dramatically increase savings through an improved customer experience by providing engaging self-service tools and data driven insights. • Develop a single sign-on self-service online platform to support customers on their path to ZNE. • Improve customer real-time access to energy use and utilize behavioral interventions to stimulate energy efficiency activities^a
AB 793 – Energy Management Technology Incentive Offering	Must develop programs that provide incentives to help residential and small/medium business customers acquire energy management technology and educate them about these programs	Online platform will provide customers improved opportunities to access program offerings and control their energy use by utilizing AMI data. Home management systems (such as smart thermostats) will also play a key role in empowering customers to make informed decisions on their energy usage
AB 758 – Existing Buildings Energy Efficiency Action Plan^b	<ul style="list-style-type: none"> • Strategy 4.1.2 – Develop and compile information on building life-cycle and/or building occupant tenure cost reductions for energy and water efficiency measures • Strategy 3.4.2 – Identify building/business types well-suited for ZNE retrofits but where current ZNE guidance is scarce 	<ul style="list-style-type: none"> • Increase engagement in the real estate market. • Promote increased value of buildings generated by energy efficiency and ZNE to property owners and tenants
AB 802 – Benchmarking and Changes to Energy Efficiency Baselines	<ul style="list-style-type: none"> • Benchmarking – By 1/1/17, for multi-unit buildings, utilities must provide aggregated energy usage data to its owner, its agent or the building operator. Commission will set requirements for public disclosure of information for benchmarking purposes • Baselines – Authorizes utilities to provide incentives to customers for energy efficiency projects based on normalized metered energy consumption as a measure of energy savings 	<ul style="list-style-type: none"> • Develop pilots and trials to explore alternative incentive structure based on benchmarking of portfolios of properties – create energy use index • Will introduce opportunities to enable contractors and third parties to achieve deeper savings through pay for performance models
SB 1414	<ul style="list-style-type: none"> • Bill directs the CEC to develop a system to track central heating and air cooling equipment sales and installations to verify compliance with permitting and other requirements • Prohibits IOUs from paying incentives unless the recipient proves compliance with state's building standards 	SDG&E will work with the CEC and other regulatory bodies to determine the best ways to support implementation of these provisions of law

^a WE&T programs will facilitate training on responsible contractor policies and ensure that any requirements applicable to SDG&E EE programs are incorporated as necessary.

^b http://docketpublic.energy.ca.gov/PublicDocuments/16-EBP-01/TN214801_20161214T155117_Existing_Building_Energy_Efficiency_Plan_Update_Deceber_2016_Thi.pdf.

Residential Goal 1: Increase Energy Efficiency Savings in the Residential Sector Through an Improved Customer Experience

As mentioned in the market characterization section, the residential sector makes up:

- 1.3M accounts in the SDG&E service territory,
- 36% of the portfolio's electric consumption, and
- 24% of the portfolio's electric savings.¹⁵

One of the trends emerging in this sector is the growth in behavioral engagement. This trend moves the customer away from a transactional relationship with energy efficiency to one that is more interactive, integrated, and enduring. Analysis and stakeholder feedback supports simplifying participation, creating awareness, and encouraging engagement. As a result, SDG&E intends for its program offerings to be more widely adopted by customers while elevating and simplifying the customer experience.

Figure 2.15 illustrates the relationship between Goal 1 and its strategies and sample tactics.

Strategy: Make Energy Efficiency Products and Services More Accessible

SDG&E intends to develop a single sign-on, self-service online platform supporting customers on their path to ZNE. This web portal could include an online chat similar to car dealerships' websites to engage customers and respond to inquiries when customers want answers. This self-service platform could also track energy efficiency progress towards ZNE by logging all projects completed at the premise with the utility and it will encourage the customer to also log projects for which the customer did not seek utility incentives. The platform would integrate with the audit function within the behavioral program to help generate recommendations for the customer specific to their home. In addition to audit information, the system would have recommendations for customers as it pertains to rates, field parts replacement, and energy

efficient product offers/services. Additionally it could prequalify customers for financing. This platform could build on and integrate with other web services, which may include SDG&E's My Account, behavioral programs and/or a site promoting energy efficient products.

Sample Tactics

In support of the New Residential Zero Net Energy Action Plan 2015-2020,¹⁶ SDG&E intends to develop an online platform to serve as a common pathway to support customers on their journey to ZNE. This platform may include a variety of features such as:

- Online chat function to engage customers and respond to inquiries;
- Ability to track energy efficiency progress towards ZNE by logging all measures installed or projects completed;
- Customized and targeted offers that span:
 - Audits (including demand response, water conservation and renewables);
 - Behavioral actions;
 - Education and training;
 - Rates;
 - Energy efficient products and services;
 - Financing;
- Prequalification for financing; and
- Integration with SDG&E's My Account and/or behavioral programs, including points and rewards.

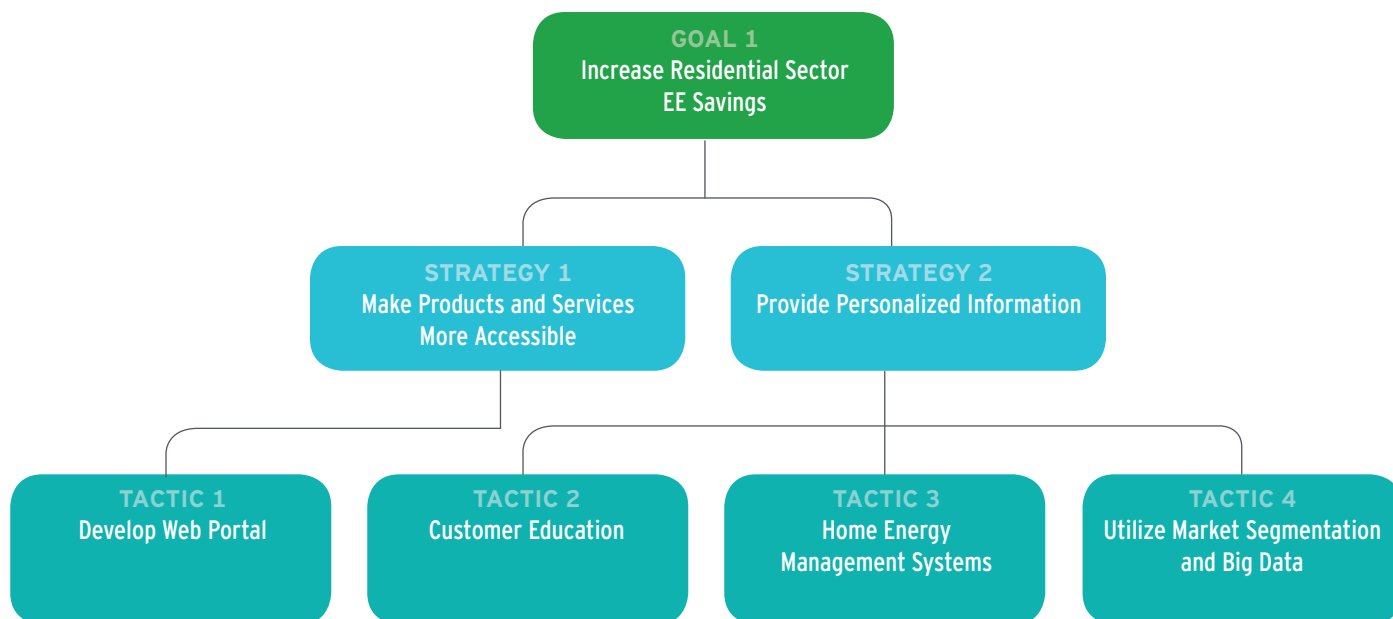
SDG&E also may include the following features:

- **Online resources to cross-promote adoption of electric vehicles.** SDG&E is committed to the promotion of electric vehicles as a way to achieve California's ambitious climate goals. Part of SDG&E's efforts to encourage customer adoption of EVs may be to partner and provide listings on the online solution that is discussed above.

¹⁵SDG&E EE Program Data, 2013-2015.

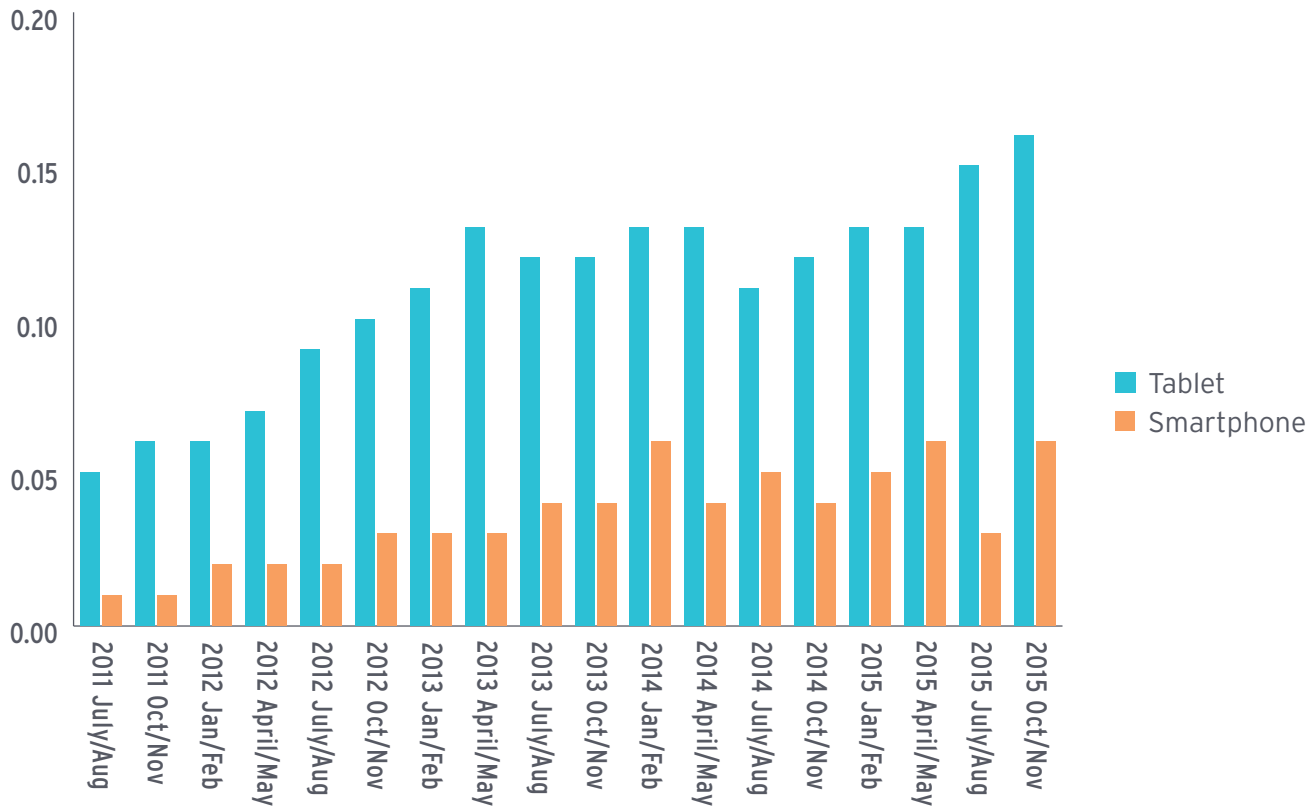
¹⁶<http://californiaznehomes.epaperflip.com/v/New-Residential-ZNE-Action-Plan-2015-2020>.

Figure 2.15 Residential Goal 1 Strategies and Sample Tactics Summary



- **Resources to select qualified trade professionals.** Resources will be provided to customers so that they can make informed decisions before selecting qualified trade professionals to assist with installation.
- **Connection to online solution where customers can purchase energy efficient products.** Providing customers with an online solution to purchase energy efficient appliances and home improvements is another method to help simplify the decision-making process for customers. The first step in the process will require enhancing the current online solution in order to integrate it with rebate offerings.
- **Integration of online solutions with rebates to simplify the purchase of energy efficient products and services.**
- **Access platform through mobile channels.** Data shows that customers' attention is quite high for messages delivered on a mobile platform. Therefore it is important to think about ways to utilize that engagement by optimizing programs and offerings for mobile browsing or through the SDG&E app. With the market moving towards mobile applications, it will be important to integrate our offerings with mobile platforms so that customers can be connected to SDG&E at any time through their mobile device.¹⁷

¹⁷Efficiency Beyond Widgets: Residential Behavioral Program Options.

Figure 2.16 Type of Device Used to Access Utility WebsiteSource: *Utility Customer Engagement*, JD Power, March 3, 2016.

As seen in **Figure 2.16**, more than 20% of SDG&E's customers are now utilizing the utility website via mobile devices, a trend which will continue to grow.

In order to increase participation, SDG&E will deliver marketing campaigns that use different types of messaging such as loss aversion, which has been shown to be successful in grabbing customers' attention and increasing participation in the rebate program.¹⁸ Rebates will be processed through the integrated online channel to allow for a quick turn-around time and more streamlined solution for customers.

This approach will continuously evolve to keep customers engaged and returning to the web portal by working through the ideation process to identify new technologies and add new products. For example, SDG&E will include energy management technologies in its review of new technologies to

assist with the pending time of use rates and battery storage. The web portal will provide customers with a way to compare different models, prices, rebate information from multiple sources, and purchase the product all in one location.

As the statewide lead for the Plug Load & Appliance program, SDG&E will work with an implementer(s) to coordinate uniform measures and incentives for all midstream and upstream measures for the state. There may be multiple intervention strategies for program delivery including Retail Products Platform, midstream and upstream agreements. A statewide utility partnership with manufacturers, distributors, retailers, other influential market participants and program administrators to develop comprehensive and innovative initiatives that reduce energy usage across plug load and appliance technologies with high savings potential.

¹⁸SDG&E internal data analysis on messaging campaign.

Additionally, upstream and midstream partnerships will be leveraged to increase the visibility and eventually decrease the cost of energy management technology.

Strategy: Empower customers to better manage their energy usage

In order to fully engage customers and maximize savings, SDG&E will need to bring customers along the customer engagement curve. Due to the many benefits of smart meters, AML/interval data is available to customers to better manage energy use through Green Button and SDG&E behavioral programs.

The first step involves making customers more aware of their energy usage. The next step along the engagement curve process is to get customers more educated on the energy they are using and identify tools available to improve energy management. One example of how this can be done is through a behavioral program that provides customers with an “attention grabbing” normative comparison report. The report would inform customers about ways that they can save energy and encourage them to go to the web platform to learn more about their energy usage.

Sample Tactics

SDG&E will use data analytics and customer segmentation to identify key customer attributes and develop a customer profile, including¹⁹:

- Customer preferences (contact preferences);
- Customer values and drivers (environment, energy rates);
- Customer economic status (household size, income level); and
- Customer property (sq. footage, vintage, consumption, peak use & times, climate zones, etc.).

For this strategy, SDG&E may employ the following tactics:

- Utilize behavioral interventions to increase engagement. SDG&E will continue to provide targeted messaging through the behavioral program and encourage customers to visit the online platform as that has been shown to increase engagement and savings.
- Engage and educate customers using the audit tool. Customers will be directed to complete an audit/energy efficiency survey that will not only provide energy efficiency recommendations but also provide information on other resources available for a whole home approach. By making customers aware of utility rebates and efficient appliances, customers will have the knowledge and tools to adopt energy efficiency into their lifestyle, make smarter purchases, and ideally continue to make smart energy choices in their home in the future.
- Provide customers with near real-time information on their energy usage. This will become especially important when residential customers are defaulted onto a time of use rate (if a rate has not already been selected).
- Provide customers with energy alerts to better manage their energy usage.
- Investigate home management systems as part of a home upgrade package. As shown in **Figure 2.17**, customers increasingly associate home management systems with a “smart” home. Home management systems “quickly gain customer’s mind share, wallet share, and trust by providing new connected products and services”.²⁰ Even though there are energy efficiency benefits associated with home energy management systems, research indicates that it is important to inform customers of other benefits besides energy efficiency to improve uptake.²¹ The Home Energy Management offering would:

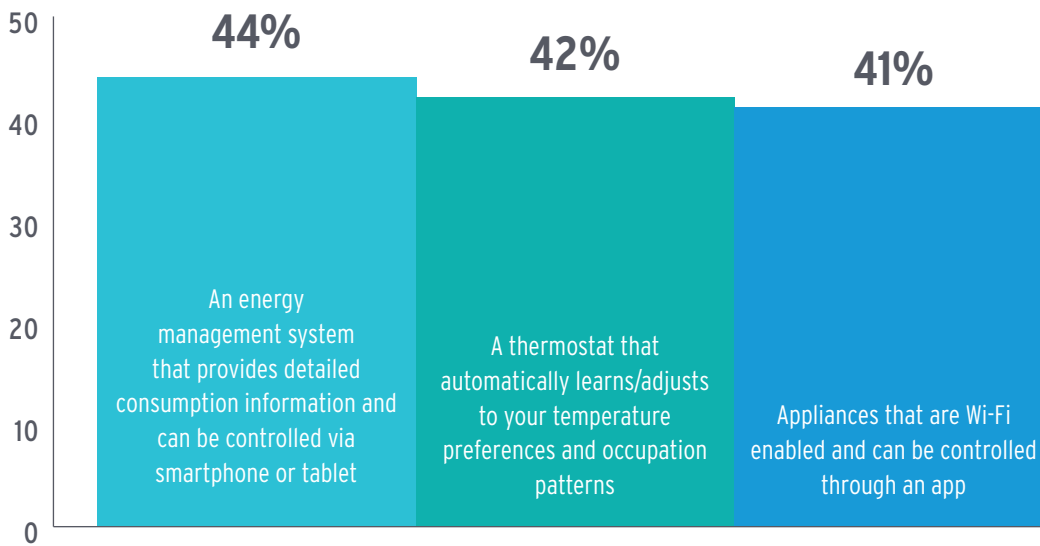
¹⁹2010-2012 PG&E and SCE Whole House Retrofit Program Process Evaluation Study (PGE302.01) Published December 12, 2012.

²⁰Top Utility Industry Trends to Keep an Eye on in 2015, Alanya Schofield, June 10, 2015.

²¹Smart Home Strategies for Utilities: Five Reasons You Should Get in the Game, Shelton Communications Group.

Figure 2.17 Customer Preferences For Smart Home Energy Efficiency

Source: Smart Home Strategies for Utilities: Five Reasons You Should Get in the Game, Shelton Communications Group.



Top 3 Things Americans Think Smart Homes should Include

- Describe the comfort, convenience, and efficiency benefits of home management systems, and follow with environmental messages; and
- Leverage pending time of use rates to increase awareness of energy management technology attributes.
- Hold workshops to teach homeowners steps they can take to be more energy efficient, including how to manage home energy use.
- Explore the use of incentives for customers who install home management systems. This will involve first working through the ideation process to determine which home management systems are effective at managing technology within a customer's home. A good approach to first introducing/incentivizing a home management system is through available demand response (DR) or energy efficiency programs.

Residential Goal 2: Increase Energy Efficiency Participation in the Multifamily Sector.

Multifamily accounts make up 34% of the 1.3 million accounts within SDG&E's service territory, represent 24% of residential electric consumption (**Figure 2.9**), and 25% of electric savings generated through our energy efficiency programs. Multifamily accounts also represent 23% of residential gas consumption (**Figure 2.10**) and 54% of gas savings generated through energy efficiency programs.²² Despite representing a large proportion of the sector's energy consumption, multifamily properties continue to lag in uptake of energy efficiency measures.

²²Citation Needed.

Figure 2.18 Residential Goal 2 Strategies and Sample Tactics Summary

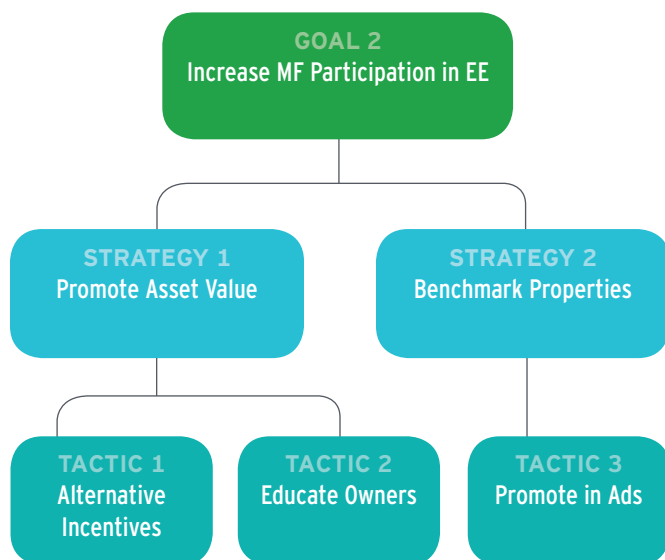


Figure 2.18 illustrates the relationship between Goal 2 and its strategies and sample tactics.

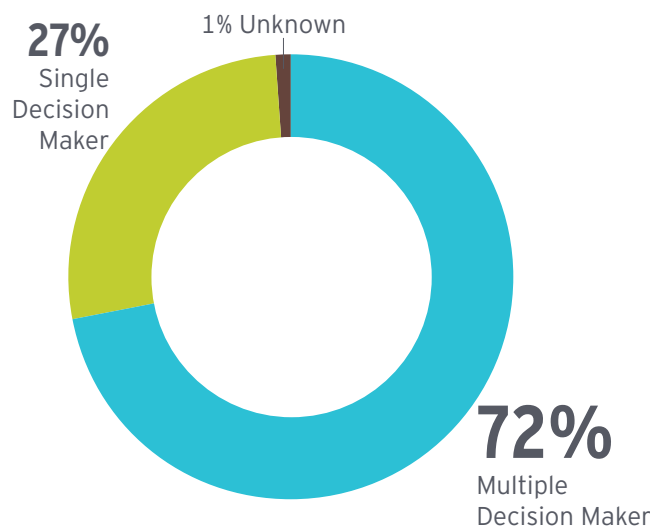
There are several reasons for this, including:

- Despite recognizing the energy efficiency upgrades needed, facility operators do not have the authority to make the decisions;²³
- Multiple decision makers (property owner, property manager, tenant) make it difficult for a comprehensive uptake in program participation in multifamily properties, as shown in **Figure 2.19**;
- The split-incentive issue continues to be challenging (property owners have no incentive to upgrade their properties since tenants pay for utilities);²⁴
- Energy efficiency is often not a priority for property owners/managers; and
- Lending laws and current program requirements related to On-Bill Financing may not be ideal for multifamily retrofit opportunities.

²³Note: SDG&E program staff anecdotal data.

²⁴CADMUS, ESA Program Multifamily Segment Study Volume 1 Report, December 4th, 2013.

Figure 2.19 Number of Decision Makers at Multifamily Properties



“The diversity of multifamily building types makes it highly challenging to develop program delivery models, incentive programs and consistent packages of building upgrade measures that meet the needs of every situation.”²⁵

– *Improving California's Multifamily Buildings: Opportunities and Recommendations for Green Retrofit & Rehab Programs*

²⁵Improving California's Multifamily Buildings: Opportunities and Recommendations for Green Retrofit & Rehab Programs; April 11, 2011; http://chpc.net/wp-content/uploads/2015/11/26-MF-HERCC_Multifamily-Program-Design_Final_04112022.pdf.

In a survey of multifamily properties, 72% stated that there are multiple decision makers.²⁶ This presents challenges when promoting energy efficiency programs and encouraging participation. In addition, anecdotal feedback from SDG&E program staff suggests that a majority of property owners and managers think that while energy efficiency is important to their tenants, other factors such as property amenities, floor types, counter types, appliance design, etc., are viewed as more important. Through the implementation of its existing and new innovative approaches, SDG&E plans to drive its multifamily sector closer to ZNE.

The Joint Center for Housing Studies of Harvard University noted in its December 2013 research brief noted “Providing better information to renters may help them in making choices among available places to live, but stimulating investments in efficiency that can benefit all renters requires that property owners also have better information—about their properties’ efficiency, potential improvements, and the impact of efficiency on revenue and costs.”²⁷

Strategy: Promote Increased Value of Asset, Generated by Energy Efficiency and ZNE, to Property Owners

In order to increase multifamily building participation in energy efficiency programs, it is necessary to engage building owners and property managers. This may also include public housing properties, based on account characteristics. One way to accomplish this is to sell building owners on the value proposition that energy efficiency increases the value of the asset.

Sample Tactics

- Identify multifamily properties that have recently performed energy efficiency building improvements to use those savings as an example for future projects;
- Identify multifamily properties that have participated in the California Advanced Homes Program and analyze multifamily building consumption relative to a ‘typical’ property;
- Utilize renter feedback / endorsement for building improvements and resulting comfort, health, and financial/energy savings benefits; and
- Hold seminars to educate building owners about the value of energy efficiency and the ROI that investments may deliver to owners.

In light of these barriers, SDG&E proposes the following incremental “out of the box” tactics to support our strategy in addition to existing programs.

²⁶2010-2012 Multifamily Property Owner and Operator Study, April 15, 2013.

²⁷Reducing Energy Costs in Rental Housing: The Need and the Potential, by Michael Carliner, Joint Center for Housing Studies of Harvard University, Research Brief 13-2, December 2013.

Strategy: Promote the benefits of renting in an energy efficient building to tenants

“A growing body of research has shown that energy efficient buildings rent for an average premium of 2-6%, can sell for a premium of as much as 16%, attract high quality tenants, and have lower default rates for commercial mortgages.”

– *Energy Efficiency in Separate Tenant Spaces*
– *A Feasibility Study by the US DOE*

In order to address a lack of participation in the multifamily sector it is important to create demand for energy efficient units. The first step in this process is to benchmark a portfolio of properties to identify properties with the highest energy use index. The next step would be for a percentage of buildings to perform a comprehensive audit to identify Integrated Demand Side Management (IDSM) opportunities that could be included as part of a whole building package. SDG&E would also help track improvements through the online platform that will be available to property owners, property managers and other designees.

In the spirit of creating demand, after developing benchmark scores it will be necessary to ensure they are promoted in unconventional areas such as “For Rent” ads, lobbies, elevators, and stairwells. Ensuring that customers know the value of energy efficient units is key to creating demand. The environmental and monetary benefits should be included.

Sample Tactics

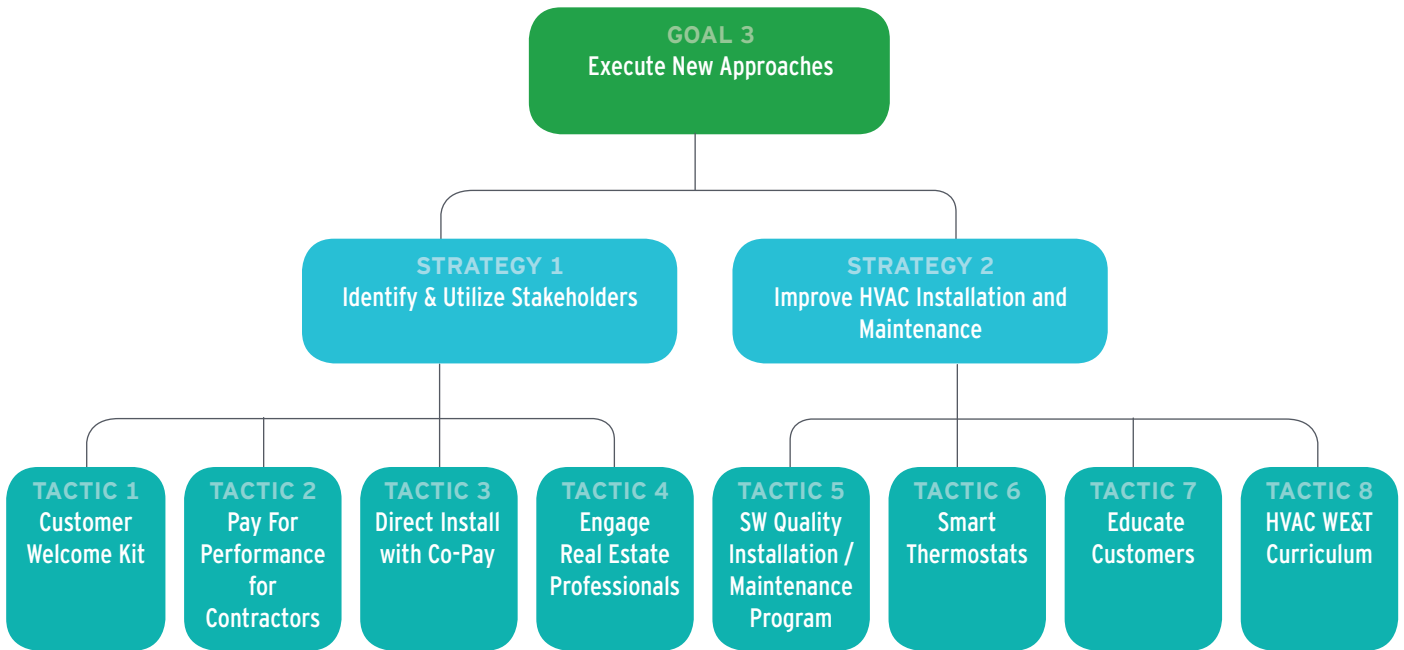
- Partner with property owners to communicate potential energy savings, energy savings, health, and comfort of more efficient properties.
- Develop pilots and trials to explore property owner incentive structure. Address split incentive barrier that currently prohibits property owners/managers from making comprehensive energy efficiency improvements.
- Coordinate energy efficiency and low-income proceedings.
 - SDG&E will coordinate with the Energy Savings Assistance (ESA) program to ensure that all units in a building are upgraded at once and, in the case of master-metered areas, that efficiency upgrades benefit all tenants.
 - SDG&E will work to qualify multifamily properties at the building level, as well as qualifying individual tenants, for the Energy Savings Assistance program. This “80-20 Rule” depends upon reaching an 80% threshold of qualified tenants to qualify an entire multifamily building for service. The reverse would be applicable for the tenants when looking at the whole building.²⁸
- Provide owners and property managers with the ability to aggregate single buildings into a portfolio of assets. Work with third-party to bundle offerings.
- Hold seminars to educate building owners about the value of energy efficiency to sell to potential renters.
- Promote inclusion of benchmark scores and tenant cost benefit of energy efficient units through channels such as “For Rent” ads, lobbies, elevators, stairwells.

In addition, SDG&E will provide multifamily owners/managers with a Single Point of Contact (SPOC). The SPOC concept “offers improved outreach, education and better program experiences for participants.”²⁹

²⁸Statewide P&P Manual in Sec. 2.2.6, Qualifying Multifamily Complexes on pages 14-15.

²⁹Multifamily Process Evaluation (2014-15): Contractor Workshop Results Published December 31, 2015

Figure 2.20 Residential Goal 3 Strategies and Sample Tactics Summary



SDG&E's efforts toward a multifamily single point of contact would assist property owners in the completion of benchmarking and the audit and simplify the process for those owners.

Residential Goal 3: Continue to Innovate by Executing New Approaches to the Market.

Existing programs alone do not address the universe of customer needs nor recent changes prompted by legislation. The energy efficiency industry has the potential to see significant change in the next decade providing an opportunity for innovation. This influx of innovation should not be limited solely to technologies, but also different approaches to programs and procurement which may include outsourcing opportunities. SDG&E will use a test and learn approach to maximize both savings and efficiency.

Figure 2.20 illustrates the relationship between Goal 3 and its strategies and sample tactics.

Strategy: Identify influential stakeholders that will allow the expansion of market opportunities / efficiencies

SDG&E will engage various stakeholders that have a strong influence and direct connections with customers in order to convey the benefits of incorporating energy efficiency into their lives. SDG&E will also explore new approaches that will allow for a greater reach, deeper savings, and ultimately help customers on their pathway to ZNE.

Sample Tactics

SDG&E proposes the following tactics to engage stakeholders and increase energy efficiency savings from the residential sector:

- Launch an innovative way to welcome new residents to SDG&E shortly after moving to a new property. The customer will receive an additional communication with energy consumption statistics and recommendations at the next seasonal change.
- Provide new SDG&E customers with a welcome kit, that informs them of the programs and offerings that could benefit them. This will be sent to them soon after they start service.
- Utilize new approaches for contractors to achieve deeper savings, such as pay for performance.
- Hold efficiency solicitations that incorporate not only EE opportunities but other distributed energy resources as well.
- Offer a training roadmap that displays all of the home-performance-related courses offered to provide guidance for contractors in selecting appropriate trainings to attend.
- Provide direct install with a co-pay for customers of moderate to higher income. Depending on customers' income and number of people in the home will determine which direct install offering will be presented to the customer. Potential integration of demand response offerings in the midterm to ensure the solutions are comprehensive.
- Connect customers to financing opportunities. One of the barriers for customers to adopt a whole home approach can be cost. One study described: "Financial constraints are the largest reason for not being able to take action". In order to assist with that barrier, SDG&E will connect customers to financial assistance.
- Work with real estate professionals / solar providers to drive increased penetration of energy efficiency. A March 2015 National Association of Homebuilders survey found that 9 out of 10 Americans want permanent energy-saving features in their homes and will pay 2-3% more for a home that has them. Prospective buyers often overlook efficiency characteristics

that can waste environmental resources and money for decades to come. Leveraging real estate professionals and services is a natural 'next step' to promote the value of energy efficiency to home buyers.

- Provide training to real estate professionals. In an effort to promote the value and benefits of energy efficiency, SDG&E intends to offer training through Workforce Education and Training to real estate professionals, including appraisers. This would include not only a comprehensive program for home efficiency characteristics, but also various financing opportunities available. Engage home appraisers to include energy efficiency characteristics as part of a home's value.
- Partner with previously untapped manufacturers and retailers to promote new efficiency channels

Strategy: Improve residential HVAC installation and maintenance

The rapid growth of air conditioning in California homes has made it one of the state's largest energy consuming end-uses and the single largest contributor to peak demand, which makes AC a leading opportunity to improve energy efficiency and reduce peak power demand. The California Long Term EE Strategic Plan states, "HVAC will be transformed to ensure that its energy performance is optimal for California's climate."³⁰ Further, the HVAC goals of the CALTEESP focus on compliance, quality installation, quality maintenance, whole building integration, and advanced technologies to improve the HVAC energy efficiency performance.³¹ The quality installation and maintenance of HVAC equipment provides many customer benefits, including increased energy savings, increased customer comfort, improved air quality, reduced operating costs, extended equipment life span, and improved code compliance.

Looking to the future, the marketplace is adding devices, such as smart thermostats, that allow customers to control their HVAC (especially at peak times) using a smart phone from anywhere.

³⁰CALTEESP, Section 1.

³¹Ibid, Section 6.

Additionally, these devices will support timely HVAC maintenance by signaling the customer with specific details when any performance issues arise.

Sample Tactics

SDG&E may employ any number of tactics to achieve this strategy, including:

- Implement a statewide quality installation / quality maintenance program.
- Incorporate smart thermostats or similar functionality into quality installations.
- Educate customers about:
 - the benefits of quality services, including a customer interview, HVAC assessment, recommended improvement checklist, measure installation, and quality control processes. Learning about HVAC services will serve as an entry point to sell the customer on other EE and DR portfolio program offerings to optimize the performance of their homes.
 - their HVAC energy usage through AMI data analytics and measured HVAC performance using integrated smart device communication to influence energy efficient behavior. As the customer becomes educated with their HVAC energy use, they will be well prepared to address time-of-use rates by reducing energy use and costs at peak.
 - the availability of financing to address the high cost of HVAC systems, quality installation, and maintenance.
- Develop HVAC WE&T curriculum to increase energy efficiency knowledge, skills, and abilities throughout the HVAC value chain upstream, midstream, and downstream to ensure code compliance and a quality customer experience.

- Promote HVAC efficiency to the real estate market. SDG&E will be building approaches and strategies to integrate the valuation of HVAC quality maintenance and installation with advanced technologies into the necessary channels to influence customer behavior.
- Use data driven targeted marketing based on building vintage, climate zone, cooling and heating demands to recruit customers. This program will lead the HVAC market towards sustained profitability for trade allies as the business model for installing and maintaining heating and cooling systems changes from a commodity-based to a value-added service business.

Cross-Cutting Coordination

WE&T

As a cross-cutting program, Workforce, Education and Training (WE&T) is critical to building customer demand by highlighting the value of EE, promoting market acceptance by educating trade professionals on how to maximize sales through the value proposition, and ensuring that a skilled and trained workforce properly installs and maintains equipment leading to greater EE savings. SDG&E's WE&T program has and will continue to focus on the following areas to engage with both residential customers and the trade professionals who support them. Looking ahead, the WE&T program will continue to support the following areas and will expand or contract based on market and potential data forecasts:

- Building Design & Construction
- Building Performance
- Codes & Standards
- Home Performance / Whole House
- HVAC
- Lighting
- Marketing / Finance / Sales / Real Estate
- Renewable Energy
- Sustainability
- SDG&E's Rebate & Incentive Programs

More details on these efforts are provided in the WE&T chapter of this Business Plan.

EM&V Considerations

Residential sector evaluation will adhere to the EM&V appendix. SDG&E will continue to work with the statewide EM&V team to develop studies, gather data, and execute statistical models to improve a Net Metered Energy Consumption (NMEC) approach for the sector. Additionally, SDG&E provides support for process evaluations to address programmatic success, both statewide and specific to the SDG&E territory. Examples of SDG&E specific evaluation include the monthly Customer Connections Survey and the Quarterly Residential Customer Opinion Survey. External research is utilized as well, such as results from JD Powers and E Source.

As indicated previously, online tools are of particular interest going forward with research focused on the tools, application, usage, and accessibility of these tools. Today SDG&E tools focus on the motivation of customer to participate in residential programs. Going forward SDG&E would like to utilize a specific understanding of its customer, generated through evaluation and data, to understand motivation, but also specific need. That is as NMEC models and process evaluations, in concert with online tools and data collection, becomes available to SDG&E, additional customization can be made based on the customers' long term energy plans and the best ways for the IOUs to engage with that customer.

SDG&E has identified a few key study areas:

- **Expanding the behavioral program definition.**
 - The concept of behavior is inherent to all programs and should be viewed as such.
- **Refreshing the Residential Appliance Saturation Study and updating California Lighting Saturation Study.**
 - These are critical to understanding our customers, their needs and programmatic direction.

Sector Metrics

Figure 2.21 describes the metrics SDG&E will use to evaluate the success of proposed sector strategies. The metrics are associated with goals and are designed to be 'SMART' (specific, measurable, attainable, realistic, and time-based). Success will be measured based on short, mid and long-term targets.

Figure 2.21 Residential Sector Metrics

Problem Statement	Market Barriers	Desired Sector Outcome	Intervention Strategies
Current program can be complicated and impede EE participation	<ul style="list-style-type: none"> • High cost and low ROI leads to low adoption of high efficiency products • Multiple programs and entries leads to low program participation 	Increase Energy Efficiency Savings in Residential Sector through an Improved Customer Experience	Make Energy Efficiency Products and Services More Accessible Through Methods Such as Mobile Apps & a Self Service Web Portal
Current program design is transactional in nature and thus short-term focused and results in missed opportunities			Empower customers to better manage their energy usage by providing them with granular level information on end-use and personalized recommendations on how to save
The split incentive between property owners and tenants dramatically reduces energy efficiency upgrades	<ul style="list-style-type: none"> • Multiple decision makers • Split-incentive 	Increase EE Participation in Multifamily	Promote Increased Value of Asset, Generated by Energy Efficiency and ZNE to Property Owners
The diversity of multifamily building types makes it highly challenging to develop program delivery models, incentive programs and consistent packages of building upgrade measures that meet the needs of every situation			Promote the benefits of renting an EE building to tenants
Innovation of implementation methodologies procurement processes are needed to meet the SB 350 goals	<ul style="list-style-type: none"> • Need to identify additional savings • Maintain cost-effectiveness 	Maximize savings and efficiencies by executing new approaches in partnership with retailers and manufactures	Identify and engage new retailers and manufactures to drive innovative and “new” approaches

Please see continuation of matrix on next page.

Figure 2.21 Residential Sector Metrics (*continued*)

Sector Metric	Baseline	Metric Source	Short-Term Target (1-3 years)	Mid-Term Target (4-7years)	Long-Term Targets (8-10+ years)
Track individual unique visits to online platform	N/A	Program tracking data	18,000 unique visits to the online platform/year	24,000 unique visits to the online platform/year	30,000 unique visits to the online platform/year
Number of customers enrolled in a Behavior program	Current level enrolled	Program tracking data	5% increase each year of eligible customers	5% increase each year of eligible customers	80% of eligible customers enrolled in program
Implement new informative training tools for property managers/owners and track manager/owner tool uptake	N/A	Program tracking data	Develop one new tool each year and establish a usage baseline	20% increase in training tool use	Additional 20% increase in training tool use
Implement new informative training tools for tenants and resulting tenant engagement	N/A				
Number of "new" approaches executed	N/A	Program tracking data	Engage 10 partners	Deliver 3 new product "bundles" in collaboration with new partners to 10 parties	Evaluate progress of partnerships and modify/expand if necessary

03 COMMERCIAL SECTOR



OUR MISSION

Help customers achieve zero net energy by providing enhanced self-help tools, program options, and targeted, expert assistance.

Chapter Summary

As San Diego Gas & Electric's (SDG&E's) largest sector, the commercial sector is a critical part of SDG&E's efforts to achieve its share of California's ambitious energy efficiency and greenhouse gas reduction goals. This sector has over 160,000 mostly smaller commercial accounts in San Diego and southern Orange County which consume 43% of the portfolio's total electricity and 22% of its total gas. In turn, the sector's vibrancy is marked by the area's appeal to new businesses with Forbes magazine in 2014 labeling San Diego as the best city in the United States in which to launch a business.¹

SDG&E's energy efficiency offerings provide the keys for customers to unlock their savings potential through financial incentives, expert assistance, and personalized tools. For several decades, this approach has proven successful but the higher expectations envisioned for energy efficiency as a primary component to combating climate change demand ever more innovative approaches.

SDG&E will build on its solid foundation of energy efficiency in this sector by creating evolutionary changes using targeted strategies that expand opportunities, streamline participation, and stimulate customer pursuit of zero net energy (ZNE) buildings.

¹ Forbes 2014, <http://www.forbes.com/sites/tompost/2014/03/13/the-best-places-to-launch-a-startup-in-2014/#4fb48e10359c>.

The Past Present, and Future of COMMERCIAL ENERGY EFFICIENCY

MARKET CHARACTERIZATION

PAST & PRESENT



FUTURE

Consistent and reliable results for years



SDG&E's largest sector is electric-centric

- 43% of total consumption
- 45% of EE spending
- 42% of EE savings

Two segments make up the majority of customers.

Most customers occupy leased space.



55% Wholesale, Retail & Office



30% Hospitality & Services

Small customers, small businesses

85% customers under 20 kW



Lighting makes up over half

of the electric savings and brings in 4x as much savings as whole building

Move from simple lighting retrofits to comprehensive **whole building approach**

Automation will become more prevalent

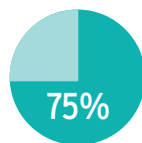


Increased focus on energy efficiency in legislation



Interval data will inform decisions

Whole building will bring in as much savings as lighting



Whole building and lighting will make up close to **75% of the total savings potential**

DELIVERY APPROACH



- Deemed Rebates
- Calculated Incentives
- Direct Install
- Audits
- On-Bill Financing
- Partner with Demand Response
- Coordinate with Time-of-Use Rate



Brought in savings



Did not foster comprehensiveness

Highly leveraged trade **professional network** to sell and deliver savings

Resulted in **single end-use, non-comprehensive projects**

Offered bonus to encourage comprehensive projects



projects qualified in 2013-2015

On-Bill Financing has helped to move costs from a capital expense to an operating expense



Concierge approach to simplify participation for property management customers

Online platform to provide seamless services



Target marketing to educate energy decision makers

Target whole building, automation, and high opportunity end-uses

Growth in financing options

Promote building benchmarking



Citations for data presented on this figure are included throughout the chapter.

In support of the California Long Term Energy Efficiency Strategic Plan (CALTEESP), SDG&E's mission for the commercial sector is to help customers achieve ZNE by providing them greatly enhanced self-help tools, program options, and expert assistance. To accomplish this mission, SDG&E has established the following commercial sector goals:

- **Commercial Goal 1:** Improve the Energy Efficiency Penetration in the Property Management Market.
- **Commercial Goal 2:** Increase Savings Through an Improved Customer Experience.
- **Commercial Goal 3:** Maximize Savings and Efficiency by Executing New Approaches.

These goals are designed to directly address the needs of the large majority of SDG&E's commercial customers who are small businesses that lease their facilities. This customer composition poses unique challenges for SDG&E as both characteristics are defined by the California Public Utilities Commission (CPUC) as hard-to-reach.²

Commercial customers have indicated that they view SDG&E as their trusted energy advisor³ because we possess a deep understanding of our electricity and gas networks, our customers' needs, and our customers' energy consumption patterns. This expertise uniquely positions SDG&E to design an energy efficiency portfolio that will maximize commercial customer program participation. Leveraging smart meter data and the myriad of potential energy saving opportunities that flow from this information, SDG&E can design offerings that channel this information back to customers through benchmarking, advanced analytics, and performance-based incentives.

This business plan identifies goals that will help customers move to the next level of energy efficiency adoption. SDG&E has developed the strategies and sample tactics described in this plan to complement the existing offerings and move customers towards a more comprehensive and sustained approach to energy efficiency implementation.

Approach to Achieve Commercial Sector Goals

SDG&E's market analysis and stakeholders have identified a number of consistent barriers to address in this plan. SDG&E has analyzed these barriers and considered the direction set by the California Energy Efficiency Long Term Strategic Plan to determine the goals needed in order to establish a unified, achievable framework that will yield concrete results in support of the mission and vision of the commercial sector.

SDG&E found that when assessing barriers for the broader commercial market, there are two categories that can be created, namely barriers affect a customer's *attitude* towards energy efficiency and those that negatively impact the customer's *aptitude* to participate in energy efficiency.

Barriers that impact attitude – Attitude barriers are those that shape a customer's attitude and perception about energy efficiency and determine the likelihood of their participation in programs. The more complex and difficult it is for a customer to participate, the less likely they are to participate. Sometimes these complexities are not created by the program, but rather within the customer's own corporate or business structure. Tenant and landlord situations are an example of this. Additional complexities can arise when there are multiple layers of management and decision makers within an organization. **Figure 3.1** provides a list of attitude market barriers.

² "Hard to Reach - Non-Residential: Those customers who do not have easy access to program information or generally do not participate in energy efficiency programs due to a language, business size, geographic, or lease (split incentive) barrier." California Energy Efficiency Policy Manual, Version 4.0 (August 2008), Appendix B, p. 7.

³ SDG&E Customer Insight Panel, 2012.

Figure 3.1 Attitude Market Barriers

Attitude Barriers
Split Incentives <ul style="list-style-type: none"> • Tenant / Landlord Leasing
Multiple levels of decision making <ul style="list-style-type: none"> • Corporate vs. local decision making • Facility manager vs. business manager
Misperception of EE Value <ul style="list-style-type: none"> • Uncertainty of project savings • Unaware of the benefits beyond utility energy cost savings
Program complexities diminish value <ul style="list-style-type: none"> • Multiple program options can create confusion • Multiple step program processes can add to uncertainty of project savings and create a “hassle factor” that may deter customers
Contractors are often single end-use focused <ul style="list-style-type: none"> • Customers that have comprehensive needs must seek multiple contractors to complete projects • Contractors do not tend to cross-promote other programs or end-uses

Barriers that impact aptitude – Aptitude barriers provide an explanation for why customers who recognize the benefits of energy efficiency still may not participate in programs. These reasons deal with whether or not the customer or company has the technical capacity to act. In some cases, even customers that recognize the benefits of energy efficiency and have the technical capacity to act still may not have the financial ability to take action. Lack of awareness of financing options is another barrier in this category. **Figure 3.2** provides a list of aptitude market barriers.

Figure 3.2 Aptitude Market Barriers

Aptitude Barriers
Customer Sophistication <ul style="list-style-type: none"> • Gap in technical expertise • Lack of in-house expertise • Not familiar with program rules
Financial Considerations <ul style="list-style-type: none"> • Lack of capital • Unaware of financing options

In order to overcome these barriers, SDG&E seeks to combine successful, traditional offerings with new, targeted approaches to more efficiently penetrate segments that have the most potential. Creating an online platform that can simplify participation in programs will create an improved customer experience. Identifying new approaches to the market by leveraging third parties and best practices will keep the commercial portfolio of offerings fresh, innovative and striving for deeper, more comprehensive savings.

Figure 3.3 summarizes the linkage between the problems (or barriers) that have been identified through the stakeholder process and through market analysis and the goals that have been created.

Figure 3.3 Commercial Sector Market Characteristics and Problems Overcome by Goals

Problem	Goal	Targeted by Strategies Supporting Goals		
		Customer Size	Market Segments	End-Uses
<ul style="list-style-type: none"> • Landlord / Tenant Split Incentive • Multiple Levels of Decision Making • Misperception of EE Value 	Improve the Penetration of Energy Efficiency in the Property Management Market	Small, Medium	Wholesale, Retail, Offices, Hospitality, Services	Lighting, HVAC, Refrigeration, Water Heating, Cooking
<ul style="list-style-type: none"> • Program Complexities Diminish Value • Lack of Customer Sophistication about EE • Financial Limitations 	Increase Penetration of Energy Efficiency in the Commercial Sector Through an Improved Customer Experience	Small, Medium, Large	Wholesale, Retail, Offices, Hospitality, Services	Lighting, HVAC, Refrigeration, Water Heating, Cooking
Contractors Focus on Single End-Use	Maximize Savings and Efficiency by Executing New Approaches	Small, Medium, Large	Wholesale, Retail, Offices, Hospitality, Services	Whole Building

Figure 3.4 Commercial Sector Annualized Savings Goals

	Short-Term 2018-2020	Mid-Term 2021-2023	Long-Term 2024-2025
GWh	47-49	53-58	60
MW	11-12	12-15	15
MMTherms	0.6	0.6	0.6

Figure 3.5 Commercial Sector Annualized Budget

	Short-Term 2018-2020	Mid-Term 2021-2023	Long-Term 2024-2025
Annual Budget	\$36,940,065	\$36,940,065	\$36,940,065

The assessment of the market and identification of barriers leads to the creation of goals for the sector. In addition to savings and cost effectiveness targets, SDG&E has set the following commercial sector goals:

- **Commercial Goal 1:** Improve the Penetration of Energy Efficiency in the Property Management Market.
- **Commercial Goal 2:** Increase Penetration of Energy Efficiency in the Commercial Sector through an Improved Customer Experience.
- **Commercial Goal 3:** Maximize Savings and Efficiency by Executing New Approaches.

Figure 3.4 and **Figure 3.5** outline the proposed energy efficiency savings goals and budget for SDG&E's commercial sector.

It is important to recognize that SDG&E developed the goals, strategies, and sample tactics described in this business plan to complement, and not replace, current financial incentives, financing, outreach and education, technical assistance, and other program level interventions that have been proven successful in assisting customers with their facility upgrades and energy savings ventures. Combined, the business plan and historically successful interventions will allow SDG&E to reach its savings goals based upon approved budgets.

Overview of Current and Proposed Offerings

Figure 3.6 describes the proposed goals, strategies, and sample tactics in terms of whether they are new, existing, or modified interventions, and whether they will be implemented in the short (1-3 years), mid (4-7 years), or long-term (8-9 years).

Market Characterization

The commercial sector is perhaps the most important component SDG&E's energy efficiency portfolio in terms of market size and energy savings opportunities. SDG&E provides electricity and gas service to over 160,000 commercial accounts in San Diego and southern Orange County, including customers in all varieties of non-residential, non-manufacturing business establishments, such as hotels, restaurants, wholesale businesses, retail stores, warehouses, storage facilities, and health, and social institutions. From 2013-2015, this sector represented 43% of SDG&E customers' total \ electric energy consumption, 37% of portfolio electric energy efficiency spending, and 29% of SDG&E's portfolio electric savings (**Figure 3.7** and **Figure 3.8**). For the same period, the commercial sector represented 22% of total gas consumption and 58% of portfolio gas savings. Thirty-seven percent of SDG&E's portfolio electric energy efficiency spending went to this sector during 2013-2015 (**Figure 3.8**).

As SDG&E's largest, the commercial sector must be successful in reducing energy consumption in order to achieve the goals established by the California Long-Term Energy Efficiency Strategic Plan.

Figure 3.6 Overview of Current and New Offerings

Goal	Strategy	Tactics	New, Existing, Modified	Short, Mid, Long-Term
Improve the Energy Efficiency Penetration in the Property Management Market	Transform tenant energy savings into asset value for property owners	Benchmarking	Modified	Mid
		Property Manager Education <ul style="list-style-type: none"> • Higher rent / sq ft • Importance of knowledgeable building operators Tenant Education Forecasted energy costs	Modified	Mid
	Provide a simple, yet comprehensive, customized energy management solution for this hard to reach (split incentive) segment	Concierge Approach will bundle all the relevant energy components, including: benchmarking, rates and usage, IDSM, behavioral, rebates / incentives, financing and implementation	New	Mild
Increase savings through an improved customer experience	Existing Programs	Energy Efficient Business Rebates and Incentives (Deemed Rebates and Calculated Incentives)	Existing	Short
		Business Energy Solutions (Direct Install)	Modified	Short
		Premium Efficiency Cooling	Modified	Short
		Retrocommissioning	Existing	Short
		Comprehensive Audit Program	Existing	Short
		Savings By Design	Modified	Short
		Locational Energy Efficiency	Modified	Short
		On-Bill Financing	Existing	Short
		Financing Pilots	Existing	Short

See next page for continuation of table.

Figure 3.6 Overview of Current and New Offerings (*continued*)

Goal	Strategy	Tactics	New, Existing, Modified	Short, Mid, Long-Term
Increase savings through an improved customer experience	Create online platform to facilitate cross-promotion	Simplify Application Process	Modified	Short
		Provide Range of Tools	Modified	Short-Long
	Expand platform to encourage EE adoption	Integrate Non-EE Incentives	New	Mid
		Connect Customers to Trade Pros	Modified	Mid
Maximize savings and efficiency by executing new approaches	Transition SW HVAC Program to Work with Manufacturers on More Efficient Design	Implement a CA SEER	New	Mid
		Add user alerts to HVAC equipment	New	Mid
	Expand Procurement Vehicles and Intervention Strategies	Add EE to All-Source RFO Process	Modified	Short
		Expand Locational EE Program	Modified	Short
		Educate Decision Makers & Workforce	Modified	Short
		Integrate Whole Building Approach, EMS, & ET in Existing & New EE Programs	Modified	Short

Figure 3.7 SDG&E 2013-2015 Average Annual Consumption / Total Energy Efficiency Savings, by Sector

Source: Consumption: Energy Consumption Data Management System, CEC, <http://ecdms.energy.ca.gov/elecbyplan.aspx>, <http://ecdms.energy.ca.gov/gasbyplan.aspx>. Savings: SDG&E 2013-2015 EE Programs.

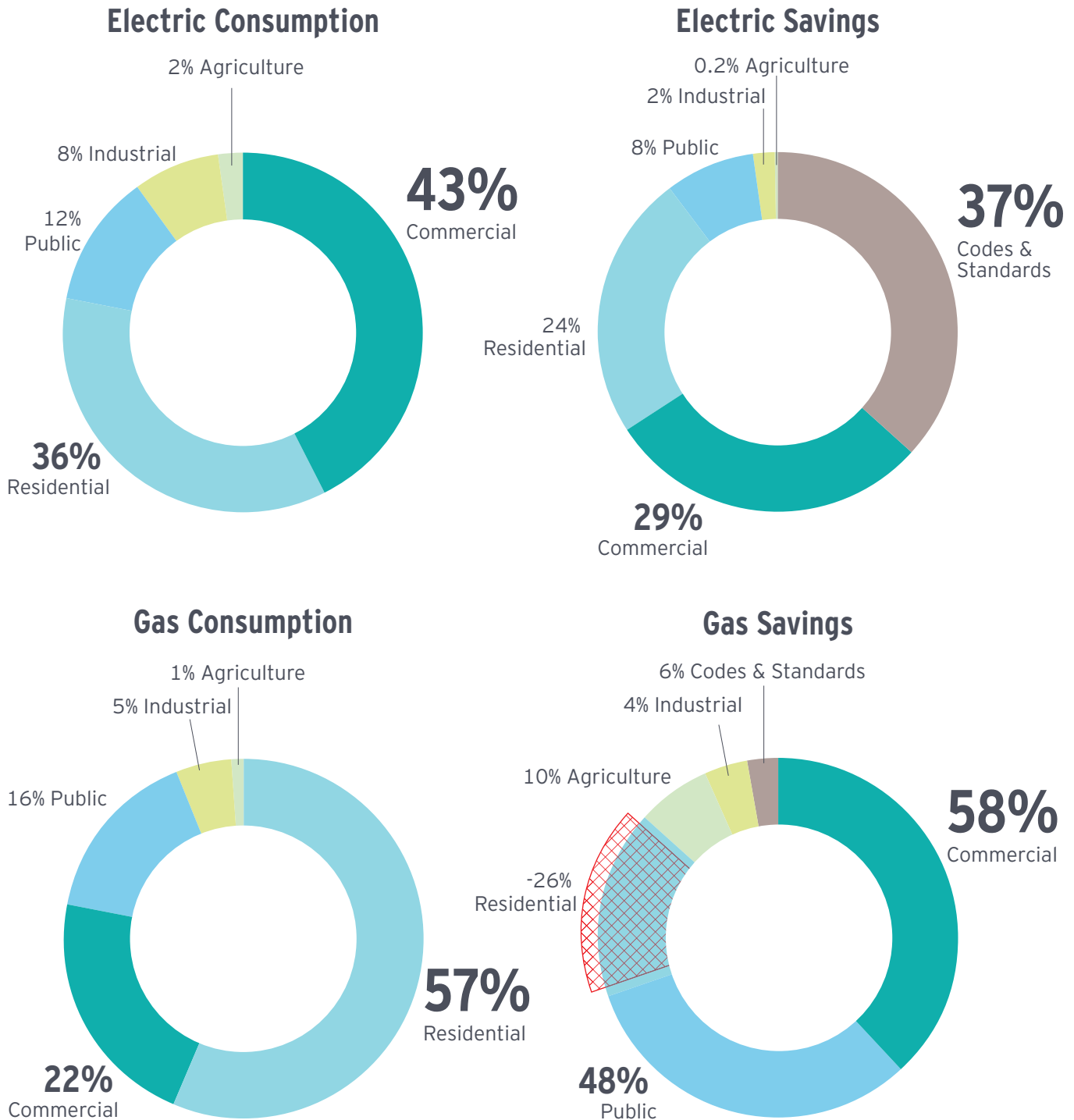
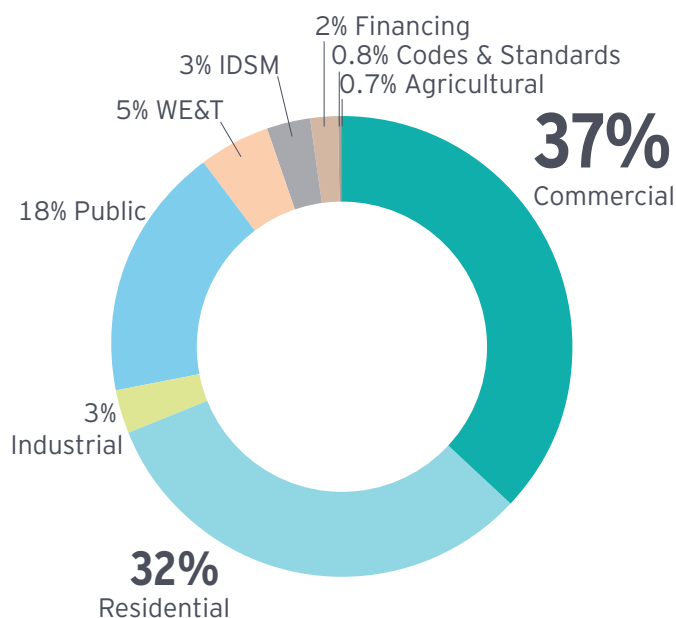


Figure 3.8 SDG&E 2013-2015 Total Energy Efficiency Spending by Sector

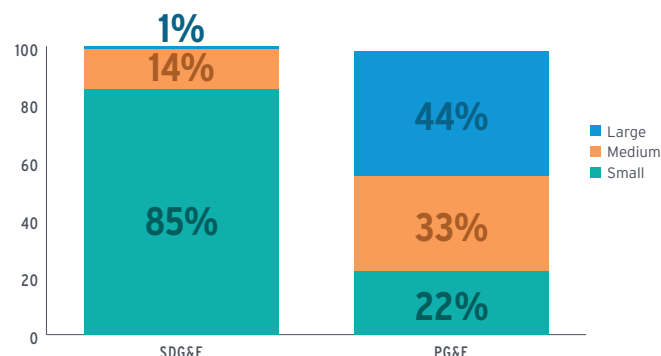
Source: SDG&E EE Program Data, 2013-2015.



Although the commercial sector is SDG&E's largest, it primarily consists of very small customers. SDG&E defines customers by electric demand: small (<20 kW), medium (20-199 kW), and large (>200 kW). These ranges and the distribution of customers within them differ significantly by California utility. Specifically, the proportion of SDG&E's commercial customers that are classified as small is much larger than that of Pacific Gas & Electric (PG&E) or Southern California Edison (SCE), as shown in **Figure 3.9**. PG&E considers "small" any commercial customer with demand less than 40 kW.

Figure 3.9 Commercial Customer Size by IOU Specific Definition (Based on Demand)

Source: SDG&E and PG&E EE Program Data, 2013-2015.

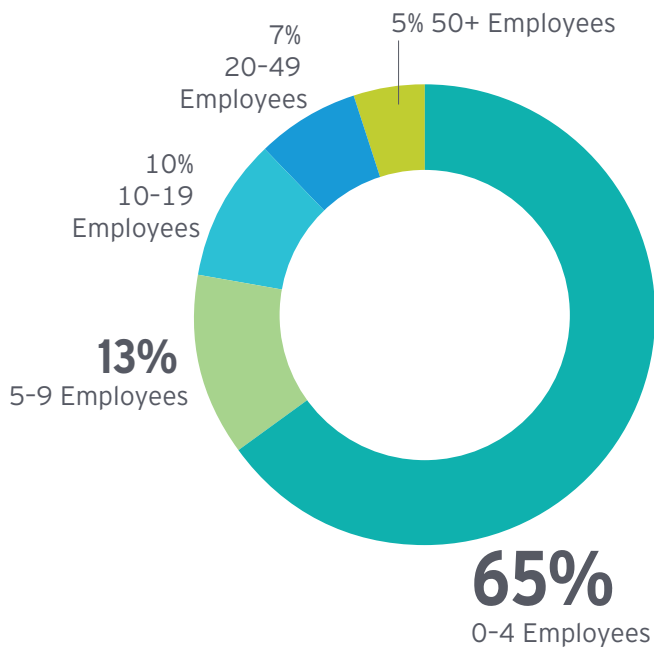


Using electric demand for classification purposes, it becomes clear, as illustrated in **Figure 3.9**, that small commercial customers, who make up 85% of all SDG&E commercial customers, dominate the sector.

SDG&E recognizes that customers and others outside of the energy industry do not categorize themselves according to their electric demand. Therefore, it is also important to consider external categorizations as well. The California Employment Development Department categorizes business size by the number of employees. **Figure 3.10** represents an employee distribution for San Diego County. Almost two-thirds of the businesses have fewer than five employees and over 75% have fewer than ten employees.

Figure 3.10 Commercial Customer Size by Number of Employees

Source: California Employment Development Department.



Using these methods of categorization together, a picture of the SDG&E service territory begins to take shape. Looking at SDG&E's commercial sector, one can make the following observations:

- 85% of commercial accounts are under 20 kW (small); and
- 78% of the businesses in San Diego have fewer than 10 employees (small).

The preponderance of small commercial customers within the sector poses unique challenges but also creates opportunities for SDG&E to pursue innovative approaches to achieving energy efficiency goals.

Market Segments

Market segmentation provides additional insights that can inform targeting, strategy, and program design. Utilizing North American Industry Classification System (NAICS) designations, SDG&E has categorized its commercial accounts by industry type, grouped them by similar energy usage patterns, and found that the majority fall into two main segments:⁴

- Wholesale/Retail/Offices - includes the majority of commercial customers;

- Hospitality/Services - e.g. hotels and motels;

As discussed below, these segments have identifiable consumption patterns and program participation trends. By understanding these participation patterns and trends, SDG&E is able to design offerings that suit each of these segments. **Figure 3.11** describes the commercial sector by segment in terms of percent of commercial accounts, percent of projects completed, and percent of electric (kWh) and gas (therm) savings.

This figure also shows the Wholesale/Retail/Offices segment is the commercial sector's largest segment in terms of number of accounts, making up 55% of commercial customer accounts. It also has the highest program participation rate in terms of project count and electric energy savings. However, because the majority of projects are lighting improvements, this segment contributes to an increase in therm consumption (because of interactive effects). The Hospitality/Services segment includes 30% of commercial customer accounts and 28% of the projects.

The Wholesale/Retail/Office segment is comprised of businesses such as:

- Groceries;
- Non-Food Retail;
- Property Management and Offices;
- Restaurants; and
- Wholesale/Warehousing.

⁴ The groupings of Wholesale/Retail/Offices and Hospitality/Services were made based on the observation that these segments exhibit similar load shapes and usage patterns.

Figure 3.11 2013-2015 Commercial Sector EE Participation

Source: SDG&E EE Program Data, 2013-2015

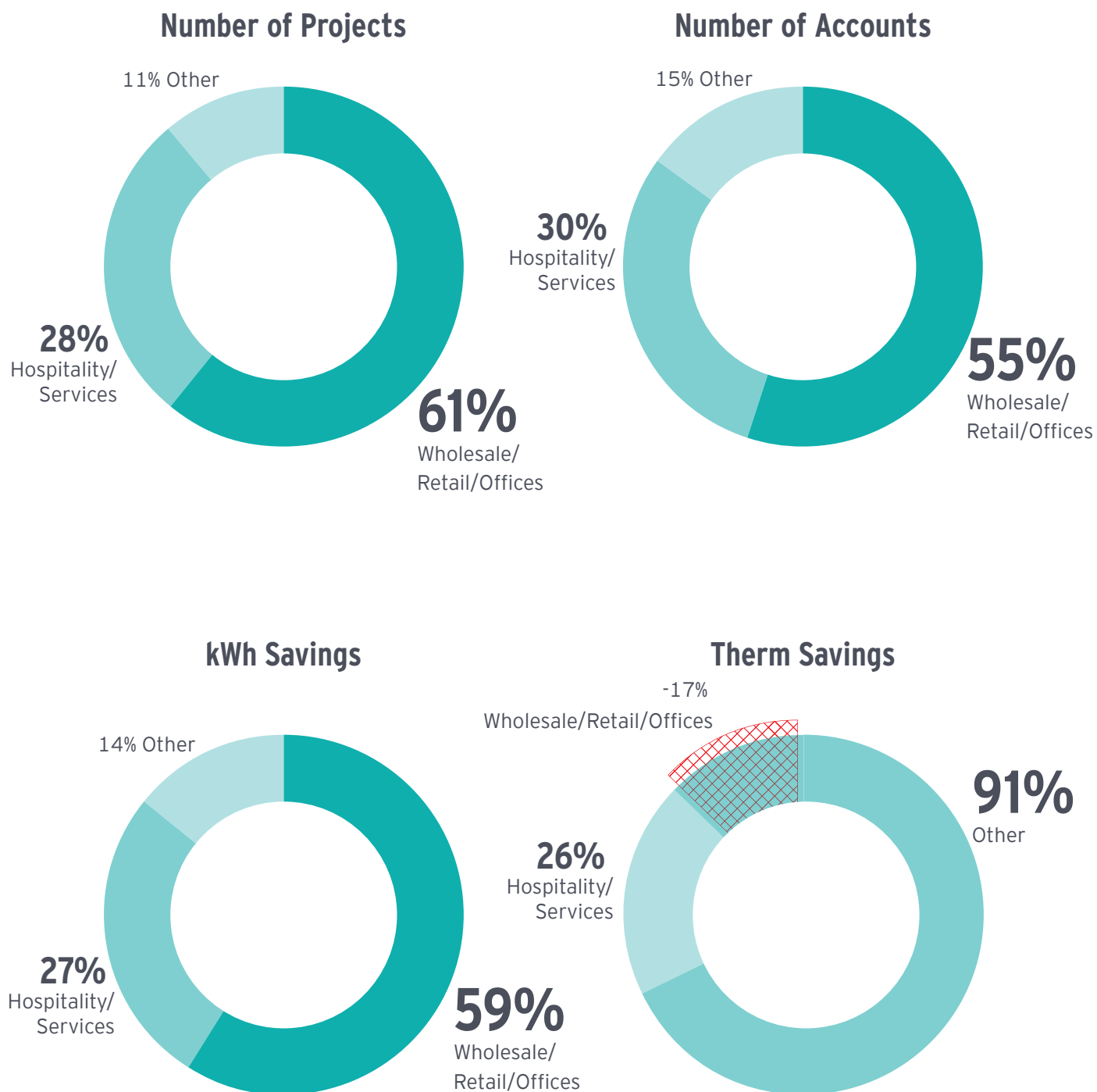
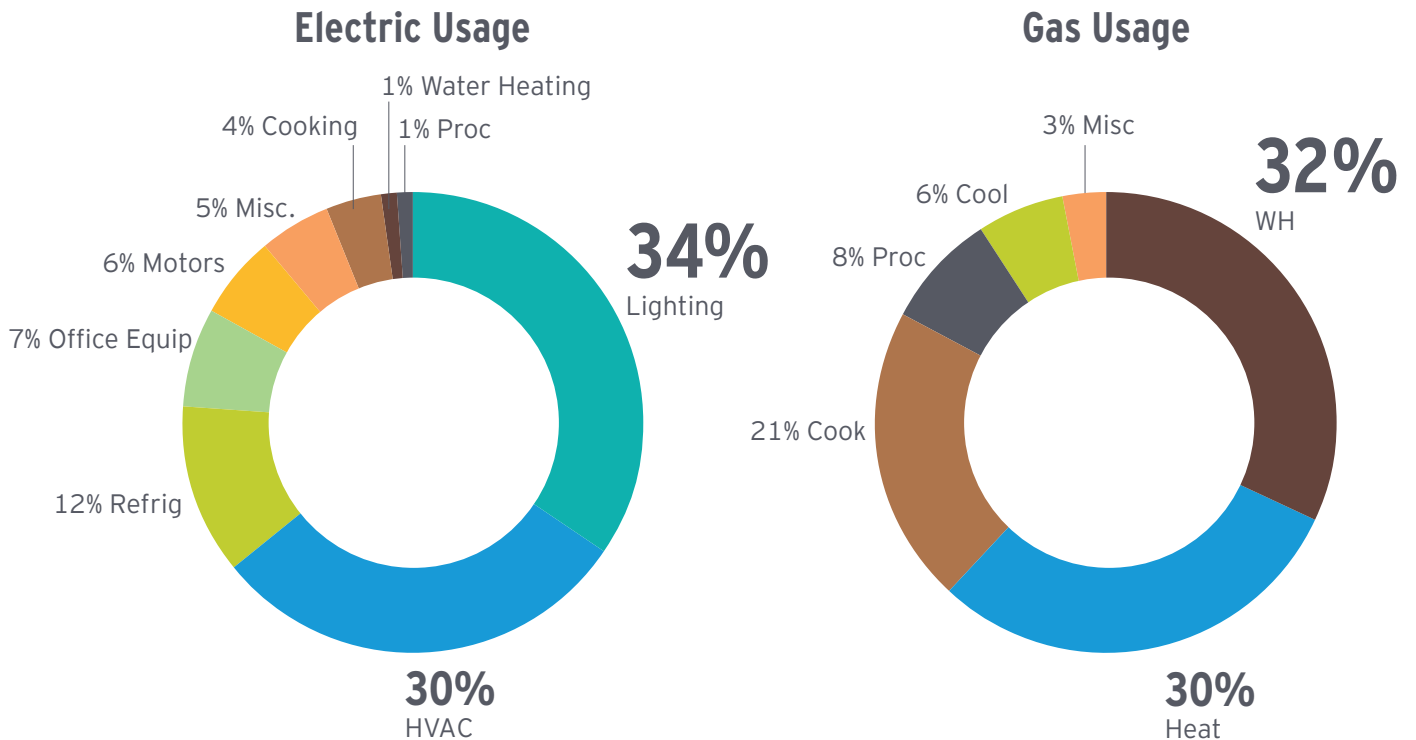


Figure 3.12 Commercial Sector Electric and Gas Consumption by End-Use

Source: California Commercial End-Use Survey, 2006.



The Hospitality and Service segment includes businesses such as:

- Lodging (hotels and motels);
- Recreation and Entertainment (e.g., amusement parks); and
- Miscellaneous Services (e.g., nail or hair salons, banks, dry cleaners).

The technology and end-uses for these two segments tend to be less complex than segments within other sectors and align well with a deemed approach to program delivery. Typical end-uses tend to be interior lighting, heating, ventilation, and air conditioning (HVAC), commercial refrigeration and food service technologies. Atypical end-uses may include water pumping and significant outdoor lighting. End-uses are discussed further in the next section.

Commercial Sector End-Uses

According to the California Commercial End-Use Survey,⁵ SDG&E's largest electric end-uses (based on consumption) in the commercial sector are lighting, HVAC, and refrigeration equipment, while the biggest gas end-uses are water-heating, heating, and cooking equipment (**Figure 3.12**). These findings are in consistent with the market characterization described earlier in this chapter.

⁵ <http://www.energy.ca.gov/2006publications/CEC-400-2006-005/CEC-400-2006-005.PDF>

Comparing commercial end-use data with historical program participation by end-use provides a high-level perspective on end-uses underserved by current energy efficiency opportunities. **Figure 3.13** outlines historical savings by end-use. Commercial refrigeration represents 12% of overall commercial consumption, yet SDG&E has experienced very low participation rates (1-2% of total commercial savings). Similarly, with gas, food service represents 21% of commercial gas consumption, but has produced only 7% of sector savings. These discrepancies indicate areas on which SDG&E programmatic efforts can focus.

Energy Efficiency Market Potential

The 2015 Navigant Market Potential Study provided data on energy efficiency market potential by utility, sector, and end-use. **Figure 3.14** shows incremental market potential (in GWh) by end-use over time. While the total market potential fluctuates between approximately seven and nine GWh from 2013 to 2024, the individual end-uses also show significant variation. For instance, while HVAC was a large percentage of the commercial sector market potential in 2013, due to code changes, it diminishes to a very small percentage by 2024. On the other hand, there will be a significant increase in whole building potential. Through 2024, lighting will remain the largest potential in the commercial sector in SDG&E's service territory.

In contrast, as shown in **Figure 3.15**, gas potential is very small for the commercial sector. Hot water heating is the largest contributor, followed by whole building. Since the potential for savings is so small, this plan will focus more on the electric side, while bundling gas measures as appropriate with whole building approaches and comprehensive programs.

Future Trends

The following trends have influenced the goals and strategies selected for the commercial sector and may impact tactics used in the future:

- A focus on premium, urban office space with an emphasis on green and LEED-certified building and retrofits. San Diego area real estate market case studies show the “vacancy rate for green buildings 4 percent lower than non-green properties...and that LEED-certified buildings routinely commanded the higher rents.”⁶
- Data-driven decisions in the retail segment. “While supermarket retailers have primarily focused on low-hanging fruit, such as reducing energy use through LED lighting retrofits and advanced refrigeration rack control algorithms, the next wave of energy efficiency initiatives will focus on combining data to better invest their maintenance budgets.”⁷

One trend that will impact all commercial customers is evolving rate structures, particularly time-of-use rates. Changing rates and differing energy usage profiles will make customized solutions more important in the coming years. In addition, broader trends, including the continued installation of solar, as well as electric vehicles and their effect on the grid and energy efficiency policies, will also impact energy usage in the commercial sector in years to come.

⁶ The Business Case for Green Building, USGB.

⁷ Chain Store Age, 12/22/2014.

Figure 3.13 Historical Incentives, Electric & Gas Savings by End-Use

Source: SDG&E 2013-2015 EE Programs.

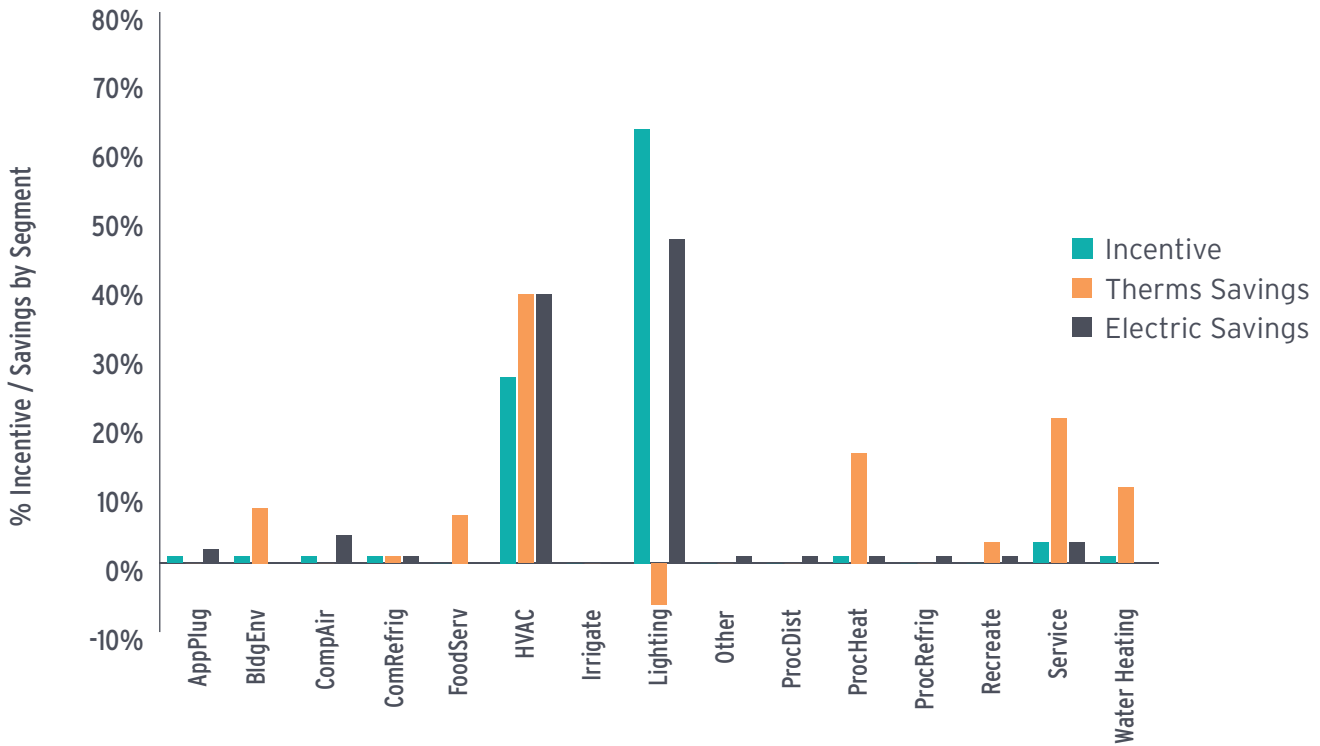


Figure 3.14 SDG&E Commercial Incremental Electric Market Potential

Source: 2015 Navigant Market Potential Study

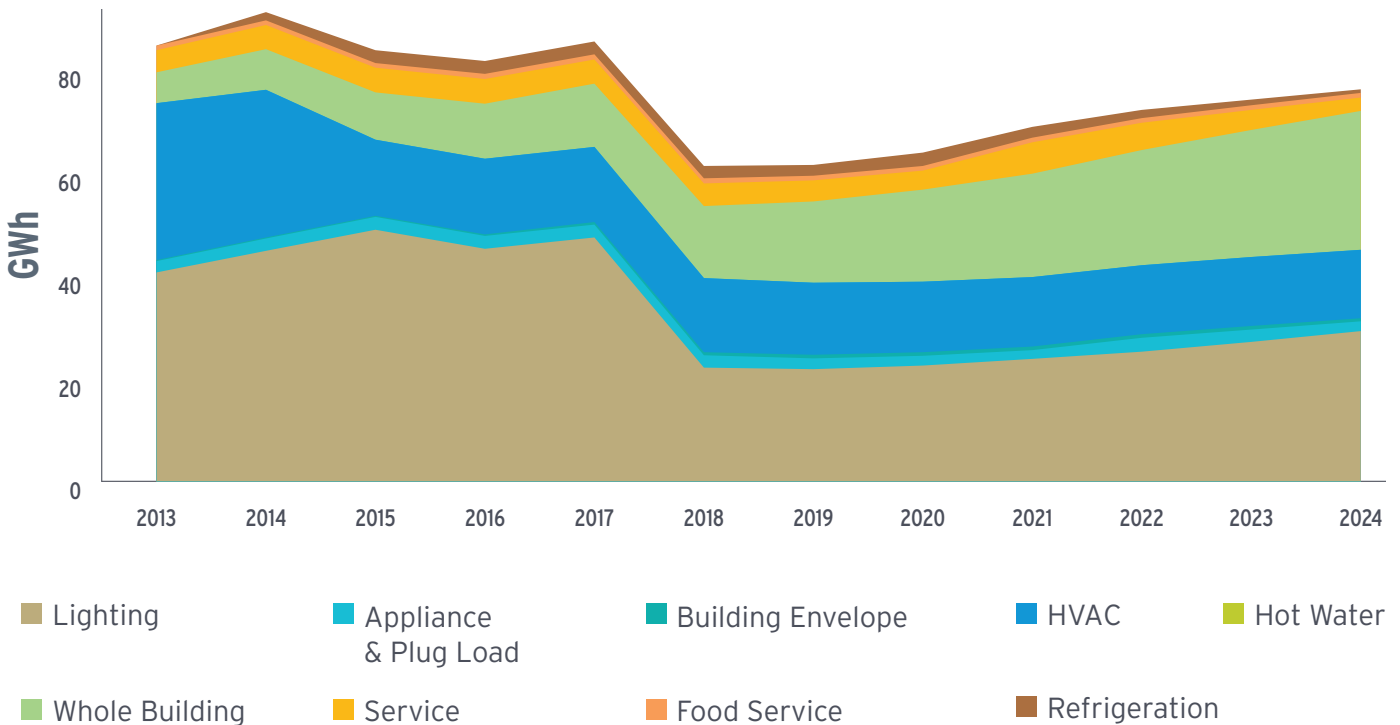
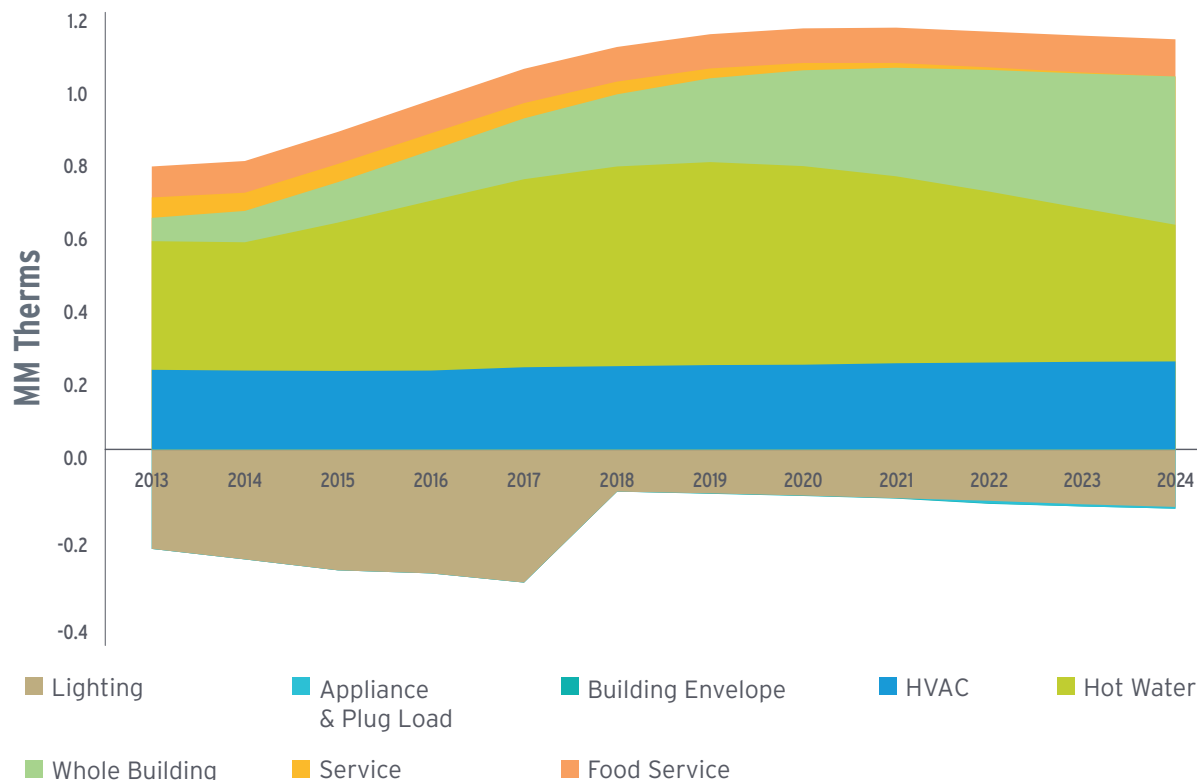


Figure 3.15 SDG&E Commercial Incremental Gas Market Potential

Source: 2015 Navigant Market Potential Study.



Legislative Drivers

Each chapter of the business plan discusses the ways recently adopted legislation, specifically, Senate Bill (SB) 350 and Assembly Bills (AB) 793, 758 and 802, help shape SDG&E’s sector approaches. SB 350, in particular, calls for a doubling of energy efficiency savings during the term of this business plan.

The CPUC has provided initial guidance implementing these directives and SDG&E and the other PAs will continue to work with the CPUC to determine the most efficient means of complying with the new legislative mandates. SDG&E believes that the strategies outlined below will complement the recently adopted legislation. Going forward, specific tactics and their processes will be adjusted as needed to meet the legislative directives and any further direction from the CPUC.

As SDG&E’s largest sector, the commercial sector will play a critical role in helping SDG&E achieve SB 350’s doubling goal. Strategies

will align in leveraging successful existing approaches while ramping up efforts to engage commercial property landlords and tenants, creating an intuitive energy management platform, and experimenting with innovative approaches to procuring energy efficiency services from the market.

Per AB 793, SDG&E is actively engaging small and medium-sized commercial customers with a host of tools to raise customer awareness about energy use and provide intuitive ways for them to reduce their energy use. SDG&E is planning to launch through its demand response portfolio a Small Commercial Energy Management Pilot in 2017, which will provide customers with incentives to offset the cost of acquiring either software or other tools that will help them monitor their energy usage across. Working with the SDG&E’s Emerging Technology group and third-party implementers, SDG&E will also look to integrate into its portfolios even more energy management technologies that can help save energy.

The Existing Buildings Energy Efficiency Action Plan (AB 758) aims to improve efficiency within commercial buildings and SDG&E aims to address this need by surmounting the “split incentive” barriers by working with third-party program provider to design offerings that maximize the value of properties and the businesses that operate inside them.

AB 802 requires that utilities provide aggregated building energy use data to building owners and facilitate opportunities to benchmark building energy use. The law also allows utilities to offer customer incentives for projects that save energy compared to an existing conditions baseline. In addition to making building energy use data available to customers for benchmarking purposes, SDG&E will create mechanisms that enable customers to use benchmarking scores to differentiate their properties. In addition, SDG&E can educate landlords and tenants on role benchmarking can play in saving energy and money. AB 802’s existing conditions baseline policies will be incorporated into commercial sector offerings and play an important role in selecting third-party providers to manage programs that use the approaches afforded by the law change.

See **Figure 3.16** for policy drivers in the commercial sector.

Goals, Strategies, and Tactics

SDG&E’s market analysis and input from stakeholders highlight consistent themes with respect to barriers customers face in adopting more energy efficient behaviors. SDG&E has analyzed these barriers in detail and considered the direction set by the California Long Term Energy Efficiency Strategic Plan to determine the goals required to establish a unified, achievable framework that will yield concrete results in support of the mission and vision of the commercial sector.

These goals and the existing core program components will be used to achieve savings goals based upon approved budgets. These activities have proven successful in assisting customers with facility upgrades and energy savings efforts.

Figure 3.16 Policy Drivers in the Commercial Sector

Policy Driver	Specific Requirement / Guidance	Business Plan Response
SB 350 – Clean Energy and Pollution Reduction Act of 2015	<ul style="list-style-type: none"> Achieve a cumulative doubling of savings in electricity and gas retail customers' final end uses by 1/1/30 The CEC shall adopt a responsible contractor policy to ensure that ratepayer-funded EE retrofits meet high-quality performance standards and reduce energy savings lost or foregone due to poor-quality workmanship 	<ul style="list-style-type: none"> Interventions targeted to the Commercial sector are fundamental to SDG&E's ability to achieve SB 350's objectives Will continue successful approaches while substantially increasing efforts to engage the commercial properties segment, establishing an intuitive energy management platform to provide actionable solutions, and experiment with innovative procurement vehicles and intervention strategies* WE&T programs will facilitate training on responsible contractor policies and ensure that any requirements applicable to SDG&E EE programs are incorporated as necessary.
AB 793 – Energy Management Technology Incentive Offering	Must develop programs by 1/1/17 that provide incentives to help residential and small/medium business customers acquire energy management technology and educate them about these programs	<ul style="list-style-type: none"> Increasing the value of the building as an asset Work with third-parties to design offerings that maximizes landlord and tenant value while minimizing the impact to both the landlord and tenant businesses
AB758 – Existing Buildings Energy Efficiency Action Plan	Strategy 5.2.3 – to surmount “split incentive” dilemma	N/A
AB 802 – Benchmarking and Changes to Energy Efficiency Baselines	<ul style="list-style-type: none"> Benchmarking – By 1/1/17, for multi-unit buildings, utilities must provide aggregated energy usage data to its owner, its agent or the building operator. Commission will set requirements for public disclosure of information for benchmarking purposes Baselines – Authorizes utilities to provide incentives to customers for energy efficiency projects based on normalized metered energy consumption as a measure of energy savings 	<ul style="list-style-type: none"> Establishing benchmarking scores as a best practice to sell energy efficiency projects Using benchmarking results to support third-party implementers in their efforts to sell energy efficiency
SB 1414	<ul style="list-style-type: none"> Bill directs the CEC to develop a system to track central heating and air cooling equipment sales and installations to verify compliance with permitting and other requirements Prohibits IOUs from paying incentives unless the recipient proves compliance with state's building standards 	<ul style="list-style-type: none"> SDG&E will work with the CEC and other regulatory bodies to determine the best ways to support implementation of these provisions of law

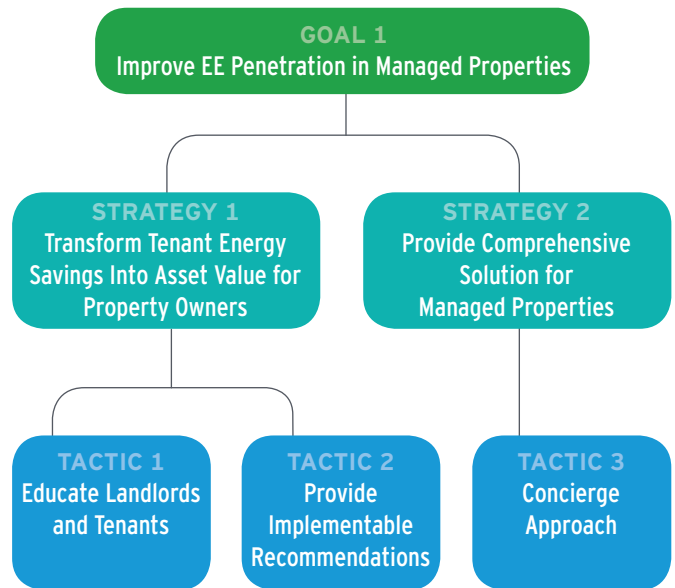
Commercial Goal 1: Improve the Energy Efficiency Penetration in the Property Management Market

Roughly one-third to one-half of the energy consumption in commercial, multi-tenanted buildings is driven by the behavior, equipment, and operating decisions of the tenants. Landlords (owners and managers) seeking to improve the energy performance of their buildings need to encourage and work with tenants to adopt best practices for energy management.⁸

As discussed in the Market Characterization section, SDG&E's commercial sector is dominated by very small businesses. Because the SDG&E service territory is dominated by small businesses who lease, rather than own, their facilities, property management companies hold the key to reaching the majority of our commercial customers. This creates a “three-legged stool” from a targeting perspective. SDG&E will need to target the property owners of small commercial spaces, the tenants of those leased spaces, and the contractors and vendors that service them. The CPUC has identified leased space as hard-to-reach because split incentives make it difficult to align the interests of lessors and lessees with respect to energy efficiency.⁹ AB 758 identifies property owners and occupants as targets for data driven approaches¹⁰, and SDG&E recognizes that achieving ongoing energy savings in this important market requires a new approach. SDG&E proposes to increase customer uptake in this hard-to-reach segment by accessing small commercial properties through their property managers.

Figure 3.17 illustrates the relationship between Goal 1 and its strategies and sample tactics.

Figure 3.17 Commercial Goal 1 Strategies and Sample Tactics Summary



Strategy: Transform tenant energy savings into an asset value for property owners.

Traditionally, energy efficiency marketing and outreach strategies have focused on highlighting energy savings and return on investment (ROI) for potential participants. However, the managed property segment is driven more by a desire to increase revenues, and in turn increase asset values, as opposed to an interest in avoiding costs.¹¹ This results in an opportunity. Due to the nature of most commercial leases, neither tenants nor landlords are motivated to make energy efficiency improvements at their facilities. This is known as the split incentive issue. Tenants, especially small businesses, are apprehensive to invest in energy efficiency projects for a number of reasons:

- Uncertainty about the longevity and/or profitability of their business, and/or
- Lack of authority to make facility upgrades.

⁸ Better Building Alliance, U.S. Department of Energy.

⁹ CPUC Policy Manual.

¹⁰ AB758, Existing Building Energy Efficiency Action Plan, p. 9.

¹¹ Upgrading Tenant Spaces, EPA 430-B-94-001B.

Property owners have not been motivated to invest in energy efficiency improvements because they are not responsible for the utility bill and thus are not financially motivated to become more energy efficient.

SDG&E will transform the traditional approach to this market by shifting from a focus on energy savings to a focus on maximizing the asset value of the building for landlords and demonstrating the benefits realized by tenants.

In addition to the split incentive barrier, two other related barriers impede tenant-occupied EE projects. These barriers facing both tenants and landlords are:

- A lack the time or skills to invest in EE projects, and/or
- Not understanding the benefits of EE.

Educate Landlords and Tenants – To realize this transformational strategy, SDG&E will deploy a redesigned educational effort that is consistent with using energy efficiency to increase the value of the building as an asset. The primary objectives of this effort will be to provide elements for each leg of the “three-legged stool” (property managers, tenants, and contractors). Holistically, these elements will need to address the various barriers as viewed from each target market (or “leg”). The objectives will be to:

- Educate property management companies about how efficient rental properties can expand revenue generating opportunities and potentially lower vacancy rates, making them more competitive.¹²
- Educate tenants to include concepts such as forecasted/benchmarked energy costs when evaluating rental properties, as well as how to choose contractors and access financing.
- Educate landlords/property managers about the need to use building operators & facility managers who are knowledgeable about energy measures to ensure proper maintenance and operation.

- Educate contractors and facilitate market acceptance through workforce, education and training:
 - Promote understanding and selling the value proposition of high efficiency equipment;
 - Provide access to tools that showcase the value to customers (sales tools as well as measurement tools from WE&T lending libraries); and
 - Offer certifications that promote quality installation and maintenance.

Provide Implementable Recommendations – In addition to educating tenants and landlords, real transformation will require action. SDG&E will provide both with specific and implementable data and recommendations which include:

- Benchmarking data and scores that can be used by property owners and managers to justify rent levels and building values, consistent with AB 802 direction.
- Green lease contract clauses which specifically address the split incentive issue.¹³

Strategy: Provide a simple, yet comprehensive, customized energy management solution for this hard-to-reach segment.

When working with small commercial markets, addressing leased spaces is imperative since most small businesses lease their space rather than own.¹⁴ Utilities such as Connecticut Light and Power, Public Service of New Hampshire, Ontario Power Authority, and Sacramento Municipal Utility District (SMUD) are all targeting this leasing market with a direct install approach.¹⁵ There are a broad range of direct install variations, each with pros and cons. To transform the way this segment values and implements energy efficiency, SDG&E will introduce a “concierge approach” that bundles all the relevant efficiency program components, including: benchmarking, rates and usage,

¹²San Diego real estate market case studies show the “vacancy rate for green buildings 4 percent lower than non-green properties... and that LEED-certified buildings routinely commanded the higher rents.” The Business Case for Green Building, USGB.

¹³Office Building Sector Snapshot, ESource, 2011, p. 10.

¹⁴Small Business Direct Install Benchmark Study, ESource, 2013, <https://www.esource.com/members/EDRP-F-48/Focus-Report/Small-Business-Direct-Install>.

¹⁵Ibid.

Integrated Demand-Side Management (IDSM), behavioral, rebates/incentives, financing, and implementation.

This concierge approach is an expansion on other utilities direct install approaches in that the proposed concierge approach will deliver EE related services directly to customers as traditional direct install programs do but will expand the approach to include more than the standard offer of no-cost / low-cost EE measures. The inclusion of a traditional direct install approach will be decided by the selected implementer (s).

Sample Tactics

Concierge Approach – SDG&E will work with third-party implementers to design and deliver a comprehensive offering, “concierge approach” that maximizes landlord and tenant value while minimizing the impact to both the landlord and tenant businesses. Key components of this program will be:

- Establishing benchmarking scores as a best practice to sell energy efficiency projects.
- Using benchmarking results from AB 802 compliance to support third-party implementers in their efforts to sell energy efficiency.
- Creating a program specifically targeting property managers that takes an integrated, concierge approach to implementation that includes financing and rebate/incentives.
- Facilitating market acceptance through workforce, education and training (WE&T) for trade professionals:
 - Expand workforce, education and training offerings to ensure that Trade Pros have a deep understanding and are fully engaged in promoting benchmarking scores as a sales tool.
 - Encourage advanced education and higher workforce standards by highlighting these credentials in the concierge approach.

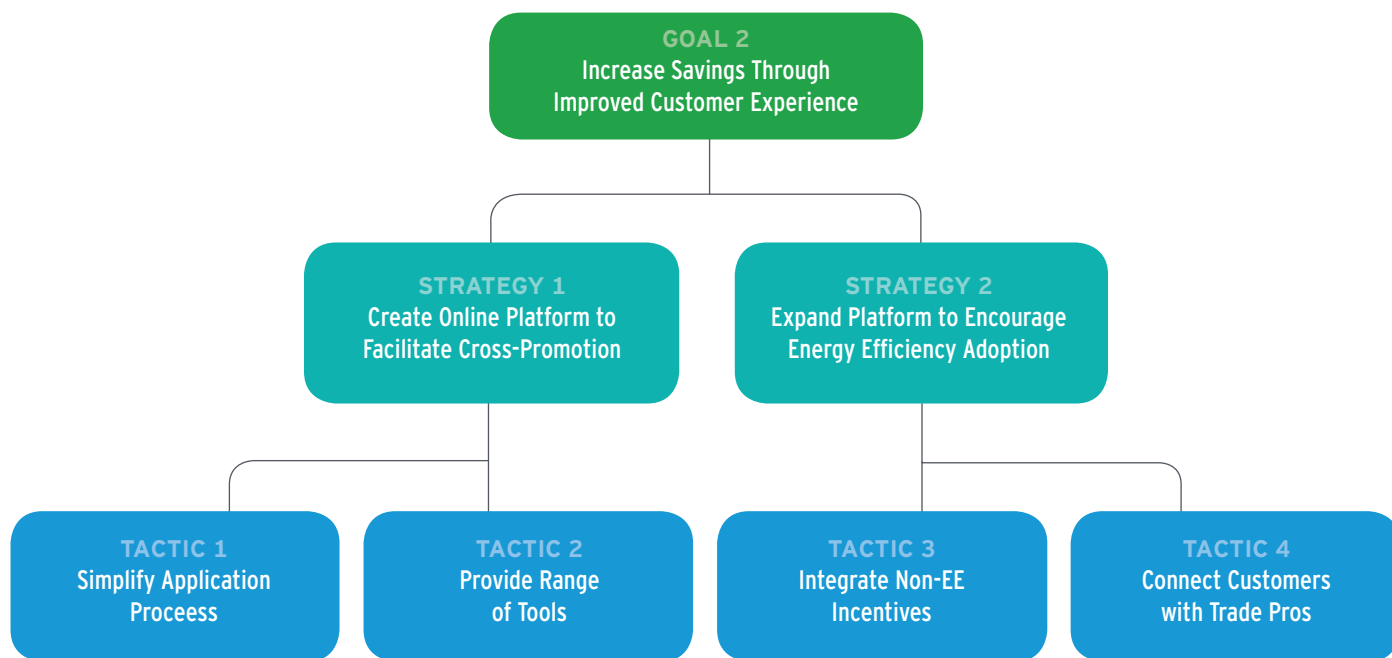
Commercial Goal 2: Increase Savings Through an Improved Customer Experience.

As a leader in the industry trend to connect to customers using an online portal, SDG&E provides its customers with comprehensive usage, billing, and payment information and tools. This technology migration has made it easier for customers to engage with their utilities in general. As part of this business plan, SDG&E will leverage this experience and apply it to energy efficiency related activities, and thus improve the customer experience for EE in much the same manner as SDG&E has achieved for usage, billing, and payment. By making EE information more accessible, SDG&E will provide the experience that customers have come to expect in a connected world by transforming data into actionable recommendations. The current transactional nature of EE encounters will evolve to an interactive, relational experience that provides customers with a starting point and milestones which will encourage ongoing participation through behavioral strategies. The end result will be an improved customer experience¹⁶ and an increase in penetration.

Figure 3.18 illustrates the relationship between Goal 2 and its strategies and sample tactics.

¹⁶Using Online Rebate Processing to Improve DSM Program Performance, ESource, 2014, p. 2.

Figure 3.18 Commercial Goal 2 Strategies and Sample Tactics Summary



Strategy: Create an online platform to facilitate cross-promotion and encourage engagement

Two of the barriers discussed under the Approach to Sector Goals section above were the transactional nature of programs and the difficulty in understanding and participating in programs.

To overcome the current transactional nature of EE, customers must be encouraged to engage with SDG&E on an ongoing basis. SDG&E has identified the lack of customized EE data as an additional barrier preventing attainment of reaching the goal of an improved customer experience and ongoing partnership. Building on successful previously implemented technology platforms such as MyAccount and SDG&E Marketplace, SDG&E will introduce an online energy efficiency platform that takes customer data from existing systems and connects it with energy efficiency information to create a tool that enables customers to customize their interactions with energy efficiency activities. The energy efficiency platform will provide customers an intelligent and intuitive experience that simplifies the transactional process and empowers

customers to control and, ultimately, reduce their energy use. The platform will use customer data from existing SDG&E systems and intelligent, intuitive technologies to ensure that a customer's experience is customized to their needs each time they visit the platform. This approach will simplify the transactional process while empowering the customer to take action on an ongoing basis.

Additionally, the 2010-2011 Non-Residential Program Process Evaluation Study identified a "lack of cross promotion of SDG&E EE Programs by Contractors, and little (if any) follow up on other programs" as an area of improvement.¹⁷ This lack of cross-promotion of energy efficiency programs acts as a barrier to reaching the goal of an ongoing partnership and results in leftover opportunities. A review of past energy efficiency projects found efforts were often single-end-use, non-comprehensive projects. For example, more than half of the deemed projects were lighting only. This leaves many untapped opportunities to encourage IDSM and encourage implementation

¹⁷SDG&E 2010-2011 Non-Residential Program Process Evaluation Study: Main Volume (SDG0256.01-.05 or WO1025), March 19, 2012.

of more comprehensive projects. Further, the transactional nature of current energy efficiency programs and multiple sources of energy-related data create an informational barrier preventing customers from fully understanding their energy usage and possible savings paths.

To address the two barriers and cross-promotion issue, SDG&E will design an intuitive platform that bundles rates, usage, products, and financing into a holistic, customized energy management solution. SDG&E believes that offering this platform will improve the customer experience in a manner that reduces the informational barriers and thus leads to greater EE participation and cross-promotion.

This strategy will leverage the program policy and system improvements made over the last few years, to include:

- Workflow management tools with holistic view of planned and implemented projects across programs;
- Improved auditing approach that provides automated referrals to core offerings to increase likelihood of implementation of audit recommendations;
- Comprehensive, multi-technology trade professional directory to facilitate deeper energy savings; and
- A simplified, more streamlined application process.

SDG&E believes that building a tool that bundles rates, usage, products and financing into a holistic, customized energy management solution can be used by customers to overcome both these barriers and better understand how they are using energy, develop an energy plan on their own, and connect them to the trade professionals who can assist with execution.

As stated above, SDG&E has identified the lack of customized data as an additional barrier inhibiting an improved customer experience. SDG&E will continue to add features to the web platform and integrate information from a variety of sources to assist customers in making energy efficiency and other ZNE-related decisions. As additional customer data is integrated with EE and ZNE information, the platform will provide a

customized customer experience with each visit. This experience will assist customers in selecting projects on their path to ZNE.

Sample Tactics

SDG&E will use its platform to encourage cross-promotion and engagement by implementing the following sample tactics:

- **Simplify the Application Process** by creating a single point of entry. Evolve this process to create an online portal that will “process” rebates with a simple “click” and leverage customer data to present customized participation options.
- **Provide a Range of Tools**, such as alerts, goals, and subscriptions that align with the customer’s desired level of sophistication and advances as the customer’s knowledge grows.
 - Create an easy to understand and customized energy plan with a graphical depiction of progress.
 - SDG&E will leverage existing offerings to enhance the customization and scope of the data provided to customers by the tool. These offerings include:
 - Data and recommendations from the Comprehensive Audit Program;
 - Workforce, Education and Training courses applicable to the customer;
 - Eligibility for enhanced incentives based on targeted locational efforts;
 - Information provided by statewide implementers;
 - Market acceptance through workforce, education and training for trade professionals:
 - Offer workforce, education and training courses and certifications that promote a skilled and trained workforce that can be demonstrated via platform at both the company and the worker level.
 - Raise standards required to participate in SDG&E’s Trade Professional Alliance Directory that allows trade professionals to submit applications on behalf of commercial customers.

Strategy: Expand the platform's scope and capabilities to encourage customers to advance along the energy adoption curve.

Sample Tactics

Both of these strategies will be implemented by creating a new customer energy hub or platform. This system will:

- **Integrate Non-EE Incentives** for other energy-related and/or sustainability offerings, such as:
 - Zero-Emission Vehicles
 - Demand Response
 - Renewables
 - Water-Energy Nexus
 - Emerging Technologies
 - Workforce Education and Training Opportunities
 - Financing Opportunities
 - Integrating the customer's energy experience including usage history and patterns, rate information, as well as energy efficiency opportunities.
- **Connect Customers with Skilled Trade Professionals** who can provide installation, maintenance, and other related services.
 - Allow customers to request quotes online
 - Enable customers to make informed decisions about trade professional selection:
 - 1) Educate customers on what to look for when hiring a trade pro (e.g., work experience, history of successful EE projects, workforce education and standards, customer satisfaction, violations, etc.)
 - 2) Highlight trade pro "stats" from public EE data sources (e.g., EE savings contributions, rate of successful project completion, WE&T participation and certifications, etc.), to provide customers more complete and transparent information for decision making

SDG&E will leverage existing offerings to enhance the customization and scope of the data provided to customers by the tool. These offerings include:

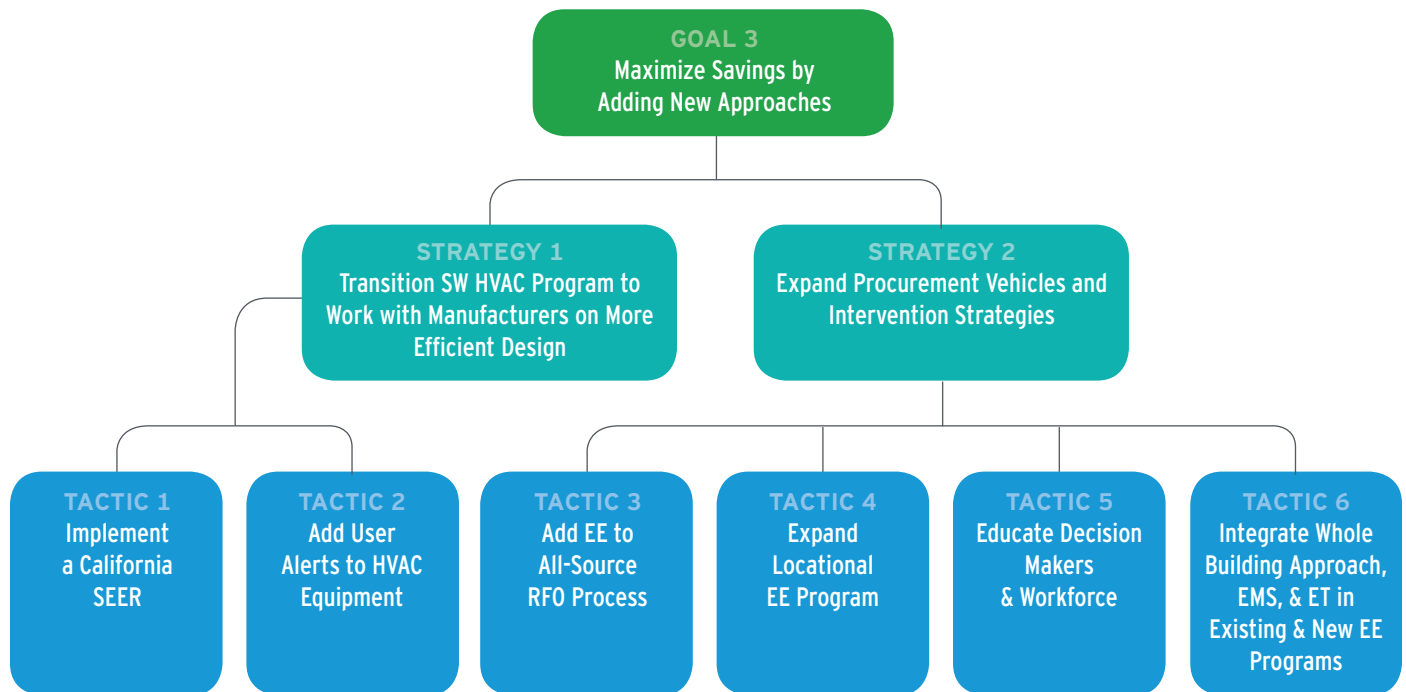
- Data and recommendations from the Comprehensive Audit Program;
- Workforce, Education and Training courses applicable to the customer;
- Eligibility for enhanced incentives based on targeted locational efforts;
- Information provided by statewide implementers;
- Market acceptance through workforce, education and training for trade professionals:
 - Offer workforce, education and training courses and certifications that promote a skilled and trained workforce that can be demonstrated via platform at both the company and the worker level.
 - Raise standards required to participate in SDG&E's Trade Professional Alliance Directory that allows trade professionals to submit applications on behalf of commercial customers.

Commercial Goal 3: Maximize Savings and Efficiency by Executing New Approaches

Existing energy efficiency programs alone do not address the universe of customer needs or recent changes prompted by legislation. The energy efficiency industry has the potential to see significant change in the next decade, providing opportunities for innovation and market transformation. This influx of innovation should not be limited solely to technologies, but rather should require us to consider fresh approaches to programs and procurements. SDG&E will use a 'test and learn' method to develop new approaches that maximize both savings and efficiency.

Figure 3.19 illustrates the relationship between Goal 3 and its strategies and sample tactics.

Figure 3.19 Commercial Goal 3 Strategies and Sample Tactics Summary



Strategy: Transition SW HVAC Program to Work with Manufacturers on More Efficient Design

The California IOUs invest tens of millions of dollars each year in HVAC EE measures. The HVAC upstream program provides hundreds of dollars per ton to distributors for stocking and installation of high SEER (≥ 16) units. The current program design, while having moderate success, has seen very low realization rates for air cooled units. Small tonnage air cooled units account for most of the units that participate in our upstream programs and these systems have the lowest realization rate (18%). Recommendations from the most recent impact evaluation¹⁸ include:

- Set program efficiency criteria for full-load and part-load combinations. Pre-identify units that meet the criteria such that savings claims are tied back to make and model numbers collected by participating distributors.

- Work with distributors to obtain extended performance maps that can be used in future simulations. DEER updates are limited by the availability of information from manufacturers, and the upstream program may be in a better position to obtain this information
- Develop methods to obtain evidence that the economizer is fully functional before dispersing the final incentive payment. Obtain acceptance testing data for the technician to assure a functioning economizer that includes documenting economizer functionality with video/photographic evidence.

While modest gains can be achieved by working with distributors and installers to insure the most efficient units are installed and that these units operate as designed for their entire life, we believe greater savings opportunities exist by working further upstream with the manufacturers and industry professionals.

¹⁸Impact Evaluation of 2013-14 Upstream HVAC Programs (HVAC1).

As the proposed statewide Program Administrator for Midstream and Upstream HVAC, SDG&E will seek the knowledge and expertise of the market to implement a program that addresses some or all of recommendations. The third-party implementer will design a program based on these observations as well as other innovative elements they believe will move California's HVAC market to the next level of energy efficiency.

New opportunities become possible as we launch an upstream HVAC program for all of California. With California's market power and key partnerships with other large energy efficiency organizations, like Northwest Energy Efficiency Alliance, a non-profit organization working to accelerate energy efficiency in the Pacific Northwest, SDG&E will have a better ability to transform the HVAC market.

Sample Tactics

California SEER – Work with the Air Conditioning, Heating and Refrigeration Institute (AHRI) to establish a California SEER that is weighted in alignment with California's hot, dry climate.

HVAC – Modify design/diagnostics to add user alerts.

- User alerts when refrigerant charge is too low or too high. Engage customers with alerts that are communicated to customer devices ranging from smart phones to energy management systems. These alerts would be similar to the "Check Engine" light on automobile dashboards that would alert customers to an immediate problem that requires attention.
- User alerts for economizer fault detection. The idea, again, is to provide a user friendly call to action to repair one of the more fragile components of an HVAC system - the economizer.

Strategy: Explore the expansion of various procurement vehicles and intervention strategies to find targeted, deeper, or incremental savings.

SDG&E developed this strategy to address two unique, yet general, challenges. The first challenge is successfully identifying and capturing energy savings that may not be covered by the existing program portfolio. The second challenge is to realize these savings in as cost effective a manner as possible. SDG&E believes that the strategies already discussed assist in overcoming these barriers, but believe that additional opportunities exist. Stakeholder input and recent direction from the CPUC reaffirms these beliefs. Thus, SDG&E plans to expand the methods by which it achieves energy savings by leveraging market opportunities.

Sample Tactics

Various tactics will be tested and refined as needed to achieve reliable, meaningful, and cost effective savings for ratepayers. These may include:

- Building on SDG&E's initial All-Source RFO to achieve additional cost-effective EE savings;
- Expanding the Locational EE program to focus on grid stability and/or other needs thus increasing the value of EE;
- Incorporating pay for performance payment terms to maximize contract value and minimize ratepayer risk;
- Focusing workforce, education and training on the energy efficiency value proposition for all segments;
- Including whole building approaches within both traditional EE programs as well as those that may be part of this strategy's implementation;
- Finding, testing, and learning about energy management products for small customers in support of AB 793;

- Providing the emerging technology program with specific high need areas for SDG&E commercial customers so that appropriate technologies are explored and evaluated with available ET tactics. Emerging technology evaluations will identify the technologies that are suitable for new pilots or program offerings in SDG&E's commercial programs;
- Exploring mutually beneficial opportunities with other agencies; and
- Targeting underperforming/high-potential end-uses such as refrigeration and food service.

Key Partners

Key partners are externally organized groups that SDG&E may collaborate with to ensure best practices, find economies of scale, extend program reach, and / or provide customers with a trusted information source. Coordinating and collaborating with partners will be important to helping SDG&E engage customers in program activities. Following are list of key partners and the roles they will play in implementing SDG&E's vision.

Program Administrators

SDG&E will coordinate with other PAs to:

- Leverage lessons learned and implement best practices, particularly as they relate to the commercial segments identified herein as playing crucial roles in achieving SDG&E's energy efficiency goals;
- Refine, especially for the benefit of market actors who work across service territories, efforts to create statewide consistency in the types of programs offered to customers; and
- Conduct market research to help identify, better understand, and address customer barriers to energy efficiency investments.

Trade Organizations and Trade Professionals

Trade organizations and trade professionals play an especially important part in delivering energy efficiency benefits to commercial customers. SDG&E will continue to work with trade organizations and trade professionals to:

- Enable them to, where feasible and practical, play active roles in helping design programs that serve the commercial sector;
- Create opportunities for groups, companies, and individuals who demonstrate their commitments to energy efficiency to be leaders in communicating to the market SDG&E's offerings; and
- Coordinate with trade organizations and trade professionals from other service territories as a means of elevating the importance of energy efficiency to their businesses.

Third-Party Program Implementers

The CPUC has established that third-party program implementers will be the primary delivery mechanism for energy efficiency programs by 2020. With this in mind, SDG&E commits to working with potential third-party program implementers by:

- Establishing a clear schedule for anticipated solicitations;
- Collaborate with third-party program implementers to provide input on selected program design;
- Publishing, within the confines of protecting customer privacy, information about customer energy use and other trends, to better enable implementers who respond to open solicitations to propose programs that meet SDG&E's energy efficiency program needs;
- Coordinating with other PAs to establish consistent solicitation schedules and, where appropriate, common language and methods of having a structured dialogue with implementers; and

- Increasing the number of potential third-party program implementers by conducting trainings, creating self-help tools for bidders, and establishing platforms that enable greater levels of participation.

Local and State Government

Local and State governmental entities will continue to be actively involved with SDG&E's efforts to increase customer levels of energy efficiency. SDG&E's commercial sector programmatic offerings will be closely tied with its public sector offerings.

California Public Utilities Commission and other Key Regulatory Bodies

Although there is not anything necessarily unique to the commercial sector that would apply to the CPUC and other regulators such as the California Energy Commission (CEC) California Environmental Protection Agency, and others, it will remain important for SDG&E to engage regulators to:

- Ensure that the CPUC is kept apprised of developments in SDG&E's commercial sector as they relate to the Business Plan and any mid-course corrections that SDG&E may propose;
- Keep the CEC and the CPUC informed about ways that implementation of the AB802 baseline changes is impacting energy forecasting;
- Check the progress of programmatic initiatives as they relate to metrics and other key performance indicators; and
- Understand how to best implement the directive to shift program implementation to third parties and to candidly convey how well the process is working.

Cross-Cutting Coordination

Workforce Education & Training (WE&T)

As a cross-cutting program, WE&T is critical to building customer demand by highlighting the value of energy efficiency, promoting market acceptance by educating trade professionals on how to maximize sales through the value proposition, and ensuring that a skilled and trained workforce properly installs and maintains equipment leading to greater savings. SDG&E's WE&T program has and will continue to focus on the following areas to engage with both commercial customers and the trade professionals who support them. Looking ahead, the WE&T program will continue to support the following areas and will expand or contract based on market and potential data forecasts:

- Building Design & Construction
- Building Performance
- Codes & Standards
- Food Service
- HVAC
- Lighting
- Marketing / Finance / Sales / Real Estate
- Renewable Energy
- Sustainability
- SDG&E's Rebate & Incentive Programs

More details on these efforts are provided in the WE&T chapter of this Business Plan.

Finance

SDG&E will provide more financing opportunities and make financing programs easier to use by further streamlining the application process and further integrating financing with the rebate and incentive programs. Traditional financing programs, such as SDG&E's On-Bill Financing, are helpful tools to encourage participation in Integrated Distributed Energy Resource programs. Although most customers qualify, trade professionals often must front the project costs for their customers until a project is completed, at the risk of the customer being disqualified from financing if the project scope changes. Several of the statewide financing pilots are being designed to address this issue.

Financing options will be included across all of our commercial sector goals.

EM&V Considerations

The commercial and residential sectors have historically been the best candidates for NMEC, as discussed in the Evaluation, Measurement and Verification (EM&V) Appendix. That is not to say this sector is without its challenges. Generally, there is significant lack of understanding of occupant driven consumption variables, such as number of employees, working/operating hours, even square footage. To drive the success of net-metered energy consumption (NMEC) in the commercial sector SDG&E will work closely with the statewide EM&V team to understand the issues related to NMEC in commercial, establishing studies to isolate critical routine and non-routine variables that drive consumption, develop frameworks and protocols for data collection, and identify additional necessary study areas.

SDG&E's service territory is dominated by small business, as such understanding the commercial sector is paramount to success. To better understand SDG&E's small commercial customers, SDG&E is currently scoping a study to understand the impact of load factor on customers' ZNE plans. The objective being to fully comprehend the primary business sector for the SDG&E territory.

This plan is presented independent of the statewide EM&V efforts included in the CA EM&V Research Roadmap. Additional evaluation will occur within that forum that will provide significant programmatic feedback to the commercial staff.

Commercial Sector Metrics

Figure 3.20 describes the metrics SDG&E will use to evaluate the success of proposed sector strategies. The metrics are associated with goals and are designed to be 'SMART' (specific, measurable, attainable, realistic, and time-based). Success will be measured based on short, mid and long-term targets.

Figure 3.20 Commercial Sector Metrics

Problem Statement	Market Barriers	Desired Sector Outcome	Intervention Strategies
1. Extremely high proportion of customers are small and lease their facilities	Multiple decision makers with split incentives	Improve Penetration in the Property Management Market	Provide a simple, yet comprehensive, customized energy management solution for this hard to reach segment
2. The Split Incentive between Landlords and Tenants dramatically reduces energy efficiency upgrades			Transform tenant energy savings into asset value for property owners
3. Current program design is transactional in nature and thus short-term focused and results in missed opportunities	<ul style="list-style-type: none"> • Lack of cross-promotion leads to single end-use transactions • Trade Pros and Customers are confused by rules and processes 	Improved Customer Experience	Create an online platform to facilitate cross-promotion and comprehensive, concierge approach to EE offerings
4. Current program processes can be complicated and impede EE participation			
5. Innovation of implementation methodologies and procurement processes are needed to meet the SB 350 goals	<ul style="list-style-type: none"> • Need for identifying and capturing additional energy savings • Maintain Cost Effectiveness 	Maximize Savings and Efficiency by Executing New Approaches	Explore the expansion of various procurement vehicles and intervention strategies to find targeted, deeper, or incremental savings

*All metrics will track AMI data when possible.

Figure 3.20 Commercial Sector Metrics (continued)

Problem Statement	Sector Metric	Baseline	Metric Source	Short-Term Target (1-3 years)	Mid-Term Target (4-7years)	Long-Term Target (8-10+ years)
1. Extremely high proportion of customers are small and lease their facilities	Number of small commercial, non-owner occupants enrolled customized energy management solution	Current % of commercial customers that are small and lease	Program database	10% increase of population by year 3	30% increase of population by year 7	50% increase of population by year 10
2. The Split Incentive between Landlords and Tenants dramatically reduces energy efficiency upgrades	Number of landlords enrolled in programs by across offerings	Current number of landlords enrolled in programs	Program database	5% increase of landlords enrolled in programs	10% increase of landlords enrolled in programs	20% increase of landlords enrolled in programs
3. Current program design is transactional in nature and thus short-term focused and results in missed opportunities	Number of realized recommendations or conversion from online platform	N/A	Program database	Develop and launch of platform	5%	10% of realized recommendations or conversions
4. Current program processes can be complicated and impede EE participation						
5. Innovation of implementation methodologies and procurement processes are needed to meet the SB 350 goals	Number of new approaches initiated and customers enrolled	N/A	Program database	Short term develop solution and baseline	Track usage. X% increase year over year dependent on solution	Track usage. X% increase year over year dependent on solution

*All metrics will track AMI data when possible.

04 PUBLIC SECTOR



OUR MISSION

Empower the public sector by equipping leaders with knowledge and tools, tailoring solutions for their needs and helping to influence the communities they serve.

Chapter Summary

The public sector is a newly defined customer grouping, created mainly for PA business plans. Therefore, it is, in a sense, a new component of California's energy efficiency portfolio programs. The lack of a past focus on public customers as a unique group presents both challenges and opportunities. Comprehensive studies of the public sector are lacking, which requires PAs to rely more heavily on anecdotal evidence, apply findings from a specific sub-segment to the entire sector, and borrow approaches that have worked for other sectors. Meanwhile, this new approach provides an opportunity to design future programs specifically with this set of customers in mind.

Twelve percent of SDG&E's electric consumption is attributable to the public sector. While this statistic is meaningful, it might be argued that the public sector has an even greater importance because of the high visibility and influence of the customer base.

SDG&E has worked closely with the public sector for many years through formal EE Partnerships as well as collaborations on projects and

special initiatives with many public entities. This approach to the public sector has proved successful. In fact, while representing 16% of gas consumption, public entities accounted for 48% of SDG&E's gas savings in 2013-15. This chapter describes how SDG&E, with this experience and input from many partners, will create offerings focused specifically to public sector customers.

Consistent with the California Long Term Energy Efficiency Strategic Plan (CALTEESP) vision for local governments, SDG&E's mission for the larger public sector is to support public customers with the knowledge and resources required to champion energy efficiency within their own facilities and communities.

SDG&E developed the public sector goals to directly address the needs of the large majority of our public customers, consisting of federal, state, local government and educational entities. This customer composition poses unique challenges for SDG&E as these entities are expected to lead by example in their own facilities, as well as create and enforce mandates, many of which are unfunded.

The Past, Present, and Future of PUBLIC ENERGY EFFICIENCY

MARKET CHARACTERIZATION

PAST & PRESENT



FUTURE

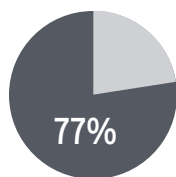
Relatively small sector

- 12% of total kWh consumption
- 18% of EE spending
- 8% of EE kWh savings



Majority of customers are small

77% accounts under 20 kW



Unique sector attributes



Taxpayer funded



Public decision-making and budgeting process



Political mandates

Climate Action Plans

create focus on energy efficiency



ZNE goals suggest flat, or possibly lower, future consumption

Responsible for complying

with increased political mandates, often unfunded



Non-EE benefits

like comfort and productivity will drive deeper EE penetration

DELIVERY APPROACH

No focus on the public sector

as a unique customer segment



Part of commercial sector

Participated in bundled non-residential programs



Lacked customization to unique needs and challenges—minimal focus on leveraging influence over private sector

Savings from traditional non-residential, single end-uses such as lighting and HVAC



Limited number of comprehensive projects



Misaligned program deadlines and public project implementation timelines restrict participation

Missed opportunities for engaging public leaders as EE champions

Missed opportunities to drive additional private sector savings

New public sector

represents an opportunity to modify existing and develop new innovative offerings. Address the sector's unique needs and challenges



Facilitate best practice sharing and equip leaders with knowledge and tools to make informed energy efficiency decisions

Garner public leader support of energy efficiency

- Eliminate barriers to participate
- Tailor offerings to address unique needs
- Develop public sector action plan
- Drive success in climate action planning
- Enable projects through financial solutions
- Modify finance products



Enhanced marketing, education and outreach and reach code development will encourage participation and progress beyond existing codes and standards in private sector

Citations for data presented on this figure are included throughout the chapter.

To accomplish this mission, SDG&E has established the following public sector goals:

- **Public Goal 1:** Empower Leaders by Equipping Them with Knowledge and Tools to Make Informed EE Decisions.
- **Public Goal 2:** Eliminate Barriers to Public Sector Participation by Developing Tailored Solutions and Financing Options.
- **Public Goal 3:** Influence Private Sector EE Activities Through Reach Codes and Engagement.

The public sector presents both unique barriers and tremendous opportunities. This chapter summarizes the strategies SDG&E has developed based on its long-term relationship with its public partners. These strategies support the goals listed above and will help governments and other public entities meet or exceed their environmental and sustainability objectives through interventions such as financing and climate action plan support.

Approach to Achieve Public Sector Goals

As a trusted energy advisor to our public sector customers, SDG&E offers extensive local knowledge of our grid and our customers' energy consumption patterns. SDG&E can provide its various stakeholders¹ valuable support to continue to achieve California's significant energy reduction goals.

The public sector is a critical component of the overall SDG&E business plan. However, based on SDG&E's assessment, it's clear that this sector experiences distinct barriers. In order to identify the optimal strategy to achieve the energy efficiency vision, it is important to understand the gaps that must close as we partner with key public sector players to meet or exceed energy efficiency goals in the SDG&E territory. The following are key considerations for the public sector.

¹ Stakeholders include, but are not limited to: state agencies, specifically the California Public Utilities Commission and California Energy Commission (CEC), Investor Owned Utilities, Program Administrators, energy efficiency program implementers, capital providers and customers.

*"Most public sector energy efficiency projects stall due to one or more of the following perceived barriers: lack of money to fund them, lack of time or personnel to design and plan them, or lack of internal expertise to implement them."*²

Staff Bandwidth

*"Insufficient local staff capacity and resources is a barrier to doing more municipal retrofits".*³

While there is no formally gathered data across the public sector, public entities have communicated anecdotally and through EM&V studies that they lack the staffing levels needed to support lasting energy efficiency efforts. Lack of dedicated energy efficiency staff is repeatedly called out as a barrier to progress toward aggressive EE goals and mandates.

*"These additional services are extremely important to the [City] because the City has a small staff and is not able to conduct the appropriate research or plan preparation without the help of outside consultants. Utilizing outside consultants is very costly to the City. Therefore, having the training opportunities and funded consultants to help local cities to achieve strategic plans that are encouraged by the State is beneficial. Without these services to the City, many plans would not be properly researched, created or implemented."*⁴

² Financing Energy Efficiency Projects, Government Finance Review, Energy Star, February 2003, https://www.energystar.gov/ia/business/government/Financial_Energy_Efficiency_Projects.pdf.

³ Program Assessment Study: Local Government Partnership Programs, Evergreen Economics and Navigant Consulting, July 2013, p. 98.

⁴ PY 2013-2014 Local Government Partnerships Value and Effectiveness Study Final Report, Opinion Dynamics, p. 34.

Technical Expertise

*“The largest barriers to Strategic Plan Project completion are 1) a lack of subject-matter expertise, and 2) technical support for projects. While the IOUs generally provide this service directly to LGs, there remains an unmet need for greater access to technical staff and resources”.*⁵

According to a study on local government partnerships by Opinion Dynamics, if available, internal energy efficiency technical experts are in high demand across their organizations, and their availability to support ongoing energy efficiency programs and initiatives is very limited. As is most often the case, technical expertise is generally lacking. As a result, outside technical and project management experts must be brought on board on a short-term basis at higher costs, burdening public agency budgets that are already packed to capacity.

While this study was specific to local governments, lack of technical expertise has anecdotally been found to be a challenge across the public sector. Because the public sector is being defined for the first time, future studies must be designed to provide insight for the sector overall.

No Universal Acceptance of Value Proposition

*“The absence of a systematic quantification of the value of energy and efficiency upgrades for nonresidential and residential building properties is a major barrier to energy efficiency investments. Research and customer surveys indicate that there is quantifiable value in energy efficiency, including operational cost reductions, healthier buildings, better employee and tenant retention, and higher resale and lease opportunities”.*⁶

Energy efficiency projects are often evaluated only by their return on investment or simple payback. Particularly for taxpayer-funded projects in the public sector, it is important to not only highlight the direct financial benefits of a project, but also the financial benefits of wise business decision regarding energy efficiency—which result in ongoing, long-term savings for the organization.⁷ Additionally, public entities must be thoroughly informed of the significant value that qualitative benefits offer to the public—such as reduced environmental impacts, improved occupant productivity and comfort, and spillover of public sector retrofits into private sector projects. The disconnect between energy efficiency and the value it offers public customers has resulted in significant investments in the form of energy efficiency audits that have yielded a low rate of successfully implemented EE measures. In fact, SDG&E performed 875 audits for public customers during the 2013-2015 program cycle, and saw a very low conversion rate. This barrier is addressed later in the document throughout the strategies discussion, and especially under Goal 1: Empower Leaders by equipping them with knowledge and tools to make informed EE decisions.

⁶ California Existing Buildings Energy Efficiency Action Plan, California Energy Commission, Sept 2015, http://docketpublic.energy.ca.gov/PublicDocuments/15-IEPR-05/TN206015_20150904T153548_Existing_Buildings_Energy_Efficiency_Action_Plan.pdf.

⁷ Reduced maintenance costs is an example of the additional savings realized through EE projects.

⁵ Ibid..

Funding and Procurement Challenges

“The cyclical nature of capital renewal requires consistent investment to keep pace with decline. While the State may have competing priorities for limited capital funding, lack of routine improvements only postpone long term need. Immediate and sustained investment reduces CSU’s financial exposure by avoiding costly emergency repairs to poorly maintained facilities.”⁸

When it comes to funding energy efficiency projects, public entities face challenges on various fronts.

- Public entities typically fund energy efficiency projects through their general maintenance or capital budgets. Incentives and energy savings from these projects are thus credited to the general fund, and are rarely earmarked for future energy efficiency improvements.

“Government and institutional organizations do not typically prioritize energy improvements as part of their overall capital improvement budgets, especially when utility bill savings accrue to their operating budget.”⁹
- Energy efficiency project funding is often cited as the largest hurdle for customers to overcome. In discussions with various customers in this space, it has been shared that capital improvement and maintenance budgets are rarely made available to energy efficiency retrofit projects, so utility financing, school bonds, CEC loans and other funding sources must be leveraged for energy efficiency projects to move forward. These funding sources each have their challenges and limitations.

- The public sector’s procurement process and rules are unlike other sectors’. The Davis Bacon Act requires payment of prevailing wage to any contractor or subcontractor, which several public entities have cited as increasing overall energy efficiency project costs.¹⁰ Competitive bid requirements slow down the project procurement process, as does the council/board/regents approval process. This lengthy process—along with the expectation that project financials would not change once approved—presents significant hurdles for moving energy efficiency projects forward.

Current Processes and Tools Are Not Intuitive

Program evaluations and customer feedback indicate the current mix of energy efficiency portfolio offerings can be confusing, due to multiple program entry points, complex program requirements, and program rule changes. Anecdotal feedback from customers and account executives supports this finding. While the variety of program options provides flexibility, customers often have difficulties finding the right program to pursue; this can cause frustration and discourage participation. Similarly, mid-stream program rule changes can negatively impact project financials and cause frustration and delays if the project must be re-approved by the board/council/regents.

⁸ California State University System, 2014 Capital Renewal Annual Report, Sightlines, 2014, p. 12.

⁹ Energy Efficiency Financing in California Needs and Gaps: Preliminary Assessment and Recommendations, Harcourt, Brown, and Carey, San Francisco: CPUC, 2011, p.34, http://www.harcourtbrown.com/wp-content/uploads/CPUC_FinancingReport_HBC_Jul8v2.pdf.

¹⁰Several partners have shared this sentiment anecdotally. Specifically, the University of California and California State University Pre-Stage 2 Input, Submitted 12 April 2016, states, “Energy efficiency projects in the public sector are more expensive due to statutory requirements like prevailing wages, bidding requirements and reporting requirements.” Decreasing Incentive Levels section, p. 2, http://media.wix.com/ugd/0c9650_c6c73755ceca43a1af197c26325c5f04.pdf.

Figure 4.1 Market Characteristics and Problems Overcome by Goals

		Targeted by Strategies Supporting Goals		
Problem	Goal	Customer Size	Market Segments	End-Uses
<ul style="list-style-type: none"> • Limited staff bandwidth • Lack of technical expertise • No universal acceptance of value propositions 	Empower Leaders by Equipping Them with Knowledge and Tools to Make Informed EE Decisions	All	All	All
<ul style="list-style-type: none"> • Current process and tools are not intuitive • Timelines aren't aligned 	Eliminate Barriers to Public Sector Participation by Developing Tailored Solutions and Financing Options	All	All	All
<ul style="list-style-type: none"> • Public sector can set rules for private sector 	Influence Private Sector EE Activities Through Reach Codes and Engagement	All	All	All

Public Sector Project Implementation and EE Program Timelines Are Not Aligned

The timeline expectations and complexity of current programs dis-incentivizes the public sector from participating in energy efficiency programs.¹¹ The public sector’s planning horizon is markedly longer than other sectors’, which is both a boon and challenge. This long-term view offers the potential for more comprehensive, longer-payback projects to be implemented, yet the dynamic nature of California’s energy efficiency programs limits the certainty that is often required by public entities with long-term planning horizons.

Figure 4.1 summarizes the linkage between the problems (or barriers) that have been identified through the stakeholder process and through market analysis and the goals that have been created.

This section outlines the three overarching goals that set the direction for SDG&E’s public sector, as well as the key strategies and tactics that support those goals. SDG&E’s public sector goals are:

- **Public Goal 1:** Empower Leaders by Equipping Them with Knowledge and Tools to Make Informed EE Decisions.
- **Public Goal 2:** Eliminate Barriers to Public Sector Participation by Developing Tailored Solutions and Financing Options.
- **Public Goal 3:** Influence Private Sector EE Activities Through Reach Codes and Engagement.

¹¹SB 350 https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB350.

This approach has been designed to provide the public sector with the support and collaboration necessary to reach savings goals based upon approved budgets. **Figure 4.2** and **Figure 4.3** outline the proposed energy efficiency goals and budget for SDG&E's public sector.

Overview of Current and Proposed Offerings

Figure 4.4 describes the proposed goals, strategies, and tactics in terms of whether they are new, existing, or modified interventions, and whether they will be implemented in the short- (1-3 years), mid- (4-6 years), or long-term (7-8 years).

Figure 4.2 Public Sector Annualized Savings Goals

	Short-Term 2018-2020	Mid-Term 2021-2023	Long-Term 2024-2025
GWh	15-16	17-18	18
MW	3	4	4
MMTherms	0.5	0.5	0.5

Figure 4.3 Public Sector Annualized Budget

	Short-Term 2018-2020	Mid-Term 2021-2023	Long-Term 2024-2025
Annual Budget	\$15,538,161	\$15,538,161	\$15,538,161

Figure 4.4 Overview of Current and New Offerings

Goal	Strategy	Sample Tactics	New, Existing, Modified	Short, Mid, Long-Term
Empower Leaders	Equip leaders with knowledge and tools to make informed decisions	Develop and manage an online collaboration platform	New	Mid, Long-Term
		Develop and manage stakeholder engagement plans	New	Mid
		Provide energy efficiency fact sheets to highlight the energy efficiency progress made within a leader's jurisdiction	Existing	Short
	Collaborate and share best practices with key players	Participate in best practices events and conferences	Modified	Short
		Foster public sector collaborations	Modified	Mid
Eliminate Barriers to Public Sector Participation	Tailor offerings to meet the unique needs of public customers projects through financial solutions	Utilize Comprehensive Audit Program	Existing	Short
		Develop and create a set of unique effective useful life (EUL) values for public sector buildings	Modified	Mid
	Existing Programs	Energy Efficient Business Rebates and Incentives (Deemed Rebates and Calculated Incentives)	Modified	Short
		Business Energy Solutions (Direct Install)	Modified	Short
		On-Bill Financing (OBF)	Modified	Short
		Comprehensive Audit Program	Existing	Short
		Local Government and Institutional Partnerships	Modified	Short
	Develop a public sector customer action plan to facilitate participation	Partner to provide the EE support that best matches the self-sufficiency level of each public entity	Modified	Mid
		Create a whole building approach	New	Short
	Equip public customers with the tools they need to succeed in Climate Action Planning (CAP)	Increased incentives for high performers	Modified	Short
		Create one-stop shop for public customers	Modified	Mid, Long-Term
		Provide robust CAP support services	Existing	Short
	Enable EE projects through financial solutions	Create public sector OBF offering	Modified	Short
		Help each type of public entity stand up its own revolving fund	New	Mid, Long-Term
		Identify alternative project financing solutions	New	Short

See following page for continuation of table

Figure 4.4 Overview of Current and New Offerings (*continued*)

Goal	Strategy	Sample Tactics	New, Existing, Modified	Short, Mid, Long-Term
Influence Private Sector EE Activities	<ul style="list-style-type: none"> Demonstrate EE value through enhanced Marketing, Education & Outreach (ME&O) 	Develop a stakeholder engagement plan for each type of public entity	Modified	Short
		Improve code compliance	New	Mid
	<ul style="list-style-type: none"> Encourage progress beyond existing code levels 	Develop and communicate a clear and consistent value proposition for reach codes	Modified	Mid
		Perform Cost-Effectiveness analyses to assess the viability of pursuing reach codes for specific measures	New	Short

Market Characterization

“SDG&E is unique in that it has several LGPs within a single county, two cities that have a legacy of energy efficiency, and association of governments that works with the remaining cities, and a Port District that focuses on a subset of businesses located in the district and County.”¹²

It is important to consider the key characteristics of the public sector market. Historically, public sector customers have been classified as commercial, which has presented challenges in meeting the needs of public customers. The CPUC’s Decision 15-10-028 provided the opportunity to create a strategy and offerings specifically for public customers. Through collaboration with California’s Program Administrators and other stakeholders, the public sector came to be defined as the group of customers that are tax-payer funded, have political mandates, and that must go through a public budgeting and decision-making process.

SDG&E provides electricity and gas service to over 14,000 public sector accounts in San Diego and southern Orange Counties, including customers in the federal, state, local government, and public education segments. As illustrated in **Figure 4.5**, the public sector accounted for 12% of SDG&E’s system electric consumption and 16% of gas consumption from 2013-2015, and contributed 8% of SDG&E’s portfolio electric energy savings and 48% of gas energy savings during the same period. Despite this relatively small percentage of direct electric consumption and electric savings, the public sector influences and informs --and therefore contributes to --both residential and non-residential markets, making it important to all sectors. **Figure 4.6** shows EE spending on public customers from 2013 - 2015 compared to SDG&E’s total portfolio. Due to the influence the public sector has across various customer types, it plays a pivotal role in reaching the Governor’s, and the California Long Term Energy Efficiency Strategic Plan’s goals.

SDG&E’s public sector is made up of many small accounts, which SDG&E defines as an annual peak demand of less than 20 kW. As shown in **Figure 4.7**, 77% of public sector accounts have a peak demand of less than 20 kW, which helps to inform the approach and design of public sector energy efficiency offerings moving forward.

¹²Program Assessment Study: Local Government Partnership Programs, Evergreen Economics and Navigant Consulting, July 2013, p. 87, <http://www.energydataweb.com/cpucFiles/pdaDocs/971/Local%20Government%20Partnership%20Programs-%202010-2012.pdf>.

Figure 4.5 SDG&E 2013-15 Average Annual Consumption/Total Energy Efficiency Savings by Sector

Source: Energy Consumption Data Management System, CEC, <http://ecdms.energy.ca.gov/elecbyplan.aspx>, <http://ecdms.energy.ca.gov/gasbyplan.aspx>, SDG&E EE Program Data, 2013-2015

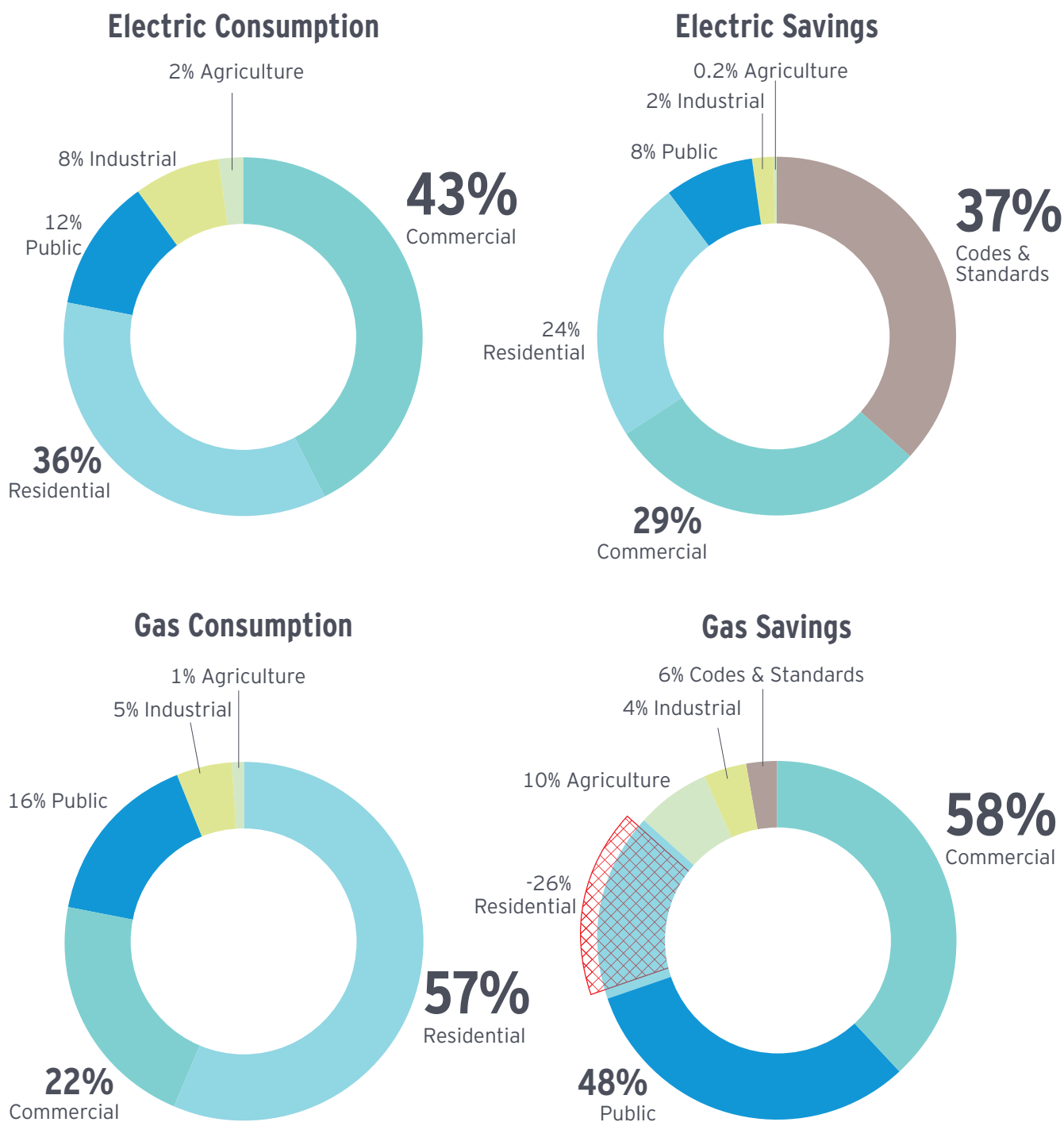


Figure 4.6 SDG&E 2013-2015 Total Energy Efficiency Spending, by Sector

Source: SDG&E EE Program Data, 2013-2015

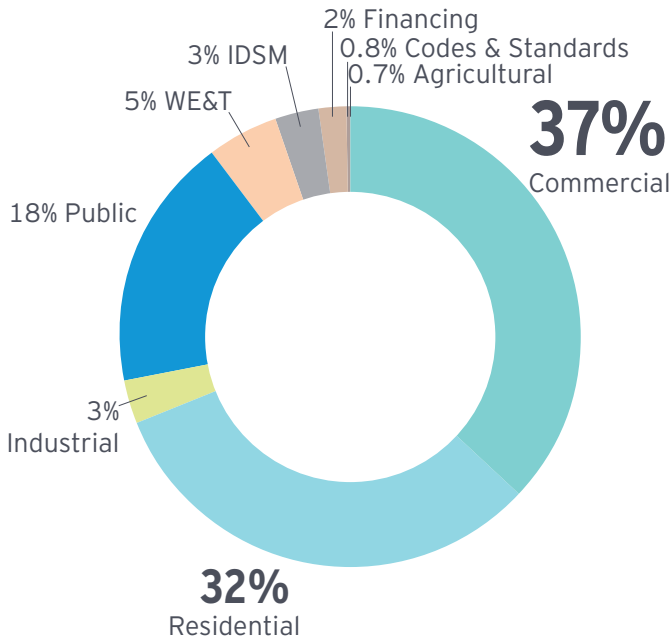
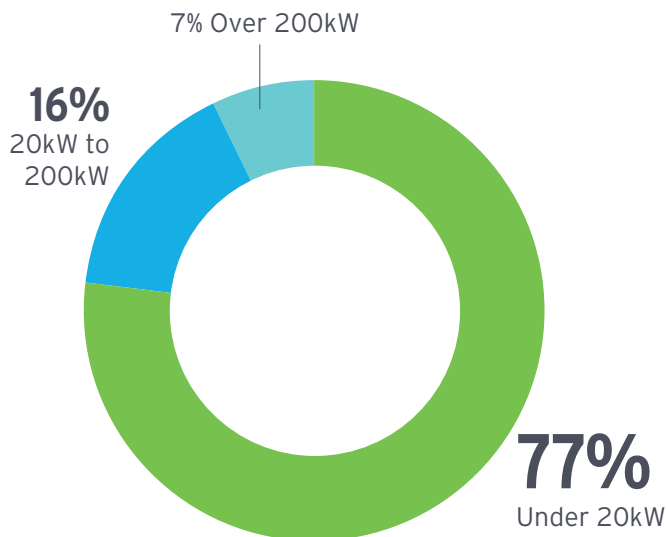


Figure 4.7 Public Sector Customer Size

Source: SDG&E EE Program Data, 2013-2015.



Market Segments

In addition to the unique characteristics of the public sector market as a whole, it is important to define and understand the makeup of the public sector in order to best meet their needs and to collaborate to achieve statewide goals. Market segmentation provides additional insights that can inform targeting, strategy, and program design. Utilizing the North American Industry Classification System (NAICS) designations, SDG&E has identified its public sector customers and has categorized them into four segments:

1) Local Government:

- City
- County
- Special District
- Solid Waste Facilities
- Hospitals
- Water/Wastewater
- Correctional facilities

2) State:

- State Buildings
- State Park Facilities
- Hospitals
- Correctional Facilities

3) Federal:

- Federal Buildings
- US Postal Service
- Hospitals
- Ports
- Military Bases
- Tribal Nations

4) Education

- K-12 Schools
- Schools
- Admin Buildings
- Higher Education
- UC/CSU
- Community Colleges
- Hospitals

SDG&E's public sector customers include entities across local government, state, federal, and education realms. Because this sector has never been broken out separately before, it is important to understand how it is unique from other sectors. **Figure 4.8** highlights some of the key characteristics of the public sector, and how they compare to commercial sector customers.

Figure 4.8 Typical Public Sector vs. Commercial Sector Comparisons

Public Sector Customer	Commercial Sector Customer
For public good	For profit
Risk averse	Calculated risk
Investments based on benefits to the public and available funds	Investment based on ROI and growth opportunities
Long approval process, often requiring council and/or board approvals	Approval typically granted when business case is proven
Complex funding mechanisms	Financial tools are easier to access
Reactive maintenance	Replace on business case
Tax-payer funded	Sales-based revenue generation
Subject to political support	Insulated from political changes
Influence customer behavior across sectors	Influence is typically limited to behavior within the customer's industry
Responsible for developing and enforcing code, policies and mandates	Responsible for complying with code

Figure 4.9 Public Sector Electricity Consumption by Customer Segment

Source: SDG&E EE Program Data, 2013-2015.

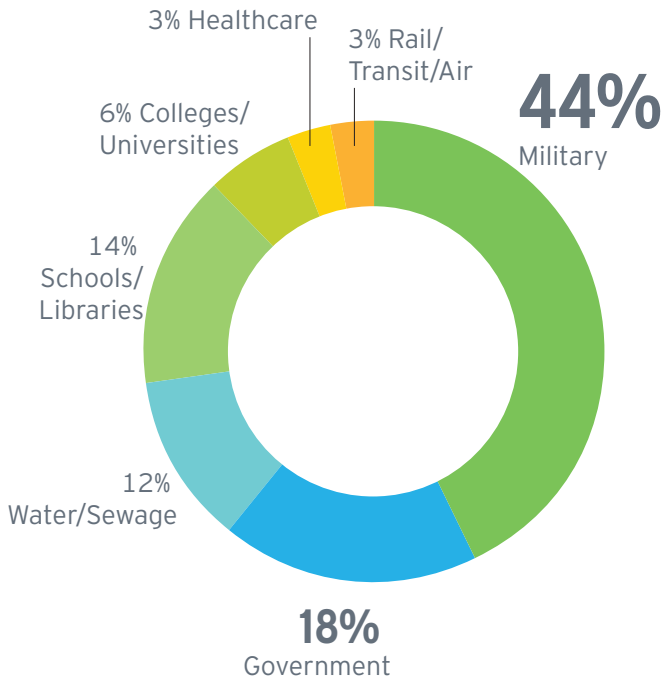


Figure 4.9 shows the diversity of SDG&E's public sector electricity consumption. Military, government, and water/sewage entities represent approximately three quarters of the public sector's electricity consumption.¹³

As depicted in **Figure 4.10** and **Figure 4.11**, government agencies tend to have a large number of accounts for their level of consumption, in contrast with the military's small number of accounts and higher consumption. This may indicate that government facilities are small (< 20 kW) and individually metered. The military's limited number of accounts suggests its facilities and campuses are master-metered.

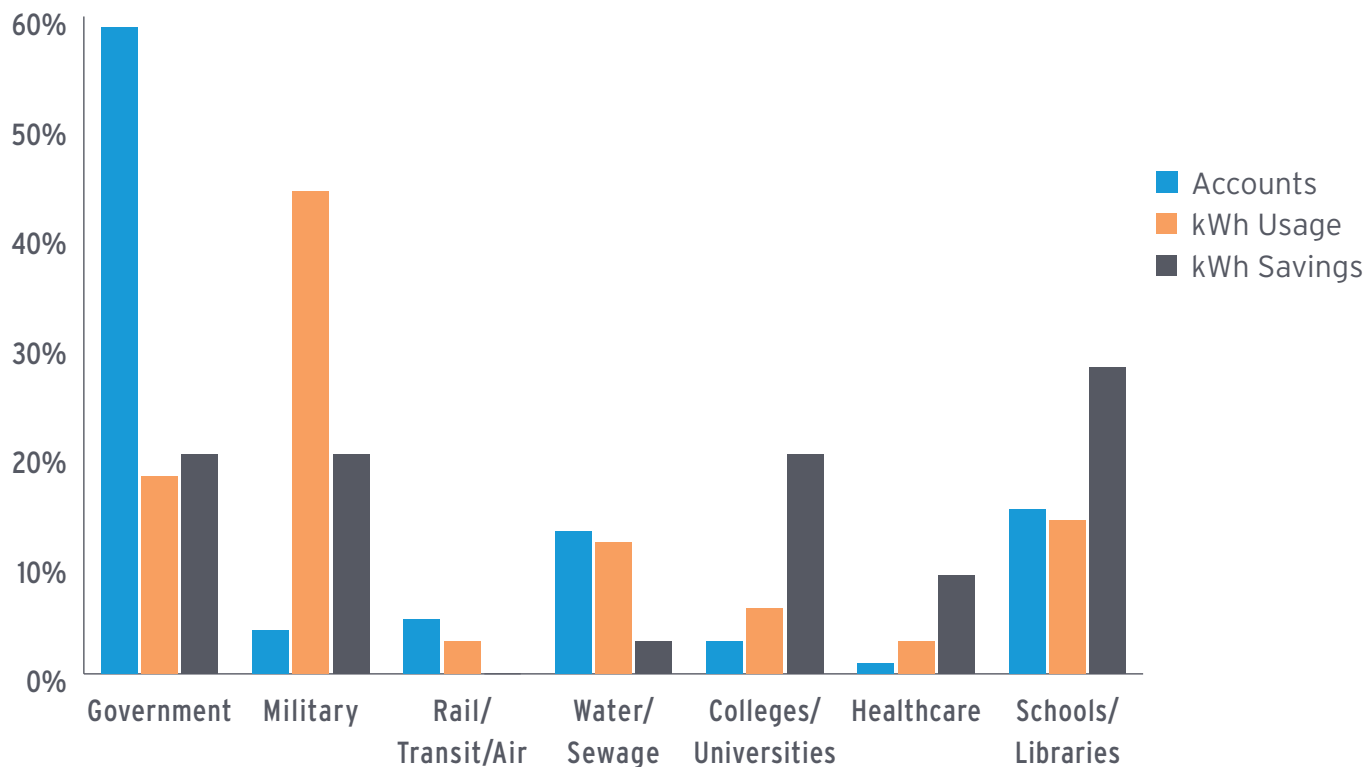
Figure 4.10 and **Figure 4.11** highlight the high electric and gas savings delivered by colleges/universities, healthcare, and schools/libraries when compared to usage. Electric and gas usage figures for colleges and universities are skewed due to cogeneration's large contribution at these facilities; electric usage in the figures do not reflect the electricity generated on site, and the gas usage figures represent traditional end-uses as well as cogeneration consumption.¹⁴

¹³SDG&E EE Program data, 2013-2015

¹⁴Cogen gas usage in the Colleges/Universities segment represents 80% of total gas consumption.

Figure 4.10 Electricity Consumption and Savings by Customer Segment

Source: SDG&E Program Data, 2013-2015.

**Figure 4.11** Gas Consumption and Savings by Customer Segment

Source: SDG&E Program Data, 2013-2015.

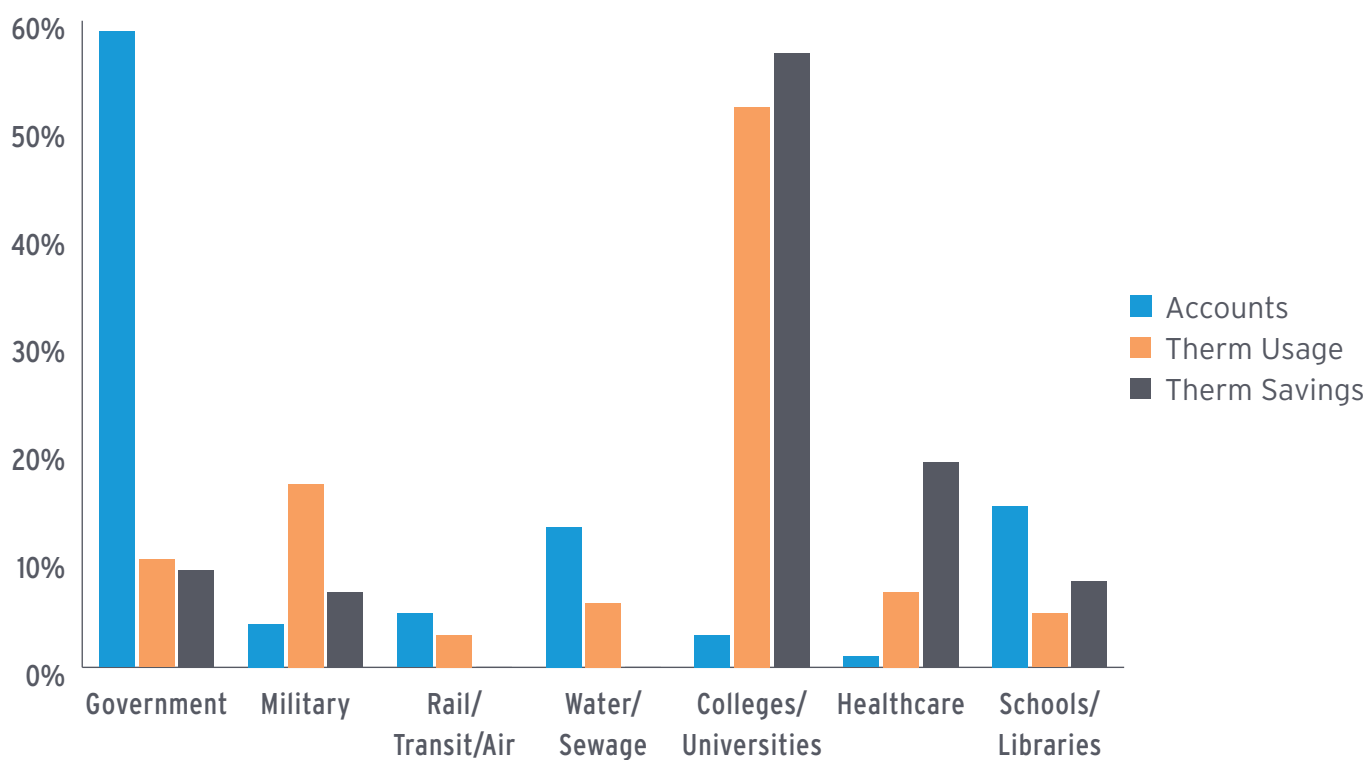


Figure 4.12 Historical Energy Efficiency Projects by Customer Segment (Electric)

Source: SDG&E Program Data, 2013-2015.

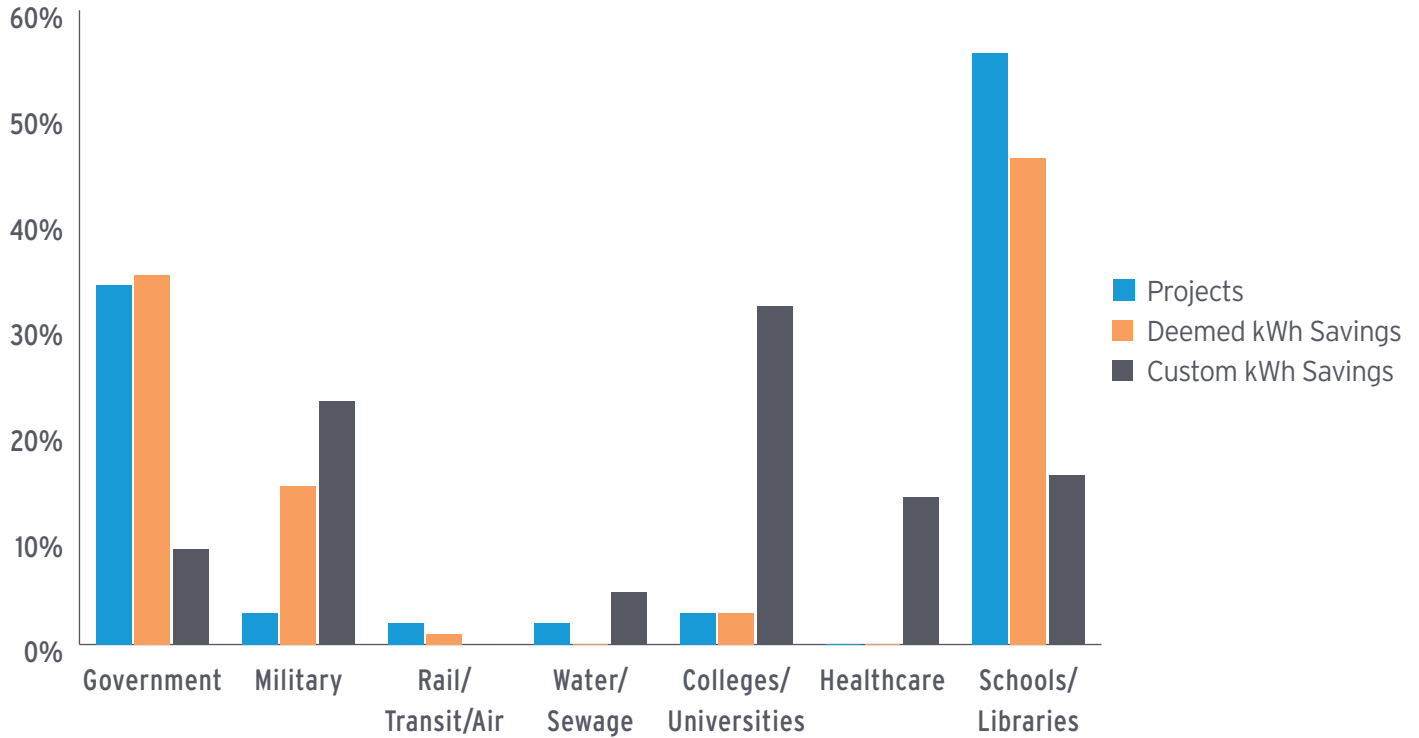


Figure 4.13 Historical Energy Efficiency Projects by Customer Segment (Gas)

Source: SDG&E Program Data, 2013-2015.

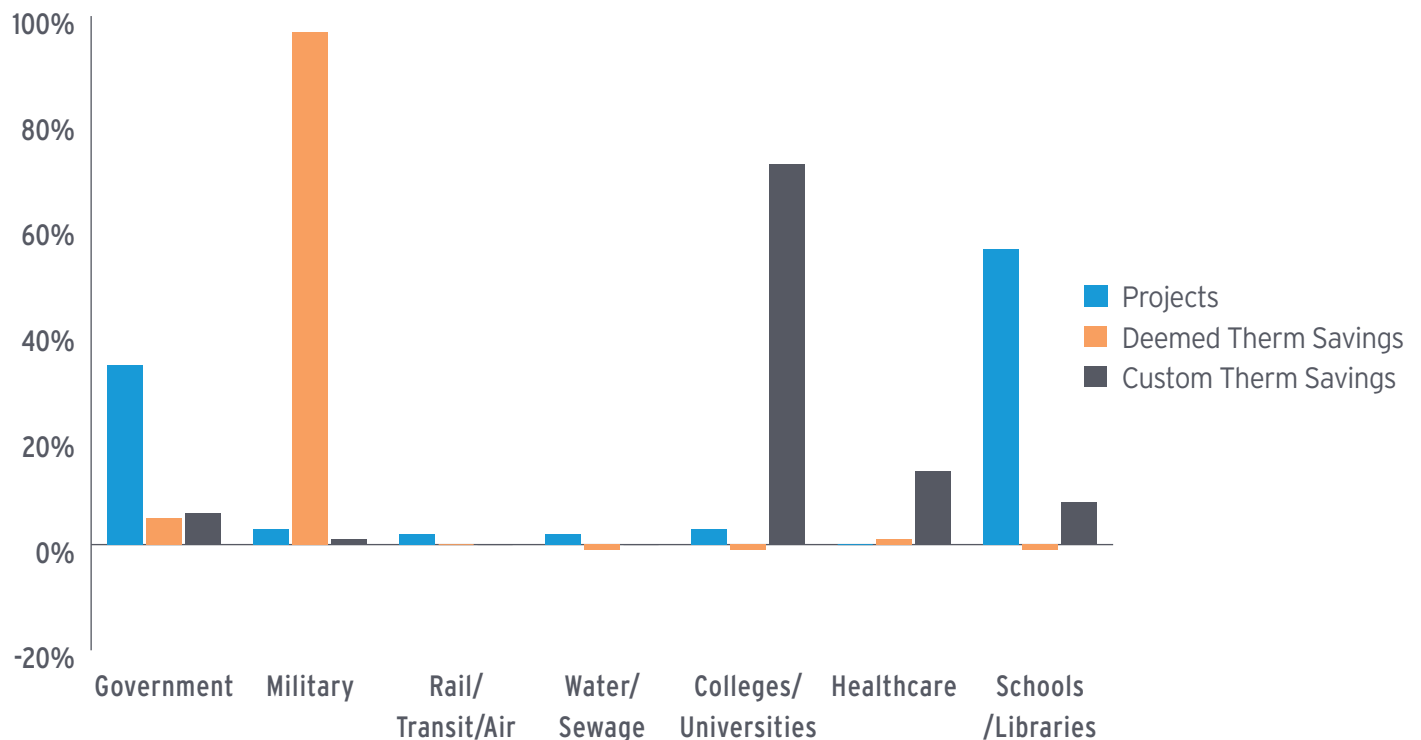


Figure 4.14 Electricity and Gas Consumption by End-Use

Source: 2015 Navigant Market Potential Study

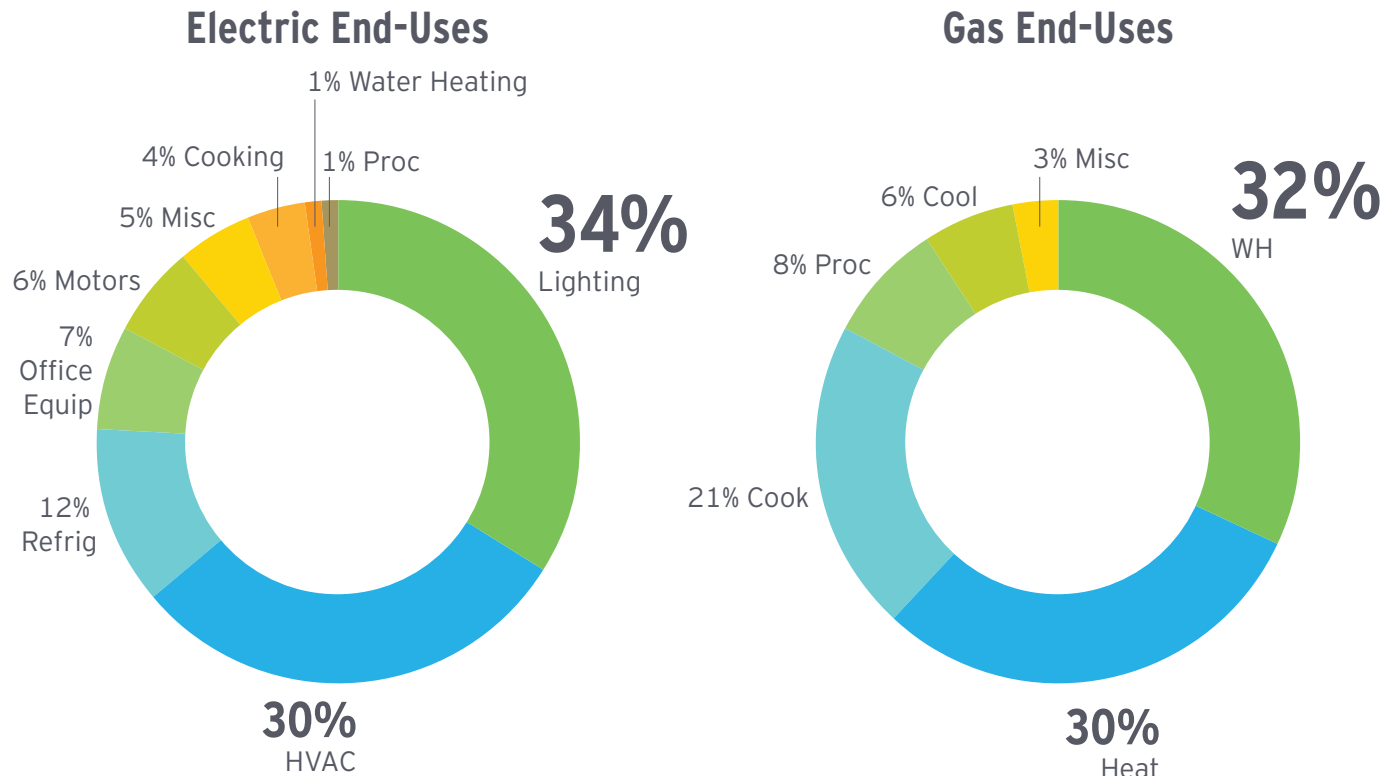


Figure 4.12 and **Figure 4.13** illustrate the energy efficiency program types (deemed versus custom) used by public sector customer segments for electric and gas measures. Government and School/Library customers rely primarily on deemed measures, while College/University and Healthcare customers rely most heavily on custom measures. This is indicative of the complexity of typical systems in each customer's buildings, and informs program design moving forward in that there is no "one size fits all" delivery mechanism for public sector customers.

Public Sector End-Uses

Public sector-specific studies on end-uses are not currently available. As such, the California Commercial End-Use Survey (CEUS) was used as the best available approximation for public end-uses.¹⁵ According to the CEUS, SDG&E's largest electric end-uses (based on consumption) in the commercial sector are lighting, HVAC, and refrigeration equipment, while the biggest gas end-uses are water-heating, heating, and cooking equipment.

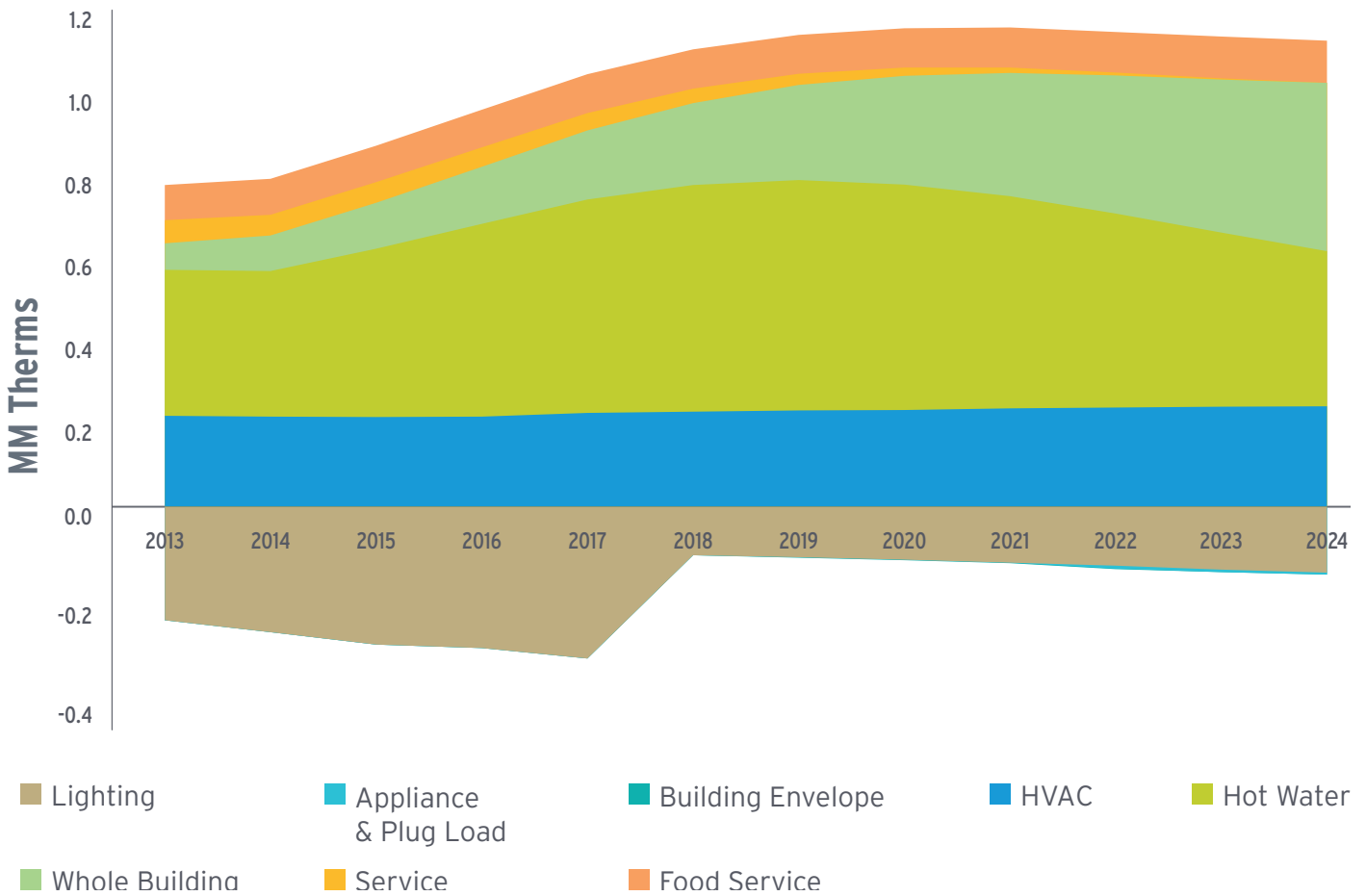
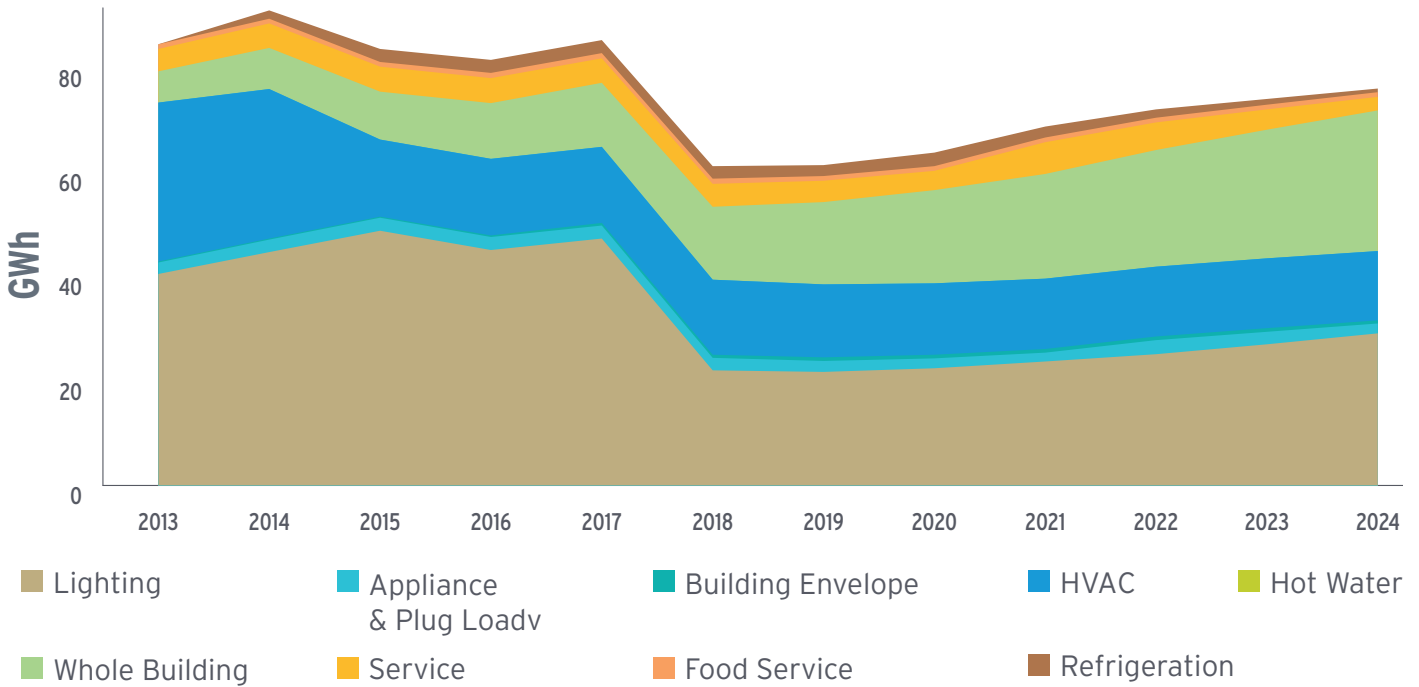
Figure 4.14 illustrates the end-uses for electricity and gas and serve as a more detailed breakout of the summary table for the top three end-uses by energy type.

¹⁵California Commercial End-Use Survey, 2006, <http://www.energy.ca.gov/2006publications/CEC-400-2006-005/CEC-400-2006-005.pdf>.

Figure 4.15 SDG&E Commercial Sector Market Potential

Source: 2015 Navigant Market Potential Study.

Note: These graphs exclude the impacts of behavioral, financing, and codes and standards advocacy programs.



Energy Efficiency Market Potential

The 2013 California Market Potential Study by Navigant provided data on energy efficiency market potential by utility, sector, and end-use (see **Figure 4.15**). Because a comparable study has never been conducted for the public sector, the commercial sector's potential study serves as the best available representation of public sector market potential at this time.

Based on the information presented for the commercial sector, of which public customers are a component, whole building and lighting measures will continue to be major areas of focus for energy efficiency program administrators in California. Once a potential study becomes available specifically for the public sector, a more detailed analysis will be possible.

Future Trends

In examining the public sector environment, some key trends have emerged to guide our strategic planning efforts over the next several years.

Program offerings will continue to evolve. Code changes that take effect in 2017 will increase efficiency standards, which may impact incentive levels across all sectors. Equipped with the knowledge that code changes are imminent, PAs can seize this opportunity to adapt and customize program offerings in order to better fit public sector needs.

Collaborative relationships will be critical to EE effectiveness. In an environment where resource constraints will remain and savings expectations will continue to climb, collaborative relationships are crucial to maximizing energy efficiency program performance. Through such strategies as the creation of revolving funds and collaborative marketing and outreach efforts, public entities can leverage their partnerships with SDG&E and each other to combine resources and implement more projects. By working together to develop the optimal level of collaboration for each partnership, SDG&E and its partners can mitigate many of the risks that public entities face over time.

The whole building approach will be a key component in the public sector program design.¹⁶ AB 802 authorizes the use of normalized metered energy consumption (NMEC) to determine energy savings, which supports the state's goal of driving deeper, more comprehensive energy retrofits. Integrating NMEC into program design will provide a means of capturing stranded, to-code energy savings by incentivizing building owners to bring their buildings up to and beyond code efficiency. As identified in the market potential figure above, this trend of increasing whole building savings potential is expected to continue over time, and individual metering will be a key component of this approach.

Lighting will continue to be the largest contributor to energy savings. Despite the code changes taking place in 2017, lighting will continue to serve as the most significant portion of energy savings. This high-savings status means that there are considerable opportunities that public entities may realize if they incorporate lighting measures into their energy efficiency projects.¹⁷

California Climate Action Plans (CAPs) and Energy Action Plans (EAPs) will continue to play a greater role in public sector decision making. Based on guidance at both the state and local levels, public entities are placing a larger emphasis on the importance of energy efficiency efforts. Because energy efficiency and sustainability practices are making their way into the core missions for these organizations, this shift in thinking presents an opportunity to advocate for increased progress in the energy efficiency realm. As CAPs and EAPs continue to provide guidance on energy efficiency policy and encourage the public sector to demonstrate leadership in energy efficiency and sustainability, the case for change will continue to grow stronger and opportunities to implement energy efficiency projects should increase. The adoption rate of alternative energy solutions is already increasing in the public sector, and this trend is expected to continue over time.

¹⁶Ibid.

¹⁷Ibid.

Legislative Drivers

Each chapter of the business plan discusses the ways recently adopted legislation and executive actions, specifically, Senate Bills (SB) 350, 32 and 1414, Assembly Bills (AB) 793, 758 and 802, and Executive Order B-18-12, help shape SDG&E's sector approaches. In particular, SB 350 calls for a doubling of energy efficiency savings during the term of this business plan. The CPUC has provided initial guidance implementing these directives and SDG&E and the other PAs will continue to work with the CPUC to determine the most efficient means of complying with the new legislative mandates. SDG&E believes that the strategies outlined in this chapter will complement these legislative requirements.

Generally, SDG&E developed the public sector goals and strategies to capture additional savings beyond those that existing program designs have been able to achieve. Specifically, in pursuit of higher levels of energy savings from the public sector, SDG&E will work with customers and third-party implementers to create programs tailored to the sector's unique needs and tie the efforts together with customer action plans. SDG&E will also assist public customers with their code compliance and reach code initiatives, both of which provide actionable ways for the sector to generate energy savings.

Public sector action plans will also enable customers to benefit from the benchmarking and existing conditions baselines provisions of AB 802. The action plans can be designed to meet individual customer needs and bundle the benefits from benchmarking, financing, and GHG inventories, to unlock projects that were not possible without an existing conditions baseline. **Figure 4.16** and **Figure 4.17** summarize these drivers and how the business plan is responding to them.

Figure 4.16 Legislative Policy Drivers

Policy Driver	Specific Requirement / Guidance	Business Plan Response
SB 350 – Clean Energy and Pollution Reduction Act of 2015	<ul style="list-style-type: none"> • Achieve a cumulative doubling of savings in electricity and gas retail customers' final end-uses by 1/1/30 • The CEC shall adopt a responsible contractor policy to ensure that ratepayer-funded EE retrofits meet high-quality performance standards and reduce energy savings lost or foregone due to poor-quality workmanship 	<ul style="list-style-type: none"> • SDG&E will develop and manage a collaboration platform that covers all public sector customers • Partner to provide the EE support that best matches the self-sufficiency level of each public entity • Create one-stop shop for Public customers • Increased incentives for high-performing customers • Assist municipalities with code compliance and provide tools to enable reach codes • WE&T programs will facilitate training on responsible contractor policies and ensure that any requirements applicable to SDG&E EE programs are incorporated as necessary
SB 32 - amendments to the California Global Warming Solutions Act of 2006	<ul style="list-style-type: none"> • Amends law to extend the carbon emission reduction goal to 40% below 1990 level by 2030 with local governments responsible for expanding the GHG emission reduction plans in their climate action plans 	<ul style="list-style-type: none"> • Will develop public sector customer action plans, tailored to the needs of individual customers - to include a concierge approach that bundles, among other services, benchmarking, financing, and GHG inventories and related services
SB 1414	<ul style="list-style-type: none"> • Bill directs the CEC to develop a system to track central heating and air cooling equipment sales and installations to verify compliance with permitting and other requirements 	<ul style="list-style-type: none"> • SDG&E will work with the CEC and other regulatory bodies to determine the best ways to support implementation of these provisions of law

Please see continuation of matrix on next page.

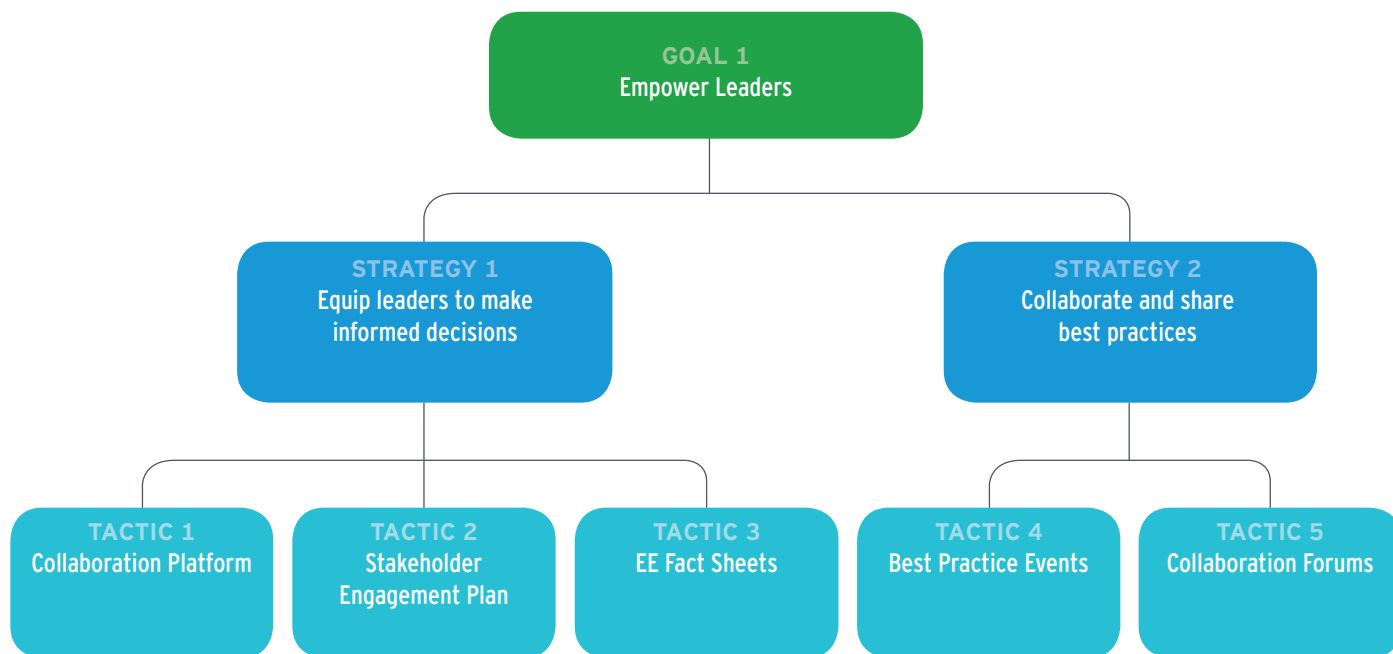
Figure 4.16 Legislative Policy Drivers *(continued)*

Policy Driver	Specific Requirement / Guidance	Business Plan Response
AB758 – Existing Buildings Energy Efficiency Action Plan	<ul style="list-style-type: none"> • Strategy 3.4.1 – Look for opportunities in specific building sectors ... where there is evidence of ZNE technical potential, current ZNE guidance, and available financing • Strategy 3.4.3 – Make financing widely available for ZNE retrofits 	<ul style="list-style-type: none"> • SDG&E will work with public customers to encourage participation in EE service offerings and programs—and to facilitate progress towards ZNE in their facilities, consistent with Executive Order B-18-12 • SDG&E will provide more financing opportunities and make financing programs easier to use. This will complement efforts to provide tools that facilitate pursuit of reach codes that assist with ZNE
AB 802 – Benchmarking and Changes to Energy Efficiency Baselines	<ul style="list-style-type: none"> • Benchmarking – By 1/1/17, for multi-unit buildings, utilities must provide aggregated energy usage data to its owner, its agent or the building operator. Commission will set requirements for public disclosure of information for benchmarking purposes • Baselines – Authorizes utilities to provide incentives to customers for energy efficiency projects based on normalized metered energy consumption as a measure of energy savings 	<ul style="list-style-type: none"> • Will develop Public Sector customer action plans, tailored to the needs of individual customers – to include a concierge approach that bundles, among other services, benchmarking, financing, and GHG inventories and related services • Leveraging opportunities afforded by AB 802, SDG&E will work with customers to unlock savings from inactive projects in existing buildings
AB 628 – Energy Management Plans for Harbor and Port Districts	<ul style="list-style-type: none"> • PUC shall encourage utilities to work with ports to develop, implement and administer energy management plans 	<ul style="list-style-type: none"> • Will work actively with the Port of San Diego to help the Port assess opportunities for and implement energy efficiency projects
Executive Order B-18-12	<ul style="list-style-type: none"> • Gov. Brown executive order directing state agencies to reduce grid-based energy purchases for state-owned buildings by at least 20% by 2018 • State-owned buildings must participate in demand response (DR) programs, use clean on-site power generation and use building commissioning processes 	<ul style="list-style-type: none"> • SDG&E will work with public customers to encourage participation in EE and DR service offerings and programs—and to facilitate progress towards ZNE in their facilities

Figure 4.17 CALTEESP Drivers

Policy Driver	Specific Requirement / Guidance	Business Plan Response
Section 12 – Goal 1: Local governments are leaders in adopting and implementing “reach” codes	Develop broad education program and peer-to-peer support to local governments to adopt and implement model “reach” codes and/or point of sale policies	Empower public customers to improve code compliance by establishing guidance on how to realize improvements and by communicating this information across all major stakeholder groups
Section 12 – Goal 2: Strong support from local governments for energy code compliance enforcement	Dramatically improve compliance with and enforcement of Title 24, including HVAC permitting and inspection requirements (including focus on peak load reductions in inland areas)	Will develop stakeholder engagement plans in order to better understand those customers’ needs and establish concrete actions to maintain strong relationships with them
Section 12 – Goal 3: Local governments lead by example with their own facilities and energy usage practices	Adopt specific goals for efficiency of local new and existing government buildings; Improve access to favorable financing terms that create positive cash flow from energy efficiency/DSM savings	<ul style="list-style-type: none"> • Will establish a collaboration platform covering all public sector customers—as well as those across other sectors • Help each type of public entity stand up its own revolving fund and establish alternative financing mechanisms
Section 12 – Goal 4: Local governments lead their communities with innovative programs for energy efficiency, sustainability, and climate change	Local governments commit to clean energy/climate change leadership; Statewide liaison to assist local governments in energy efficiency, sustainability, and climate change programs	Will continue to provide, and enhance, periodic energy efficiency fact sheets to highlight the energy efficiency progress made within a leader’s jurisdiction
Section 12 – Goal 4: Local Government Energy Efficiency Expertise	Create a menu of products, services, approved technologies and implementation channels to guide local governments; Develop model approaches to assist local governments participating in regional coordinated efforts for energy efficiency	Partner to provide the EE support that best matches the self-sufficiency level of each public entity

Figure 4.18 Public Goal 1 Strategies and Sample Tactics



Goals, Strategies, Tactics

In its role to encourage progress within the energy efficiency realm, SDG&E aims to provide effective and actionable EE support to its customers—and specifically to its public customers, in the context of this plan. Ultimately, SDG&E has been tasked with “maximizing cost-effective long-term savings.”¹⁸ The goals, strategies and tactics below lay out a roadmap for achieving these cost-effective savings and the goals established by the Long Term Energy Efficiency Strategic Plan.

Public Goal 1: Empower Leaders by Equipping Them with Knowledge and Tools to Make Informed EE Decisions

A critical component of building an innovative, connected, and sustainable energy future is the ability to identify the best way forward, implement initiatives that demonstrate success, share knowledge to empower key players, and collaborate with stakeholders to pursue effective energy efficiency solutions. The key driver for this goal is the need to demonstrate the value that energy efficiency offers to public entities and their stakeholders. Because there is a lack of universal understanding of energy efficiency benefits, it is challenging to garner widespread support for progress in the energy efficiency realm; this barrier hinders the enablement of energy efficiency projects and makes it challenging for public entities to demonstrate leadership in energy efficiency. Without universal acceptance of energy efficiency’s value, public organizations will struggle to maintain and/or develop energy efficiency staff bandwidth and expertise necessary to achieve the energy efficiency goals that have been mandated across

¹⁸Ibid.

California. By establishing a clear and consistent flow of information with key decision makers across the public sector, SDG&E aims to boost overall energy efficiency program participation, and shift the culture across the public sector to support progress toward key energy efficiency goals. **Figure 4.18** illustrates the relationships of strategies and sample tactics to this goal.

Strategy: Equip leaders with knowledge and tools to make informed decisions

As discussed in the Market Characterization section of this plan, public entities are in a unique position to influence constituent behavior across all sectors. Public organizations can serve as trail blazers that demonstrate how to make substantive progress in the energy efficiency realm, and some can establish regulatory requirements and policies that call constituents to action and incentivize behaviors that contribute to energy efficiency goals. Such attributes place public customers in the position to both lead and influence the energy efficiency environment across multiple sectors. SDG&E will use this rich set of communication channels and the experience of its public sector staff to demonstrate the value of energy efficiency to key decision makers at public organizations.

By helping public sector leaders to understand which energy efficiency options are available to them and how to go about implementing those options, SDG&E can empower these leaders to make informed decisions that maximize energy efficiency savings and facilitate progress toward energy efficiency goals.

For instance, a tailored approach to informing decision makers of the benefits of proactive maintenance and equipment replacement will help to transform the current culture and challenges associated with reactive maintenance. This approach of informing key decision makers would yield improvements in quality and reliability across all upgraded facilities.

This knowledge sharing strategy ties SDG&E audits performed to implementation decisions made by public sector leaders. Because audits serve to identify the best-fit approach for

an organization to realize energy efficiency savings, the outputs from audits translate into strategic actions that offer the most value to that organization. By tracking and managing public sector stakeholders' responses to SDG&E-funded audits, this strategy directly ties EE knowledge sharing to results.

Additionally, benchmarking services equip SDG&E and public sector leaders with the information necessary to prioritize facilities in need of energy efficiency retrofits, and allows for ongoing management of building performance.

Sample Tactics

In support of this strategy, SDG&E may consider the following sample tactics:

- To effectively capture and manage customer progress, SDG&E will develop and manage a collaboration platform that covers all public sector customers—as well as those across other sectors. This tactic is addressed in more detail in Goal 2.
- SDG&E will develop stakeholder engagement plans in order to better understand those customers' needs and establish concrete actions to maintain strong relationships with them.
- SDG&E will continue to provide, and enhance, periodic energy efficiency fact sheets to highlight the energy efficiency progress made within a leader's jurisdiction. These fact sheets arm local, state and national leaders with information to help promote the benefits of EE and the accomplishments of their jurisdiction.

Strategy: Collaborate and share best practices with key players

The Market Characterization section in this document discusses the barriers public entities face throughout the energy efficiency project life cycle. These challenges can be mitigated by collaborating with players across the energy efficiency and public communities in order to identify and adopt best practices that will ease the process to shepherding energy efficiency projects through their life cycles. Best practices are actions that stakeholders can take to maximize their EE savings and/or incentives; such best practices are usually tied to available technology and those actions that are widely accepted as most effective by industry standards. Sharing best practices not only increases awareness, but also informs partners and stakeholders about how to implement those practices to achieve energy efficiency goals.

By putting forward recommendations that are aligned to accepted best practices (such as whole building approach and progress toward ZNE), public sector projects can present a stronger case for implementing these measures and enhance any available opportunity to receive energy efficiency funding in order to complete these projects. Additionally, collaboration and information sharing serve to further customer and community understanding of the energy efficiency value proposition, thus engage the right individuals to garner support for energy efficiency and achieve substantive change. Lastly, this collaboration and information sharing results in cost savings, as similar efforts are not duplicated unnecessarily.

Sample Tactics

In support of this strategy, SDG&E may consider the following sample tactics:

- Through participation in best practices events and conferences, SDG&E can more effectively connect public sector leaders to best practices experts, information, and tools.
- SDG&E will foster the following public sector collaborations:
 - San Diego Regional Climate Collaborative, San Diego Association of Government’s Energy Working Group, San Diego Regional Energy Partnership, sub-regional energy action collaboratives (North Coast Employer Advisory Council, South Bay Energy Action Collaborative, etc.);
 - Statewide Institutional Partnerships, including the California Community Colleges, University of California/California State University, State of California, and the California Department of Corrections partnerships;
 - Statewide Best Practices Coordinator, Statewide Energy Efficiency Collaborative, inter-regional collaboration with Program Administrators;
 - CPUC Energy Division, California Energy Commission;
 - Southern California Tribal Chairmen’s Association, K-12 Schools Sustainability Strategy Collaborative.

Figure 4.19 Public Goal 2 Strategies and Sample Tactics

Public Goal 2: Eliminate Barriers to Public Sector Participation by Developing Tailored Solutions and Financing Options

The Market Characterization section in this document describes the various challenges that public entities face in performing energy efficiency activities. From securing funding and approvals for projects to implementing measures and collecting incentives, public customers must navigate energy efficiency programs that may not fully meet their unique needs. Because of these barriers, it is difficult for public entities to make quick and significant progress toward energy efficiency mandates.

This goal focuses on how SDG&E will work with public customers to encourage participation in energy efficiency service offerings and programs—and to facilitate progress towards ZNE in their

facilities.¹⁹ These strategies are designed to alleviate the burden on our public customers—and to maximize the benefits and support to stakeholders across the public sector. **Figure 4.19** illustrates the relationships of strategies and sample tactics to this goal.

Strategy: Tailor offerings to meet the unique needs of public customers

As discussed, the public sector has unique customers with their own programmatic needs. In order to meet these needs, SDG&E intends to tailor its public sector offerings to meet these customers distinct needs. In tailoring public sector programs, it is critical to develop offerings that align with the timing of public sector projects. Timelines for public sector projects are typically longer than projects in other sectors because of approval gates, extended governance requirements, and releases of incremental funding throughout the project. Therefore, it is crucial to build flexibility around timing into

¹⁹All new State of California buildings and major renovations beginning design after 2025 must be constructed as Zero Net Energy facilities. Executive Order B-18-12. <https://www.gov.ca.gov/news.php?id=17508>.

SDG&E's public sector offerings. As a result, energy efficiency offerings must be tailored to support a wider spectrum of project timing needs in order to maximize public sector energy savings. Specific tactics, described in more detail below, that will help to operationalize this strategy include utilizing the Comprehensive Audit Program, creating a unique set of Equipment Useful Lives for the public sector, and creating a public sector OBF offering.

Sample Tactics

In support of this strategy, SDG&E may consider the following sample tactics:

- Utilize SDG&E's Comprehensive Audit Program to streamline the path from measure identification, to savings calculations, to implementation of public sector EE projects.
- Develop and create a set of unique effective useful life (EUL) values for public sector buildings. Feedback from SDG&E customers across various public sector sub-segments indicates that current Database for Energy Efficient Resources (DEER) EUL values are not representative of real-world public sector equipment lives.

Strategy: Develop a public sector customer action plan to facilitate participation

SDG&E recognizes that the public customer focus goes beyond just energy efficiency, and that it is necessary to understand the customer's complete set of priorities in order to help them integrate energy efficiency as a core component. Thus, it is critical to employ a tailored approach for each public customer type—and to determine the appropriate degree of customization for an approach based on the public customer's readiness and level of involvement.

In order to achieve the Governor's ZNE goals, SDG&E must incorporate energy efficiency as a key component of a public sector customer's strategic direction. This "concierge approach" bundles all the relevant energy components, including the following:

- Benchmarking;
- Rates and usage;

- IDSM;
- Behavioral;
- GHG inventories and related services;
- Rebates/incentives;
- Financing; and
- Implementation.

To implement this approach, SDG&E will implement a user-friendly cross-sector online platform that guides customers, including those in the public sector, through those energy efficiency offerings that best match the needs of that organization. The platform will facilitate creating an action plan for sector customers that streamlines the participation process and integrates program offerings to improve the EE experience for all customers. With a solution that also serves as a collaboration platform, SDG&E and its customers can view EE information, track and manage performance, and follow program applications and participation through a straightforward and transparent process. Further, this collaboration platform may be used as a means of connecting implementers to customers, and potentially as a bidding platform, to facilitate participation and drive EE savings. More detail about the online platform is included in the commercial chapter.

Sample Tactics

In support of this strategy, SDG&E may consider the following sample tactics:

- Partnership assistance. Partnerships—both formal and informal—are designed to create dynamic, collaborative working relationships between IOUs, state or local governments, and agencies or educational institutions. From a partnerships perspective, SDG&E aims to provide the energy efficiency support that best matches the capacity of each public entity. The following are some key activities that are slated to support this objective:
 - Provide more robust services to non-partnered entities. Because many non-partnered entities (informal partners) hold the potential to yield significant energy savings given the appropriate level of assistance, SDG&E will boost its support to

these players. By providing some support to those entities who can commit to energy efficiency savings goals but are not ready to pursue full/formal partnerships, SDG&E can encourage incremental progress toward savings goals through alternatives to a traditional partnership agreement. Currently, SDG&E provides this support to local governments through its Emerging Cities and SANDAG Energy Roadmap programs, but the aim is to expand this support beyond local governments to all qualifying public entities (institutions, rural and disadvantaged communities, special districts, water districts, tribal nations, federal agencies, etc.). It is important to note that SDG&E will engage with rural, hard to reach communities, as well as disadvantaged or underserved communities (which may include portions of a larger city within SDG&E's territory); this aspect of the strategy is especially beneficial to smaller partners and may yield significant progress toward EE goals in the long term.

- Rollout SDG&E whole building approach. The whole building, meter-based approach to energy efficiency emphasizes comprehensive retrofits and is in line with California's Big Bold Energy Efficiency Strategies to reach ZNE in residential and commercial buildings.²⁰ Specifically, SDG&E will introduce its whole building approach through the following sequence:
 - Whole building guidance development. SDG&E will develop guidance that helps decision makers determine the optimal combination of upgrades and/or retrofits for specific building types. Public entities can then use and share this guidance both internally (to implement whole building projects for public sector facilities) and externally (to educate constituents and customers on whole building measures that can be taken across all sectors).
 - Whole building program for public sector. SDG&E will leverage its internal whole building expertise, together with the information

that external entities gather from their own successful whole building efforts. An important component of this whole building, meter-based approach is monitoring-based commissioning,²¹ which has been successfully implemented by SDG&E's higher education customers for a number of years. Using this value combination of information and expertise, SDG&E can develop a whole building program for its public sector customers.

Strategy: Equip public customers with the tools they need to succeed in Climate Action Planning

A key distinction of public agencies is how these organizations have been charged with developing Climate Action Plans and Energy Action Plans, and how these plans will continue to play a greater role in public sector decision making as pressure to meet set EE goals increases²². Thus, SDG&E will work with public entities to assist them in establishing, tracking, and achieving their EE climate and energy goals. SDG&E already provides significant support to its public sector customers as they work to develop and implement the energy efficiency portions of their climate action plans (including funding for EE-specific climate studies and GHG inventories). SDG&E will also continue to provide assistance beyond energy efficiency, drawing on expertise from its Clean Transportation, Advanced Technology, Electric & Fuel Procurement, and Vegetation Management teams.

Since many of the climate and energy goals are tied to reach codes, SDG&E will work collaboratively with public customers in developing tailored approaches to meet or exceed these codes over time. Specifically, SDG&E will

²⁰California Energy Efficiency Strategic Plan, CPUC, January 2011, p. 6. <http://www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=5303>.

²¹"One Lawrence Berkeley National Laboratory (LBNL) study found an average annual energy savings of 10 percent with buildings subject to MBCx; most measures implemented in that study also yielded a payback period of less than two years." <https://www.esource.com/TAS-RB-112/MBCx-Savings>.

²²"Climate action plans are comprehensive roadmaps that outline the specific activities that an agency will undertake to reduce greenhouse gas emissions." Institute for Local Government, <http://www.ca-ilg.org/climate-action-plans>. Municipalities create Energy Action Plans to shape their long-term energy efficiency activities, achieve greenhouse gas emissions reductions, and implement the Local Government chapter of the CALTEESP.

continue to provide technical support to public entities, and will work with its public sector customers to identify and pursue other resources to further their progress toward CAP and EAP EE goals. SDG&E will also continue to work with public customers to provide them with all available data²³ in order to meet their needs and to encourage informed decision making.

Sample Tactics

In support of this strategy, SDG&E may consider the following sample tactics:

- Explore increased incentives for high performers. For public sector projects and programs that exceed performance expectations, SDG&E will offer higher incentives. In order to establish this practice, SDG&E will develop guidance in collaboration with high performing stakeholders that establishes clear criteria for high performance (i.e., projects and programs that are cost effective, high impact, comprehensive, or exceed expectations for energy savings).
- Develop an offering that serves as a one-stop shop for public customers. While this offering would be reminiscent of the Business Energy Solutions program on the commercial side,²⁴ its public sector focus would take into account the unique considerations specific to public customers (such as approval processes and timing, procurement requirements, etc.).
- Provide robust CAP support services, including: GHG emission inventories and data sharing.²⁵

²³SDG&E will provide all available data that complies with legal privacy requirements, CPUC directives, or any other regulatory directives.

²⁴<http://www.sdge.com/business/sdges-business-energy-solutions-program>.

²⁵SDG&E will provide all available data that complies with legal privacy requirements, CPUC directives, or any other regulatory directives.

Strategy: Enable EE projects through financial solutions

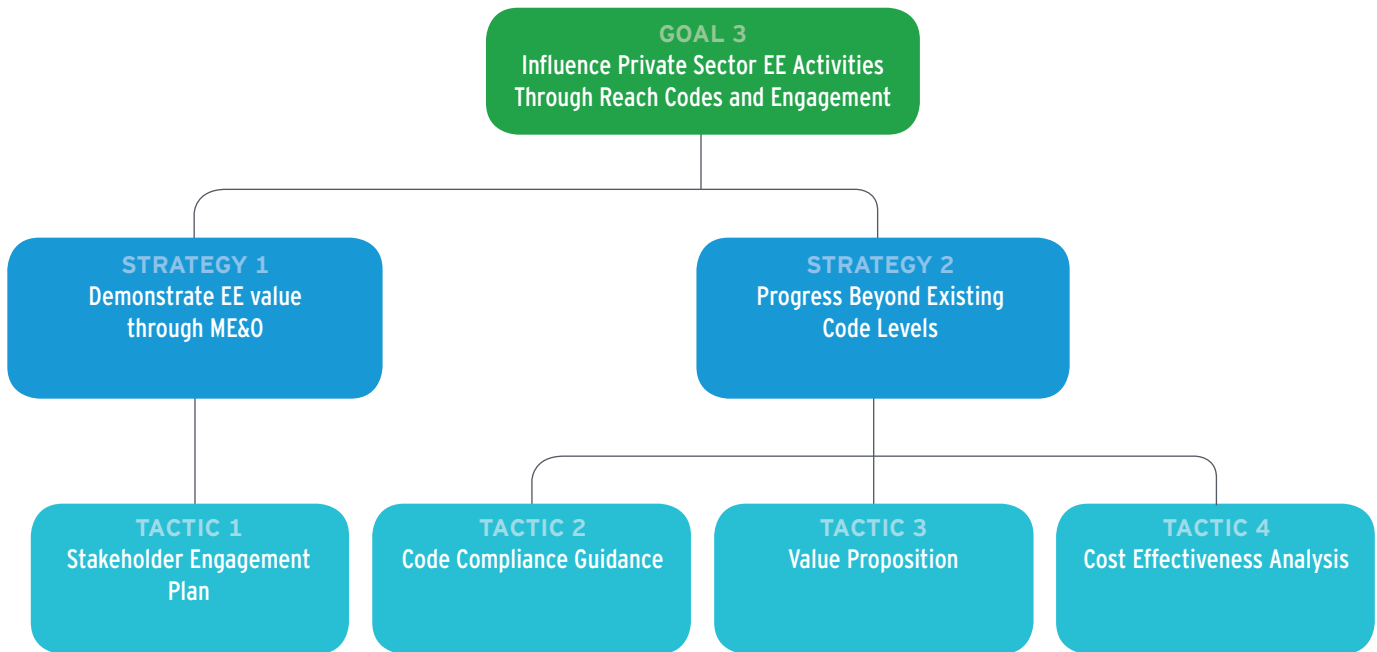
In order to mitigate some of the funding and procurement challenges described in the Market Characterization section, SDG&E will modify existing and develop new financial solutions that are specific to public sector entities. These financial solutions will be designed to address the major challenges that public customers face, and to facilitate the completion of energy efficiency projects across public entities.

Sample Tactics

In support of this strategy, SDG&E may consider the following sample tactics:

- **Public sector OBF offering.** SDG&E will pursue modifications to its existing OBF program rules to enable larger, more comprehensive projects to be funded. Examples of these modifications include increasing the maximum simple payback and increasing the loan limit per meter.
- **EE funding solutions.** A revolving energy efficiency fund ensures the cost savings of one energy efficiency project can be rolled into the next, and removes barriers to future project implementation, such as competition for funding. SDG&E will develop a series of ready-to-use options designed to help each type of public entity create its own revolving fund—or similar funding solution. Once the ready-to-use processes are established, SDG&E can provide comprehensive support for the creation of one revolving fund for each interested public customer. This support may include the following:
 - **Identify successful process.** Educate public customers on the University of California's, or the City of San Diego's successful creation of dedicated funding sources for energy efficiency and/or sustainability projects—and any other revolving funds that occur over time.
 - **Customize process to meet specific organization's needs.** Work with each interested public entity to develop customized process steps that must be taken to meet that customer's requirements for revolving fund standup.

Figure 4.20 Public Goal 3 Strategies and Sample Tactics



– **Support stakeholder effort.** Engage stakeholders to facilitate the creation and use of revolving funds in the EE arena, and to garner support for these efforts.

- **Alternative project financing solutions** may include:
 - The California Infrastructure & Economic Development Bank’s SWEEP, ISFR, and CLEEN programs²⁶
 - Statewide IOU finance pilot programs (i.e. On-Bill Repayment)
 - Private lenders

Public Goal 3: Influence Private Sector EE Activities Through Reach Codes and Engagement

SDG&E recognizes that public entities make decisions that impact customers across all sectors. Not only do public entities offer information and guidance to their customers, but they also hold the authority to mandate activities in support of energy efficiency progress. Most notably—and in alignment with the Big Bold Energy Efficiency Strategies in the California Long Term Energy Efficiency Strategic Plan—public entities support progress toward the statewide goal of all residential new construction being ZNE by 2020, and all commercial new construction being ZNE by 2030. Such mandates can have broad reach and will influence the progress that private sector customers make toward energy efficiency goals. This unique perspective opens the opportunity for the public sector to drive awareness and reach wide-ranging audiences to demonstrate the value of energy efficiency. Because public entities serve as trusted sources of information for their constituents and have robust communication channels in place, they

²⁶<http://www.ibank.ca.gov>.

can use these channels to drive substantive and necessary change. Additionally (and unlike organizations in other sectors), public entities can offer valuable incentives to encourage a shift in constituent behavior.

With this perspective in mind, SDG&E will work together with key players in the public sector in striving to achieve an innovative, connected, and sustainable energy future. Our strategies to boost private sector participation emphasize innovative, customer-specific actions that are most effective in generating results and maximizing energy savings across multiple sectors. **Figure 4.20** illustrates the relationships of strategies and sample tactics to this goal.

Strategy: Demonstrate EE value through enhanced Marketing, Education & Outreach

The public sector plays an important role in influencing energy attitudes and actions across customer classes in SDG&E's territory. Through collaboration with its public sector customers, SDG&E can quickly and effectively reach a large audience in order to inform stakeholders about the value that energy efficiency offers to them, their organizations, and their communities. Aided by the support of SDG&E's marketing, education, & outreach (ME&O) teams, SDG&E will work closely with each type of public customers to develop and manage the best stakeholder engagement ME&O approach.

Sample Tactics

SDG&E proposes to develop a stakeholder engagement plan for each type of public entity that will cover the products that SDG&E will commit to developing, as well as the activities/events that SDG&E will commit to supporting. The plan will also specify time frames surrounding all products and activities that will be developed and/or performed. These plans will determine the most effective means to (1) disseminate actionable guidance throughout their jurisdictions, (2) engage key players, and (3) maintain an open dialogue between SDG&E and its public customers and stakeholders.

Strategy: Encourage progress beyond existing code levels

SDG&E understands the challenges associated with conventional reach code adoption:

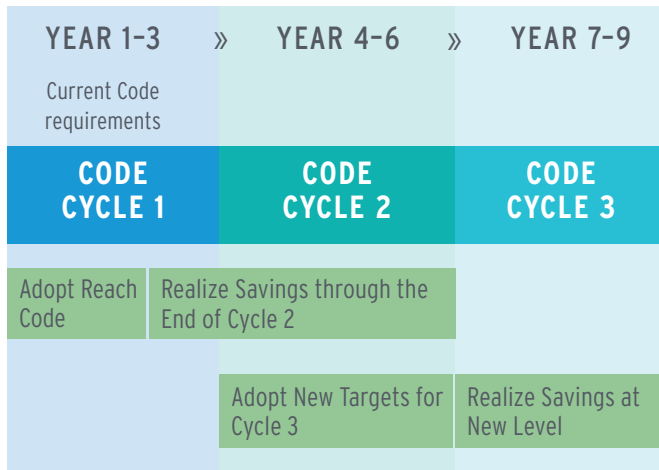
- Local governments are faced with lengthy approval processes that extend the timeline for reach code standup, while the time frames to collect incentives from energy savings continue to shrink.
- The all-or-nothing approach to mandating rigid requirements (i.e., adoption of formal reach codes) does not incentivize incremental progress (i.e., savings above code but below reach code levels).
- The lack of a clear and consistent value proposition for reach codes has resulted in concerns that the adoption of reach codes may slow economic progress.²⁷

Given the above challenges, it is critical that SDG&E works with local governments and key stakeholders to provide a variety of options that empower public entities to take those steps that are realistic for them in support of long-term ZNE goals. Depending on how aggressively a local government chooses to push for progress toward ZNE, SDG&E will provide two sets of options within this strategy:

- For local governments that want to encourage incremental progress, SDG&E will equip local governments with the information required to implement policies and take actions that **move beyond existing code**. Rather than presenting strict reach code adoption as the only way forward, SDG&E will work closely with local governments to offer a set of scalable options that allow for varying degrees of progress. For example, governments can set percentage targets above existing code, which would provide flexibility in how constituents achieve beyond-code targets.

²⁷Businesses have voiced concerns over increased code requirements, thus signifying the importance of demonstrating the value of above-code progress to all involved stakeholders.

Figure 4.21 Adoption and Savings Cycles for “Super Reach Codes”



- In addition to encouraging incremental progress, SDG&E will collaborate with local governments to **facilitate creation of “super reach codes”** to mitigate timing risks and maximize savings realized. Rather than fighting the clock in order to adopt reach codes that will only be valid for the remainder of the Title 24 code cycle, SDG&E will work with local governments to anticipate mandated code shifts that would fall two code cycles ahead (i.e., six years into the future). This way, local governments can establish reach codes that would yield savings beyond the code cycle that immediately follows the current year, and impacted stakeholders can take advantage of longer time frames to claim savings.²⁸

Figure 4.21 shows the adoption and savings cycles for super reach codes.

For both paths, SDG&E will work with local governments to communicate a clear and consistent value proposition for progress toward ZNE. By helping public customers and their communities to understand the value of energy efficiency, SDG&E and the public sector will establish the foundation for increased knowledge and support for energy efficiency. Specifically, SDG&E will develop messaging that clearly defines the need for reach codes, as well as their benefits

to impacted stakeholders. This value proposition will be communicated to local governments and concerned stakeholders in order to facilitate a dialogue on the importance of making progress toward ZNE—and employing reach codes as a tool to achieve these overarching goals.

Sample Tactics

In support of this strategy, SDG&E may consider the following sample tactics:

- Empower public customers to improve **code compliance** by establishing **guidance** on how to realize improvements and by communicating this information across all major stakeholder groups.
- SDG&E will develop and communicate a **clear and consistent value proposition** for reach codes, backed by concrete data from technical studies.
- Perform **Cost-Effectiveness analyses** to assess the viability of pursuing reach codes for specific measures.

From a timing perspective, SDG&E’s short-term efforts will focus on assessing and optimizing its existing programs and services in order to maximize the value to its public sector customers—and to prepare for the rollout of new initiatives that will address the unique challenges that public entities currently face. The efforts that follow—in the medium and long term—will focus on implementing new strategies and tactics while maintaining effective and efficient energy efficiency program operations. This approach optimizes existing resources to maintain quality and reliability in SDG&E’s current performance, while dedicating a combination of available and new resources to the standup of new initiatives.

Figure 4.22 provides a proposed timeline for the public sector sample tactics.

²⁸This path is only possible for technologies available at the time of “Super Reach Code” adoption, as technologies mandated two code cycles in the future may not be widely available.

Figure 4.22 Timeline for SDG&E’s Public Sector Sample Tactics (across 10 years)

1	2	3	4	5	6	7	8	9	10
EE fact sheets	Stakeholder engagement plans			Collaboration platform		GOAL 1 TACTICS			
Facilitate best practice sharing									
Comprehensive Audit Program		Unique EUL values	GOAL 2 TACTICS						
Increase incentives for high performers		Whole building approach		One-Stop-Shop offering for public customers					
Robust Climate Action Planning support services		Partner to provide best-fit EE support							
Public sector OBF offering	Alternative project financing solutions	Revolving fund standup support for each type of public entity							
Engagement plan	CE Analysis	Code compliance guidance		Value proposition for reach codes		GOAL 3 TACTICS			
ALL: Continuous improvement of existing programs, services, and coordination									

PA/Program Coordination

Local Government Partnership Statewide Consistency

Over the last 10 years, California’s four IOUs have closely collaborated with local partners to make Local Government Partnership (LGP) programs operate more effectively and efficiently for customers and the communities served. This includes making program offerings, where possible, more consistent across the state. There have been several LGP activities that have aligned statewide over the past several years including the statewide CA Long-term Energy Efficiency Strategic Plan (CALTEESP) menu, the streamlined statewide Strategic Plan Semi-Annual Reporting template, and LGP performance management metrics. Other activities have

aligned across multiple IOUs and are on their way to become consistent statewide, such as expanded direct install program offerings, and a move to regionalize partnerships.²⁹ The IOUs, however, realize that there is still much room for improvement. In the short-term, the IOUs will work closely with local partners to drive toward greater consistency across the state, while allowing partners to retain their ability to tailor programs to their local needs.

One opportunity for improving consistency across IOUs is to adopt best practices. SDG&E and the other IOUs are considering adopting a model similar to Southern California Edison’s (SCE) tiered Energy Leader model. In addition to aligning programs and adopting best practices,

²⁹Partnership regionalization does not apply to SDG&E.

IOUs are considering other strategies to improve the consistency of LGP administration across multi-IOU LGPs, such as developing consistent reporting requirements, and offering similar contract terms and duration.

The IOUs are also working on aligning statewide across Strategic Plan activities. Currently, there is a statewide menu for Strategic Plan Activities as well as a statewide template for Strategic Plan Semi-Annual Reporting. Going forward, the IOUs will look to SCE's new Strategic Plan model for opportunities to be more consistent statewide.

Supporting local governments' access to non-EE funding sources provides another opportunity for statewide consistency. The IOUs would work with the Statewide Best Practices Coordinator or another third party entity to identify and promote alternative funding sources (both internal and external to IOUs). These sources could be used to strengthen and supplement the work that local governments are already pursuing (e.g., providing broader GHG reduction funding). Funding opportunities could be documented and managed in a database that will be made available to all local governments statewide. In addition, IOUs will explore leveraging LGP resources such as the SEEC Forum and All Partner meetings to provide information and support for alternative funding opportunities (such as Cap and Trade Funding, CEC Grants, Federal Grants, etc.).

As Core programs move to statewide implementation, IOUs anticipate that LGPs will benefit from these changes as partnerships actively leverage these Core programs statewide, such as Commercial HVAC, Savings by Design, Primary Lighting, and Emerging Technology. In support of continuous improvement of statewide consistency, the IOUs will utilize the CAEECC Public Sector Sub-committee on an on-going basis to discuss opportunities to improve program administration, share best practices, and provide a venue to determine whether a given solution should be adopted across the state. Other future opportunities for greater statewide consistency include contracting, Core program coordination, and transitioning partnerships to an IDSM focus.

The ultimate goal of EE market transformation programs is to drive the market to a point where the adoption of all cost-effective energy efficiency is a standard practice. To that end, over the coming years the IOUs will work with key stakeholders to develop a long term transformational partnership model that drives partners to become self-sustaining leaders in energy efficiency. Some potential ideas may include adopting energy efficiency revolving funds, encouraging a self-funding model for energy managers, and leveraging other sources of funding. These are a few of the potential options that would be considered by IOUs and stakeholders throughout the state in the development of this new model.

Institutional Partnership Statewide Consistency

As ordered in CPUC Decision R.13-11-005, the institutional partnerships (“IPs”) will be managed by a “lead PA.” They are:

- Two statewide higher education partnerships: the University of California and California State University EE Partnership and the California Community Colleges EE Partnership; and
- Two statewide partnerships with departments of the state government: the State of California EE Partnership (which works with the Department of General Services), and the California Department of Corrections and Rehabilitation (CDCR) EE Partnership.

The PAs are currently working with the statewide IP customers to determine the statewide program details, but this section will include: statewide PA lead, how lead PA will operate IOU/PA lead coordination.

Additionally, in support of the Governor’s Executive Order B-18-12³⁰ requiring State of California-owned facilities to reduce energy usage by 20% by 2018, IOUs will continue to engage and provide necessary technical support to agencies that are poised to deliver significant energy savings, such as California Department of Corrections and Rehabilitation, Department of General Services, and Judicial Council of California (formerly known as the Administrative Office of the Courts).”

Cross-Cutting Coordination

WE&T

As a cross-cutting program, Workforce, Education and Training (WE&T) is critical to the success of public sector goals by (1) highlighting the value of EE, (2) promoting market acceptance by educating both internal public stakeholders and external constituents on how to enable EE projects and improve compliance, and (3) ensuring that a skilled and trained workforce properly installs and maintains equipment leading to greater EE savings. SDG&E’s WE&T program has and will continue to focus on the following areas to engage with both public customers and the constituents within their territories. Looking ahead, the WE&T program will continue to support the following areas and will expand or contract based on market and potential data forecasts:

- Building Design & Construction
- Building Performance
- Codes & Standards³¹
- Food Service
- Home Performance / Whole House
- HVAC
- Lighting
- Marketing / Finance / Sales / Real Estate
- Renewable Energy
- Sustainability
- SDG&E’s Rebate & Incentive Programs

More details on these efforts are provided in the WE&T chapter of this Business Plan.

³⁰<https://www.gov.ca.gov/news.php?id=17508>.

³¹For more information on the impact of the Codes & Standards education that WE&T provides, please refer to the following: Opinion Dynamics, 2010, p. 77, http://www.calmac.org/publications/06-08_Statewide_Education_and_Training_Impact_Eval_Vol_I_FINAL.pdf.

Emerging Technology

The statewide Emerging Technology Partnership (ETP) has many long-running partnerships with public entities that have proven to be beneficial for both sides and have moved statewide initiatives forward. Entities with whom the ETP has collaborated includes schools and universities, hospitals, water and waste water treatment facilities, military bases, and federal, state, county, and local government agencies. The ETP supports these entities by screening technologies that can be used in the implementation of Executive Order B1812, helping to identify energy-saving technologies that are economically viable for cash-strapped agencies, and exploring innovative new solutions for which some public buildings are uniquely positioned to adopt.

Across California, the ETP is assisting in public sector efforts to implement state initiatives. These initiatives include Executive Order B1812 which stipulates that state agencies reduce gridbased energy purchases by at least 20% by 2018 and incorporate building commissioning into projects to help ensure new buildings perform at maximum efficiency. The statewide ETP helps to advance these efforts by evaluating commissioning solutions and offering support for technologies that can decrease overall energy expenditures specifically in the public sector, such as recent projects on LED street lighting and municipal water distribution leak analysis.

Taking a broader view, many public sector customers face capital constraints, particularly at the local level. For these customers, the traditional ET support for legacy efficiency programs that help remove financial obstacles to adopting energy-saving technologies is critical. As such, even as the ET portfolio diversifies over the coming years to include new and innovative types of solutions, the statewide ETP is also committed to maintaining a robust set of “traditional” measures in the ET portfolio. This approach will help program implementers maintain a suite of measures that can benefit any public sector customer.

Conversely, the economics of the public sector sometimes allows facilities to explore efficiency upgrades with a payback period that would be out-of-reach for cash-strapped SMB or industrial customers. For these public sector customers, ETP can offer expertise and support for pilot demonstrations. The ETP also works to accelerate the time-to-market for emerging solutions that may be too new or difficult to justify for a mom-and-pop business but may be a good fit for some public facilities. These sorts of activities align well with SB 350, which calls for a doubling of previous EE goals and will require adoption of innovative new solutions.

Codes and Standards

Public sector customers play an important role in Codes & Standards implementation, particularly as it relates to enforcement and adoption of reach codes. SDG&E will work with public sector customers in efforts to integrate their activities, where applicable, with the Codes & Standards program. This will include providing assistance for code enforcement and offering resources for communities that wish to pursue reach codes.

Financing

SDG&E will provide more financing opportunities and make financing programs easier to use. Traditional financing programs—such as SDG&E’s On-Bill Financing—are ideal starting points and can be modified to better meet public sector needs. Although public customers easily qualify for these services, obtaining approval for and setting aside up-front funding for projects continues to be a challenge. SDG&E understands this environment and has incorporated options within the Financial Solutions strategy for public customers to mitigate such challenges and secure the required funding for EE projects. Financing options are discussed in further detail under Goal 3, which focuses on improving public customers’ access to assistance.

SDG&E will work with the statewide EM&V team, with the evaluation framework to address the various knowledge gaps identified in this section. SDG&E EM&V suggests a meta-analysis to identify if research exists that address the identified gaps, determine if there are additional areas of study, and provide necessary information to PAs as they prepare programmatic implementation plans.

Public Sector EM&V Considerations

Because the public sector is a newly defined component of the energy efficiency realm, the information that specifically covers this group of customers is limited. Given the lack of past focus on this grouping, the following information gathering efforts—which may include data calls, formal studies, and various other techniques for obtaining information—would be valuable in enhancing overall knowledge of the public sector needs, as well as in more accurately assessing the expected effectiveness of SDG&E’s energy efficiency goals and strategies.

SDG&E will work with the statewide EM&V team, with the evaluation framework to address the various knowledge gaps identified in this section. SDG&E EM&V suggests a meta-analysis to identify if research exists that address the identified gaps, determine if there are additional areas of study, and provide necessary information to PAs as they prepare programmatic implementation plans.

Public Sector Metrics

Figure 4.25 describes the metrics SDG&E will use to evaluate the success of proposed sector strategies. The metrics are associated with goals and are designed to be ‘SMART’ (specific, measurable, attainable, realistic, and time-based). Success will be measured based on short, mid and long-term targets.

Figure 4.23 Missing data summarized in Stage I

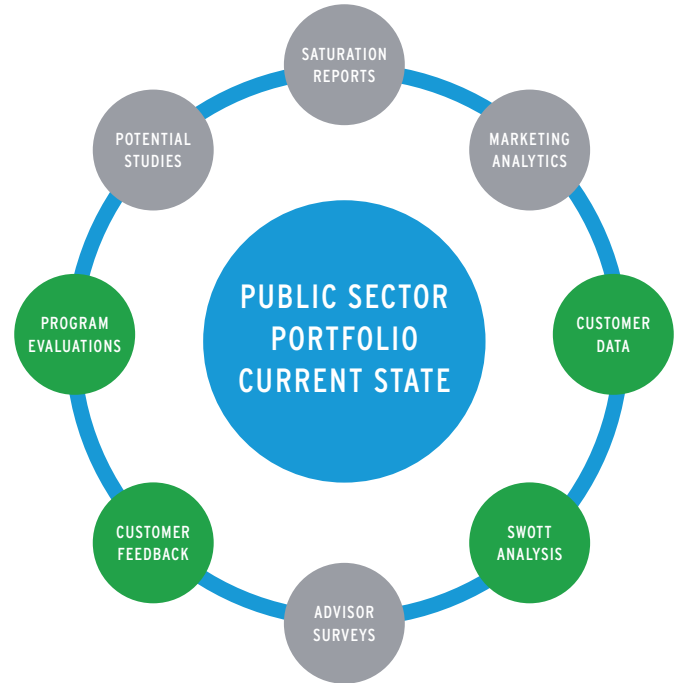


Figure 4.24 EM&V Information Gathering Efforts

Information Need	Relevant Area to Realize Value
Assessment of EE program offerings and services (effectiveness, participation, ROI, etc.)	Overall value (This would guide how best to use program offerings and services in order to optimize EE performance across the public sector)
Effectiveness assessment of various EE pilots and/or initiatives that have been completed (whole building approach, revolving fund standup, etc.)	Overall value (This would highlight those efforts that yield the best results for public entities and can guide SDG&E's focus on supporting those that provide the best value to public customers) Especially relevant to Revolving EE Funds strategy and Holistic Customer Approach strategy
Analysis of EE resources across the public sector (staffing levels, expertise, funding trends, etc.)	Barriers Discussion (This would enhance SDG&E's understanding of public sector landscape, the challenges the sector faces, and what is necessary to bridge the gap)
EE project life cycle assessment for the public sector (lead times, procurement process, implementation success rates, etc.)	Barriers Discussion (This would enhance SDG&E's understanding of the unique project life cycle for the public sector and what is required to achieve a successful outcome)
Effectiveness assessment of collaboration, knowledge sharing, and ME&O	Lead By Example strategy; stakeholder engagement plan strategy
Reach codes analysis (adoption, effectiveness, constituent responses, impact on EE savings, impact on economic environment, etc.)	Reach Codes strategy
Effectiveness assessment of partnerships	Access Through Partnerships strategy
Effective Useful Life study for public sector equipment	Overall value (This would guide the parameters for program offerings and services that are available to public customers)
Potential study for public sector	Overall value (This type of study does not exist for the public sector)
Other information gathering (marketing analytics, saturation reports, advisor surveys, customer satisfaction surveys, etc.)	Overall value (This information is either missing or limited for the public sector, and it would be valuable in responding SDG&E's customer needs)

Figure 4.25 Public Sector Metrics

Problem Statement	Market Barriers	Desired Sector Outcome (Goal)	Intervention Strategies	Sector Metric
Priorities Outnumber Available Resources	B1: Staff Bandwidth	Empower Leaders	1. Equip leaders with knowledge and tools to make informed decisions	Determine and deliver leadership “tool kit”
	B2: Technical Expertise		2. Collaborate and share best practices with key players	Number of San Diego regional leaders and decision makers using tool kit.
Gap between Current Offerings and Public Customer Needs	B3: No Universal Acceptance of Value Proposition	Eliminate Barriers to Public Sector Participation	3. Tailor offerings to meet the unique needs of public customers	Increased number of public entities with an established EE Goal (i.e., CAP or kWh savings goal)
	B4: Funding and Procurement Challenges		4. Develop a public sector customer action plan to facilitate participation	
	B5: Current Processes and Tools Are Not Intuitive		5. Equip public customers with the tools they need to succeed in Climate Action Planning	Audits resulting in action (at least one implemented measure)
	B6: Mismatch between Public Sector Timing and Available Offerings		6. Enable EE projects through financial solutions	
Challenges to Project Enablement	B3: No Universal Acceptance of Value Proposition	Influence Private Sector EE Activities	7. Demonstrate EE value through enhanced ME&O	Increase in absolute number of sector-wide implemented EE measures
	B5: Current Processes and Tools Are Not Intuitive		8. Encourage progress beyond existing code levels	Increased voluntary progress beyond existing code towards State’s ZNE goals ^c
	B6: Mismatch between Public Sector Timing and Available Offerings			

^a A decision maker is any individual with the authority to approve energy efficiency projects. Essentially, these are the leaders that financially sponsor projects, approve and release funding, and guide their organizations’ strategic direction with regards to EE. This metric will be managed and tracked by years at the business plan level, and it will be managed more closely (i.e., by quarters, months, or other appropriate time frames) at the implementation plan level.

Figure 4.25 Public Sector Metrics (continued)

Problem Statement	Baseline	Metric Source	Short-Term Target (1-3 Years)	Mid-Term Target (4-7 Years)	Long-Term Target (8-9 Years)
Priorities Outnumber Available Resources	N/A	Program Data	Tool kit completed in year one with ongoing updates		
	Current level of SD regional leader participation	Conference attendance, surveys	10% increase above baseline	20% increase above baseline	30% increase above baseline
Gap between Current Offerings and Public Customer Needs	Current number of public entities with an EE goal	Program data	5-8 additional public entities above baseline	10-16 additional public entities above baseline	15-24 additional public entities above baseline
	Current audit conversion rate ^b	Program data	20% of audits performed	40% of audits performed	60% of audits performed
Challenges to Project Enablement	Sector-wide individual EE measure adoption	Program data	10% increase above baseline	20% increase above baseline	30% increase above baseline
	Number of partners that have advanced above code.	Program data	1-2 reach codes adopted	1-3 additional reach codes adopted	1-3 additional reach codes adopted

^b SDG&E's Comprehensive Audit Program has been tracking detailed audit results and will be a key point of collaboration in tracking and managing this metric.

^c This metric can refer to reach codes, or to progress past code at a certain rate. How would we measure this?

05 INDUSTRIAL SECTOR



OUR MISSION

Educate and enable customers by providing targeted energy tools and strategic energy management offerings.

Chapter Summary

San Diego is home to more than 3,000 manufacturing companies, which support more than 96,000 jobs.¹ These represent 10% of all establishments and 15% of all paid employment in San Diego.² San Diego's manufacturers range from defense and aerospace to computer electronics and solar panels, to biotechnology. While a variety of manufacturing establishments make San Diego their home, San Diego still is not considered a "manufacturing boomtown".³ The industrial sector makes up only 8% of the total electric consumption within SDG&E's service territory. Much like the other sectors in the service territory, the majority of customers in this sector are in the small to medium size range with 96% of the accounts having electric demand under 200kW and 74% under 20kW.

To support the EE Strategic Plan vision, SDG&E's mission for the industrial sector is to educate and enable customers on their path to increased sustainability by providing targeted energy tools and solutions and continuous improvement offerings. To accomplish this mission, SDG&E has established the following industrial sector goal:

Industrial Goal 1: Double the Energy Efficiency Participation by SDG&E's Industrial Sector.

To reach this goal, SDG&E has developed a number of strategies and sample tactics to address the challenges faced by industrial customers. Because different industries within the industrial sector often require very specialized skills, SDG&E intends to increase its use of third-party contractors with industrial experience. As with other sectors, SDG&E will provide customers with longer-term, more comprehensive solutions. One key element of this migration is the Strategic Energy Management (SEM) program which promises to encourage customers to take a long-term approach to energy efficiency and sustainability.

¹ San Diego Regional Economic Development Corporation, <http://www.sandiegobusiness.org/industry/manufacturing>

² Ibid.

³ March 2014 data from the Bureau of Labor Statistics; Quarterly Census of Employment and Wages

The Past, Present, and Future of INDUSTRIAL ENERGY EFFICIENCY

MARKET CHARACTERIZATION

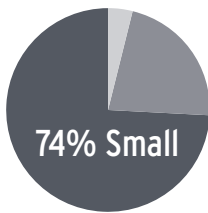
PAST & PRESENT



FUTURE

Relatively small sector:

- 8% of electric consumption
- 5% of gas consumption
- 3% of EE spending
- 2% of electric savings
- 4% of gas savings



Primarily small customers

No one-size fits all solution

- Diverse end-uses
- Complex Systems
- Proprietary Processes



Profitability directs decision-making



Safety, environmental and waste compliance are priorities

CEC estimates indicate **little to no growth** in this sector through 2024



Environmental regulations for this sector continue to increase

Motors & Drives represent the largest potential for this sector. **Twice as much savings** from O&M compared to new equipment.



Wastewater treatment facilities could be a prominent segment in the future

DELIVERY APPROACH

No specific offering for industrial sector, bundled non-residential offering



- Deemed Rebates
- Calculated Incentives
- Direct Install
- Audits
- On-Bill Financing

Lacked customization to unique needs and challenges—minimal focus on process end-uses



Savings from traditional non-residential, single end-uses such as lighting and HVAC

Limited number of comprehensive projects

Supplement traditional approach with a more specialized intervention to allow for more robust savings



Outsourcing and leveraging external expertise will help:

- Maximize resources
- Keep costs down

A Strategic Energy Management approach that can accommodate small industrial needs will be an important element



Citations for data presented on this figure are included throughout the chapter.

As discussed on the previous page, SEM is thus well suited to the industrial segment and will become a cornerstone of SDG&E's industrial strategy.

As a trusted energy advisor, SDG&E will create the foundation for an innovative, connected and sustainable energy future in collaboration with key stakeholders. With a long history of servicing the region and a deep understanding of local concerns and business drivers, SDG&E is uniquely positioned to work with local industrial customers of all sizes as well as the third-party entities that serve them, to continue achieving California's significant energy reduction goals. This business plan identifies goals that will help customers move to the next level of energy efficiency implementation. SDG&E has developed the strategies and sample tactics described in this plan to complement the existing offerings and move customers towards a more comprehensive and sustained approach to energy efficiency implementation.

Approach to Achieve Industrial Sector Goals

San Diego Gas & Electric, in collaboration with key stakeholders, will create the foundation for an innovative, connected and sustainable energy future. SDG&E seeks to educate and enable customers on their path to increased sustainability by providing targeted energy tools and solutions and strategic energy management offerings.

SDG&E's market analysis and stakeholders have identified a number of consistent barriers for this sector. SDG&E has analyzed these barriers and considered the direction set by the California Long-Term Energy Efficiency Strategic Plan to determine the goals needed in order to establish a unified, achievable framework that will yield concrete results in support of the mission and vision of the industrial sector.

“Similar to other manufacturing industries, cement and concrete manufacturers tend to view their individual processes as proprietary. Thus, the improvement potential of any particular manufacturer cannot be precisely predicted.”

– *KEMA, Industrial Sectors Market Characterization, Cement and Concrete Industry*

The industrial sector contains some of the most highly specialized processes, as well as some that are very proprietary in nature. In the chemical industry, for example, the highly specialized processes in place create further barriers to implementing energy efficiency by adding complexity to project evaluations, customer decision-making, and implementation itself.⁴ Furthermore, if a process is considered proprietary, customers may be more reluctant to change or allow scrutiny of a patented process.

Competing priorities for capital seems to be more prevalent in industry than merely just access to capital. The industrial sector is highly regulated in areas such as the environment, waste, and safety, creating competition for time and resources. For customers who do have access to capital, significant competition exists for these resources and customers are looking for low risk opportunities to assign this capital. SDG&E historic program participation data shows that the industrial sector accounted for a very small percentage of participation in the On-Bill Financing (OBF) program. Though this could also be due to a lack of awareness or size differences

⁴ KEMA - Industrial Sectors Market Characterization: Chemicals Industry

Figure 5.1 Industrial Market Characteristics and Problems Overcome by Goals

		Targeted by Strategies Supporting Goals		
Problem	Goal	Customer Size	Market Segments	End-Uses
<ul style="list-style-type: none"> • Complex, specific processes require specialized knowledge • Many priorities competing for resources and funding • Risk aversion and internal processes 	Double EE Participation by the Industrial Sector	Small, Medium, Large	Sand & Gravel, General Manufacturing, Large Manufacturing, Electronics / Telecommunications, Biotech, Laboratories, and Research	Compressed Air, Process Heat, Process Refrigeration, HVAC, Lighting, Water Heating

between the eligible sectors, it more likely indicates that industrial customers do not seek out energy efficiency projects.

In summary, the barriers for this sector can be characterized by these three statements:

- Diverse, highly complex systems mean that no one approach will meet all needs.
- Industrial organizations assess opportunities based on a number of considerations, energy efficiency being just one of many areas competing for priority of resources and funding.
- Even if capital is available for projects, some customers may be unwilling to participate due to other factors such as risk aversion, internal processes, and/or difficulty or unwillingness to comply with increasing regulations.

These barriers are discussed in **Figure 5.1** and explored further in the market characterization and segmentation section.

To focus on the complicated needs of the industrial sector, SDG&E has developed an overarching goal to address the need to increase energy savings. The relationship between the identified problems, the established goals, and the markets these goals address is summarized in **Figure 5.1**.

This chapter outlines the overarching goal that sets the direction for SDG&E's industrial sector energy efficiency efforts, as well as the key strategies and sample tactics that support those goals. SDG&E's industrial sector goal is:

- **Industrial Goal 1:** Double the Energy Efficiency Participation by SDG&E's Industrial Sector.

This goal and the existing core program components will be used to reach savings goals based upon approved budgets. **Figure 5.2** and **Figure 5.3** outline the proposed energy efficiency goals and budget for SDG&E's industrial sector.

It is important to recognize that SDG&E developed the goals, strategies, and sample tactics described in this business plan to complement, and not replace, the current financial incentives, financing, outreach and education, technical assistance, and other program level interventions that have been proven successful in assisting customers with their facility upgrades and energy savings ventures.

Figure 5.2 Industrial Sector Annualized Savings Goals

	Near-Term 2018-2020	Mid-Term 2021-2023	Long-Term 2024-2025
GWh	6-7	6	6
MW	0.6	0.6	0.6
MMTherms	0.2	0.2	0.2

Figure 5.3 Industrial Sector Annualized Budget

	Near-Term 2018-2020	Mid-Term 2021-2023	Long-Term 2025-2025
Annual Budget	\$3,519,446	\$3,519,446	\$3,519,446

Overview of Current and Proposed Offerings

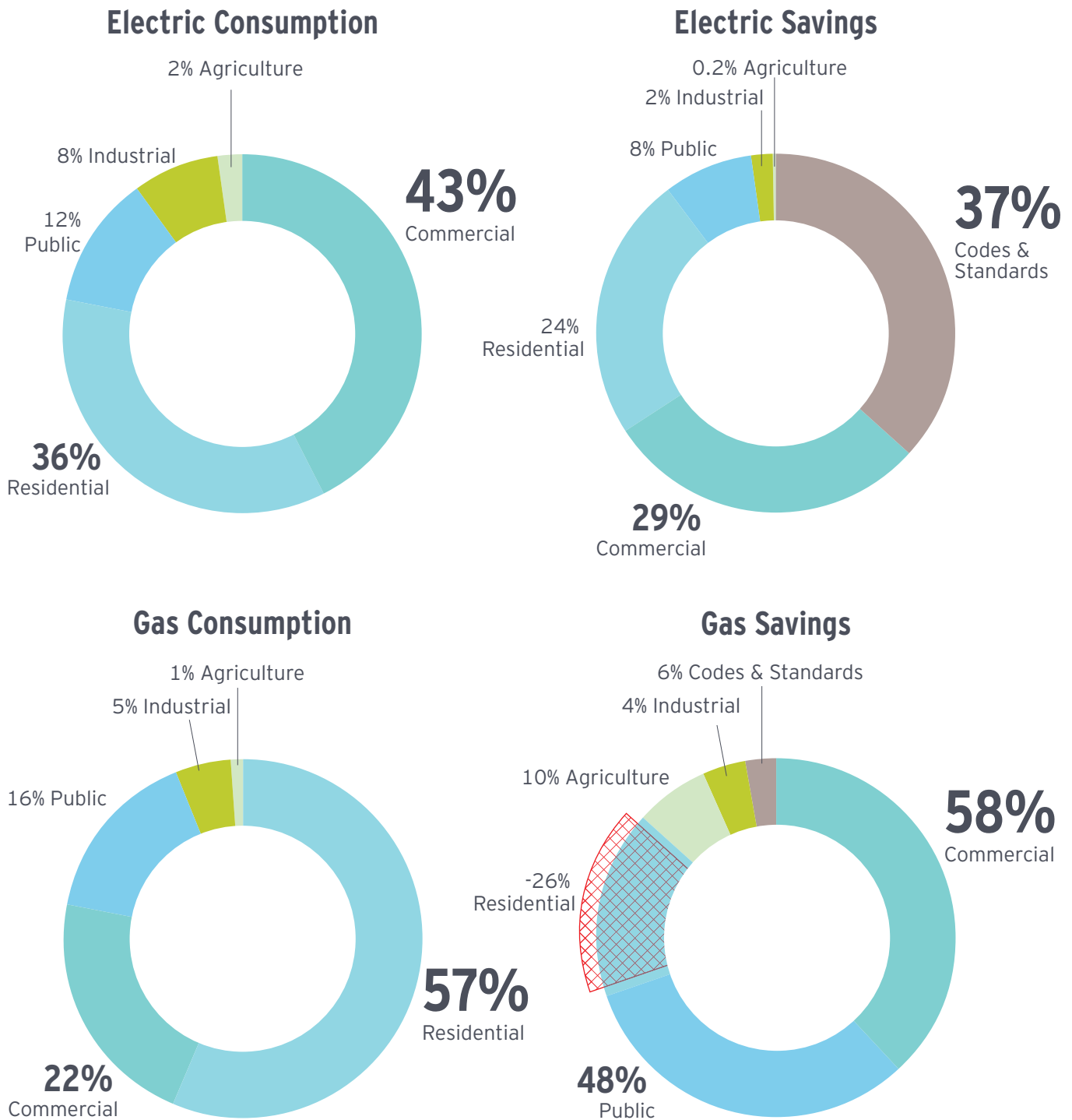
SDG&E's current industrial offerings consist of those bundled programs (Energy Efficient Business Rebates and Incentives, Business Energy Solutions, and Comprehensive Audits) available to all non-residential customers. There are no offerings specifically for or unique to the industrial sector.

Figure 5.4 describes the proposed goals, strategies, and sample tactics in terms of whether they are new, existing, or modified interventions, and whether they will be implemented in the short (1-3 years), mid (4-7 years), or long-term (8-10 years).

Figure 5.4 Overview of Current and New Offerings

Goal	Strategy	Sample Tactics	New, Existing, Modified	Short, Mid, Long-Term
Double the Energy Efficiency Participation by SDG&E's Industrial Sector	Add value by bringing external industry expertise that will drive customer participation in programs and encourage customers on continued path towards deeper savings	Solicit third parties that can provide offerings that may include: <ul style="list-style-type: none"> • Audits & Benchmarking as appropriate • Energy management plan • Financing • Incentives 	Modified	Short
	Unlock deeper savings through Strategic Energy Management Offering	Expand Strategic Energy Management offering by leveraging the SW downstream model for consistency	New	Short
		Educate and train industrial customers to identify process savings and how to achieve deeper savings through Strategic Energy Management.	Modified	Short
	Target Customers at the Port of San Diego per AB 628	Evaluate enlisting the assistance of a third-party implementer to design, develop, and implement an EE program offering specific to the Port of San Diego and customers therein	New	Short

Figure 5.5 SDG&E 2013-2015 Average Annual Consumption^{a,b} / Total Energy Efficiency Savings,^c by Sector



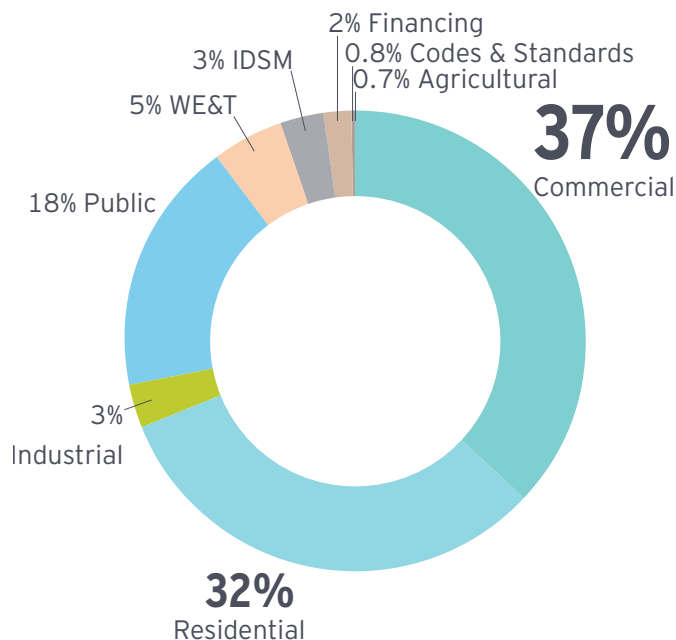
^a Energy Consumption Data Management System, CEC, <http://ecdms.energy.ca.gov/elecbyplan.aspx>

^b Energy Consumption Data Management System, CEC, <http://ecdms.energy.ca.gov/gasbyplan.aspx>

^c SDG&E EE Program Data, 2013-2015

Figure 5.6 SDG&E 2013-2015 Total Energy Efficiency Spending by Sector

Source: SDG&E EE Program Data, 2013-2015



Market Characterization

SDG&E's industrial sector is one of its smallest, providing electric and gas service to fewer than 21,000 accounts. The sector includes a diverse group of customers, including a wide variety of goods manufacturers (pharmaceuticals, communications and computer equipment, and textile), commercial bakeries and breweries, and construction industry contractors. From 2013-2015, this sector represented 8% of SDG&E customers' total electric energy consumption, 3% of portfolio electric energy efficiency spending, and 2% of SDG&E's portfolio electric savings. For the same period, the industrial sector represented 5% of total gas consumption and 4% of portfolio gas savings (**Figures 5.5** and **5.6**). Although this sector is small, it includes some of SDG&E's largest consuming individual customers. No energy efficiency portfolio would be complete without programs that address these customers who offer significant potential with each contact.

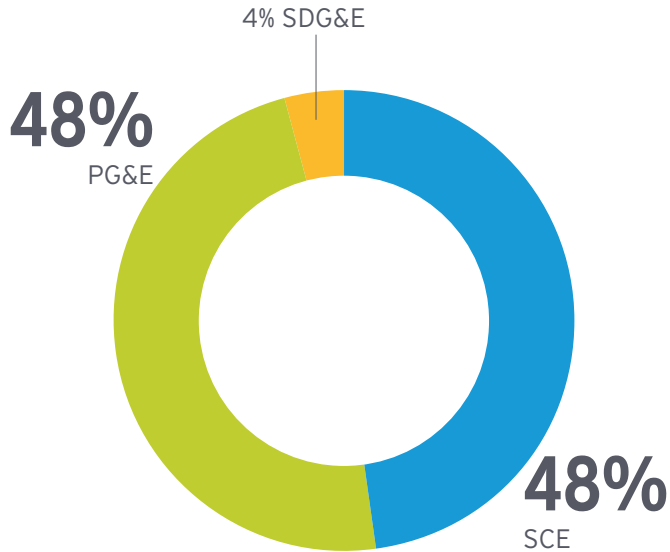
“Identifying remaining energy efficiency opportunities requires an understanding of sector-specific technologies, customer behaviors and needs, and dynamic regulatory and market forces. Furthermore, given the heterogeneous nature of this market, it is quite likely that one size does not fit all.”

– *Measure, Application, Segment, Industry (MASI): Finding the Remaining Energy Efficiency Potential through Market Assessment, ACEEE Summer Study on Energy Efficiency in Industry, 2015*

Energy consumption by industrial users, primarily manufacturing-related, in the United States receives much focus and scrutiny because of its large scale and impact on the economy. Though quite diverse, SDG&E's industrial sector has significantly smaller consumption than the industrial customers of other utilities, even within California. This difference is illustrated in **Figure 5.7**, which indicates that SDG&E's industrial sector represents just 4% of the state's IOU industrial electricity consumption. In addition, as noted above, most local industrial accounts are “small-sized”, with almost three-quarters of accounts registering 20 kW of demand or less. Comprising roughly 8% of the service territory electricity consumption, SDG&E's industrial sector exists on a smaller scale.

Figure 5.7 CA IOU 2013-2015 Total Electricity Consumption, Industry + Mining & Construction

Source: Energy Consumption Data Management System, CEC, <http://ecdms.energy.ca.gov/elecbyplan.aspx>

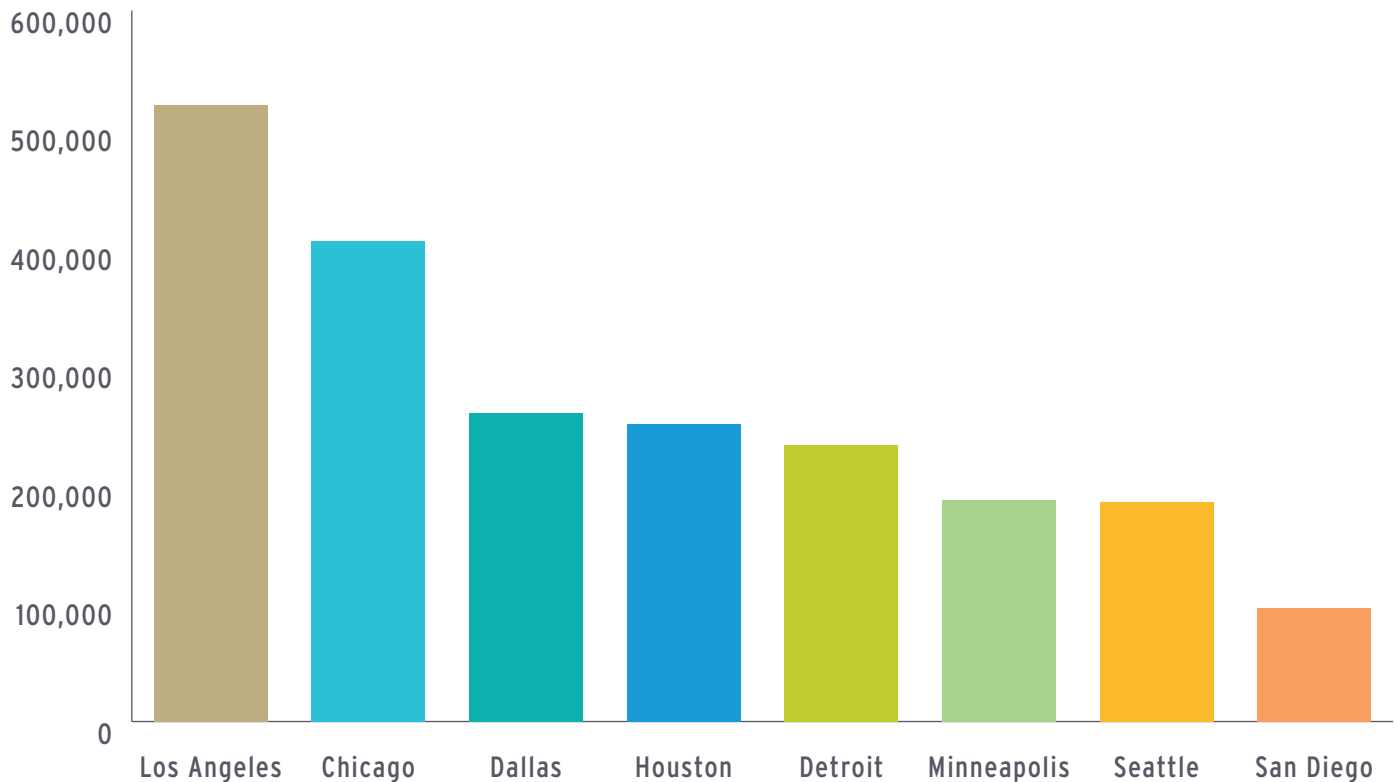


While manufacturing makes up most of our industrial sector, based on North American Industry Classification System (NAICS) code segmentation, the region is not known for massive industry, which constrains overall sector opportunities. Comparing the number of manufacturing jobs in the San Diego area to the Los Angeles region shows Los Angeles with more than five times the number of jobs.⁵ This comparison and that to other major U.S. cities is shown in **Figure 5.8**.

⁵ Bureau of Labor Statistics, March 2014

Figure 5.8 Manufacturing Jobs per Region

Source: Bureau of Labor Statistics, March 2014



Market Segments

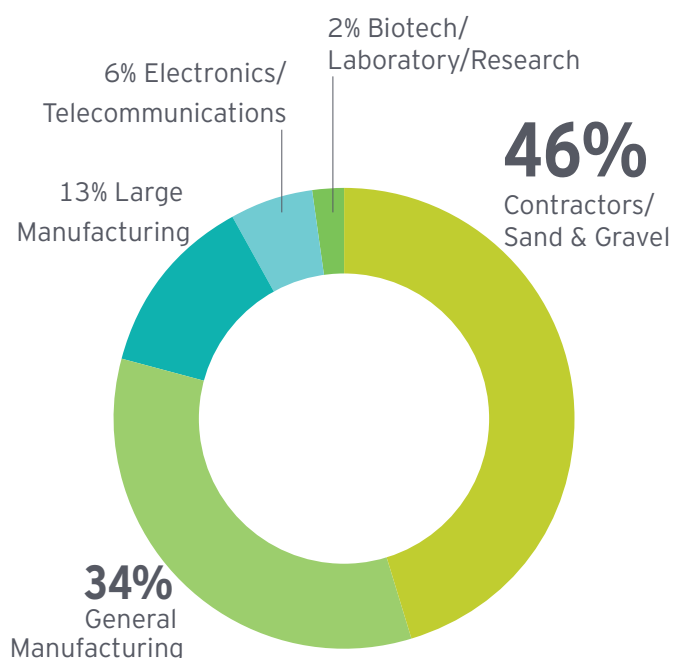
Industrial sector customers can be characterized by highly complex systems which exist within diverse, heterogeneous, customer segments. As no one size fits all, the diversity of the sector necessitates a customized approach to energy efficiency which can be expensive.

Market segmentation provides additional insights that can inform targeting, strategy, and program design. Utilizing the NAICS designations, SDG&E has categorized its industrial accounts by industry type, grouped them by similar energy usage patterns, and found that the majority fall into five main segments as shown in **Figure 5.9**:

1. **Sand, Gravel & Contractors** – Industry contractors and construction (plumbing, electrical, heating, A/C, special trades, roofing, etc.), natural gas extraction, landscape and masonry
2. **General Manufacturing** – Commercial bakeries & breweries, machine shops, fabric, plastic, textile and woodworking manufacturing.
3. **Large Manufacturing** – Aircraft, engine, bicycle, turbine, A/C and commercial refrigeration manufacturing
4. **Electronics/Telecommunications** – Manufacturers of communications, audio/visual, TV/Radio, computer and circuit assembly and other electronic equipment
5. **Biotech, Laboratories, and Research** – Pharmaceutical, biological, medicinal and botanical manufacturing

Figure 5.9 Industrial Account Distribution & Customer Segmentation

Source: SDG&E Industrial Account Distribution & Customer Segmentation (2013-2015)

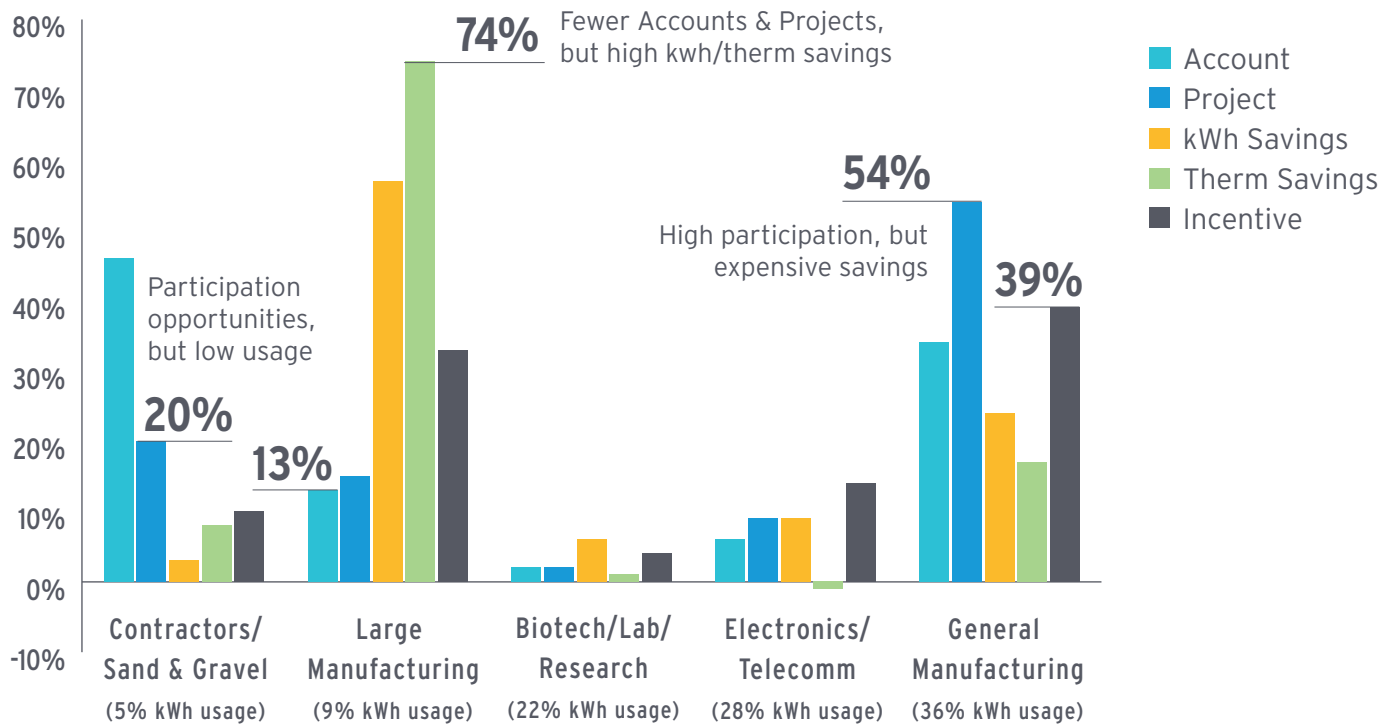


Each of these segments presents unique challenges when seeking to implement more efficient equipment and processes. Specifically, the sand, gravel contractor segment proves challenging to address because the majority of their work is performed at construction sites, rather than in a single facility. Though they are classified as industrial based on their NAICS classification, this sector aligns more closely with the commercial sector when it comes to assessing for energy efficiency opportunities. The actual sand and gravel facilities are typically offices and warehouses, which suggest many synergies with the commercial sector.

Each segment has unique consumption patterns as well as program participation trends that are discussed below. By understanding customer segmentation, market characterization, and past participation trends, SDG&E seeks to design a focused portfolio of offerings that will efficiently enable the industrial sector to participate at a greater rate than in the past.

Figure 5.10 Historical Program Participation and Results

Source: SDG&E Energy Efficiency Programs (2013-2015)



Looking at participation in the 2013-2015 program cycle, certain trends emerge. The bar charts in **Figure 5.10** describe the industrial sector by segment in terms of:

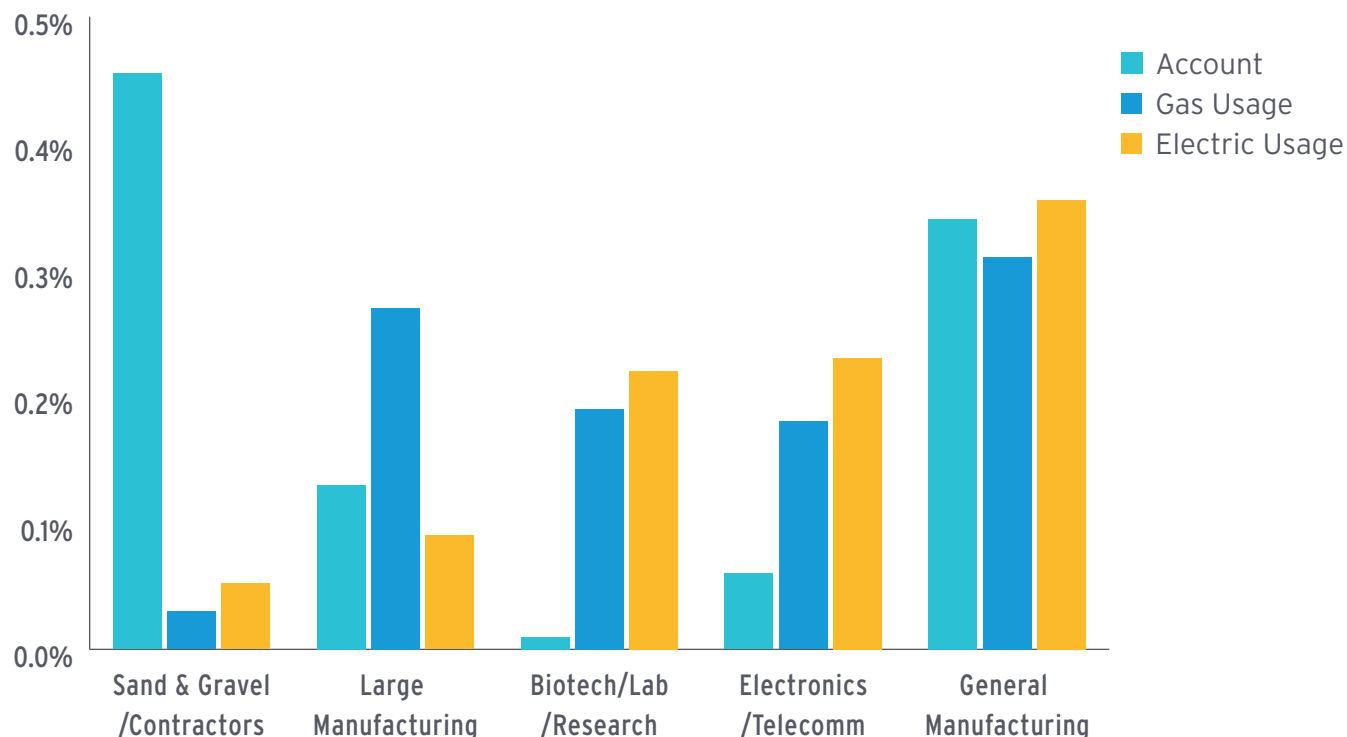
- percent of industrial accounts,
- percent of projects completed, and
- percents of electric (kWh) and gas (therm) savings.

Further analysis shows approximately 60% of electric usage and 64% of gas usage comes from only 21% of industrial accounts in three customer segments, as shown in **Figure 5.11**.

As shown in **Figure 5.10**, the sand and gravel contractors and general manufacturing segments are the largest in the industrial sector, making up 46% and 34%, respectively, of industrial customer accounts. These also have the highest program participation rates (20% and 54% of projects, respectively) in terms of project count. In contrast, it is the large manufacturing that claims the largest electric and gas savings.

Figure 5.11 Industrial Sector Electric and Gas Usage by Segment

Source: SDG&E Energy Efficiency Programs (2013-2015)



Sector End-Uses

Because the industrial sector represents such a diverse set of customers, it is difficult to identify the heaviest consuming electric and gas end-uses. Instead, we note in **Figure 5.11** that general manufacturing reflects the highest consuming electric and gas segment, whereas the sand & gravel / contractor segment reflects the largest number of accounts. When this information is combined with the historical savings by segment, it indicates that the best opportunities for future projects may come from the large manufacturing segment, which as high gas usage, moderate electric usage, and the highest historical electric and gas savings.

“California industry is highly diverse in type, size, and operation; uniform programs often will not match corporate or facility needs.”

- *California Energy Efficiency Strategic Plan, January 2011- Industrial Sector*

Figure 5.12 Historical Incentive/Savings by End Uses

Source: SDG&E Program Data, (2013-2015)

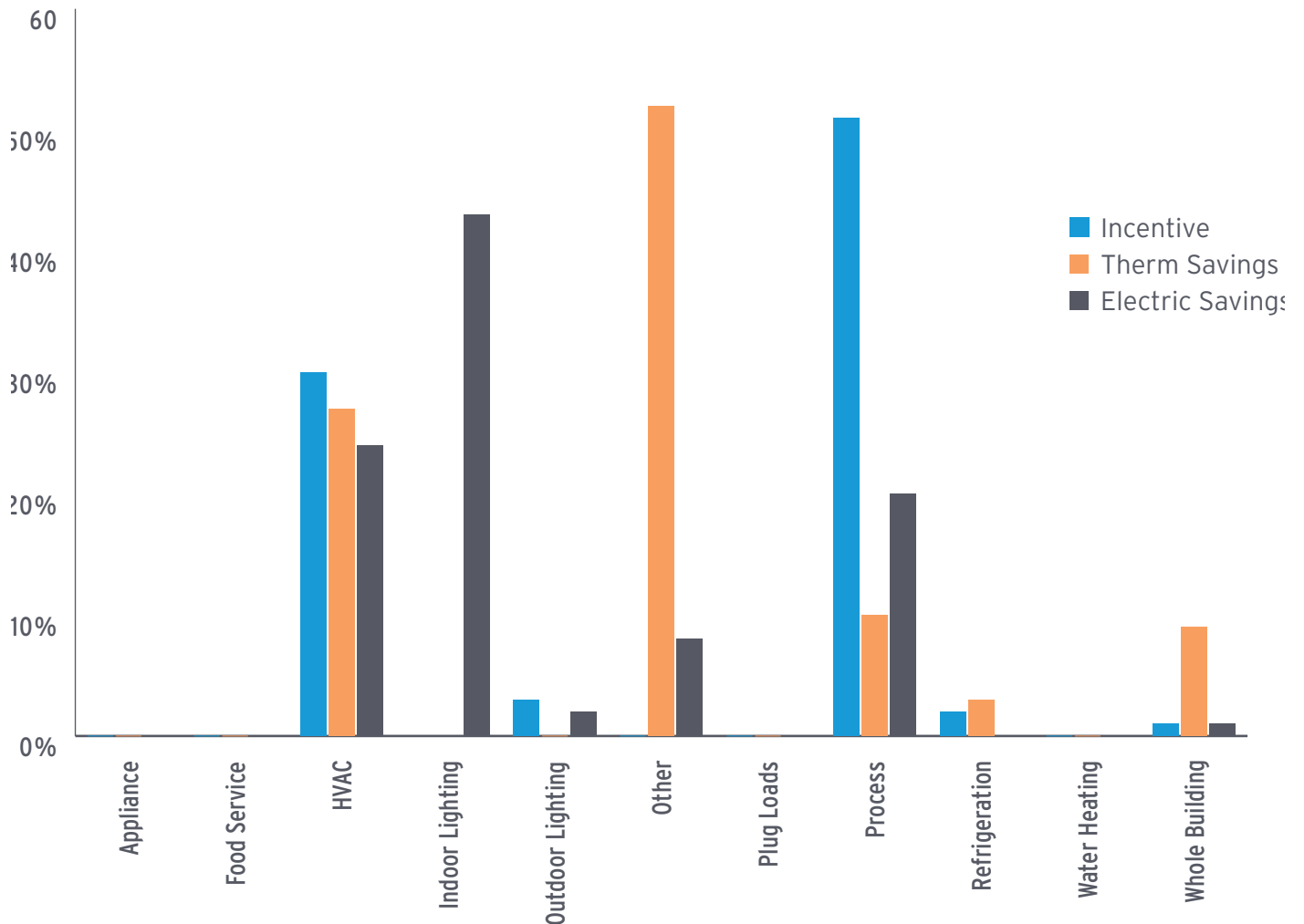


Figure 5.12 represents a historical look at end-use participation, based on savings, for the industrial sector. This assessment shows that HVAC, lighting, services, and recreation were the top three electric end-uses, and HVAC, water heating, and recreation were the top three gas end-uses. There is also opportunity to explore the process end-uses given the diversity and complexity that this sector embodies. Since there is no industrial end-use study to draw from, SDG&E must look to past program participation and the Navigant Market Potential Study to provide additional end-use information.

Energy Efficiency Market Potential

The 2013 Navigant Market Potential Study provided data on energy efficiency market potential by utility, sector, fuel, and end-use.

Figures 5.13 and **5.14** show incremental market potential (in GWh and MMTherms, respectively) by sector. The industrial sector potential remains relatively constant throughout the time period.

Figure 5.13 SDG&E Incremental Electric Market Potential^e

Source: 2015 Navigant Market Potential Study

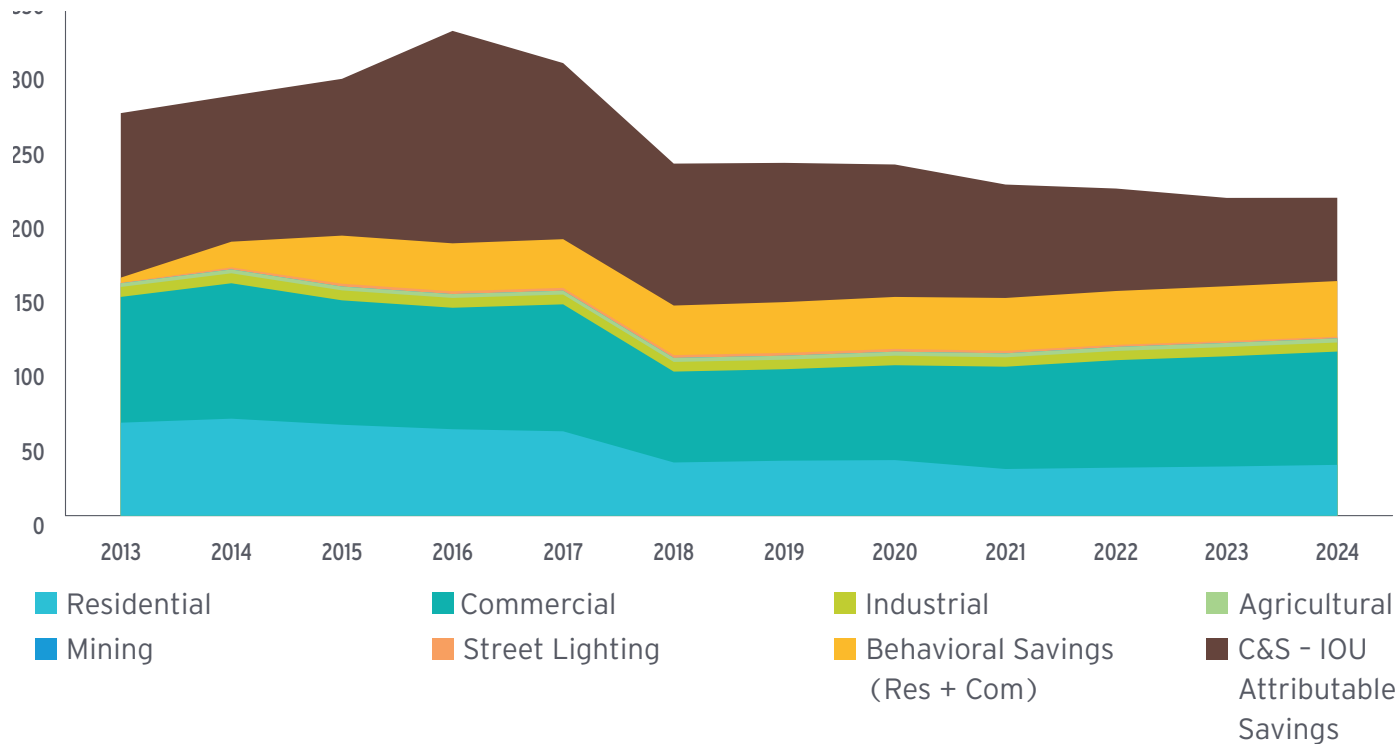


Figure 5.14 SDG&E Incremental Gas Market Potential^f

Source: Energy Efficiency Potential and Goals Study for 2015 and Beyond

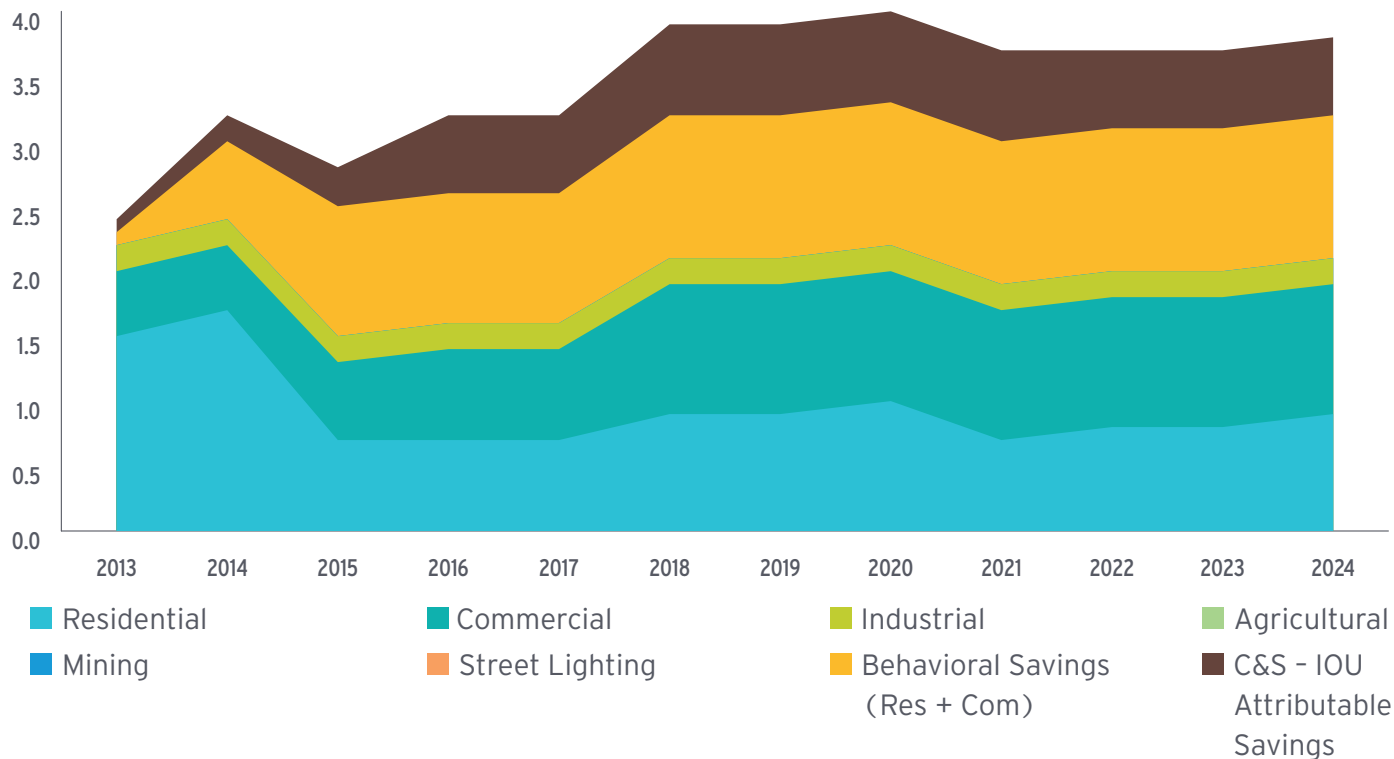


Figure 5.15 SDG&E Industrial Incremental Electric Market Potential

Source: Energy Efficiency Potential and Goals Study for 2015 and Beyond

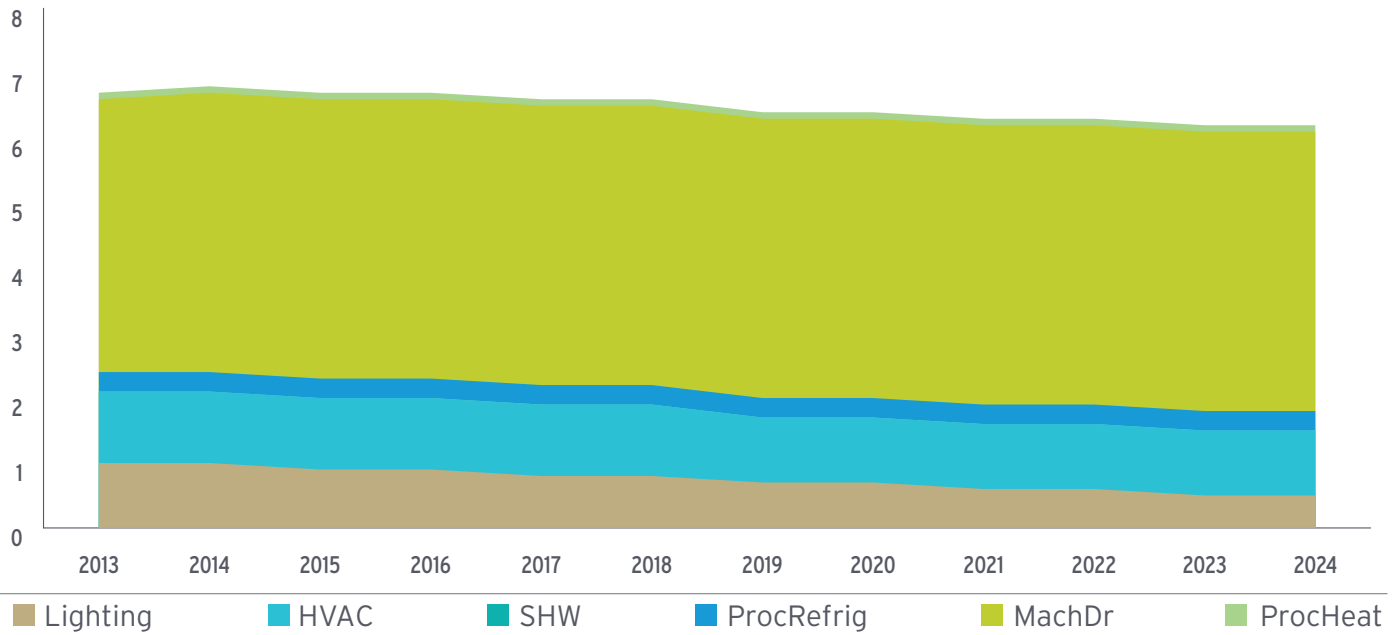


Figure 5.16 SDG&E Industrial Incremental Gas Market Potential

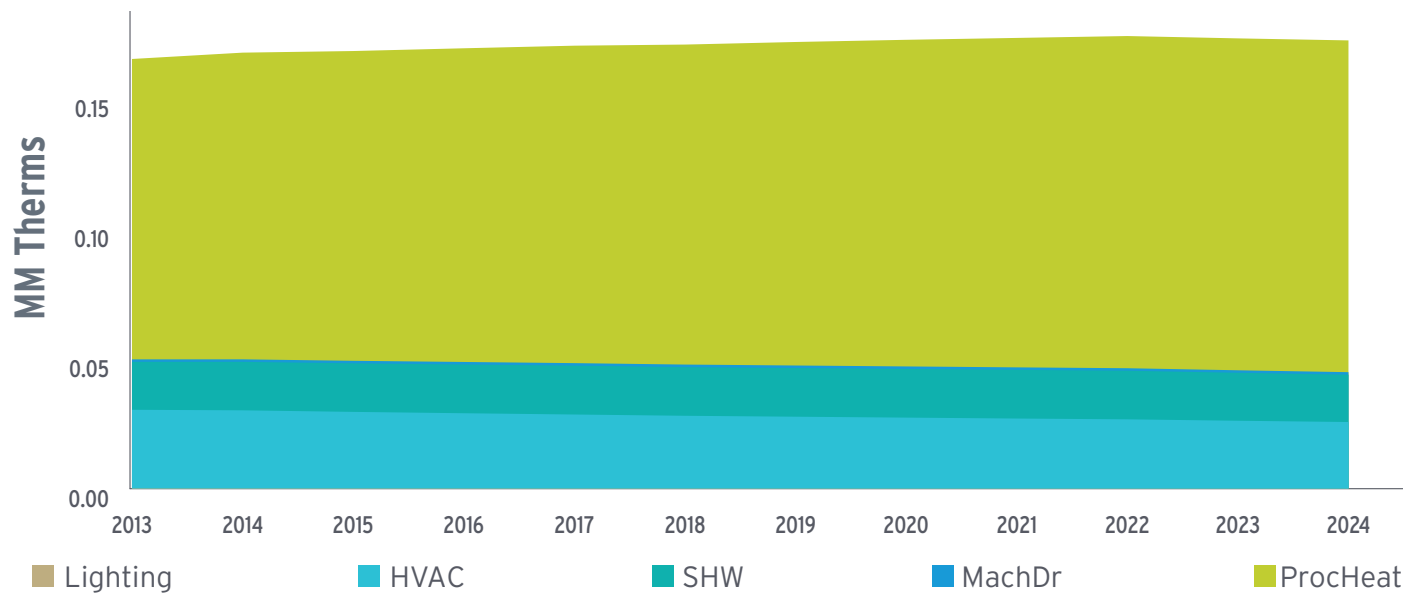
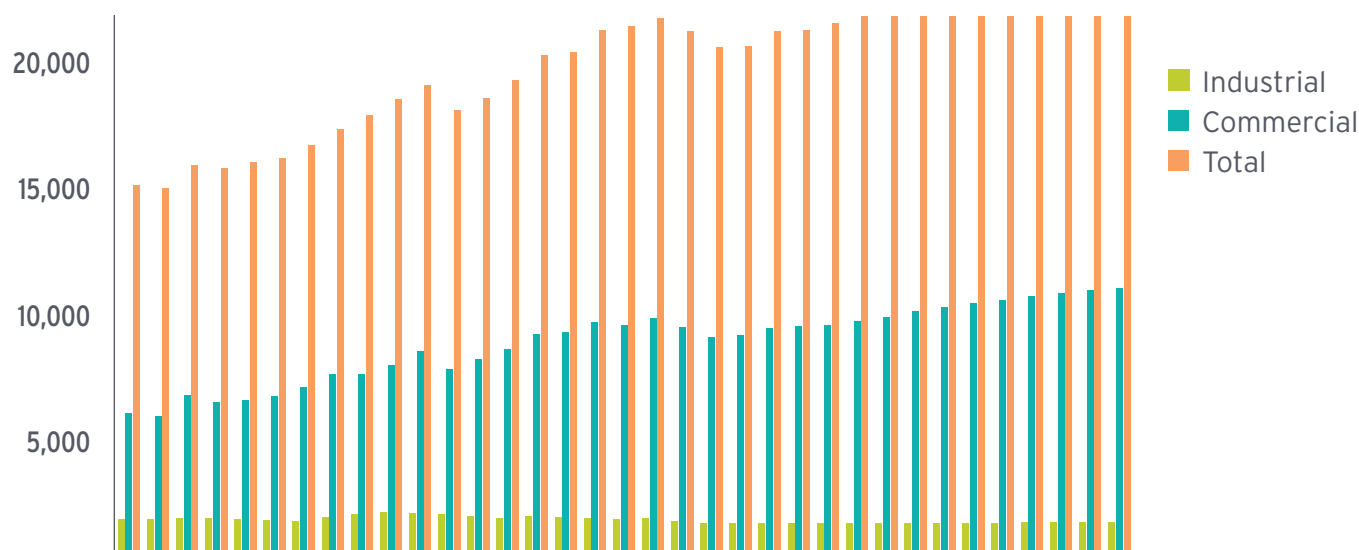


Figure 5.17 Sector Consumption Trends^a

^a Kavalec et al., 2013. California Energy Demand 2014-2024, California Energy Commission. CEC-200-2013-004-V1-CMF.

Figure 5.15 provides the incremental electric market potential by end use. The potential data for SDG&E's industrial sector indicate that lighting and HVAC will continue to be contributors to the portfolio savings, but that machine drives and motors are expected to have the largest savings potential. According to the 2010 Manufacturing Energy Consumption Survey, machine drives represent anywhere from 30 to 88% of facility electricity use, depending on the industry.⁶

As described in the 2015 Navigant Market Potential Study, there is twice as much potential from operations and maintenance as from new equipment. Declining equipment potential in the industrial sector supports the notion of moving beyond equipment-focused programs to address and transform customer business practices.⁷

Figure 5.16 provides the incremental gas market potential by end use.

Future Trends

Looking at the consumption trends over time provided by the CEC and illustrated in **Figure 5.17**, overall consumption is trending upwards, specifically in the residential and commercial sectors. In contrast, the trend shows the industrial sector consumption staying relatively flat. As a result, SDG&E cannot expect to achieve its increases in energy efficiency savings through sector growth alone. Rather, SDG&E will need to implement new and creative methods to reach a higher percentage of its industrial customers.

One trend benefiting this sector is the focus promoting the sustainability, as well as economic development, of ports within California. This trend was formalized by the passage of AB 628 which, among other topics, calls for assessment and implementation of energy efficiency. Since industrial customers are large energy users at ports, SDG&E will focus particular attention of these customers at the Port of San Diego.

⁶ Measure, Application, Segment, Industry (MASI): Finding the Remaining Energy Efficiency Potential through Market Assessment, ACEEE Summer Study, 2015; MECS <http://www.eia.gov/consumption/manufacturing/>

⁷ Wallner, et al. More than High Efficiency Motors Market Transformation for Industrial SEM

Legislative Drivers

Each chapter of the Business Plan discusses the ways recently adopted legislation, specifically, Senate Bill (SB) 350 and Assembly Bills (AB) 793, 758 and 802, help shape SDG&E's sector approaches. SB 350, in particular, calls for a doubling of energy efficiency savings during the term of this Business Plan. The CPUC has provided initial guidance implementing these directives and SDG&E and the other PAs will continue to work with the CPUC to determine the most efficient means of complying with the new legislative mandates.

Generally, the industrial goals and strategies have been developed to capture additional savings beyond those that existing program design could capture. Of note, SDG&E will work with third parties to design programs that specifically leverage audits/benchmarking, financing, innovative incentives, and Strategic Energy Management (SEM). Per Strategy 2.2.5 of the Existing Buildings Energy Efficiency Action Plan (AB 758), SDG&E will help train and educate industrial customers on ways to identify process improvements through SEM that save energy and water.

AB 802's provisions related to use of an existing conditions baseline will enable SDG&E to work with third-party providers and customers to create programs and identify projects that can benefit from this new approach. This effort will include expanding ways that SDG&E can provide pay-for-performance incentives for savings based on normalized-metered energy consumption (NMEC).

Further, as described in the Future Trends section, AB 628 directly impacts SDG&E's approach to the industrial sector by focusing its energy efficiency efforts on industrial customers at the Port of San Diego. SDG&E is working actively with the Port to design its Energy Management Plan proposal.

Figure 5.18 summarizes these drivers and how the business plan is responding to them.

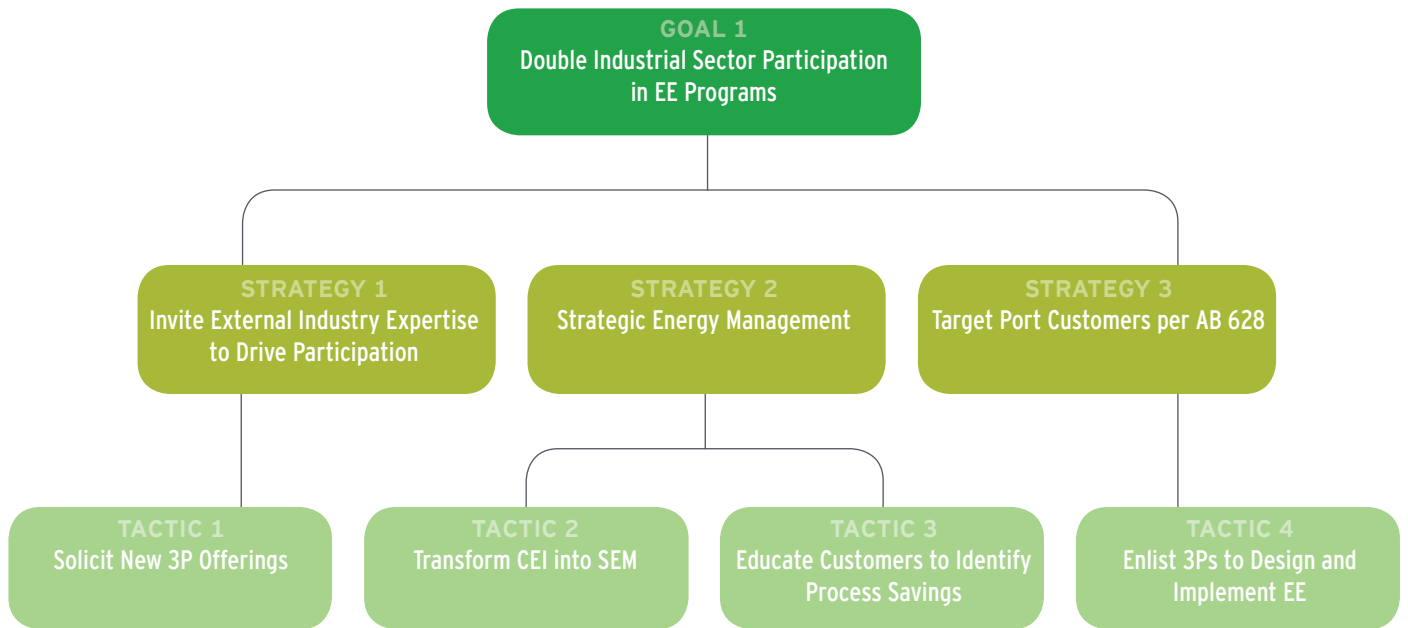
Goals, Strategies, and Tactics

Taking into consideration the small size of SDG&E's industrial sector, as well as the small size of its average industrial customer, as well as the overall diversity of the sector, SDG&E has developed the following goal, strategies, and sample tactics to remove barriers and attract both customers and vendors to energy efficiency.

Figure 5.18 Policy Drivers in the Industrial Sector

INDUSTRIAL		
Policy Driver	Specific Requirement / Guidance	Business Plan Response
SB 350 – Clean Energy and Pollution Reduction Act of 2015	<ul style="list-style-type: none"> • Achieve a cumulative doubling of savings in electricity and gas retail customers’ final end uses by 1/1/30 • The CEC shall adopt a responsible contractor policy to ensure that ratepayer-funded EE retrofits meet high-quality performance standards and reduce energy savings lost or foregone due to poor-quality workmanship 	<ul style="list-style-type: none"> • Double sector’s participation by working with third parties to design offerings that leverage audits/benchmarking, financing, innovative incentives, and Strategic Energy Management • WE&T programs will facilitate training on responsible contractor policies and ensure that any requirements applicable to SDG&E EE programs are incorporated as necessary
AB 802 – Benchmarking and Changes to Energy Efficiency Baselines	<ul style="list-style-type: none"> • Benchmarking – By 1/1/17, for multi-unit buildings, utilities must provide aggregated energy usage data to its owner, its agent or the building operator. Commission will set requirements for public disclosure of information for benchmarking purposes • Baselines – Authorizes utilities to provide incentives to customers for energy efficiency projects based on normalized metered energy consumption as a measure of energy savings 	<ul style="list-style-type: none"> • Leverage third-party community knowledge and expertise to design programs that provide customers assistance in benchmarking their facilities and using this information to develop actionable energy management plans • Expand opportunities for customers to utilize pay-for-performance incentives based on normalized metered energy consumption
AB 628 – Energy Management Plans for Harbor and Port Districts	CPUC shall encourage utilities to work with ports to develop, implement and administer energy management plans	Will work actively with the Port of San Diego to help the Port assess opportunities and implement energy efficiency projects

Figure 5.19 Industrial Goal 1 Strategies and Sample Tactics



Industrial Goal 1: Double the Energy Efficiency Participation by the Industrial Sector

The industrial sector has been historically underrepresented in the energy efficiency arena for a number of reasons. For one, industrial sector customers tend to have highly specialized, sometimes proprietary systems which necessitate a customized approach to energy efficiency, but can inhibit cost effectiveness. Also, energy efficiency competes for customer attention and financing.

Strategy: Add value by bringing external industry expertise that will drive customer participation in programs and encourage customers on continued path towards deeper savings.

The “one size fits all” approach that SDG&E has previously deployed has been more effective in other sectors than in the industrial sector. For example, when evaluating the savings for this sector, the end-uses mirrored those of the commercial sector. This would suggest similarities between the sectors; however, we know that the industrial sector is far more diverse. Therefore, we must look to other reasons why the industrial sector isn’t exhibiting the diversity of its functionalities. To bring more diversity to the sector, SDG&E will launch solicitations to identify industry experts to provide tailored offerings that will increase the participation for the industrial sector and prepare customers for Strategic Energy Management.

“In order for industry to make significant gains in energy efficiency, there must be greater awareness and knowledge sharing about programs, resources, and practical methods that can help industrial plants identify, develop, and document energy efficiency improvements and their economic benefits.”

– *California Energy Efficiency Strategic Plan, January 2011- Industrial Sector*

Sample Tactics

While the specific tactics used for implementation will be designed by the selected third-party Implementer (s) the following are tactics that are likely to be used:

- Audits and benchmarking, as appropriate;
- Energy management plans;
- Financing; and
- Incentives.

Strategy: Unlock deeper savings through Strategic Energy Management offering

Due to the complexity and variability of this sector, a strategic energy management approach has the potential to yield far-reaching benefits. The Navigant Market Potential Study shows that the largest industrial sector opportunities are in the operations and maintenance of HVAC and machine drives/motors. In order to tap into this potential, customers will need assistance, which SEM can provide, to institutionalize practices which will sustain long-term savings. As noted in a recent report, SEM is a vehicle to do this work by motivating customers “to make one-time capital improvements [...and] embed long-term energy-management practices within companies”.⁸

Sample Tactics

While the specific tactics used for implementation will be designed by the selected third-party Implementer (s) the following are tactics that are likely to be used:

- Continue the transformation of the old Continuous Energy Improvement program into the newly adopted Strategic Energy Management offering by leveraging the statewide downstream SEM model; and
- Educate and train industrial customers on to identify process savings and how to achieve deeper savings through Strategic Energy Management.

⁸ Strategic Energy Management Programs: Tapping Large Customers for Deep and Continuous Energy Savings, ESource

Strategy: Target Customers at the Port of San Diego per AB 628

Assembly Bill 628 provides ports in California and their utilities the opportunity to collaborate on an energy management plan designed to provide energy cost certainty, promote sustainability, and promote economic development. As part of this effort, SDG&E intends to contract with one or more third-party entities to focus on the specific needs of the Port of San Diego and the customers within the port. Many of the largest energy users at the port are industrial customers. Thus, this specific strategy may have a meaningful impact on the overall sector's success. As with the first strategy listed above, the primary focus of this strategy will be to provide a comprehensive and customized solution to each industrial customer.

Sample Tactics

While the specific tactics used for implementation will be designed by the selected third-party Implementer (s) the following are tactics that are likely to be used:

- Enlist the assistance of a third-party implementer to design, develop, and implement an EE program offering specific to the Port of San Diego and customers therein.

Key Partners

SDG&E will build on its existing relationships with both formal Partners and informal partners and strive to form new ones to allow for cost effective and comprehensive energy efficiency projects for its industrial customers.

SDG&E currently has a formal Partnership with the Port of San Diego and SDG&E intends to maintain a close partnership with the Port under the soon to be developed Energy Management Plan. SDG&E and the Port will work closely together to implement a number of programs including energy efficiency targeted at industrial, as well as commercial, customers.

Implementation of energy efficiency for all industrial customers will be dependent upon both selected third-party implementers and trade professionals working through core SDG&E EE programs. Thus, SDG&E will build on its existing third-party portfolio and Trade Pro Alliance help maintain and build energy efficiency offerings to industrial customers.

Cross-Cutting Coordination

In addition to the strategies and tactics describe in this business plans Workforce Education & Training chapter and the cross-cutting sections of other Program Administrators' business plans, SDG&E intends to provide its industrial customers with the following specific cross-cutting services.

Emerging Technology

In addition to the statewide electric and gas emerging technology programs referenced below, SDG&E may propose to pursue specific emerging technology pilots under the Port of San Diego's Energy Management plan should new technologies specific to the port be identified.

Workforce Education & Training

As a cross-cutting program, WE&T is critical to building customer demand by highlighting the value of energy efficiency, promoting market acceptance by educating trade professionals on how to maximize sales through the value proposition, and ensuring that a skilled and trained workforce properly installs and maintains equipment leading to greater savings. SDG&E's WE&T program has and will continue to focus on the following areas to engage with industrial customers. Looking ahead, the WE&T program will continue to support the following areas and will expand or contract based on market and potential data forecasts:

- Building Design & Construction
- Building Performance
- Codes & Standards
- HVAC

- Lighting
- Renewable Energy
- Sustainability
- SDG&E's Rebate & Incentive Programs

More details on these efforts are provided in the WE&T chapter of this business plan.

Financing

SDG&E will provide more financing opportunities and make financing programs easier to use. Traditional financing programs, such as SDG&E's On-Bill Financing, are helpful tools to encourage participation in IDER programs. Although most customers qualify, trade professionals often must front the project costs for their customers until a project is completed, at the risk of the customer being disqualified from financing if the project scope changes.

Codes & Standards

The Port of San Diego is one of SDG&E's primary location for industrial customers. As part of the Port's Climate Action plan, the Port has instituted a local energy benchmarking and use reporting ordinance. SDG&E will collaborate with the Port of San Diego and the customers within the Port boundary to leverage these local ordinances to save energy for the benefit of customers and the Port overall.

EM&V Considerations

The industrial sector has historically been difficult to analyze due to the large consumption that makes energy efficiency savings appear as "noise" in the data and with multiple processes at industrial sites complicating the evaluator's ability to isolate the effects of EE interventions. SDG&E will examine this sector using the approach as that outlined in the EM&V appendix. SDG&E will work with the statewide EM&V team to identify research to address the gap between current methodology, which relies heavily on simulation and engineering, and NMEC. Potential areas of study are:

- How to resolve the gap between the ex-ante and ex-post evaluation results?
- How to implement and maintain a feedback loop from ex-post evaluation to ex-ante assumptions?

A pervasive issue in all evaluation, and of specific concern to the industrial sector, is at what level does the evaluator need to understand the customer? In a perfect world, the evaluator would understand every aspect of the customer and their consumption. While it is not possible to fully understand the customer at this level, SDG&E will work with the EM&V team to develop studies, data collection protocols, address gaps, as discussed previously, to more fully understand our customers and lead successful NMEC evaluations.

Industrial Sector Metrics

Figure 5.20 describes the metrics SDG&E will use to evaluate the success of proposed sector strategies. The metrics are associated with goals and are designed to be 'SMART' (specific, measureable, attainable, realistic, and time-based). Success will be measured based on short, mid and long-term targets.

Figure 5.20 Industrial Sector Metrics

Energy Efficiency Business Plans: Sector Metric Table – Industrial Sector			
Problem Statement	Market Barriers	Desired Sector Outcome	Intervention Strategies
Industrial sector customers tend to have highly specialized, sometimes proprietary systems which necessitate a customized approach to energy efficiency, but can inhibit cost effectiveness. Also, energy efficiency competes for customer attention and financing	1. Industrial organizations assess opportunities based on a number of considerations, energy efficiency offerings being just one of many topics competing for priority of resources and funding	Double the Energy Efficiency Participation by SDG&E's Industrial Sector	Add value by bringing external industry expertise that will drive customer participation in programs and encourage customers on continued path towards deeper savings
	2. Diverse, highly complex systems means that no one approach will meet all needs		Unlock deeper savings through Strategic Energy Management offering
	3. Customers may be unwilling to participate due to other factors such as risk aversion, internal processes and compliance with increasing regulations		Target Customers at the Port of San Diego per AB 628

Figure 5.20 Industrial Sector Metrics (*continued*)

Energy Efficiency Business Plans: Sector Metric Table – Industrial Sector						
Problem Statement	Sector Metric	Baseline	Metric Source	Short-Term Target (1-3 years)	Mid-Term Target (4-7years)	Long-Term Targets (8-10+ years)
Industrial sector customers tend to have highly specialized, sometimes proprietary systems which necessitate a customized approach to energy efficiency, but can inhibit cost effectiveness. Also, energy efficiency competes for customer attention and financing	Number of unique industry engagements (diversity of types of industry)	N/A	Program database	3 Unique Industries / Year	3 Unique Industries / Year	3 Unique Industries / Year
	Number of customers engaged with this solution per year	N/A	Program database	5-8 Participants / Year	5-8 Participants / Year	5-8 Participants / Year
	Complete Port Offering	N/A	Program database	Assume AB 628 Approved in 2018 Yrs 2 & 3: 2 Port Industrial Participants / Year	2 Port Industrial Participants / Year	2 Port Industrial Participants / Year

06 AGRICULTURAL SECTOR



OUR MISSION

Identify strategic experts to grow the savings in the sector while also addressing water/energy nexus.

Chapter Summary

The agricultural sector is one of San Diego Gas & Electric's (SDG&E's) smallest, representing just 2% of total portfolio electric consumption and 1% of portfolio gas consumption. Although this sector provides only 0.2% of the portfolio's electric savings, it provides a full 10% of the gas savings.

While this sector plays an important role in the area's economy, it faces significant challenges. Historically, SDG&E can help alleviate these challenges with strategies that improve energy and resource efficiency for its diverse set of agricultural customers. SDG&E has served the sector with programs that seek to improve both water-use and energy efficiency (EE); however, California's acute water shortages have only worsened the sector's plight and more must be done to help these customers control energy costs and remain economically viable. Thus, this new approach is warranted. This business plan lays out a plan for the agricultural sector that will seek to leverage the expertise of third-party providers and offer tools and strategies that enable customers to reduce energy costs and save water.

Consistent with the California Long Term Energy Efficiency Strategic Plan, SDG&E's mission for the agricultural sector is to rely upon cultivating relationships with the agricultural community and supporting the sector's long-term economic and environmental success. To accomplish this mission, SDG&E has established the following agricultural sector goals:

- **Agricultural Goal 1: Double the Energy Efficiency Participation by the Agricultural Sector**
- **Agricultural Goal 2: Provide the Agricultural Sector an Offering to Address the Water/Energy Nexus**

SDG&E has struggled to engage the agricultural sector in its programs, and efforts to engage agricultural customers are complicated by the large number of small farms and agricultural businesses. Recent studies, described further within this chapter indicate that the manner in which SDG&E has implemented agricultural programs has not been wildly successful and suggests that a completely new approach is warranted.

The Past, Present, and Future of AGRICULTURAL ENERGY EFFICIENCY

MARKET CHARACTERIZATION

PAST & PRESENT



FUTURE

A very challenging market

- Expensive land
- Poor soil
- Expensive and limited water



Many small farms
65% under 10 acres

2% of total electric consumption



0.2% of total EE savings

San Diego County has more farms than any other county in the U.S.



Indoor agricultural load could grow

Indoor agriculture may grow with cannabis legalization



Water costs in San Diego are highest in the State

Water will continue to be a driving factor in decision-making for agricultural customers



Water scarcity will create competition within rural areas



Potential for **gas savings** is very small

DELIVERY APPROACH

No specific agricultural offering, only general non-residential offering



- Deemed Rebates
- Calculated Incentives
- Direct Install
- Audits
- On-Bill Financing

Lack of customization to unique sector needs, barriers and challenges



Lack of collaboration with stakeholders and industry partners

Separate and focused approach that allows for specialization to the market



Plan to outsource to attract expertise in area

Strategic Energy Management for agriculture can accommodate SDG&E's agricultural sector



Citations for data presented on this figure are included throughout the chapter.

SDG&E believes that in order for the agricultural sector to embrace energy efficiency, these customers will require a customized approach that focuses on the unique requirements of this sector. The strategies proposed herein will leverage the statewide Strategic Energy Management (SEM) program and use the knowledge and expertise of the market by selecting third-party contractors to serve as the implementer(s) of energy efficiency for the agricultural sector. This approach is consistent with the advocated position of a number of stakeholders in the California Energy Efficiency Coordinating Committee (CAEECC) process.

The legalization of cannabis in the state may also change the character of the agricultural industry in the service territory and require a marked change in the way SDG&E addresses the sector. Specifically, marijuana growing facilities can be very energy intensive due to use of traditional 1000-watt incandescent light bulbs. As a potentially large energy user, cannabis farming could negate much of the energy savings that the sector hopes to achieve. Extra effort may be required to ensure that this sub-segment has ample opportunities to pursue energy efficiency. In fact, growers in Washington State who have received utility rebates for implementing light-emitting diodes (LEDs) pay less than half the energy costs as those still using incandescents.¹

Approach to Achieve Agricultural Sector Goals

SDG&E has previously implemented the agricultural offerings in conjunction with the commercial offerings providing one over-arching deemed program and one over-arching calculated program. However, SDG&E's program data indicate that the manner in which SDG&E has implemented its agricultural programs has not been wildly successful. In an effort to better understand these customers, SDG&E commissioned a market study in 2015 by Evergreen Economics, which had the following findings:

- SDG&E agriculture customers are interested in saving water, and are also interested in water-related measures.
- Agriculture customers may be more receptive to marketing and measure offerings if they are described in their own industry terms.
- When presenting to trade associations, use case studies that feature participating customers.
- Customers report lack of awareness and lack of having enough information as the two largest barriers to participating in SDG&E's programs.
- There are additional measures that save energy in this sector offered by other (non SDG&E) utilities that SDG&E might consider offering.
- About half of customers report that rebate amounts are too low, and most of the remainder report that the rebate amounts are just right.
- Crop-producing customers report that they would be a lot more likely to participate in SDG&E's offerings if there was the ability to get incentives at the supplier level.²

¹ Marijuana growers are seeing the (LED) light on energy efficiency, Utility Dive, December 14, 2016. <http://www.utilitydive.com/news/marijuana-growers-are-seeing-the-led-light-on-energy-efficiency/431991/>.

² SDG&E Agricultural Sector Market Study, Evergreen Economics, 2015.

The Evergreen Economics study, as well as SDG&E's market analysis and stakeholders, identified a number of consistent barriers to participation in energy efficiency by the agricultural sector. SDG&E has analyzed these barriers and considered the direction set by the California Energy Efficiency Long Term Strategic Plan to determine the goals needed in order to establish a unified, achievable framework that will yield concrete results in support of the mission and vision of the agricultural sector.

Based on the study findings, Evergreen Economics made the following recommendations for SDG&E to consider:

- Focus on both money and water savings wherever possible when marketing energy efficiency options to the agriculture sector. SDG&E could consider marketing their on-site audit as an irrigation checkup in order to appeal to the customer desire to save on water costs.
- Utilize agriculture specific terms for measures that can be utilized across industries in order to improve the odds that agriculture customers who are looking for assistance will easily find their offerings.
- Expand the use of customer testimonials to SDG&E's website.
- Continue working with industry organizations to inform and educate customers with the intent of increasing awareness of program offerings.
- Consider changing the way that the greenhouse cover is presented (and calculate the incentive per roll rather than per square foot).
- Consider a midstream rebate approach for crop producing (indoor and/or outdoor) growers.
- Consider connecting the data collected in the mail survey to customer information.

Given its performance to date with the agricultural sector, SDG&E believes a completely new approach is warranted. Various stakeholders in the CAEECC process have advocated for a more market based approach by leveraging the contractor community. Thus, the agricultural sector is an excellent opportunity to pursue stakeholder recommendations and collaborate with third-party implementers to better serve this market. As such, SDG&E intends to issue solicitations for this entire sector to third parties that are embedded in the agricultural markets, have relationships with distributors and suppliers, and can achieve the energy savings goals.

To focus on the overwhelming importance of water in the agricultural sector, SDG&E has developed a specific goal to address the connection between water and energy. The relationship between the identified problems, the established goals, and the markets these goals address is summarized in **Figure 6.1**.

This chapter outlines the overarching goals that will set the direction for SDG&E's agricultural sector's energy efficiency efforts in the coming years. SDG&E's agricultural sector goals are:

- **Agricultural Goal 1: Double the Energy Efficiency Participation by the Agricultural Sector.**
- **Agricultural Goal 2: Provide the Agricultural Sector an Offering to Address the Water/Energy Nexus.**

These goals and the programs that will be designed and implemented will be used to reach savings goals based upon approved budgets. The following **Figures 6.2** and **6.3** outline the proposed energy efficiency goals and budget for SDG&E's agricultural sector.

Figure 6.1 Agricultural Sector Market Characteristics and Problems Overcome by Goals

		Targeted by Strategies Supporting Goals		
Problem	Goal	Customer Size	Market Segments	End-Uses
<ul style="list-style-type: none"> • Marketing not specific to Ag sector, nor presented in effective manner • Desire for mid/upstream incentives • Lack of awareness & sufficient info on EE 	Double EE Participation by Ag Sector	Small, Medium, Large	Nursery & Cut Flower Products, Fruit & Nuts, Vegetables, Livestock & Poultry, Livestock & Poultry Products, Miscellaneous Products & Services	Building Envelope, HVAC, Irrigation, Lighting, Water Heating
Focus on water	Provide Ag Sector an Offering to Address the Water/Energy Nexus	Small, Medium, Large	Nursery, Fruit & Nuts, Vegetables, Livestock & Poultry	Irrigation, Water Heating

Figure 6.2 Agricultural Sector Annualized Savings Goals

	Short-Term 2018-2020	Mid-Term 2021-2023	Long-Term 2024-2025
GWh	2.7	2.7 - 2.8	2.8
MW	0.2	0.2	0.2
MMTherms	0.04	0.04	0.04

Figure 6.3 Agricultural Sector Annualized Budgets

	Short-Term 2018-2020	Mid-Term 2021-2023	Long-Term 2024-2025
Annual Budget	\$816,720	\$816,720	\$816,720

Overview of Current and Proposed Offerings

As discussed, SDG&E's current non-residential energy efficiency programs, listed below, span multiple customer sectors, restricting the utility's ability to tailor offerings to specific segments. Rather than continue with this approach, SDG&E is pursuing a new approach: all of the components needed for the agricultural sector will now be bundled into a sector-specific solicitation. It will be critical that agricultural customers receive the benefits of the existing core programs offered in a way that is appropriate for the agricultural sector. The core programs that have been offered in the past are:

- Comprehensive Audit Program
- Energy Efficiency Business Rebates
- Energy Efficiency Business Incentives
- Business Energy Solutions
- Premium Efficiency Cooling
- Retrocommissioning
- Savings By Design
- Locational Energy Efficiency
- On-Bill Financing

The strategies and sample tactics proposed in this business plan will explore the use of third parties to design, deliver, and drive participation for the agricultural sector. **Figure 6.4** provides an overview of these strategies and sample tactics.

Figure 6.4 Overview of Current and New Offerings

Goal	Strategy	Sample Tactics	New, Existing, Modified	Short-, Mid-, Long-Term
Double the Energy Efficiency Participation by the Agricultural Sector	Expand the use of Third Parties to develop and deliver intervention strategies	Solicit third parties that can provide offerings that include: <ul style="list-style-type: none"> • Energy Management Systems and Emerging Technologies • Working with trade associations to educate sector leaders • New operation and maintenance training • Expanding financing options • Develop Agricultural EE case studies 	Modified	Short
	Offer Strategic Energy Management	<ul style="list-style-type: none"> • Educate and train agricultural customers to identify process savings and how to achieve deeper savings through Strategic Energy Management 	New	Short
Provide the Agricultural Sector an Offering to Address the Water/Energy Nexus	Work with Third Parties to Incorporate Embedded Energy Savings in Offerings	Solicit third parties that can provide offerings that include: <ul style="list-style-type: none"> • Address water savings solutions • Partnering with water agencies to develop shared offerings • Water/Energy management systems and emerging technologies 	Modified	Short

“It is important to consider that San Diego County houses a unique agriculture community with smaller than average farms, a dry climate, high water costs and many high value per acre crops.”

– *SDG&E Agricultural Market Study, Evergreen Economics, 2015*

Market Characterization

San Diego County has a geographic area of 4,200 square miles. Within that geographic area, there are more than 5,700 farms -- more than any other county in the United States. In 2014, San Diego County agriculture covered 268,620 acres (10% of the County acreage) and contributed approximately \$1.8 billion to the economy. San Diego County farmers produce more than 37 commodities that are valued in excess of \$1 million each.³

SDG&E’s agricultural sector can best be characterized by five main features:⁴

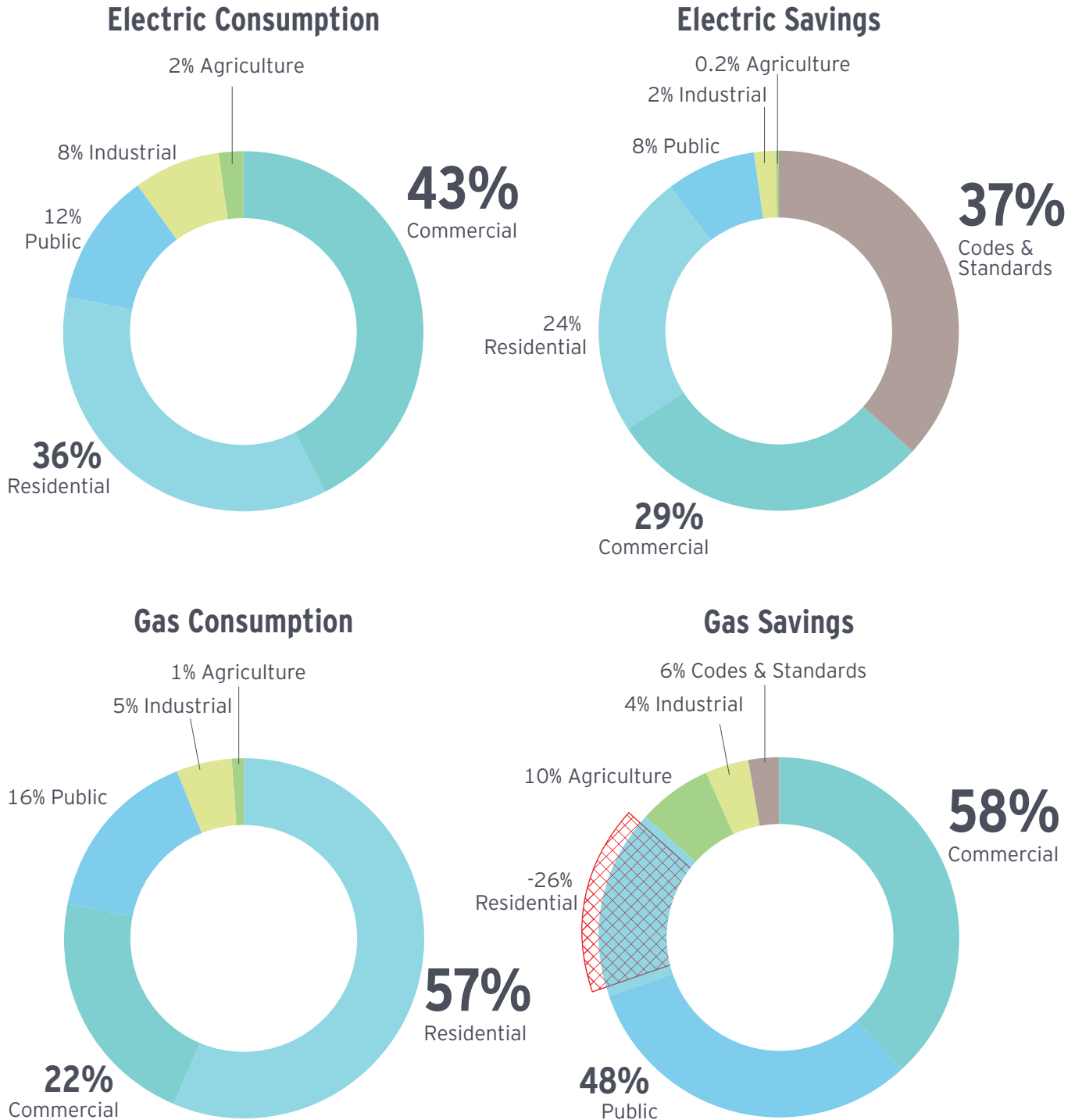
- **Mild Climate** – The service territory has a mild, Mediterranean climate. With an average temperature of 63 degrees and ample sunlight, this area is capable of year-round production for many crops.

- **Expensive Land** – Land values in SDG&E’s service territory trend more with real estate values than agricultural inputs and values. San Diego County has some of the highest prices for farmland in the country.
- **Poor Soils** – Only six percent of the soils in the County are considered prime for agricultural use. Soil improvement is a major task for any area farmer.
- **Expensive Water** – Not only is water availability an issue that is plaguing the State, but the cost of the water that is available is extremely expensive and can reach over \$600/acre foot, some of the highest in the State. Water rates in the service territory can be as high as 30-times more than those of the Central Valley or Imperial Valley.
- **Small and Numerous Farms** – With more than 5,700 farms, San Diego County has more farms than any other county in the U.S. The average farm size in California is 334 acres, which is below the national average of 438 acres. According to the San Diego Farm Bureau, sixty-five percent of farms in the county have fewer than 10 acres, meaning that while the area has a large number of farms, they are predominantly very small.

³ 2014 County of San Diego Crop Statistics & Annual Report.

⁴ <http://cesandiego.ucdavis.edu/files/54278.pdf>

Figure 6.5 SDG&E 2013-2015 Average Annual Consumption^{a,b} / Total Energy Efficiency Savings^c, by Sector



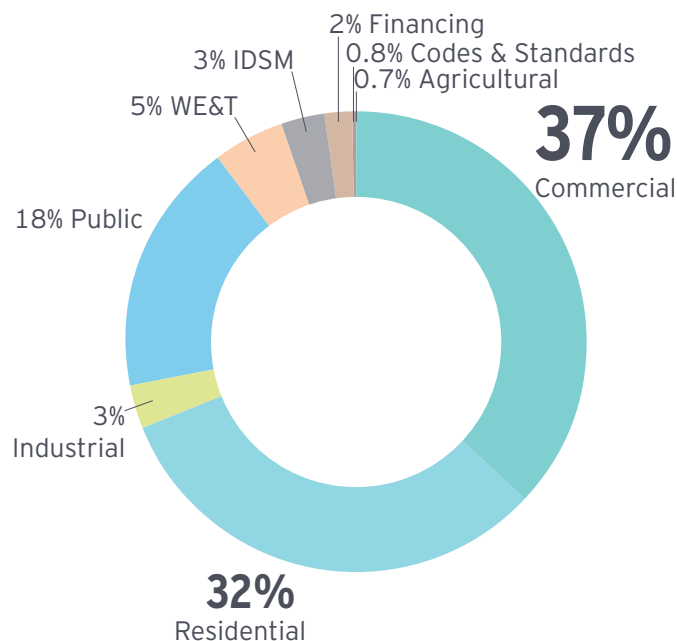
^a Energy Consumption Data Management System, CEC, <http://ecdms.energy.ca.gov/gasbyplan.aspx>.

^b Energy Consumption Data Management System, CEC, <http://ecdms.energy.ca.gov/electbyplan.aspx>.

^c SDG&E EE Program Data, 2013-2015.

Figure 6.6 SDG&E 2013-2015 Total Energy Efficiency Spending, by Sector^A

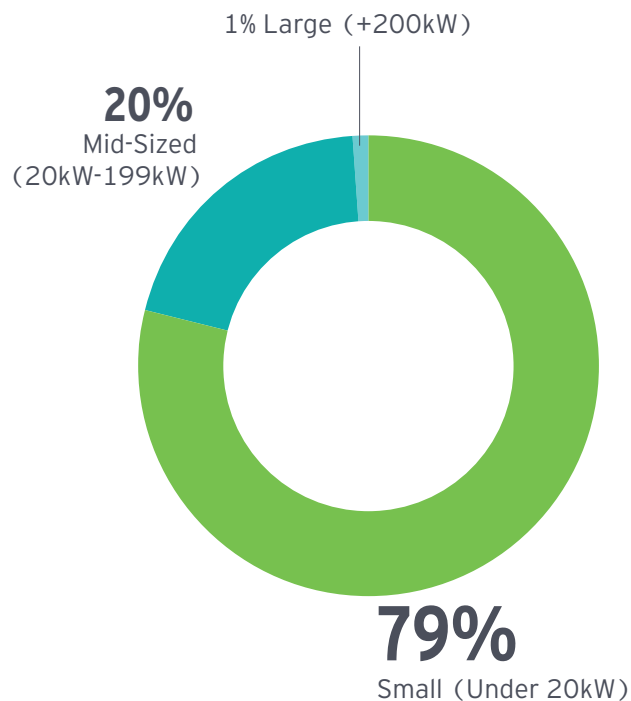
Source: SDG&E EE Program Data, 2013-2015



According to data from SDG&E's 2013-2015 program cycle, the agricultural sector represents 2% of the portfolio's electric consumption, or 331 GWh, 1% of the portfolio's gas consumption, or 3 million therms, 0.7% (\$1.9M) of all energy efficiency spending, and 0.2% (1.2 GWh) of the portfolio's electric savings and 10% of the portfolio's gas savings, as shown in **Figure 6.5** and **Figure 6.6**.

Figure 6.7 Agricultural Customer Size

Source: SDG&E Agricultural Customer Distribution (2013-2015).



In line with the other customer sectors in SDG&E's service territory, the data displayed in **Figure 6.7** show that the majority of SDG&E's agricultural customers are very small (under 20kW). Small customers are typically challenged when it comes to planning and implementing energy efficiency improvements. SDG&E defines customers by the distribution of their demand, ranging from small customers (<20kW), to medium customers (20-199kW), to large customers (>200kW).

Any way you measure it, SDG&E's agricultural sector is very small. As such, it makes sense to explore new approaches to serve this sector so that its needs are addressed specifically, rather than being one sector among many being served.

Market Segments

Market segmentation provides additional insights that can inform targeting, strategy, and program design. SDG&E has historically characterized the agricultural sector within the territory as one segment: growers. Further analysis and a market characterization study of agricultural accounts shows that greater differentiation is possible.

The SDG&E Agricultural Sector Market Study that was conducted by Evergreen Economics Inc., in 2015, identified these main Agricultural segments:

- Nursery & Cut Flower Products;
- Fruit & Nuts;
- Vegetables;
- Livestock & Poultry;
- Livestock & Poultry Products; and
- Miscellaneous Products and Services (including apiary).

All these segments have previously been reported under the North American Industry Classification System (NAICS) designation of “Growers”. While additional work is needed to further dissect the Misc. Products and Services segment, the other five segments directly align with the major crops categories outlined in *2014 County of San Diego Crop Statistics & Annual Report*.

Figure 6.8 Account Shares by Agricultural Segment

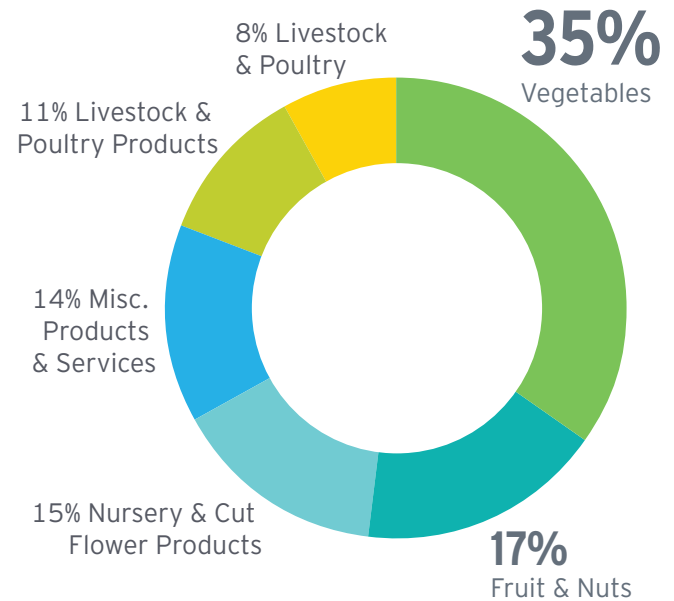
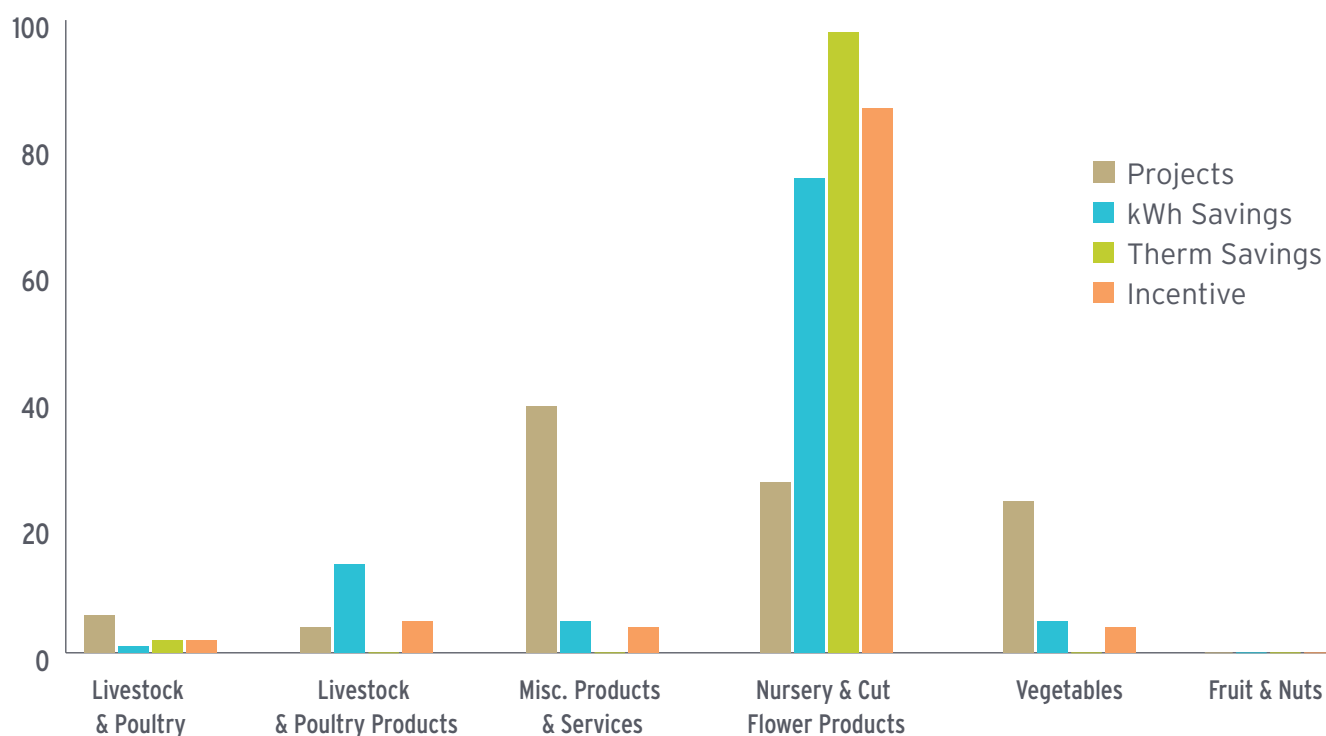


Figure 6.8 represents the distribution of accounts by segment for SDG&E’s approximately 2,300⁵ total agricultural accounts.

There are some key observations that can be surmised from assessing the segment distribution for this sector within SDG&E’s service territory. The Vegetable segment is the largest, containing approximately 800 accounts. The Fruits & Nuts segment is the next largest with approximately 400 accounts. As shown in **Figure 6.8**, these two segments alone make up more than half of the sector’s electric usage (~52%). The remaining sub-segments are quite small, totaling about 1,100 accounts, but they make up the remaining 48% of the electric consumption.⁶

⁵ Energy Consumption Data Management System, CEC, <http://ecdms.energy.ca.gov/gasbyplan.aspx>.

⁶ Ibid.

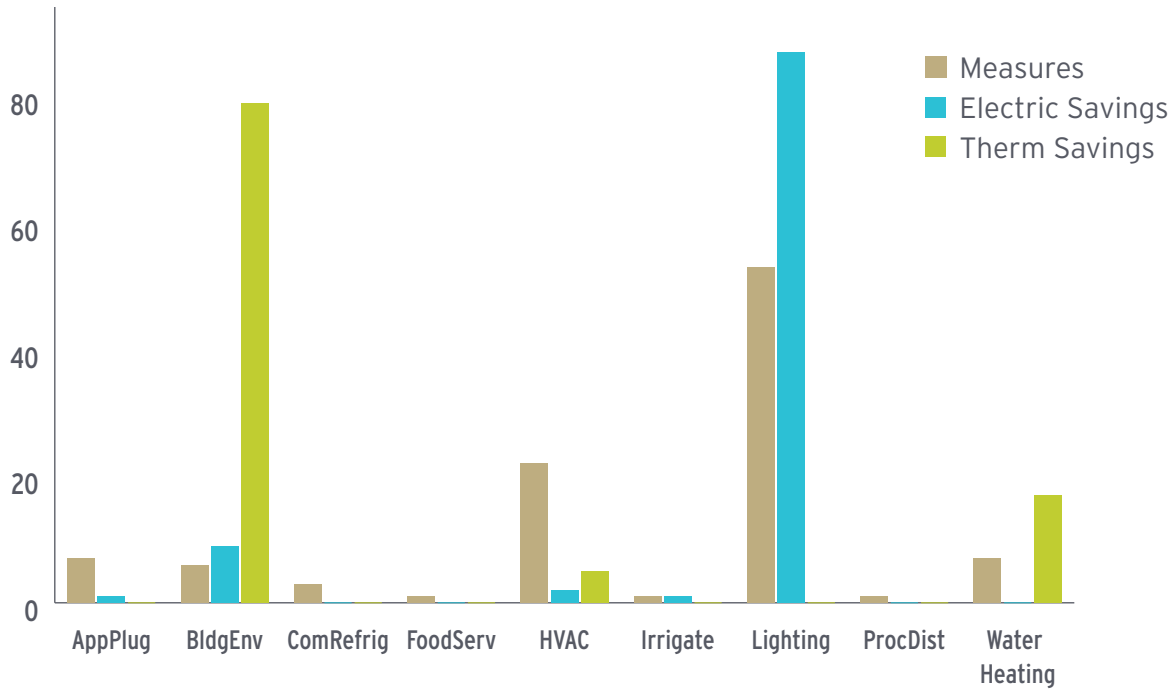
Figure 6.9 Historical Energy Efficiency Projects

Each segment has unique consumption patterns and needs that may influence their program participation. By understanding these participation patterns and trends, SDG&E will propose offerings that better suit each of these unique segments.

Looking at participation in the 2013-2015 program cycles, certain trends emerge. **Figure 6.9** describes the historical energy efficiency projects and participation by each segment in the agricultural sector, including:

- percent of accounts,
- percent of projects completed,
- percents of electric (kWh) and gas (therm) savings, and
- percent of incentive paid.

Although we see participation in a few segments, the majority of the sector savings came from a single segment, Nursery & Cut Flower Products. While the Vegetable segment represents the most consumption within the sector, their savings relative to their participation is lower than expected. This dissociation is true also of the Misc. Products/Services segment. Both of these segments offer opportunities for greater participation and savings. Other opportunities will be to look into the Fruit & Nut segment to understand the lack of participation.

Figure 6.10 Historic Savings by End-Use^A^ASDG&E market characterization study and customer information system data

Sector End-Uses

When analyzing the historical program participation for this sector by end-use, it is clear that a few key measures make up the majority of the projects. **Figure 6.10**, outlines historical savings by end-use.

Based on this data, it is clear that the vast majority of gas savings are from building envelope, including greenhouse heat curtains and infrared film for greenhouses. To a lesser degree, the water heating category with measures such as pipeline insulation and hot water line Insulation, also contributed gas savings to this sector. These measures seem like the most likely candidates given the types of segments that are prominent in the SDG&E service territory. Moving forward, it will be important to identify additional measures to offer this segment as many of the gas measures noted are now considered to be

maintenance and standard practice and therefore are not eligible for incentive or rebate. On the electric side, lighting provides the majority of savings, followed by building envelope. Lighting is expected to grow as a result of the legalization of cannabis in California. More about this future trend will be discussed later in this plan.

Energy Efficiency Market Potential

When assessing potential, it's important to see the sector potential in relation to the overall portfolio potential. As seen in **Figures 6.11** and **6.12**, both the electric and gas potential for SDG&E's agricultural sector are very small compared to the overall portfolio and are forecasted in the 2015 Navigant Market Potential Study to be only 3 GWh and 36,000 therms, respectively. This is consistent through 2024.

Figure 6.11 SDG&E Electric Market Savings Potential by Sector (GWh)

Source: 2015 Navigant Market Potential Study

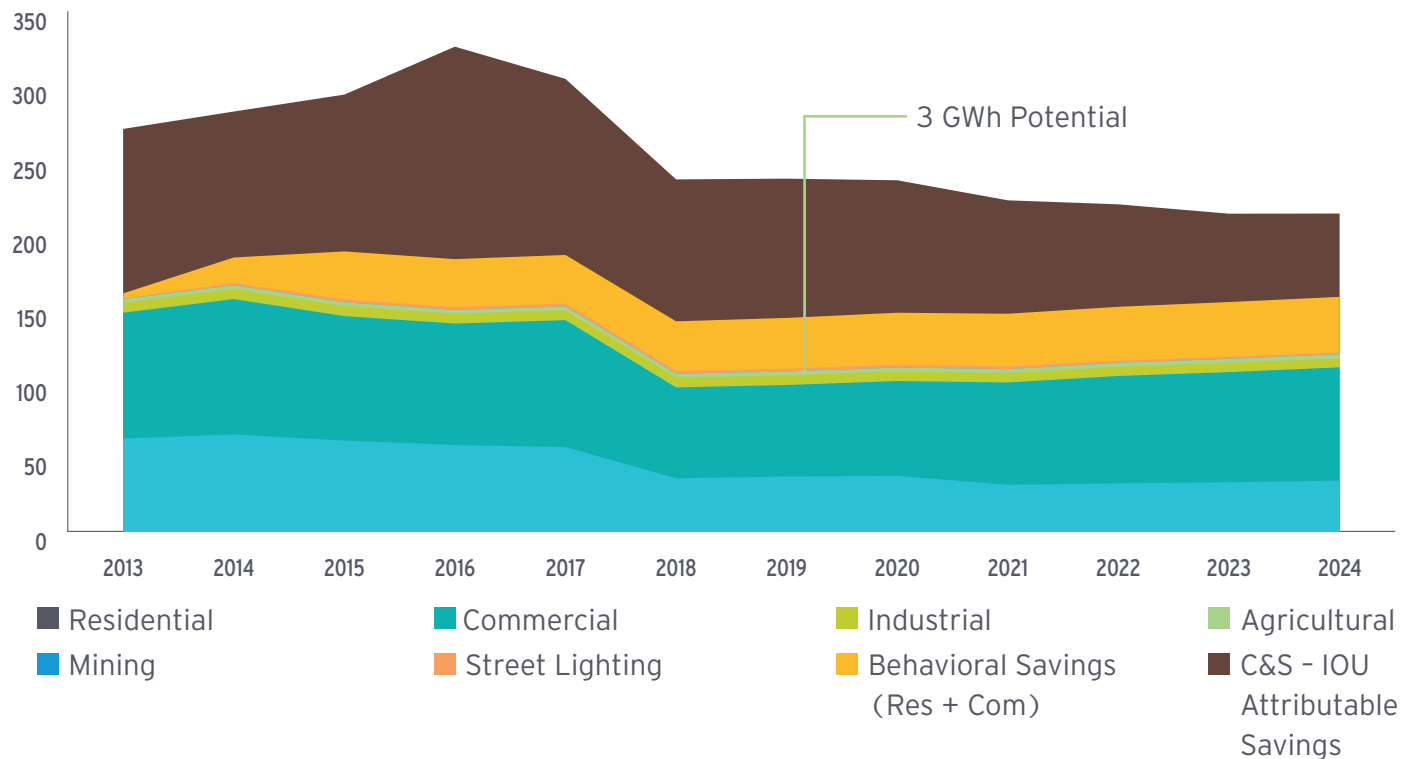


Figure 6.12 SDG&E Gas Market Savings Potential by Sector (MMTherms)

Source: 2015 Navigant Market Potential Study

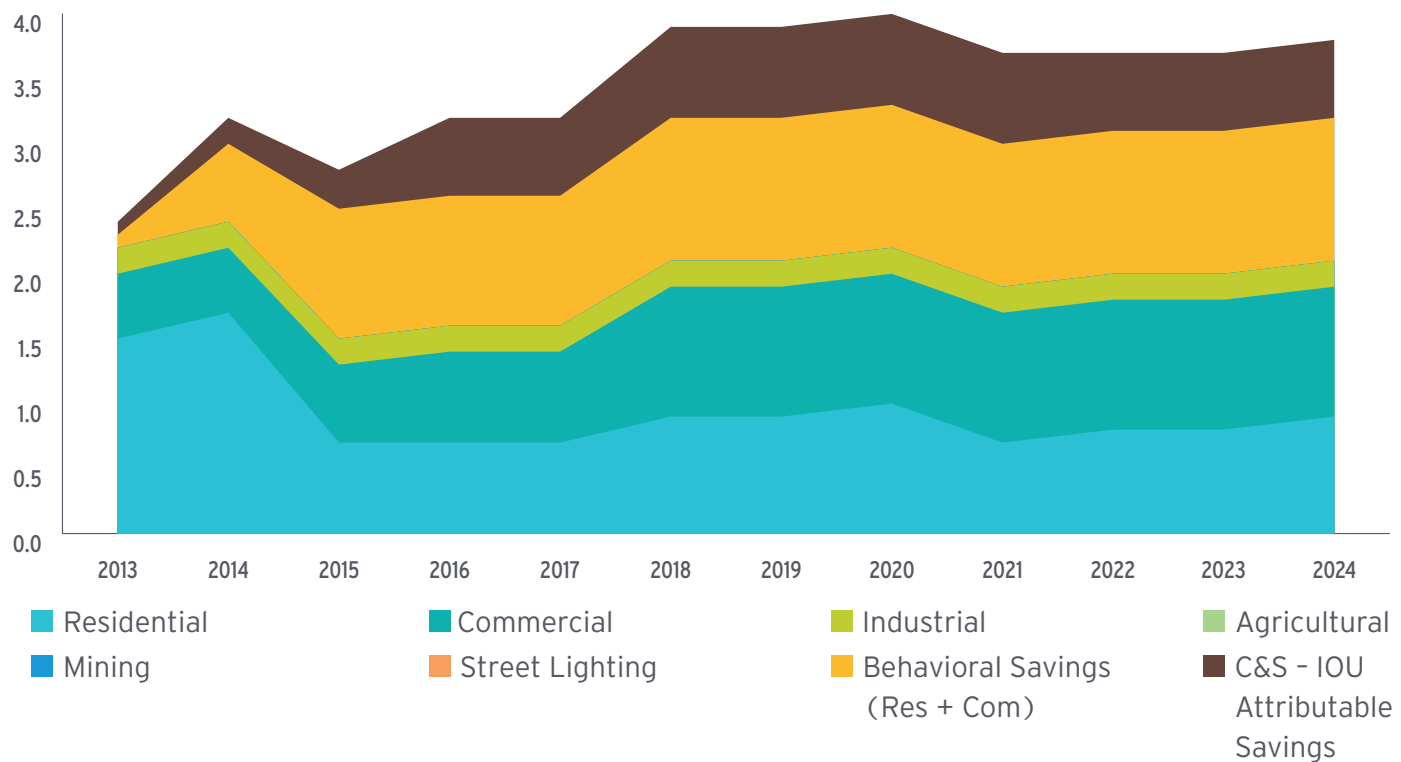


Figure 6.13 SDG&E Incremental EE Market Potential by End-Use for the Agricultural Sector^A

Source: 2015 Navigant Market Potential Study

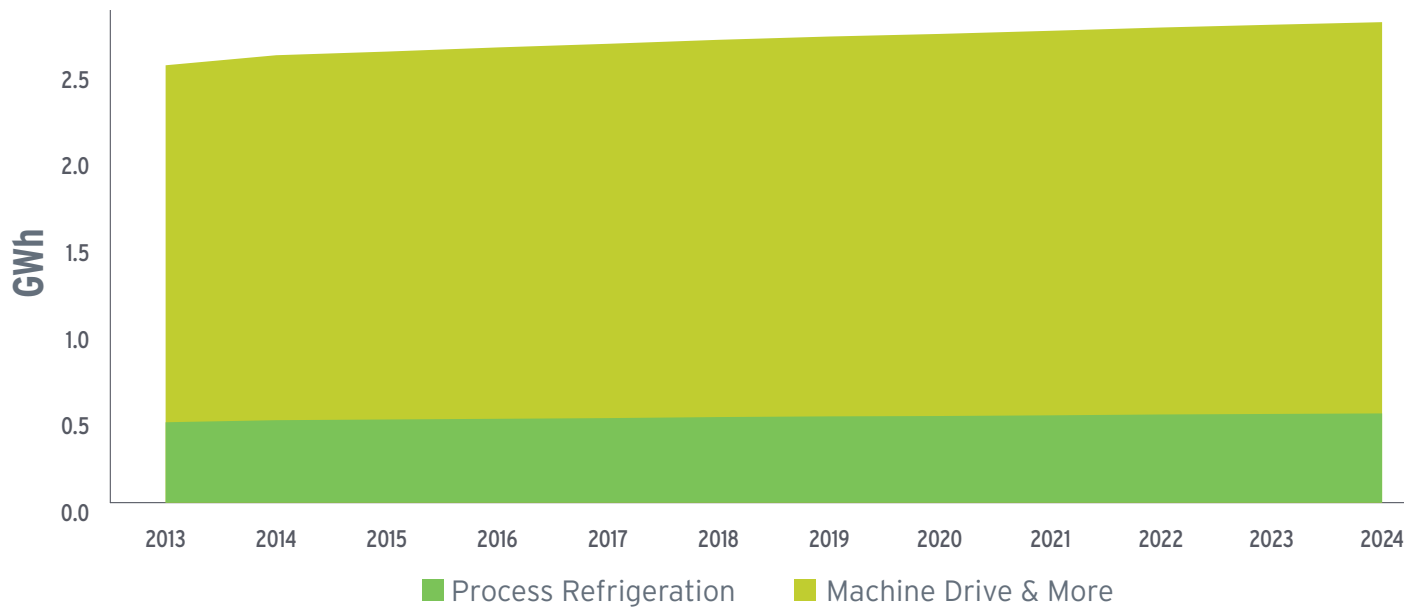


Figure 6.13 and **Figure 6.14** show the agricultural potential by end-use category. Within the agricultural sector, the predominant electric end-use categories are process refrigeration and machine drive/motors and the predominant gas end-uses are hot water and process heat. While process refrigeration, hot water, and process heat show consistent market potential throughout the time period of 2013-2024, machine drive / motors show a slight increase in potential over the study period. Machine drives are most commonly found in post-harvest processing, dairies, and irrigated agriculture building types, as shown in **Figure 6.15**. According to the Navigant potential study, over half of the potential savings for Agriculture was identified as operations and maintenance (O&M). Thus, the main focus for these end-uses and building types will be on O&M.

“Given the size of California’s relative population and medical marijuana market, the potential California recreational cannabis market alone could be twice the size of the Colorado, Washington, Oregon and Alaska markets combined, and may generate enough tax revenue and retail sales to impact national opinion and subsequently, federal legislation.”

– SDG&E Cannabis Agricultural Energy Demand Study, Evergreen Economics, 2016

Figure 6.14 SDG&E Incremental Gas EE Market Potential by End-Use for the Agricultural Sector^A

Source: 2015 Navigant Market Potential Study

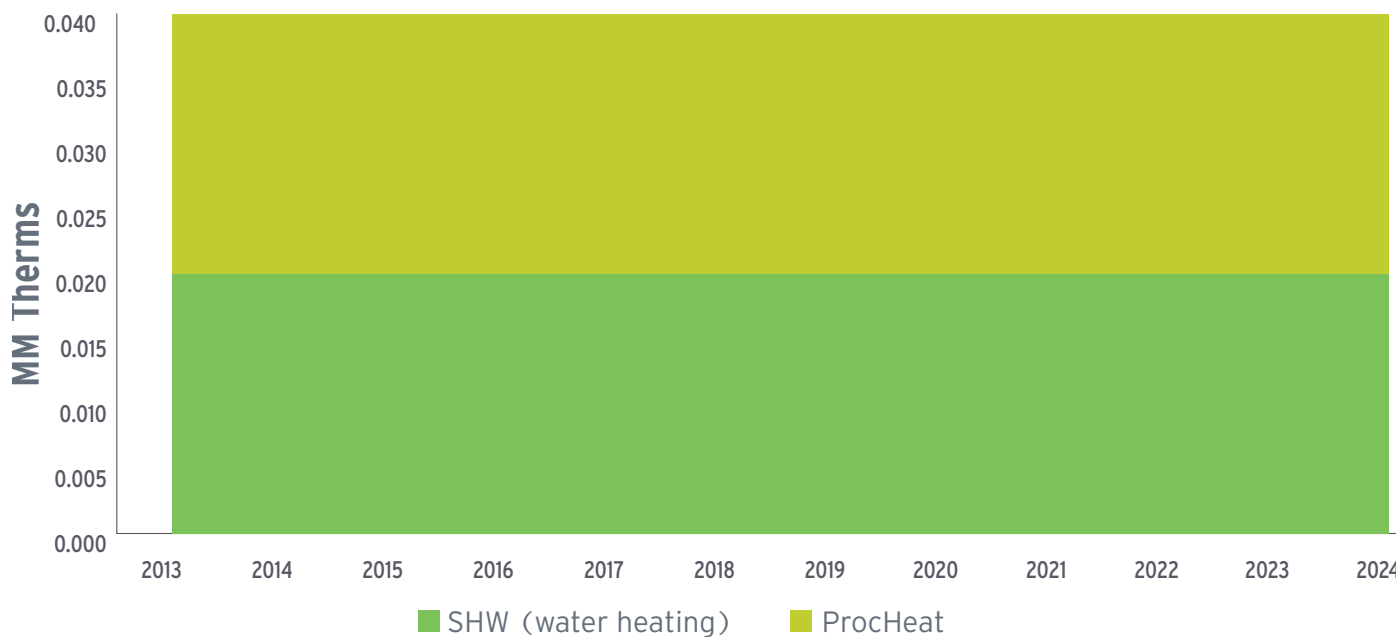
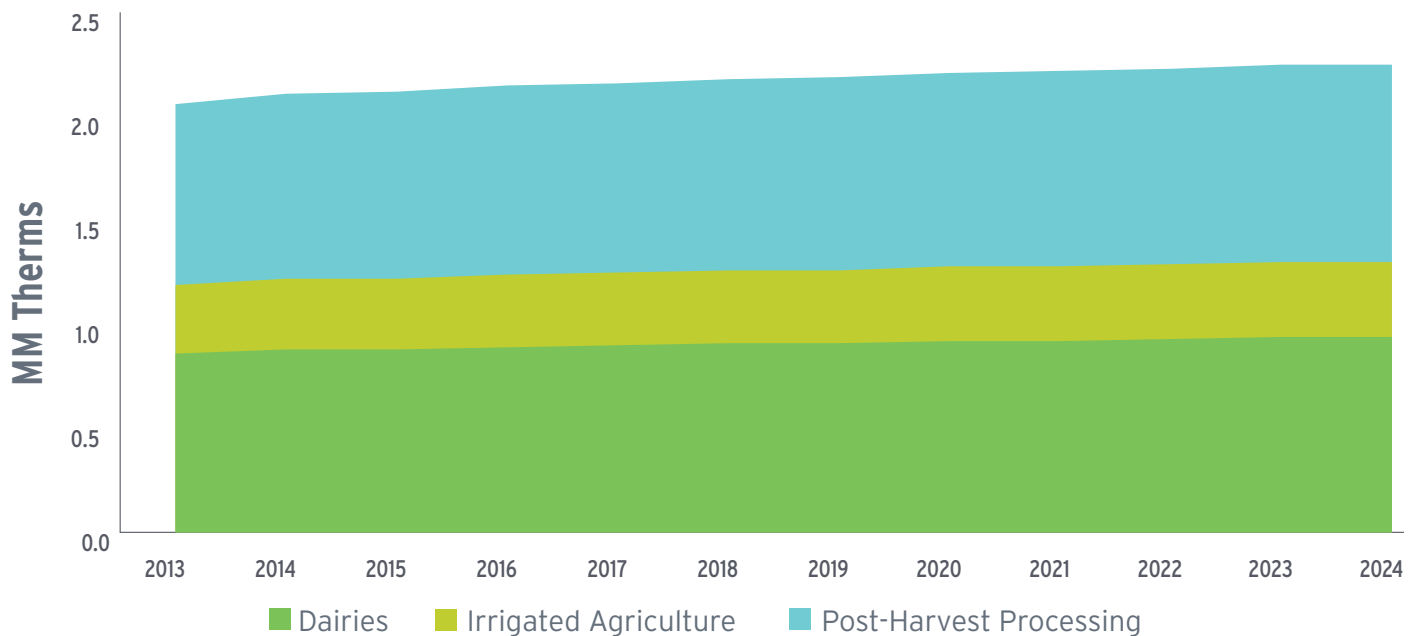


Figure 6.15 SDG&E Incremental Electric EE Market Potential by Building Type for the Agricultural Sector

Source: 2015 Navigant Market Potential Study



Future Trends

Two major trends that will impact agriculture in the San Diego region are:

- Water scarcity; and
- Cannabis legalization in California.

Agriculture in California will continue to be challenged with trying to stay productive, prosperous, and relevant in the face of what is being referred to as a potential “megadrought” in the future.⁷ With water costs in San Diego County already being amongst the highest in the State⁸, water will continue to be a driving factor in how SDG&E’s agricultural customers make their decisions on where to spend their resources. Water scarcity will drive up the cost of water as agriculture competes with rural areas for this resource. Farmers will be forced to make production decisions with less water and more uncertainty in the 21st century.⁹

California has joined the ranks of Colorado, Washington and Oregon to legalize cannabis through a ballot measure approved in November. In a study commissioned by SDG&E, Evergreen Economics estimated that energy will account for at least half of the operating costs for indoor growers, and, as a result, utilities will experience increased energy demand, once the crop is legalized.

Money and Water related savings were identified as higher priorities than energy savings.

– SDG&E Agricultural Market Study, Evergreen Economics, 2015

⁷ Measure, Application, Segment, Industry (MASI): Agriculture, Navigant Consulting for Southern California Edison, 2015, p. 43.

⁸ <http://cesandiego.ucdavis.edu/files/54278.pdf>

⁹ <http://californiaagriculture.ucanr.edu/landingpage.cfm?article=ca.v054n04p16&fulltext=yes>

Legislative Drivers

Each chapter of the business plan discusses the ways recently adopted legislation, specifically, Senate Bill (SB) 350 and Assembly Bills (AB) 793, 758 and 802, help shape SDG&E's sector approaches. For example, SB 350's requirement to achieve a doubling of EE goals aligns very well with the sector's primary goal of doubling agricultural customers' participation in SDG&E programs. As is discussed elsewhere in this chapter, SDG&E will employ strategies of expanding use of third parties to serve agricultural customer needs and actively use Strategic Energy Management to provide customers actionable energy efficiency solutions.

Most agricultural customers will benefit from SDG&E's AB 793 offerings to commercial customers. Small commercial customers are eligible to receive free programmable communicating thermostats (PCTs), which enable them to better understand and manage their energy use.

Although AB 802's building benchmarking requirements are not as applicable to the agricultural sector since the predominant building types are not easily benchmarked, SDG&E will seek opportunities to provide through the online platform proposed (see commercial sector) better information about their energy use. To the extent possible, this information will also include relevant information about how a customer's usage compares with other similar operations.

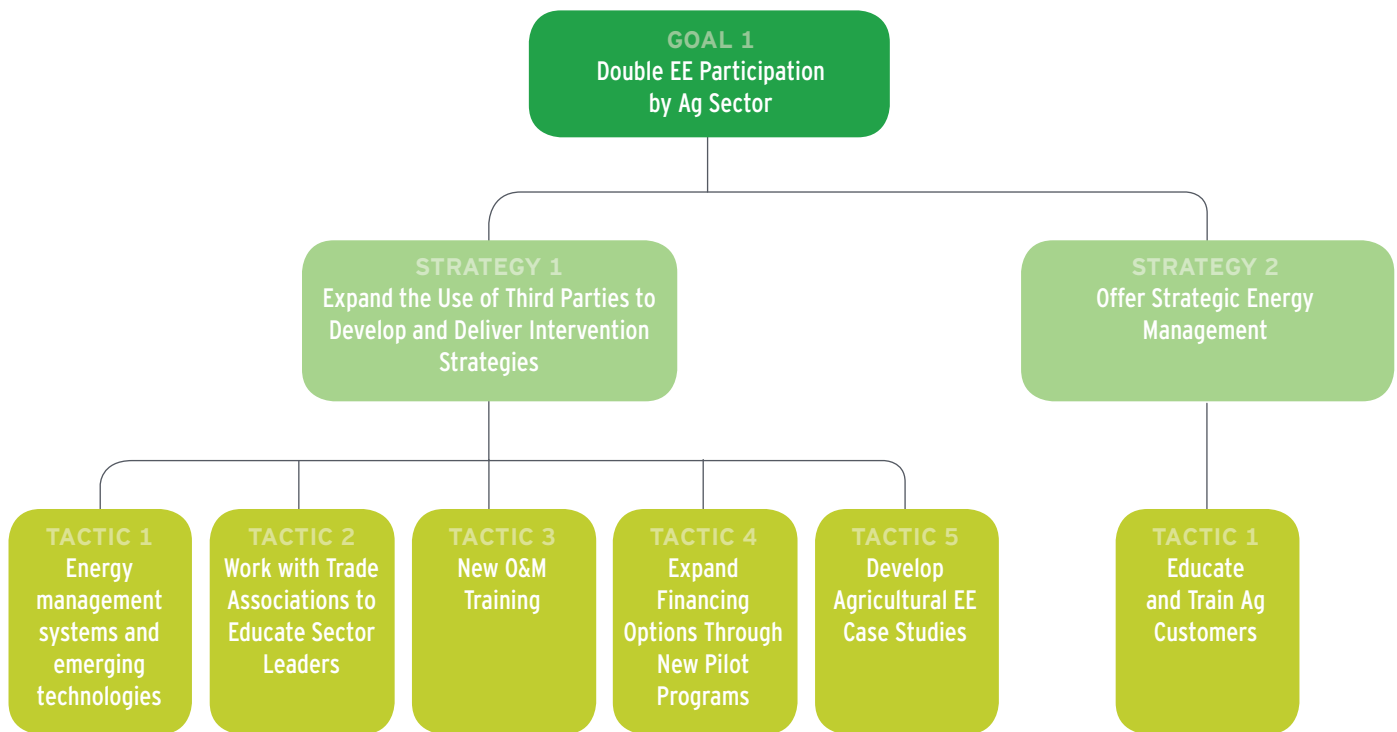
AB 802's changes to baselines will be one of the factors shaping SDG&E's pursuit of third party-administered programs for the sector. As the intricacies of the baseline policy become clearer, it is anticipated that third party-designed programs will utilize these approaches with specific application to agricultural customers' needs.

Policy Drivers in the Agricultural Sector are summarized in **Figure 6.16**.

Figure 6.16 Policy Drivers in the Agricultural Sector

AGRICULTURAL		
Policy Driver	Specific Requirement/Guidance	Business Plan Response
SB 350 – Clean Energy and Pollution Reduction Act of 2015	<ul style="list-style-type: none"> • Achieve a cumulative doubling of savings in electricity and gas retail customers' final end uses by 1/1/30 • The CEC shall adopt a responsible contractor policy to ensure that ratepayer-funded EE retrofits meet high-quality performance standards and reduce energy savings lost or foregone due to poor-quality workmanship 	<ul style="list-style-type: none"> • Programs will increasingly link the issue of water scarcity and cost to offerings for agricultural customers with the aim of serving two purposes – reducing water use while improving agricultural sector energy efficiency • SDG&E will cultivate stronger relationships with the agricultural community and support the long-term economic and environmental success of the sector • WE&T programs will facilitate training on responsible contractor policies and ensure that any requirements applicable to SDG&E EE programs are incorporated as necessary
AB 793 – Energy Management Technology Incentive Offering	Must develop programs by 1/1/17 that provide incentives to help residential and small/medium business customers acquire energy management technology and educate them about these programs	Offerings available to small commercial customers through the commercial strategies and tactics will also apply to agricultural customers, most of whom run smaller farms
AB 802 – Benchmarking and Changes to Energy Efficiency Baselines	<ul style="list-style-type: none"> • Benchmarking – By 1/1/17, for multi-unit buildings, utilities must provide aggregated energy usage data to its owner, its agent or the building operator. Commission will set requirements for public disclosure of information for benchmarking purposes • Baselines – Authorizes utilities to provide incentives to customers for energy efficiency projects based on normalized metered energy consumption as a measure of energy savings 	Online platform available to commercial customers will also provide agricultural customers improved opportunities to access program offerings and control their energy use

Figure 6.17 Agricultural Goal 1 Strategies and Sample Tactics



Goals, Strategies, and Tactics

SDG&E’s market analysis, studies commissioned by SDG&E and others, and input from stakeholders highlights consistent themes with respect to barriers agricultural customers face in adopting more energy efficient behaviors. SDG&E has analyzed the problems and barriers faced by these customers to establish goals and strategies to overcome these issues and allow agricultural customers to realize the benefits of energy efficiency and the services offered by SDG&E’s programs.

With these attributes in mind, SDG&E has created goals, strategies and sample tactics that are intended to remove barriers and attract both customers and vendors to energy efficiency.

Agricultural Goal 1: Double the Energy Efficiency Participation by the Agricultural Sector

As described above in this chapter, energy savings attributable to the agricultural sector has been proportionally lower than other sectors. Yet, agriculture is an important part of the San Diego area economy and increasing the sectors participation in EE by a meaningful margin is a reasonable goal. Thus, SDG&E aims to double participation of this sector. **Figure 6.17** illustrates the relationships of strategies and sample tactics to this goal.

Strategy: Expand the Use of Third Parties to Develop and Deliver Intervention Strategies

SDG&E's market analysis and review of its current approach indicate that two major changes are necessary. First the general non-residential program offerings must be combined and customized for the agricultural sector. Doing so will enable design of an offering focusing on the needs of agricultural customers. Second, communications and marketing must be sector and sub-sector specific. SDG&E believes that the best approach to delivering such a customized solution is through one or more third-party programs.

Sample Tactics

While the details of the agricultural program offering (s) will be designed by the selected implementers, SDG&E will seek to find third parties that can provide offerings that include:

- Energy management systems and emerging technologies;
- Working with trade associations to educate sector leaders;
- New operation and maintenance training;
- Expanding financing options through the new IOU financing pilot programs and other financing products; and
- Developing agricultural EE case studies.

Strategy: Offer Strategic Energy Management

The market analysis provided above indicates that knowledge of EE programs, understanding of EE value, and connecting EE to the various core businesses within the agricultural sector are all barriers to participation and savings. The Strategic Energy Management program is designed to overcome just such barriers and is expected to deliver significant energy savings. SDG&E hopes that this program will overcome some of the barriers faced by the agricultural sector and deliver meaningful energy savings.

Sample Tactic

While the details of the agricultural program offering (s) will be designed by the selected implementers, SDG&E will seek to find third parties that can provide offerings that include:

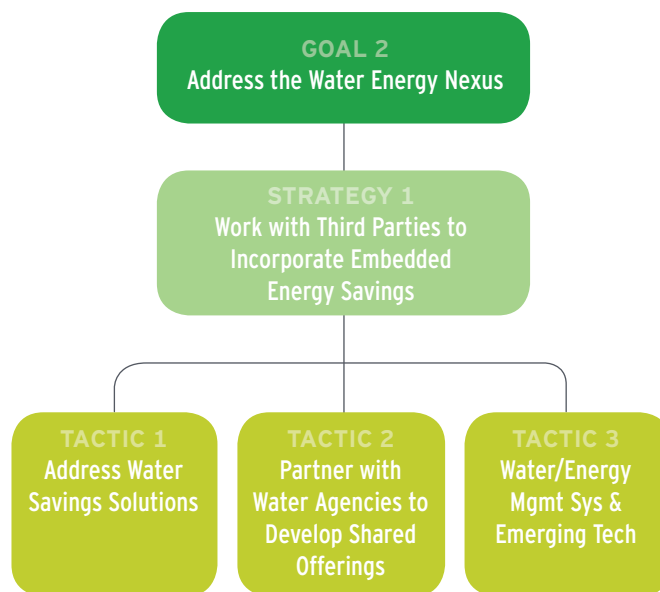
- Educate and train agricultural customers to identify process savings and how to achieve deeper savings through Strategic Energy Management.

Agricultural Goal 2: Provide the Agricultural Sector an Offering to Address the Water/Energy Nexus

A 2015 study by Evergreen Economics on San Diego Gas & Electric (SDG&E)'s agricultural sector concluded that IOUs' pursuit of energy savings from this sector is increasingly misaligned with most farmers' motivations, as water (rather than energy) is of primary concern under current conditions.¹⁰ The study recommended that IOUs "improve and prioritize energy efficiency agricultural program offerings relevant to water conservation and the water-energy nexus [and] provide guidance and training on how to utilize tools to establish and maintain optimal irrigation practices."¹¹

The agricultural sector has been historically underrepresented in the energy efficiency arena for a number of reasons. As is true in other sectors, energy efficiency is not the top priority for agricultural customers. With the recent drought in California, the agricultural sector has been much more focused on its water consumption, rather than its energy consumption. Thus SDG&E proposes its second goal be focused on the connection between the use of water and consumption of energy. SDG&E believes that if this connection can be successfully addressed the energy savings from this sector could be relatively significant. **Figure 6.18** illustrates the relationships of strategies and sample tactics to this goal.

Figure 6.18 Agricultural Goal 2 Strategies and Sample Tactics



Strategy: Work with Third Parties to Incorporate Embedded Energy Savings in Offerings

Efforts to save water also result in small embedded electric savings in the form of reduced water pumping. However, the electrical energy savings produced by water saving measures is not often factored in to savings estimates or incentive calculations. This strategy will support third party program administrator(s) in their incorporation of embedded energy savings in their savings and incentive calculations.

Sample Tactics

While the details of the agricultural program offering(s) will be designed by the selected implementers, SDG&E will seek to find third parties that can provide offerings that include:

- Addressing water saving solutions;
- Partnering with water agencies to develop shared offerings; and
- Water/energy management systems and emerging technologies.

¹⁰ Evergreen Economics, SDG&E Agricultural Sector Market Study, March 26, 2015, pp. 29-31.

¹¹ Evergreen Economics, SDG&E Agricultural Sector Market Study, March 26, 2015, p 26.

Cross-Cutting Coordination

Workforce Education & Training (WE&T)

As noted in the strategies above, this sector is highly specialized and SDG&E is recommending to outsource targeted and potentially on-site training. However, as a cross-cutting program, WE&T provides a wide array of training that may be beneficial to customers in this sector. SDG&E's WE&T program has and will continue to focus on the following areas to engage with both agricultural customers and the trade professionals who support them. Looking ahead, the WE&T program will continue to support the following areas and will expand or contract based on market and potential data forecasts:

- Building Design & Construction
- Building Performance
- Codes & Standards
- Food Service
- HVAC
- Lighting
- Renewable Energy
- Sustainability
- SDG&E's Rebate & Incentive Programs

More details on these efforts are provided in the WE&T chapter of this business plan. In addition, once the implementers are selected, the WE&T program will collaborate with them to ensure that this sector has access to a comprehensive WE&T offerings.

Financing

Improve Financing Opportunities

SDG&E will provide more financing opportunities and make financing programs easier to use by further streamlining the application process and further integrating financing with the rebate and incentive programs. Traditional financing

programs, such as SDG&E's On-Bill Financing, are helpful tools to encourage participation in Integrated Distributed Energy Resource (IDER) programs. Although most customers qualify, trade professionals often must front the project costs for their customers until a project is completed, at the risk of the customer being disqualified from financing if the project scope changes. Several of the statewide financing pilots are being designed to address this issue.

Agricultural Sector EM&V Considerations

Please see the EM&V appendix for SDG&E's evaluation approach. The EM&V approaches for the agricultural sector will conform to the general approach outlined in the appendix. The agricultural sector is unique in that whole building data, specifically singular meter, may not be appropriate to measure interventions associated with strategies outlined in this section, such as WEN approaches. Although, SDG&E recognizes this constraint, the general approach remains valid, and will be executed. SDG&E will examine where NMEC is appropriate and only deviate to other approaches, upon determination that a net-metered approach will not produce results.

For instance, Indoor growers, who, for evaluation purposes, are new construction, thus lacking historical consumption data, are likely high consumers, and are likely risk averse to technologies associated with production. In this case pre-post tests, RCTs, and various other NMEC methods are reasonable. Here, the EM&V teams will have to determine how to capture programmatic savings. SDG&E will work with the statewide EM&V team to specify a study that examines how to best capture savings associated with this customer base. Additionally, process evaluations will be proposed to better understand these customers, the equipment they use, and how to best connect and engage these companies.

Figure 6.19 Agricultural Sector Metrics

Energy Efficiency Business Plans: Sector Metric Table – Agriculture Sector	
Problem Statement	Low program participation overall
Market Barriers	<ul style="list-style-type: none"> • Money and water savings trump energy savings • Lack of awareness and information
Desired Sector Outcome (Goal)	<ul style="list-style-type: none"> • Double EE Savings for Ag Sector • Provide the Agricultural Sector a Solution Addressing the Water/Energy Nexus
Intervention Strategies	<ul style="list-style-type: none"> • Leverage Strategic Energy Management (SEM) • Expand the Use of Third Parties to Develop and Deliver Intervention Strategies such as WEN solutions.
Sector Metric	<ul style="list-style-type: none"> • Number of agricultural participants enrolling in the SEM program • Number of agriculture customers participating in water related EE programs month over month
Baseline	<ul style="list-style-type: none"> • Current number of ag customers enrolled in SEM program • Current number of ag customers participating in water related programs
Metric Source	Program database
Short Term Target (Years 1-3)	<ul style="list-style-type: none"> • 5-8 Customers / year • 20% over baseline
Mid Term Target (Years 4-7)	<ul style="list-style-type: none"> • 5-8 Customers / year • 40% over baseline
Long Term Targets (Years 8-9)	<ul style="list-style-type: none"> • 5-8 Customers / year • 60% over baseline

Agricultural Sector Metrics

Figure 6.19 describes the metrics SDG&E will use to evaluate the success of proposed sector strategies. The metrics are associated with goals and are designed to be ‘SMART’ (specific, measureable, attainable, realistic, and time-based). Success will be measured based on short, mid and long-term targets.

07 EMERGING TECHNOLOGY



Emerging Technologies Program (ETP)

Following the CPUC's direction per D. 16-08-019, program administrators (PAs) will administer on a statewide basis all upstream and midstream programs and those with market transformation objectives.¹ Southern California Edison (SCE) will be the statewide program administrator for the Emerging Technologies Program for electric, and Southern California Gas Company (SoCalGas) for gas. This program is entirely statewide; there are no locally-administered components to the ETP. Please refer to SCE's ETP chapter for details on the statewide electric ETP and SoCalGas' ETP chapter for details on the statewide gas ETP.

SDG&E will support implementation of the statewide Emerging Technologies Programs by assisting SCE for electric, SoCalGas for gas, and any third parties contracted for ETP implementation with carrying out their responsibilities within SDG&E's service territory and help ensure that SDG&E's customers'

interests are well represented. The transition to statewide implementation of programs such as ETP through third parties creates potential issues regarding adequate coverage and representation of investor-owned utility service territories, dedicating these limited local resources makes sense. SDG&E will partner with the PAs in setting the proper foundation for future statewide implementation of the ETP. Beyond the transition period, SDG&E staff will continue to play an ongoing long-term role in helping the lead PAs and implementers be successful in meeting the needs and preferences of our unique service area and customer base, and in ensuring the most promising emerging technology measures are incorporated in the portfolio as part of overall portfolio design. SDG&E will participate in the prioritization, solicitation, selection, review and approval of ETP projects and deliverables as needed. SDG&E will continue to provide guidance and feedback to overall ETP strategies in addition to activities and issues pertinent to SDG&E's needs and interests.

¹ "Decision Providing Guidance for Initial Energy Efficiency Rolling Portfolio Business Plans," California Public Utilities Commission, Decision 16-08-019, August 18, 2016, p. 2.

Finally, SDG&E staff will serve as expert local resources for its programs staff to ensure that their development and implementation of energy efficiency and demand response programs (whether local or third-party implemented) have access to ETP-produced information about the latest technological innovations so that they may offer measures with verifiable savings to customers seeking to reduce energy use.

Figure 7.1 outlines the proposed budget for SDG&E's ET Program.

Figure 7.1 ET Program Annualized Budget

	Short-Term 2018-2020	Mid-Term 2021-2023	Long-Term 2024-2025
Annual Budget	\$1,370,074	\$1,370,074	\$1,370,074

08 WORKFORCE, EDUCATION & TRAINING SECTOR



OUR MISSION

To facilitate, support, and provide subject-matter expertise for the transfer of energy efficiency knowledge and skills to the industry across all sectors, balancing the needs of the state, customers, and our communities.

Chapter Summary

San Diego Gas & Electric established its Workforce Education & Training (WE&T) program to support the training and educational needs of both California and SDG&E to meet its energy efficiency potential. Over the years, the WE&T program has offered energy efficiency education to incumbent and potential workers (trade professionals¹) and customers, so that they may recognize and act on opportunities to save energy. Future improvements on the Workforce Education & Training offerings need to account for a diverse group of both trade professionals and end-use customers. Trade professionals can impact energy savings through the selling, design, installation, and maintenance of equipment. Customers need education to understand and prioritize the value proposition of energy efficiency when planning projects. SDG&E will contribute to statewide efforts that prepare the workforce to achieve the energy efficiency needs of the state, as well as address the unique

and specific needs of the local community. To achieve these goals, technical education offerings and collaboration with appropriate organizations will be critical.

Workforce Education & Training cross-cuts sectors, end-uses, and the needs of individual participants and therefore must further the skill development of a diverse audience. Many occupations have the ability to influence energy savings, however training for their jobs usually does not include energy efficiency as an area of focus. Understanding where there may be gaps in education will allow SDG&E to offer technical trainings or work with traditional education tracks to incorporate energy efficiency into existing curriculum. It will be important to continually examine market data to understand current gaps and forecast future needs.

Trade professionals and customers often do not understand the full value and impact of energy efficiency and thus, make their decisions based on the lowest upfront costs without considering other critical aspects of a successful project such as: utilizing a skilled and licensed workforce and

¹ In this context, trade professionals represent both those who work in areas that could impact energy efficiency, as well as those that work directly or solely on energy efficiency.

The Past, Present, and Future of WORKFORCE EDUCATION & TRAINING ENERGY EFFICIENCY

MARKET CHARACTERIZATION

PAST & PRESENT



FUTURE

5% of EE portfolio spend

Topics include: HVAC, codes and standards, home/building performance, lighting, sustainability, renewables



San Diego County workforce is approximately 1.5M people

San Diego clean energy sector :

- 3,000+ companies
- 28,000+ workers
- 66% focus on EE



Market barriers include:

- Building codes, technologies, and tools change constantly.
- Demand specific skills fluctuates
- EE projects aren't comprehensive
- Customers don't value EE

California needs a trained workforce to achieve a doubling of its EE savings



Code is dynamic and complex so market actors need continuing education

Continuing education is needed for new technologies and tools



~20% growth anticipated in construction jobs and HVAC Technicians



A focus on both design and operation is needed to meet future energy savings potential

Trade professionals will shift focus

from single end-uses to comprehensive approach

Market Actors need to be able to sell value proposition of EE to customers

DELIVERY APPROACH

Emphasis on commercial and residential sectors



Heavy focus on HVAC and lighting through single classes/workshops

Marketing targeted a **broad, general audience**

Access and reach to fully engage workforce was challenging



Ad-hoc coordination with other institutions. Gaps in their offerings for EE are unknown.

Focused on achieving savings versus the relevant value proposition (non EE benefits)

Align with and support the portfolio potential



Modernize approach

- expand delivery channels
- comprehensive, integrated curriculum

Collaborate with other education providers to expand access and reach



Attract new workers through statewide programs

Educate decision makers about the value proposition and benefit of hiring skilled workers

Citations for data presented on this figure are included throughout the chapter.

Figure 8.1 WE&T Market Characteristics and Problems Overcome by Goals

Problem	Goal	Targeted Areas		
		Customer Sectors	Audience	End-Uses
<ul style="list-style-type: none"> • Building codes, technologies, and tools are dynamic and constantly changing • Demand for certain occupations and specific skills fluctuate and usually don't focus on energy efficiency • Energy projects often address one end-use and don't take a comprehensive approach • Customers do not understand or prioritize the value of energy efficiency or of a well-trained workforce 	<ul style="list-style-type: none"> • Prepare Workforce to Meet California's Goal of Doubling EE Savings by 2030 • Design and Deliver Workforce, Education and Training Programs that Help SDG&E's Energy Efficiency Sectors Achieve Savings Goals • Build the Future of an Energy Efficiency Workforce Through Statewide Programs that Focus on Career Awareness and Inclusion of Disadvantaged Workers 	All	Trade Professionals, Customers	All

adhering to building codes for safety, efficiency, and legal compliance. WE&T programs provide trade professionals and customers with a deeper, more comprehensive understanding of energy efficiency and its benefits. Marketing, Education and Outreach (ME&O) efforts create awareness for and participation in energy efficiency programs. Workforce, Education and Training (WE&T) programs provide for a deeper, more comprehensive understanding of energy efficiency concepts and how they relate to owning and operating buildings. Together, ME&O and WE&T programs will create increased demand for energy efficiency.

To accomplish this mission, SDG&E has established the following Workforce Education & Training sector goals:

- **WE&T Goal 1:** Prepare Workforce to Meet California's Goal of Doubling Energy Efficiency Savings by 2030.
- **WE&T Goal 2:** Design and Deliver Workforce, Education and Training Programs that Help SDG&E's Energy Efficiency Sectors Achieve Savings Goals.

- **WE&T Goal 3:** Build the Future of an Energy Efficiency Workforce through Statewide Programs that Focus on Career Awareness and Inclusion of Disadvantaged Workers.

Approach to Achieve Sector Goals

Workforce Education & Training is a cross-cutting program that spans the commercial, residential, public, industrial, and agricultural sectors. To achieve California's energy efficiency and demand-side management potential, SDG&E and key policy, industry and education stakeholders must support the continued training of trade professionals and customers. SDG&E seeks to achieve zero net energy (ZNE) and a doubling of energy efficiency savings by providing continuing education and training to trade professionals, influencing the curriculum of external providers' core education classes, and collaborating with other organizations to engage in statewide programs.

There are common barriers that Workforce Education & Training must overcome at a state and at a local level. Some of the consistent

barriers at both levels include:

- Building codes, technologies, and tools are dynamic and constantly changing. Without continuing education, trade professionals are left with outdated skills and knowledge.
- Demand for certain occupations and specific skills fluctuate depending on market needs and traditional training for jobs usually does not focus on energy efficiency.²
- Energy efficiency projects are often “siloeed” and address one specific end-use, but to get deeper energy savings, trade professionals will need to take a more comprehensive approach to address multiple end-uses and systems.³ With training, trade professionals will understand the need for and value of looking at energy efficiency projects holistically.
- Customers do not prioritize or understand the value of energy efficiency and a well-trained workforce to implement projects. Customers will be more inclined to pursue projects when they understand that energy efficiency provides benefits beyond energy savings, such as comfort and safety. Further, they will conduct more successful projects if they see the value to hire trade professionals who are licensed, qualified, and trained to follow all appropriate laws and codes, as well as to understand and value safety through the permitting process.

The identification of barriers leads to the creation of goals for the sector (see **Figure 8.1**). SDG&E has set the following WE&T sector goals:

Figure 8.2: WE&T Sector Annualized Budget

	Short-Term 2018-2020	Mid-Term 2021-2023	Long-Term 2024-2025
Annual Budget	\$4,897,001	\$4,897,001	\$4,897,001

- **WE&T Goal 1:** Prepare Workforce to Meet California’s Goal of Doubling Energy Efficiency Savings by 2030.
- **WE&T Goal 2:** Design and Deliver Workforce, Education and Training Programs that Help SDG&E’s Energy Efficiency Sectors Achieve Savings Goals.
- **WE&T Goal 3:** Build the Future of an Energy Efficiency Workforce Through Statewide Programs that Focus on Career Awareness and Inclusion of Disadvantaged Workers.

Figure 8.2 outlines the proposed budget for SDG&E’s WE&T programs.

Overview of Current and Proposed Offerings

Figure 8.3 describes the proposed goals, strategies, and sample tactics in terms of whether they are new, existing, or modified interventions, and whether they will be implemented in the short (1-3 years), mid (4-7 years), or long-term (8-9 years).

² California Workforce Education & Training Needs Assessment: For Energy Efficiency, Distributed Generation, and Demand Response, Donald Vial Center On Employment In The Green Economy, Institute for Research on Labor and Employment, University of California, Berkeley, 2011, p. 214.

³ PY2013-2014 California Statewide Workforce Education and Training Program, Contractor Training Market Characterization, Opinion Dynamics Corporation, June 2016, p.8.

Figure 8.3 Overview of Current and New Offerings

Goal	Strategy	Sample Tactics	New, Existing, Modified	Short, Mid, Long-Term
Prepare Workforce to Meet California's Goal of Doubling EE Savings by 2030	Deliver technical training, continuing education, and certifications to ensure a trained and skilled workforce can deliver energy savings	<ul style="list-style-type: none"> • Provide education and training around dynamic code changes, new technologies, and skills needed to meet legislative requirements • Support certification to provide market recognition of acquired skills or competency • Provide access to tools and tool-trainings that will allow workers to work more efficiently and achieve better results • Incorporate integrated demand-side management approaches into current offerings 	Existing	Short
	Collaborate with appropriate organizations of California's education system to expand the reach & access of energy efficiency education	<ul style="list-style-type: none"> • Develop new and enhance current curriculum • Facilitate a Stakeholder Engagement Forums and educational summits • Perform a gap analysis to see what the current challenges are for core curriculum to achieve legislative mandates, such as ZNE performance 	Modified	Mid
	Educate customers on the value proposition of energy efficiency and of hiring skilled workers to implement projects	<p>Educate customers about:</p> <ul style="list-style-type: none"> • the return on investment for energy efficiency projects; • the value of hiring well-trained, skilled, licensed workers; • the importance of codes, standards, and permits to maximize the performance and safety of EE projects; and • the non-energy benefits of EE projects. 	Modified	Short

See following page for continuation of table.

Figure 8.3 Overview of Current and New Offerings (*continued*)

Goal	Strategy	Sample Tactics	New, Existing, Modified	Short, Mid, Long-Term
Design and Deliver Workforce, Education and Training Programs that Help SDG&E's Energy Efficiency Sectors Achieve Savings Goals	Commercial Strategy: Transform tenant energy savings into asset value for property owners	<ul style="list-style-type: none"> • Benchmarking • Property Manager Education <ul style="list-style-type: none"> – Higher rent / sq ft – Importance of knowledgeable building operators • Tenant Education • Forecasted energy costs 	Modified	Short-Mid
	Residential Strategy: Empower customers to better manage their energy usage	<ul style="list-style-type: none"> • Customer Education • Home Energy Management Systems • Utilize market segmentation and big data 	New	Short
	Public Strategy: Equip leaders with knowledge and tools to make informed decisions	<ul style="list-style-type: none"> • Develop and manage a collaboration platform • Develop and manage stakeholder engagement plans • Provide energy efficiency fact sheets to highlight the energy efficiency progress made within a leader's jurisdiction 	New	Short
	Industrial Strategy: Unlock deeper savings through SEM offering	<ul style="list-style-type: none"> • Expand Strategic Energy Management (SEM) offering • Educate and train industrial customers to identify process savings and how to achieve deeper savings through SEM. 	New	Short
	Agricultural Strategy: Expand the use of third parties to develop and deliver intervention strategies	<p>Solicit third parties that can provide offerings that include:</p> <ul style="list-style-type: none"> • Energy Management Systems and Emerging Technologies • Working with trade associations to educate sector leaders • New operation and maintenance training • Expanding financing options • Develop agricultural EE case studies 	New	Short

See following page for continuation of table.

Figure 8.3 Overview of Current and New Offerings (*continued*)

Goal	Strategy	SAMPLE Tactics	New, Existing, Modified	Short, Mid, Long-Term
Build the Future of an Energy Efficiency Workforce Through Statewide Programs that Focus on Career Awareness and Inclusion of Disadvantaged Workers	Promote Statewide-Career Awareness/Connections and Statewide-Career Readiness to support the availability of workers	SW – Connections	Modified	Short
		SW – Career & Workforce Readiness	New	Short

Market Characterization

California consumed 279.4 terawatt-hours (TWh) of electricity in 2014, with the commercial (45%) and residential (32%) sectors using the most energy.⁴ To support the long term energy efficiency goals of California, all sectors will need skilled trade professionals and customers who understand, appreciate and prioritize energy efficiency, but special focus may be given to the commercial and residential sectors, as the service territory is primarily made up of commercial and residential customers and these customers are responsible for the majority of EE savings achieved by SDG&E.

The audience for Workforce Education & Training is broad. Potential WE&T participants include trade professionals, customers, and organizations that provide workforce education and training. There is no data that exclusively focuses on employment in the energy efficiency sectors, but it is estimated that California has over 430,000 people employed in advanced energy jobs at more than 40,000 firms, with about 70% of firms focusing on energy efficiency.⁵ An estimated number of trade professionals reached across the state by the IOU Energy Centers during 2006-2008 are shown in **Figure 8.4**.

Working collaboratively with the other IOUs, the Workforce Education & Training programs have provided educational offerings that cover a diverse set of end-uses. Collaboration has allowed the program to address a wider variety of topics and issues that impact all of California, by making some offerings available online and for any California participant. **Figure 8.5** describes the many topics and the frequency that they are offered.

In addition to supporting educational offerings throughout the state, SDG&E focuses on the needs of its community to ensure that offerings are appropriate for the market. **Figure 8.6** describes the topics and the relative frequency at which they are offered locally by SDG&E.

The California Long Term Energy Efficiency Strategic Plan recognizes that “an effective, comprehensive WE&T program for a new energy efficient economy requires collaborative efforts by many entities. It is not the core mission of utilities to effectuate the level of change needed to create a comprehensive WE&T program, nor can ratepayers fully fund the effort.” There are a large number of organizations that are established to provide core education and occupation-specific skills. When it comes to receiving training specifically focused on energy efficiency or renewable energy, the majority of skills upgrade training courses are offered by private organizations and the utilities. Many occupations can impact energy savings, however the skills developed for those jobs may not include energy efficiency or may address energy

⁴ Energy Consumption Data Management System, 2014. <http://www.ecdms.energy.ca.gov/elecbyutil.aspx>.

⁵ CA Advanced Energy Employment Survey, AEE Institute, 2014, p4. <http://info.aee.net/hs-fs/hub/211732/file-2173902479-pdf/PDF/aeei-california-advanced-energy-employment-survey-fnl.pdf>.

Figure 8.4 Trade Professionals Reached by Industry Area^a

Source: Indirect Impact Evaluation of the Statewide Energy Efficiency Education and Training Program, Opinion Dynamics Corporation, 2006-2008, p.58. http://www.calmac.org/publications/06-08_Statewide_Education_and_Training_Impact_Eval_Vol_I_FINAL.pdf.

Industry Area	Market Actors (Statewide)	Estimated Reach by Centers	Percent Reached Statewide
HVAC & Refrigeration	19,700	9,427	44%
Government Agency/Regulatory/Inspector	12,500	3,263	26%
Engineering/Architectural Design	58,200	13,053	22%
Lighting	68,300	8,339	12%
Construction	161,200	9,064	6%
Boilers/Water Heating Sales	56,000	3,263	6%
Other	55,800	2,901	5%
Motors	49,400	2,538	5%
Facility Operations or Maintenance	163,000	3,263	2%
Energy Technology Research/Consulting	N/A	5,801	N/A
Pumping/Hydraulic Equipment	N/A	2,175	N/A
Renewables	N/A	5,076	N/A
Don't Know/Refused	N/A	2,175	N/A

^a Reached by Industry Area

Figure 8.5 2013-15 IOU Education Offering Topics

Source: IOU program data (PG&E, SCE, SCG, SDG&E).

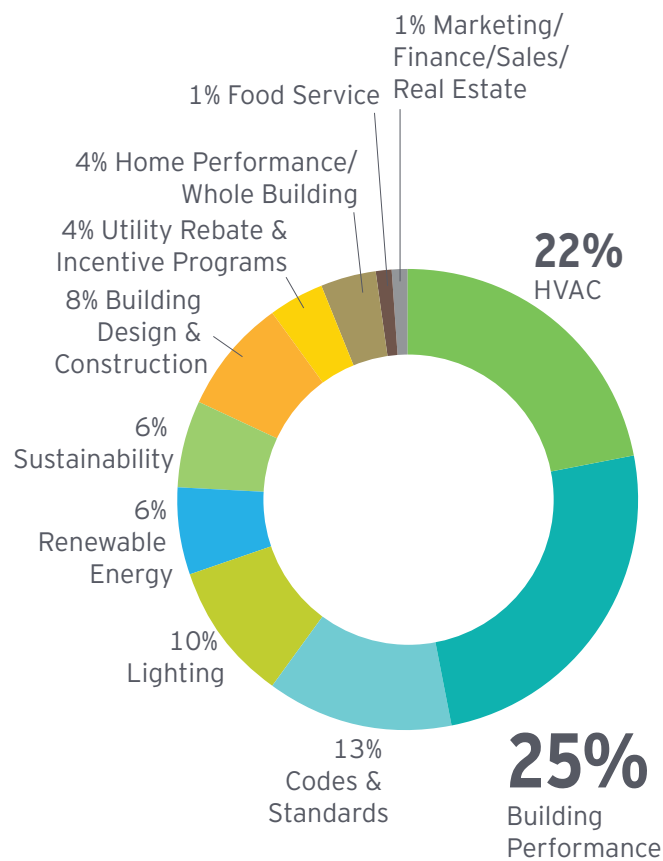
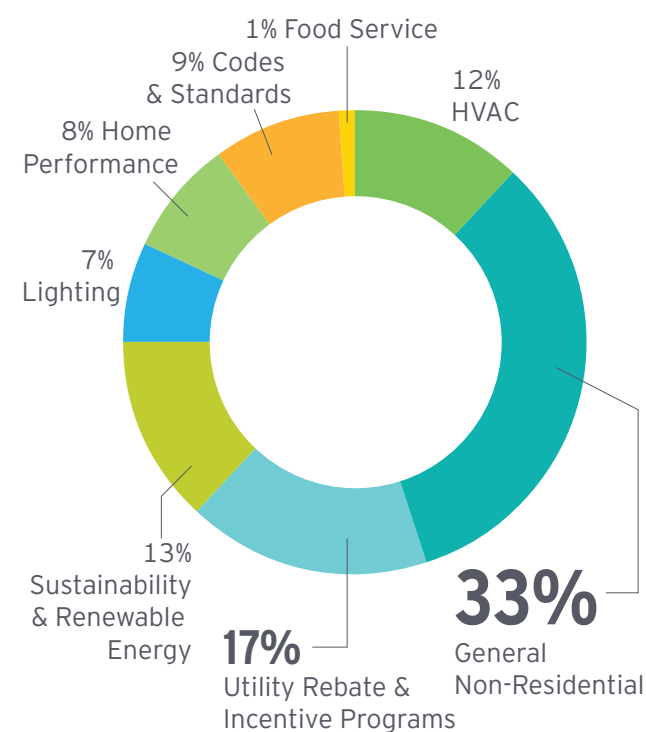


Figure 8.6 2013-2015 SDG&E Education Offering Topics

Source: SDG&E 2013-2015 program data.



efficiency only cursorily. Trade professionals approaching energy efficiency from different starting points may need different “on-ramps” for additional education or specific training.

Collaboration with non-utility institutions will be important to expand access to energy efficiency education and be inclusive of a wide range of potential market actors. These organizations include :

- Government agencies: the California Department of Education, Department of Labor, and local, regional and state governments;
- Educational institutions: University of California (UC) and the California State University (CSU), community colleges, private colleges and universities, technical schools, and K-12 school districts;
- Community-based organizations: California Community Services and Development , California Workforce Investment Boards , and workforce training programs;
- Industry and labor organizations: trade unions and apprenticeship programs, home rating organizations, and trade associations.

Figure 8.7 provides a brief overview of California’s non-utility WE&T resources.⁶ This data shows that there are very few non-utility WE&T resources in San Diego compared to the rest of the state, and thus, SDG&E’s WE&T program is critical for continued success in workforce training.

In addition to the resources listed in **Figure 8.7**, there are a number of professional organizations that provide certifications related to specific end-uses. These end-uses include, but are not limited to: building design, HVAC, lighting controls, sustainability, and refrigeration.

Local WE&T Sector Market Characterization and Segmentation

The local San Diego market is similar to California in that the largest electric and gas consumption occurs in the commercial and residential sectors, as shown in **Figure 8.8**.

⁶ California Workforce Education & Training Needs Assessment: For Energy Efficiency, Distributed Generation, and Demand Response, Donald Vial Center On Employment In The Green Economy, Institute for Research on Labor and Employment, University of California, Berkeley, 2011, Appendix 1. http://laborcenter.berkeley.edu/pdf/2011/WET_Part2.pdf.

Figure 8.7 Overview of California’s Non-Utility WE&T Resources

Focus	Type	# of Sites in California	Program Tracks	# of Sites in San Diego
Workforce Development	Workforce Investment Boards	49	N/A	1
	One-Stop Centers	259	N/A	11
	Regional Occupation Programs	N/A	211	17
Post-Secondary Education	Community Colleges	112	607	7
	Adult Schools	285	285	6
	Regional Occupation Centers	74	74	1
	CSU/UC	33	212	3
Other Training Resources	Community Based Organizations	N/A	39	N/A
	Apprenticeship (Joint/ Unilateral)	N/A	265	N/A
	Private Training Organizations	15+	204	20

Figure 8.8 SDG&E Electric and Gas Consumption by Sector

Source: SDG&E 2013-2015 program data.

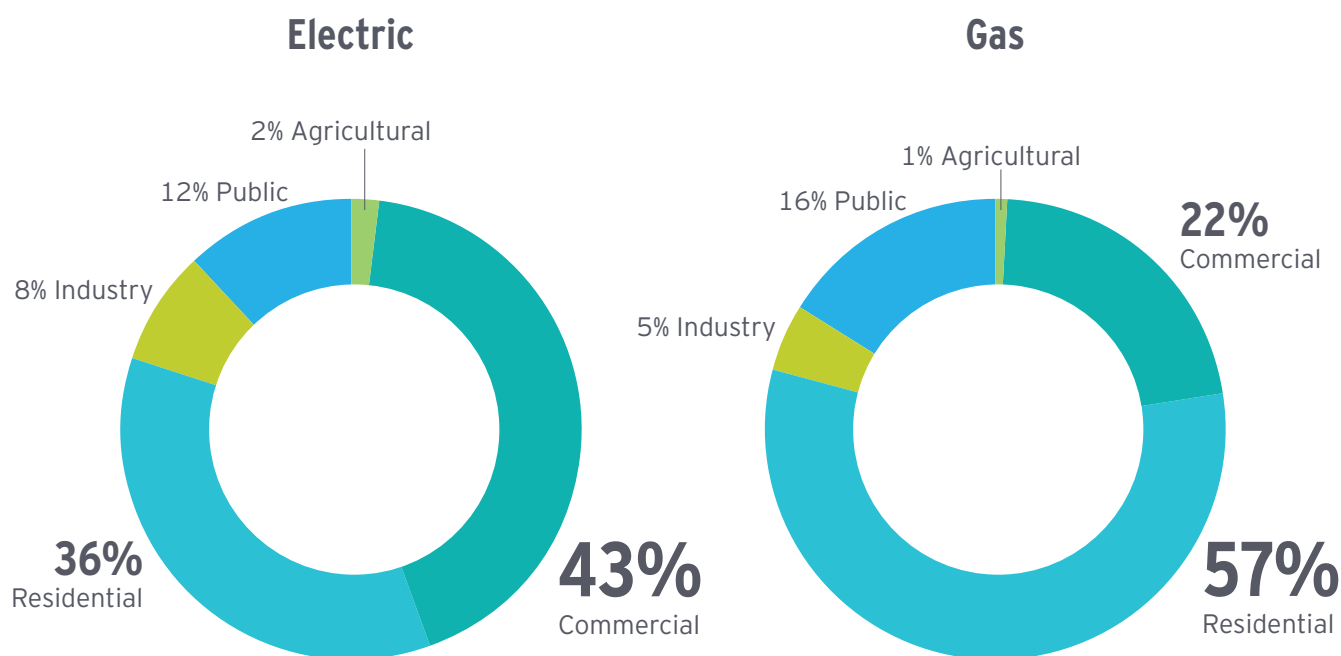


Figure 8.9 SDG&E Incremental Electric and Gas Market Potential by Sector

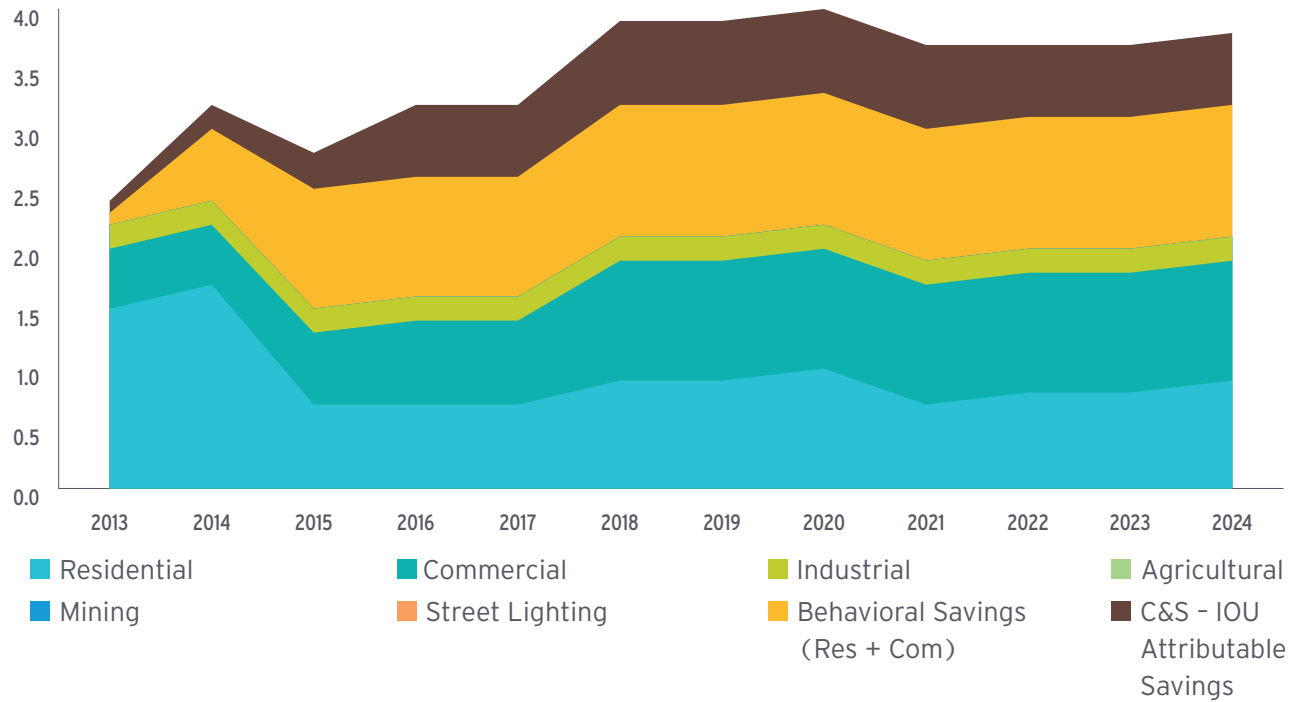
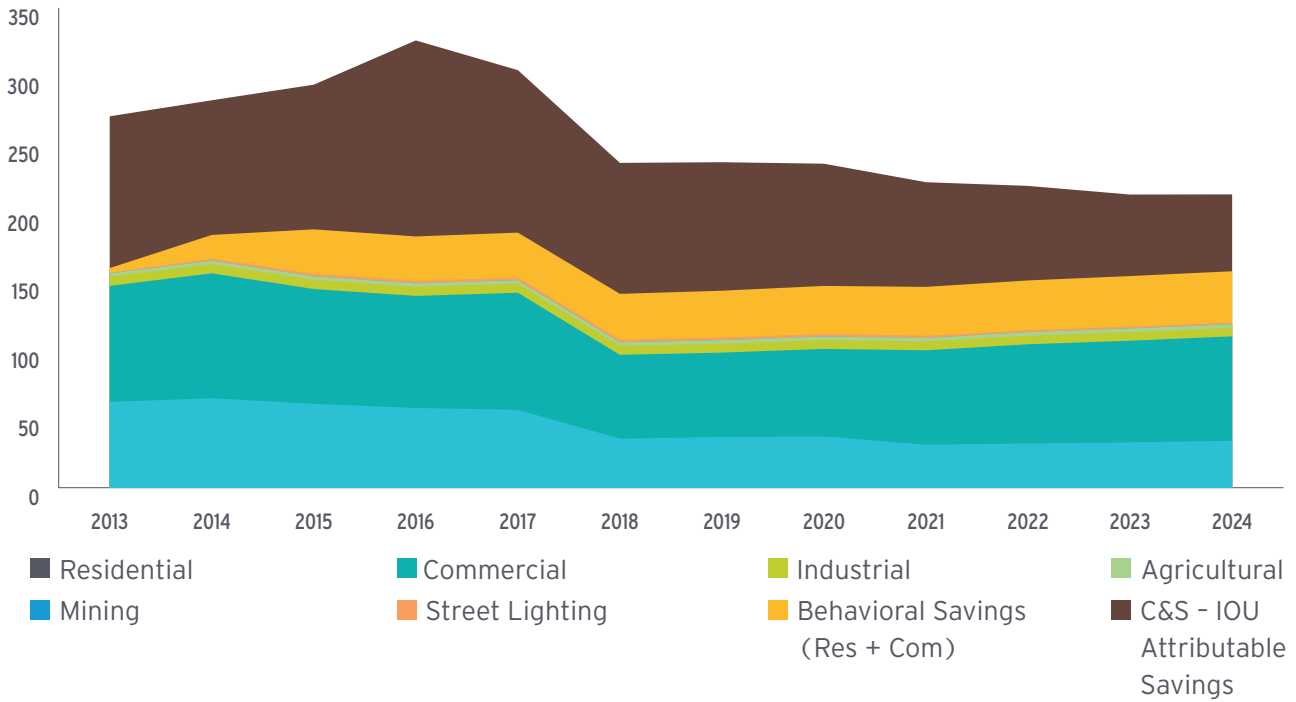
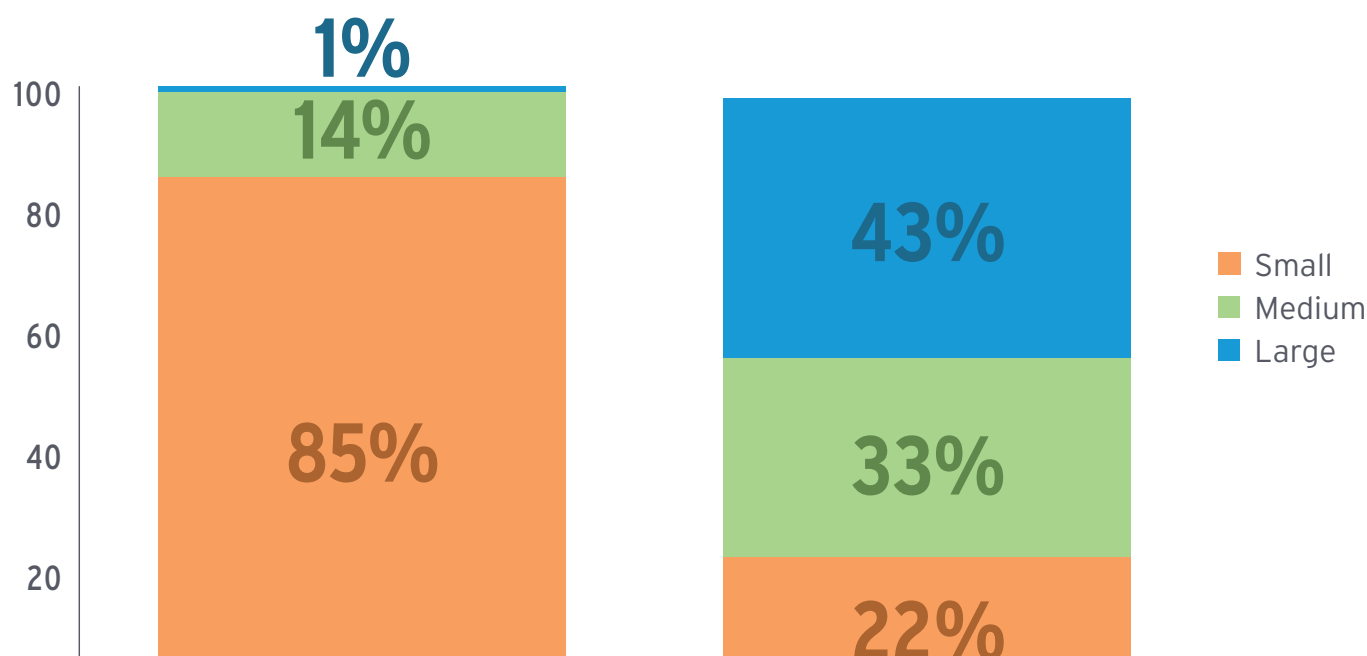


Figure 8.10 Commercial Customer Size by IOU Specific Definition (Based on Demand)

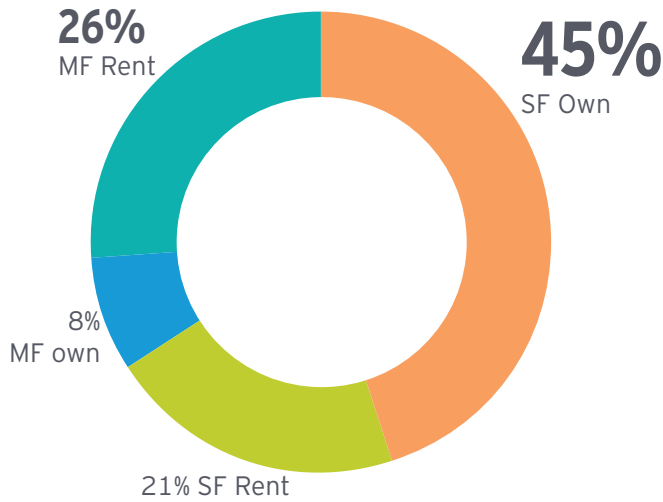


As seen in **Figure 8.9**, though commercial and residential are the largest consuming sectors, there is significant potential in most sectors. Thus, while there may need to be a focus on the commercial and residential sectors, all sectors will need WE&T support and education will need to be specifically tailored for SDG&E to meet the market's needs. Further, given the large potential attributable to codes and standards, it is imperative that trade professionals and customers alike receive adequate training so they are prepared for upcoming code changes.

Further, SDG&E's commercial and residential sectors have unique attributes that support the need for local WE&T offerings. Specifically, SDG&E's commercial sector is composed of 85% small customers (under 20kW) in contrast with small businesses being 22% of PG&E's customers, as shown in **Figure 8.10**.

Figure 8.11 Residential Sector Housing Demographics

Source: SDG&E 2013-2015 program data.



In the residential sector, 66% of customers live in single family dwellings, as shown in **Figure 8.11**, indicating a training opportunity with single family housing stock. SDG&E will continue to work with contractors that perform work on multifamily dwelling units and common areas, and will increase focus on single family contractors and its challenging market.

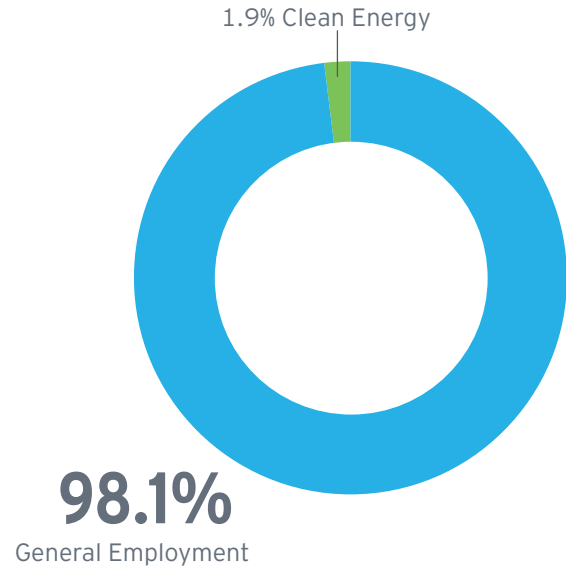
To achieve SDG&E's energy efficiency savings goals requires both a skilled workforce and educated customers. It is estimated that the clean energy sector in San Diego County employs over 28,500 workers, or about 1.9% of the total 1,511,300 employees.⁷ See **Figure 8.12**.

As 50% of employers in San Diego's Energy industry are composed of five or fewer employees, market actors need a variety of specialized and cross-skill training, sales, and project management to be successful. Workers who can sell rebate programs and discuss and calculate potential energy savings are highly valued because they can often generate more

⁷ Labor Force and Unemployment Rate for Cities and Census Designated Places. CA Employment Development Department, Sept 2016. <http://www.labormarketinfo.edd.ca.gov/data/labor-force-and-unemployment-for-cities-and-census-areas.html>.

Figure 8.12 Clean Tech Employment in San Diego County

Source: Clean Energy: Labor Market Analysis San Diego County. San Diego Workforce Partnership, Oct 2014. http://workforce.org/sites/default/files/pdfs/reports/industry/clean_energy_2014_0.pdf.



business for the employer.⁸ However, it is difficult for contractors to give their workers time off to attend several consecutive days of training, although they do realize the importance and value of training.⁹

As shown in **Figure 8.9**, after 2018, the energy efficiency potential market is set to expand in the commercial sector. Based on this, the Clean Energy Industry is expecting employer growth in San Diego County, especially in the areas of HVAC and construction. See **Figure 8.13**.

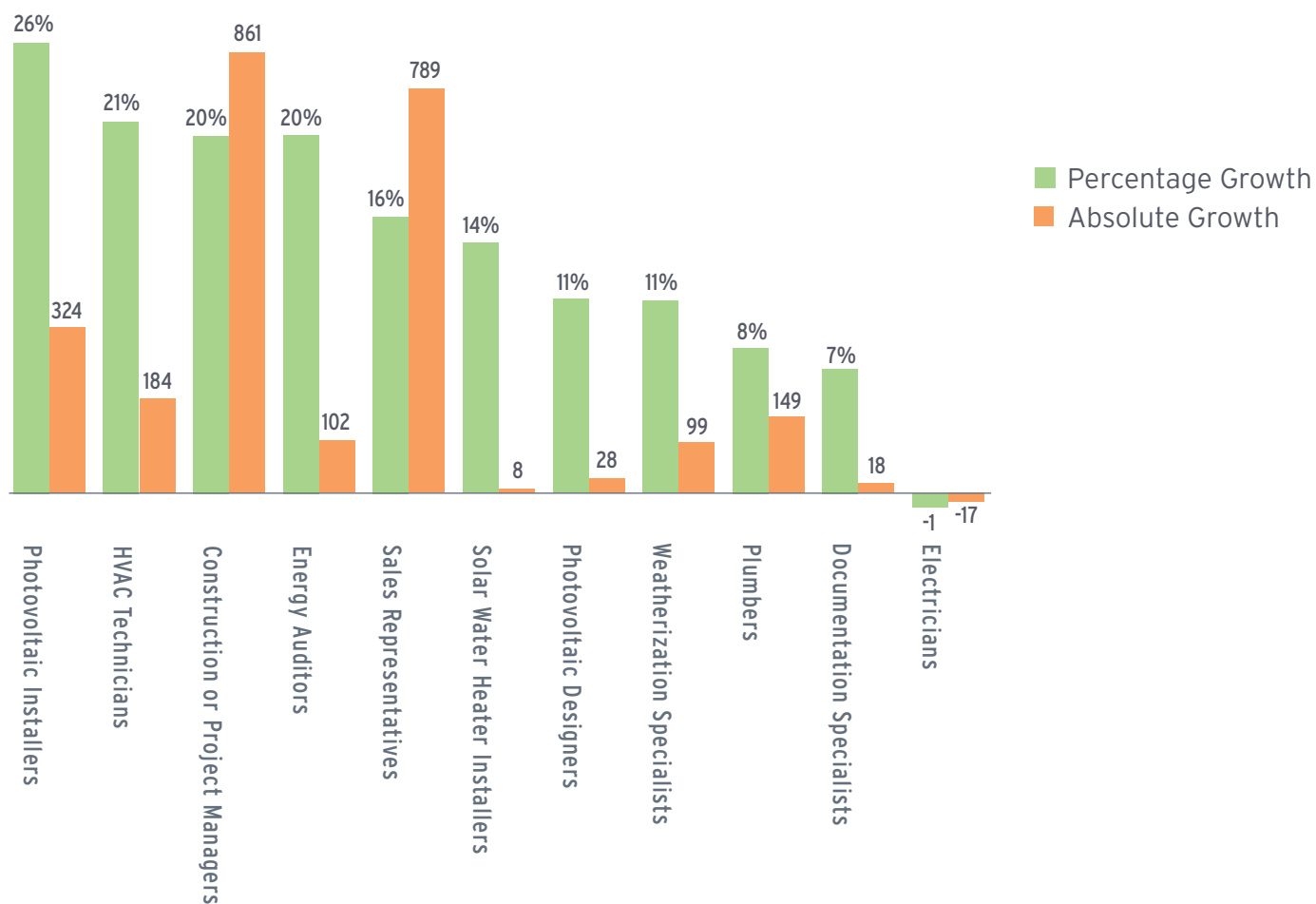
⁸ Clean Energy: Labor Market Analysis San Diego County. San Diego Workforce Partnership, Oct 2014. http://workforce.org/sites/default/files/pdfs/reports/industry/clean_energy_2014_0.pdf.

⁹ 2010-2012 PG&E Whole House Retrofit Program Phase II Process Evaluation, Volume 1, p. 30.

Figure 8.13 A Growing Workforce

Source: Clean Energy: Labor Market Analysis San Diego County. San Diego Workforce Partnership, Oct 2014. http://workforce.org/sites/default/files/pdfs/reports/industry/clean_energy_2014_0.pdf.

Employer Expectations of a 12-Month Employment Growth



As discussed, customers and trade professionals face many barriers to obtaining the training and education needed to maximize energy savings. To ensure that customers value and seek out energy efficiency, they must be trained both the energy (saving money, kWh, and therms) and non-energy benefits (comfort, safety, compliance) of energy efficiency, as well the importance of hiring well-qualified, licensed, code-compliant trade professionals. To ensure that incumbent and future trade professionals support the delivery of energy savings, they need proper training and access to continuing or advanced education on the value of energy efficiency to their business (implies quality, cutting edge products and knowledgeable, well-trained workers), how to sell energy efficiency, and how to assist customers in understanding and participating in incentive and rebate programs. Teaching both customers and trade professionals the value of energy efficiency and the value of skilled workers will increase the demand for both, resulting in an ever more qualified workforce that produces high quality projects that maximize savings and return on investment.

At the local level, SDG&E's WE&T program will focus on market segments and end-uses identified as having significant potential in its service territory. **Figure 8.14** describes these topics. Because the commercial and residential sectors make up the vast majority of SDG&E's consumption and customers, the WE&T will place particular emphasis on those sectors.

Figure 8.14 SDG&E's Future Areas of Focus for WE&T

Sector	Target Audience	WE&T Focus
Residential	Customers, (Homeowners, Tenants, Landlords, Property Managers)	<ul style="list-style-type: none"> • Educate on energy and non-energy benefits of investing in EE • How to change behavior to achieve reduced energy use through conservation and efficiency • What to consider in evaluating EE proposals, including the value of skilled and qualified trade professionals
	Trade Professionals (Designers, Contractors, Retailers, Vocational Students)	<ul style="list-style-type: none"> • Skill enhancement around targeted end-uses and taking a comprehensive approach • Codes/standards, inspections, and permitting process • Selling the value of EE to customers
Commercial	Customers (Building Owners, Building Operators, Tenants, Landlords, Property Managers)	<ul style="list-style-type: none"> • Educate on energy and non-energy benefits of investing in EE • How to change behavior to achieve reduced energy use through conservation and efficiency • What to consider in evaluating EE proposals, including the value of skilled and qualified trade professionals
	Trade Professionals (Designers, Contractors, Retailers, Vocational Students)	<ul style="list-style-type: none"> • Skill enhancement around targeted end-uses and taking a comprehensive approach • Codes/standards, inspections, and permitting process Comprehensive approach to achieve ZNE • Selling the value of EE to customers
Public	Customers (Building Owners, Building Operators, Building Occupants, Facility Managers)	<ul style="list-style-type: none"> • Educate on energy and non-energy benefits of investing in EE • How to change behavior to achieve reduced energy use through conservation and efficiency • What to consider in evaluating EE proposals, including the value of skilled and qualified trade professionals • Best practices in EE leadership • Preventative maintenance of equipment • Codes/standards, inspections, and permitting process
	Trade Professionals (Designers, Contractors, Retailers, Vocational Students)	<ul style="list-style-type: none"> • Skill enhancement around targeted end-uses and taking a comprehensive approach • Codes/standards, inspections, and permitting process Comprehensive approach to achieve ZNE • Selling the value of EE to customers

See following page for continuation of table.

Figure 8.14 SDG&E's Future Areas of Focus for WE&T (*continued*)

Sector	Target Audience	WE&T Focus
Agricultural	Customers (Building Owners, Building Operators, Building Occupants, Facility Managers)	<ul style="list-style-type: none"> • Educate on energy and non-energy benefits of investing in EE , including the energy/water nexus • How to change behavior to achieve reduced energy use through conservation and efficiency • What to consider in evaluating EE proposals, including the value of skilled and qualified trade professionals • Skill enhancement around targeted end-uses and taking a comprehensive approach
	Trade Professionals (Designers, Contractors, Retailers, Vocational Students)	<ul style="list-style-type: none"> • Skill enhancement around targeted end-uses and taking a comprehensive approach , including the energy/water nexus • Codes/standards, inspections, and permitting process Comprehensive approach to achieve ZNE • Selling the value of EE to customers
Industrial	Customers (Building Owners, Building Operators, Building Occupants, Facility Managers)	<ul style="list-style-type: none"> • Educate on energy and non-energy benefits of investing in EE • How to adjust behaviors to achieve deeper energy savings • Skill enhancement around targeted end-uses and taking a comprehensive approach
	Trade Professionals (Designers, Contractors, Retailers, Vocational Students)	<ul style="list-style-type: none"> • Skill enhancement around targeted end-uses and taking a comprehensive approach • Codes/standards, inspections, and permitting process Comprehensive approach to achieve ZNE • Selling the value of EE to customers

Market Segments

While WE&T doesn't have traditional market segments, it does serve a number of different constituencies. Specifically, SDG&E's WE&T program provides education and training for:

- Trade professionals, including incumbent and potential contractors and equipment retailers;
- Customers, including owners, tenants, property managers, and facility managers; and
- Students, including K-12, community and technical colleges.

Energy Efficiency Market Potential

Workforce Education & Training is non-resource and thus, energy savings are not attributed directly to the program. However, in an impact evaluation study conducted for the program years 2006 through 2008, WE&T programs were found to offer significant indirect impact. During this time frame, it was estimated that combined, the Energy Centers generated approximately 700 GWh of annual electricity savings and 6 million net therms of annual gas savings, thereby avoiding 30,000 metric tons of carbon-dioxide. The Energy Centers are estimated to provide an additional 5% net savings to the overall projected energy impact of the portfolio.¹⁰

Future Trends

California has an ever-expanding green energy economy. In 2016, AEEI reported that California is home to nearly 43,000 advanced energy businesses that span a wide range of energy technologies. Advanced energy firms in California employ over an estimated 500,000 workers; energy efficiency-related firms reported 6% growth from 2014 to 2015.¹¹ Advanced energy employment grew 18% in 2015 compared with statewide employment which only grew at 3%. However, energy and energy efficiency are

not chief priorities of the building design and construction industry. These firms indicate that "less than a quarter (23%) of the state's energy efficiency workers spend all of their time on energy efficiency-related work and about 50% spend at least half their time on efficiency-related work."¹² Since 2009, the construction industry boasts some of the fastest-growing job classifications in the California.¹³

Organizations have different drivers depending on the audience they serve. The California Master Plan for Higher Education finds that higher educational institutions continue to provide a coherent system for post-secondary education, but no such coordination exists for the "middle skills occupations."¹⁴ Two-year colleges and other trades training schools are identifying high-potential areas of focus, including building operators and facility managers and both residential and commercial HVAC system designers, installers and maintainers.¹⁵

¹²Ibid, p. 9.

¹³www.labormarketinfo.edd.ca.gov/OccGuides/FastGrowingOcc.aspx.

¹⁴California Workforce Education & Training Needs Assessment: For Energy Efficiency, Distributed Generation, and Demand Response, Donald Vial Center On Employment In The Green Economy, Institute for Research on Labor and Employment, University of California, Berkeley, 2011, p 122, http://laborcenter.berkeley.edu/pdf/2011/WET_Part2.pdf.

¹⁵Workforce Issues and Energy Efficiency Programs: A Plan for California's Utilities, The Donald Vial Center on Employment in the Green Economy, Institute for Research on Labor and Employment, University of California, Berkeley, 2014.

¹⁰Indirect Impact Evaluation of the Statewide Energy Efficiency Education and Training Program, Opinion Dynamics Corporation, 2006 - 2008. p. 3. http://www.calmac.org/publications/06-08_Statewide_Education_and_Training_Impact_Eval_Vol_I_FINAL.pdf.

¹¹Advanced Energy Jobs in California: Results of the 2016 California Advanced Energy Employment Survey, AEEI, 2016, p. 6.

Legislative Drivers

Each chapter of the business plan discusses the ways recently adopted legislation, specifically, Senate Bill (SB) 350 and Assembly Bills (AB) 793, 758 and 802, help shape SDG&E's sector approaches. SB 350, in particular, calls for a doubling of energy efficiency savings during the timeframe covered by this business plan. The CPUC has provided initial guidance implementing these directives and SDG&E and the other PAs will continue to work with the CPUC to determine the most efficient means of complying with the new legislative mandates. SDG&E believes that the strategies outlined below will complement the recently adopted legislation. Going forward, specific tactics and their processes will be adjusted as needed to meet the legislative directives and any further direction from the CPUC.

Workforce, Education & Training activities will play a crucial role in supporting SDG&E's efforts to comply with legislative requirements, most notably in meeting requirements of SB 350. In addition to preparing the workforce to enable a doubling of energy savings by 2030, SDG&E's WE&T program will be actively engaged with the California Energy Commission in developing and implementing responsible contractor policies and training and educating participants, especially those from disadvantaged communities.

In support of AB 793, WE&T will help educate market actors to design, install, maintain, and use energy management technologies. These efforts will be focused on the residential as well as the small and medium commercial customer segments. Per AB 758, SDG&E will provide education and special skills training to facilitate implementation of WE&T components of the Existing Buildings Energy Efficiency Action Plan. For AB 802, SDG&E's WE&T group will work with contractors and building operators to improve their understanding of and access to benchmarking information and tools. These initiatives will also be aimed at educating customers about the benefits provided by benchmarking properties.

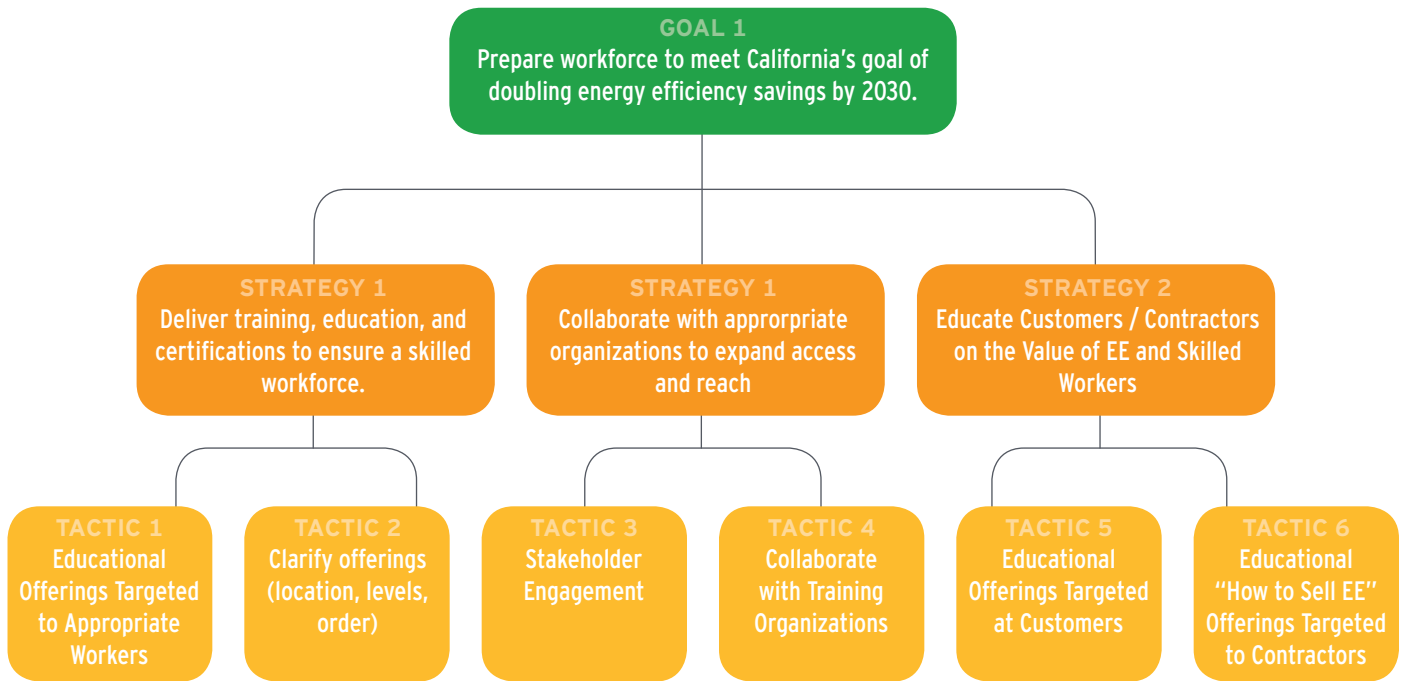
Figure 8.15 summarizes SDG&E WE&T sector efforts to comply with legislative mandates. WE&T will need to be agile and innovative to respond to this dynamic environment.

Goals, Strategies, and Tactics

To successfully accomplish the energy efficiency potential of California and its own market, SDG&E will coordinate with appropriate organizations throughout the state to further workforce education specific to energy efficiency. The strategies and tactics proposed in this business plan will expand the existing programs, supplement them, and drive participation in them.

Figure 8.15 Legislative Impacts on Sector

Policy Driver	Specific Requirement/Guidance	Business Plan Response
SB 350 – Clean Energy and Pollution Reduction Act of 2015	<ul style="list-style-type: none"> • Achieve a cumulative doubling of savings in electricity and gas retail customers' final end uses by 1/1/30 • The CEC shall adopt a responsible contractor policy to ensure that ratepayer-funded EE retrofits meet high-quality performance standards and reduce energy savings lost or foregone due to poor-quality workmanship • Workforce development and job training for residents in disadvantaged communities, including veterans, at-risk youth, and members of the state and local community conservation corps 	<ul style="list-style-type: none"> • Prepare the workforce to achieve a doubling of EE through educational opportunities that provide technical training, continuing education, and certifications, as well as reducing confusion for workers considering these educational opportunities • Collaborate with the CEC on the adoption, implementation, and enforcement of a responsible contractor policy • Continue inclusion efforts to educate participants from disadvantaged communities, and propose a new SW-Career & Workforce Readiness program • WE&T programs will facilitate training on responsible contractor policies and ensure that any requirements applicable to SDG&E EE programs are incorporated as necessary
AB 793 – Energy Management Technology Incentive Offering	<p>Must develop programs by 1/1/17 that provide incentives to help residential and small/medium business customers acquire energy management technology and educate them about these programs</p>	<ul style="list-style-type: none"> • Facilitate the development or enhancement of market actor education on how to properly design, install, or maintain home energy management technology, based on any gaps in the market for this education. • Facilitate the development or enhancement of home-owner education on how to properly use energy management technology. Example tactics may include "how-to" videos or manuals
AB 758 – Existing Buildings Energy Efficiency Action Plan	<ul style="list-style-type: none"> • 3.3 - Implement WE&T strategies that integrate Knowledge, Skills & Abilities with WE&T curriculum; update training to include best practice building science and code requirements • 3.3.4 - Train contractors and other market actors to sell energy efficiency • 3.3.6 - Include special skills training in core WE&T activities to help meet demand, spur innovation, and increase the body of knowledgeable building professionals 	<ul style="list-style-type: none"> • Include special skills training (i.e. Retrocommissioning, facility management) in core WE&T activities to help meet demand and increase the body of knowledgeable building professionals • Train contractors how to sell energy efficiency to customers • Provide education and training around dynamic code changes, new technologies, and skills needed to meet legislative needs (such as ZNE Design, Benchmarking and Retrocommissioning)
AB 802 – Benchmarking and Changes to Energy Efficiency Baselines	<ul style="list-style-type: none"> • Benchmarking – By 1/1/17, for multi-unit buildings, utilities must provide aggregated energy usage data to its owner, its agent or the building operator. Commission will set requirements for public disclosure of information for benchmarking purposes • Baselines – Authorizes utilities to provide incentives to customers for energy efficiency projects based on normalized metered energy consumption as a measure of energy savings 	<ul style="list-style-type: none"> • Provide education and training around dynamic code changes, new technologies, and skills needed to meet legislative needs (such as ZNE Design, Benchmarking and Retrocommissioning) * Educate contractors and building operators how to benchmark energy usage and software in facilities so they understand their energy use • Educate customers about the value of benchmarking and the increase in value of their investments for the purpose of selling or leasing their property

Figure 8.16 WE&T Goal 1 Strategies and Sample Tactics

Goal 1: Prepare Workforce to Meet California's Goal of Doubling Energy Efficiency Savings by 2030.

"In order to achieve the very ambitious energy conservation targets set forth in the Strategic Plan and other policies, increasingly complex energy conservation measures and programs are needed. Energy efficiency jobs in the near future will require additional knowledge, skills, and abilities (KSAs) to complete this more complex work than were required for past energy efficiency success."¹⁶

To realize California's goal of doubling energy efficiency savings, SDG&E's Workforce Education & Training program will support ongoing collaborative efforts across the state and participate in the development of new educational offerings to promote the knowledge, skills, and abilities of a broad and diverse set of workers and customers. **Figure 8.16** illustrates the relationships of strategies and sample tactics to this goal.

¹⁶Workforce Issues and Energy Efficiency Programs: A Plan for California's Utilities, The Donald Vial Center on Employment in the Green Economy, Institute for Research on Labor and Employment, University of California, Berkeley, 2014, p. 2. <http://laborcenter.berkeley.edu/pdf/2014/WET-Plan-Executive-Summary14.pdf>.

Strategy: Deliver technical training, continuing education, and industry-recognized certifications to ensure a skilled workforce can implement quality energy savings projects.

“There may be a need for skills upgrade training for incumbent workers for new “beyond-code” technologies. Nevertheless, there can be a lag time for upgrading curriculum as the most cutting-edge energy efficiency and renewable energy skills and technology penetrate the market.”¹⁷

Energy efficiency codes and standards, technologies, and tools are dynamic and ever changing; thus, it is important for incumbent workers to receive continuing education and training to fully realize energy savings and remain competitive in the marketplace. SDG&E proposes to continue to deliver technical training, continuing education, and certifications to ensure a trained and skilled workforce that can deliver energy savings. Educational offerings will be:

- Prioritized by data driven decisions that incorporate energy potential and employment market data.
- Delivered through multiple approaches (classroom, hands-on, online), as there are a number of factors that can prevent market actors from taking training, including the economy, size of company, and time of day.¹⁸
- Better marketed through appropriate channels so that market actors and organizations are aware of the available training, the expected outcomes of offerings, and the benefits of attending the educational offerings
- Tailored to multiple audiences, as there is a substantial difference in the needs and issues between sectors, and even size of buildings within sectors, such as small commercial versus large commercial. Matching the course content to the course attendee will allow for more

meaningful participation in offerings

- More comprehensive in nature, and integrated across end-uses.
- Align course delivery method to expected actions so participants have appropriate opportunities for education
- Focused on lifecycle savings to include proper building operation for commercial and residential customers to realize savings once equipment and systems have been properly designed, installed, and maintained.

Sample Tactics

Two major approaches are needed to implement the strategy above. The first approach is educational offerings that provide technical training, continuing education, and provide tangible signals of competency such as certifications. Some example tactics this effort will be to:

- Provide education and training around dynamic code changes, new technologies, and skills needed to meet legislative needs (such as ZNE Design, Benchmarking for AB 802 and Retrocommissioning for AB 758).
- Support certification so that market recognition of acquired skills or competency is available.
- Provide access to tools and tool-trainings that will allow workers to more efficiently work and achieve better results.
- Incorporate training opportunities for the teachers to receive the latest education regarding new technologies or changes in code and learn effective teaching methods. Incorporate integrated demand side management approaches into current offerings.
- Allow for third parties to bid on specific trainings that are needed.

¹⁷Proposition 39: Jobs and Training for California’s Workforce, Donald Vial Center On Employment In The Green Economy, Institute for Research on Labor and Employment, University of California, Berkeley, 2013, p. 17. http://laborcenter.berkeley.edu/pdf/2013/prop39_jobs_training.pdf.

¹⁸Critical Data Gaps Assessment, p11. http://www.calmac.org/publications/2013-2014_WET_PTLM_and_Critical_Data_Gap_Assessment.pdf.

The second approach will reduce confusion for workers considering educational offerings and make it easier for potential participants to find training options in their areas. This objective may be accomplished by:

- Using marketing targeted at workers to alert them about appropriate classes.
- Providing a training roadmap of offerings to help workers understand related courses.
- Offering an interactive training calendar available online to promote and list educational offerings as they become available.
- Implementing a classification system for educational offerings to indicate whether they are stand-alone, part of a series, resulting in a certification, or continuing education, and include level of difficulty (Basic, Intermediate, Advanced).

Strategy: Collaborate with appropriate organizations to expand the awareness and access to energy efficiency education

“An effective, comprehensive WE&T program for a new energy efficient economy requires collaborative efforts by many entities.”¹⁹

While many occupations work on the periphery of energy efficiency and have the ability to influence energy efficiency savings, their core workforce education and training organizations do not have efficiency as their primary focus. As a result, these organizations may not have the latest information, may offer very narrow training on single end-uses, or may not emphasize energy efficiency at all. SDG&E proposes to collaborate with relevant organizations to:

- Collaboration with educational and professional stakeholders will better align offerings to match the needs of the market and increase the likelihood of acquired knowledge being incorporated into jobs
- Enhance current curriculum or develop new curriculum that incorporates additional energy efficiency education
- Facilitate collaboration amongst a variety of organizations through stakeholder engagement opportunities. Such an environment will allow organizations to share ideas, collaborate, and improve energy efficiency education without additional ratepayer funding.
- Increase dissemination of educational offerings and support self-sustaining programs that are created using energy efficiency funds.
- Support efforts with organizations that are inclusive of all incumbent and potential energy efficiency workers so that access to energy efficiency education is available
- Establish consistent standards of education resulting in better quality assurance of work performed.²⁰

¹⁹CALTEESP, p. 70.

²⁰ CA HVAC Contractor and Technician Behavior Study Phase II.

Sample Tactics

There will be two primary focuses for tactics of this strategy. The first focus is stakeholder engagement. Some sample tactics of this effort may be:

- Host stakeholder engagement forums that invite organizations to network, share ideas, collaborate, and prioritize energy efficiency training actions to be taken.
- Promote cross-skills training and collaboration between organizations to achieve California's energy efficiency goals.
- Survey training providers to identify energy efficiency gaps in core curriculum to achieve legislative mandates, such as ZNE performance.

The second focus will be to address specific steps that SDG&E may undertake with organizations that will be tailored to their individual needs. Some sample tactics may be:

- Train-the-trainer sessions on new technologies and codes.
- Develop and/or enhance current or new curriculum.
- Work with third parties to leverage expertise to address specific training needs.

Strategy: Educate customers on the value proposition of energy efficiency and hiring skilled workers to implement projects

"There was general agreement, though, that there is not much demand for certified installers among customers or general contractors."²¹

Customers need to understand the value proposition of energy efficiency and the importance of hiring skilled workers to implement projects. An increase in demand for comprehensive energy efficiency projects will have a major impact on the workforce. As more projects are designed, installed and maintained, there will be a need for a trained workforce that can deliver savings. Educational offerings will inform customers that an investment in energy efficiency results in a greater return on their investment, and that the investment includes non-energy benefits like increased comfort and productivity.

Just as customers need to understand the value proposition of energy efficiency, trade professionals must understand how to sell it. Educating and engaging trade professionals will help SDG&E realize its energy efficiency potential, increase the trade professionals' value, and continue to drive business opportunities to those actors. This education will involve not only selling, but being able to bid and manage work. If contractors can sell energy efficiency as an investment, contractors will win customer business.²²

²¹Lighting Control Training Assessment, http://www.calmac.org/publications/Lighting_Controls_Training_Assessment_Report_2016-04-08b.pdf, p. 68.

²²Western HVAC Performance Alliance 2016. Recommendations to Operationalize Employer Support for the HVAC Sector Strategy.

Sample Tactics

The first series of sample tactics focus on educational offerings directed towards customers to demonstrate the value proposition of energy efficiency as an investment and not a cost. Some example tactics of this effort will be:

- Educate customers about the return on investment for energy efficiency projects, including available rebate and incentive programs.
- Educate customers about the value of hiring skilled workers to ensure that their investment is fully realized and that a project is designed, installed, or maintained properly.
- Educate customers about the additional benefits to EE projects outside of energy reduction, such as improved occupancy comfort.

The second tactic supports educating workers on how to “sell Energy Efficiency.” This will allow them to “sell” the value of energy efficiency. Some example tactics of this effort include:

- Educate contractors how to “sell Energy Efficiency” and how to bid for and manage customer business.
- Educate contractors how to sell additional benefits of projects and just the reduced energy savings aspect.

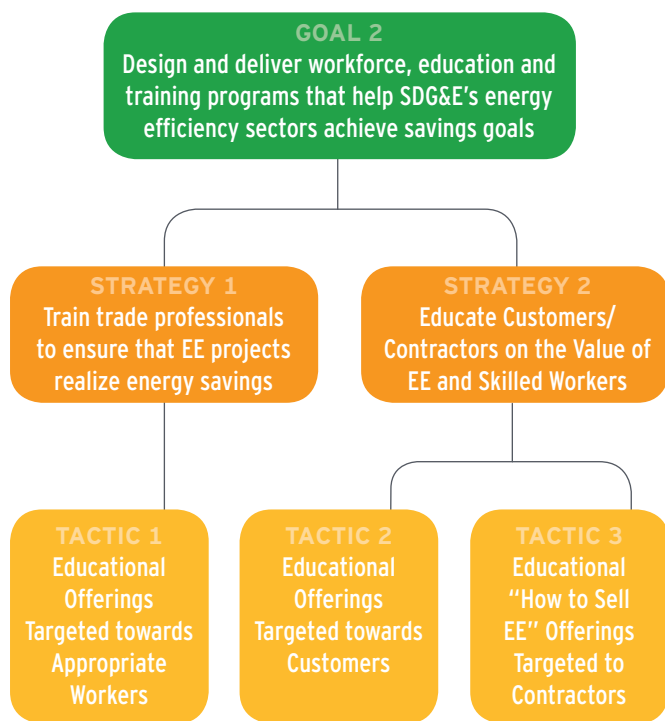
Goal 2: Design and Deliver Workforce, Education and Training Programs that Help SDG&E’s Energy Efficiency Sectors Achieve Savings Goals.

As a cross-cutting program, Workforce Education & Training will be important for SDG&E to meet its energy savings goals. Each sector will need trade professionals who have the skills to implement energy efficiency projects and customers who prioritize the value of energy efficiency. **Figure 8.17** illustrates the relationships of strategies and sample tactics to this goal.

The strategies and example tactics below highlight only a small part of the market sectors and the trade professionals and intervention that will be needed for SDG&E to realize success in the local market. Additional information for each sector can be located in their respectful chapters.

SDG&E will continue to offer successful education and collaborate with organizations where appropriate. General focus will include major energy end-uses (such as HVAC, lighting) and proper design, installation, and maintenance. This goal is to further address the specific goals and strategies as highlighted in their respective chapters and provide clarification to the new or enhanced strategies SDG&E is taking. The following strategies and tactics are not exhaustive of the approach and offerings that SDG&E will be offering. Because a specific end-use or customer is not addressed, does not imply that offerings will not be available for that area. The graphic below highlights only one major strategy and tactic per sector, but is not exhaustive.

Figure 8.17 WE&T Goal 2 Strategies and Sample Tactics



Strategy: Train trade professionals to ensure that energy efficiency projects realize energy savings.

Many occupations impact energy consumption, however workers receive very little education specifically focusing on energy efficiency because few jobs focus directly on energy efficiency. Energy efficiency is often one component or ignored as workers develop their skillset. Trade professionals need to be aware that ongoing education is available and participate in training offerings so they can realize energy savings. The education and training offerings will further workforce engagement to implement energy efficiency measures and will be specific for every sector and program.

Incumbent and potential trade professionals will need to receive energy efficiency education when participating in core education or when participating in additional educational opportunities. Offerings will be coordinated to address the needs of the market and the requirements and goals of programs so that

trade professionals can participate and deliver realized energy savings to customers. WE&T will collaborate with EE resource programs to ensure that training offerings are provided to meet any program requirements needed to achieve higher EE savings. Contractor standards will remain in place and be updated as appropriate so that energy projects are implemented in alignment with safety and energy saving standards. As responsible contractor policies and program requirements for qualifications are adopted, Workforce Education & Training will make appropriate training to market actors available.

Trade professionals will continue to have different needs for the skills they learn and how educational offerings need to be designed and delivered. These needs will be addressed in more detail within Implementation Plans.

Sample Tactics

The potential tactics below are just a few examples of the skills that certain trade professionals within certain sectors will need to implement energy efficient projects:

- Commercial: Educational offerings will target contractors to incorporate whole building approach to address lighting, HVAC, and energy management systems to reach ZNE
- Residential: Educational offerings will target HVAC contractors and technicians and support quality HVAC installation, maintenance
- Public: Educational offerings will be provided to building inspectors so they understand changes to Title 24, part 6 and can perform thorough inspections
- Industrial: Educational offerings will need to target the Industrial Strategic Energy Management program in the future
- Agricultural: Educational offerings will need to target the Agricultural Strategic Energy Management program
- Codes & Standards: Educational offerings will target contractors and building inspectors and provide information about code changes and how to comply

- **Emerging Technology:** Educational offerings will target contractors and provide education around comprehensive approaches, so projects are integrated with whole building approaches
- **Financing:** Educational offerings will be provided so that contractors develop skills to “sell” energy efficiency and be able to use financing programs for customer projects

Strategy: Educate customers to prioritize energy efficiency when paying for a project.

In conjunction with marketing, education, and outreach efforts, customers need additional education around the value of energy efficiency and enough understanding to request a comprehensive approach and quality installation and maintenance of equipment.

Customers will benefit from the industry recognized certification offerings that SDG&E will support. Certifications are tangible credentials to signify competency to customers. Contractor standards for trade professionals will remain and be updated as appropriate so customers feel confident in using approved trade professionals for energy efficiency projects.

Customers will have different needs for the education offerings targeted to them and specific tactics will be addressed in more detail within Implementation Plans.

Sample Tactics

The potential tactics below are just a few examples of educational offerings that will encourage customers to prioritize energy efficiency when deciding on projects:

- **Commercial:** Customers receive education about the value of skilled building operators to properly maintain education and realize energy savings
- **Residential:** Customers receive education about the value of skilled installers and ask for comprehensive energy saving approaches when undertaking home remodels
- **Public:** Customers receive education about the value of energy efficiency

- **Industrial:** Customers receive education about the value of energy efficiency and participate in Industrial Strategic Energy Management
- **Agricultural:** Customers receive education about the value of energy efficiency and participate in Agricultural Strategic Energy Management
- **Codes & Standards:** Customers will receive education about the upcoming changes to energy codes and how it may impact them for new construction and retrofits of existing buildings
- **Emerging Technology:** Customers will receive education about the value of energy efficiency and will undertake the risk of implementing a technology that is new to the market
- **Financing:** Customers will be educated about the long-term value of energy efficiency and the availability of financing options so they don't over-value lowest-upfront cost projects

Goal 3: Build the Future of an Energy Efficiency Workforce Through Statewide Programs That Focus on Career Awareness and Inclusion of Disadvantaged Workers.

See Statewide Administrator PG&E's chapter for a full description of WE&T statewide programs.

Future Look

To accomplish the goals and strategies laid out in this plan, we propose restructuring the WE&T program to create a pathway for participants and define clear roles and responsibilities for how our program works in conjunction with other education providers. See **Figure 8.18**.

Figure 8.18 Future Look

Program Component	A. SW – Career Connections: Job/Career Awareness & Basic Green Energy Ed	B. SW – Career & Workforce Readiness (CWR): Job and Career Readiness	C. Integrated Energy Education & Training (IEET)	
			Core Energy Education	Technical Upskill
Primary Audience	People unaware of energy jobs and careers: <ul style="list-style-type: none"> • K-12 students • K-12 instructors • Energy job/career seekers • Energy education seekers 	People not prepared to enter a traditional energy job/career higher education path: <ul style="list-style-type: none"> • Disadvantaged communities • Disadvantaged workers 	People on a chosen educational track toward a job/career: <ul style="list-style-type: none"> • Post-secondary students • Adults • Retraining for those who have identified an energy career energy path 	People in a job/career seeking energy-focused upskilling: <ul style="list-style-type: none"> • Engineering & design professionals • Technical trades/ journeymen
Offerings and Purpose	<ul style="list-style-type: none"> • Career awareness • Green energy and sustainability teaching materials and support (green energy/ sustainability) 	<ul style="list-style-type: none"> • Career prep/job readiness services (via partnerships) • Gain skills that may lead to employment and/ or advancement in a job in the energy efficiency field 	<ul style="list-style-type: none"> • Track-specific technical education and training • Support for teaching materials development • Train-the-Trainer • “Kick-Start / early stage” initiatives support • Building performance measurement tools 	<ul style="list-style-type: none"> • High-level and in-depth training • Targeted offerings for specific occupations • Certification program support
Primary Organizations for Strategic Partnerships	<ul style="list-style-type: none"> • K-12 schools • WIBs, CBOs 	<ul style="list-style-type: none"> • Workforce Investment Boards • Community-based organizations • Job-training organizations 	<ul style="list-style-type: none"> • Community and 4-year Colleges • Job-training organizations • Vocational Schools • Labor/Unions • Trade Associations • Apprenticeship & Pre-apprenticeship • Community-based orgs. 	<ul style="list-style-type: none"> • University Extension Programs • Certification agencies & programs • Professional and Trade Associations and Agencies
Outcomes	Knowledge gain, using gained knowledge and skills on the job, expanding/enhancing other organizations’ curricula. Combined outcomes should lead to EE savings and support SDG&E portfolio goals			

WE&T EM&V Considerations

WET is unique, in that energy savings is not a direct function of the program, but largely captured within other sectors. That said the EM&V teams will rely heavily on process evaluation to improve programs to achieve a skilled workforce to help realize EE savings. SDG&E will work with statewide teams to develop studies to continually improve specific program offerings, while collecting additional data to drive improvements of other sectors. Recognizing that the venue is a critical touch point between various stakeholders and the PA, SDG&E EM&V will work closely with SDG&E's Energy Innovation Center (EIC).

The WET program works with evaluators on a regular basis to incorporate study findings and recommendation for program improvement. These include:

- The IOUs' Energy Centers are successful in achieving energy savings and promoting greater energy efficiency knowledge. The 2006-2008 Indirect Impact Evaluation of the Statewide Energy Efficiency Education and Training Program Report concluded that the IOUs Energy Centers provide an additional 5% of energy savings to the IOUs program portfolio.²³
- In response to a study recommendation, the IOUs are moving toward outcome-based Program Performance Metrics (PPMs) to more effectively gauge and monitor program performance. The PPMs being explored by the IOUs include customer and workforce participation in training and helping to enhance/expand energy efficiency content in other organizations' curricula.²⁴
- In response to study recommendations, the Energy Centers have improved data tracking and collection efforts in order to have more consistency across IOUs in support of WE&T program theory and logic. The study recommendations for improving data tracking included revising and enhancing the registration data collection, revising and enhancing the Energy Center course tracking databases, and revising and enhancing the course feedback surveys. The IOUs have incorporated some of these recommendations into the WE&T program by developing a core set of questions in the student post-course survey instrument. Also, all IOUs now use the same registration system and collect aligned demographics (e.g., same job classifications, same job sectors).²⁵
- A past study has confirmed that there is sufficient availability and variety of training to support contractors, but the barrier remains in terms of contractor awareness of these training options. This contractor training market characterization study found that the wide variety of trainings available in the state for the residential Energy Upgrade California (EUC) Home Upgrade program, the residential HVAC program, and the non-residential lighting program sufficiently meets the training needs of contractors and technicians. Awareness of trainings is a greater obstacle than the number and availability of trainings.²⁶

²³Indirect Impact Evaluation of the Statewide Energy Efficiency Education and Training Program Report, Opinion Dynamics Corporation, 2010, p. 2. www.calmac.org/publications/06-08_Statewide_Education_and_Training_Impact_Eval_Vol_I_FINAL.pdf.

²⁴013-2014 Statewide WE&T Program, Program Theory and Logic Model Update; Centergies Data Needs; And Critical WE&T Data Needs, Opinion Dynamics Corporation, June 2014, p. 2.

²⁵Ibid.

²⁶PY2013-2014 California Statewide Workforce Education and Training Program, Contractor Training Market Characterization, Opinion Dynamics Corporation, June 2016, p. 7. www.energydataweb.com/cpucFiles/pdaDocs/1631/CPUC%20WET%20Contractor%20Training%20Market%20Characterization_FINAL_V5.docx.

WE&T Sector Metrics

Table 8.19 describes the metrics SDG&E will use to evaluate the success of proposed program strategies. The metrics are associated with goals and are designed to be ‘SMART’ (specific, measurable, attainable, realistic, and time-based). Success will be measured based on short, mid and long-term targets.

Figure 8.19 WE&T Sector Metrics

Energy Efficiency Business Plans: Sector Metric Table – Commercial Sector			
Problem Statement	Market Barriers	Desired Sector Outcome	Intervention Strategies
A comprehensive WE&T program requires collaborative efforts by many entities	<ul style="list-style-type: none"> • Traditional occupation training does not focus on energy efficiency • Educators must remain up-to-date with changes in codes and technology 	Prepare California's workforce to meet the doubling of energy efficiency savings by 2030	Collaborate with external training organizations to identify gaps in energy efficiency education and develop curriculum to share
Trade Professionals don't have the technical knowledge, skills, or abilities to meet SDG&E's EE savings goals	<ul style="list-style-type: none"> • Code Changes and Complexity • New technologies and "upskill" training needed to stay competitive • Lack of understanding in how to participate in SDG&E programs 	Design and deliver workforce, education, and training programs that help SDG&E energy efficiency sectors achieve savings goals	Market Actors will receive training to ensure that energy efficiency projects realize energy savings
Customers/Contractors don't understand the value proposition of energy efficiency	<ul style="list-style-type: none"> • Lack of Understanding or Awareness of ROI or Programs • Unaware of business benefits beyond Utility Cost savings • Program Complexities diminish perceived value • Contractors don't "sell value" of EE 		Customers/Contractors will receive education in conjunction with marketing, education, and outreach to prioritize energy efficiency when paying for a project

See following page for continuation of table.

Figure 8.19 WE&T Sector Metrics (continued)

Energy Efficiency Business Plans: Sector Metric Table – Commercial Sector					
Sector Metric	Baseline	Metric Source	Short-Term Target (1-3 years)	Mid-Term Target (4-7years)	Long-Term Targets (8-10+ years)
Curriculum developed and shared with external organizations	Current Number of Training Partners	Program Data	Assessment Year; determine appropriate training partners; Year 2-3: 10% increase partners year over year	10% increase in partners year over year	10% increase in partners year over year
Number of participants in high potential topics/ energy use areas for energy savings	Establish Current Number of Applicable Clean Energy Trade Professionals (28,500 per Clean Energy Report)	Program Data	20% of Market	25% of Market	30% of Market
Number of participants in high potential topics/ energy use areas for energy savings	Current Number of Participants	Program Data	10% increase by Year 3	Additional 10% increase by Year 7	Additional 10% increase by Year 10

09 FINANCE



Finance

SDG&E is a pioneer of energy efficiency financing in California. SDG&E was the first IOU to launch On-Bill Financing in 2006 (first loans issued in 2007). More than \$51.3 million has been disbursed for 1,495 projects since the offering's inception through December 31, 2016. SDG&E's default rate is below 1%. Building on this foundation of success, SDG&E will continue to promote and evolve the financing options for customers in San Diego while supporting the efforts for statewide financing. Following the CPUC's direction per D. 16-08-019, program administrators (PAs) will administer on a statewide basis all upstream and midstream programs and those with market transformation objectives. PG&E will be the Finance program statewide program administrator. Please refer to the Finance chapter in PG&E's business plan for details regarding the statewide components of the Finance program.

SDG&E will both support implementation of the statewide financing pilots and locally implement the On-Bill Financing (OBF) subprogram. To support implementation of the pilots, SDG&E staff will assist the selected statewide implementer(s) in carrying out their responsibilities within SDG&E's service territory and help ensure that SDG&E's ratepayers' interests are well represented. The transition to statewide implementation of programs such as Finance through third-parties may create potential issues regarding adequate coverage and representation of investor-owned utility service territories. For this reason, while this role may not be needed beyond the transition period, setting the proper foundation for future statewide implementation of the Finance program is important enough that dedicating these limited local resources makes sense.

SDG&E staff will also serve as local resources for its programs staff to ensure that their development and implementation of energy efficiency programs (whether local or third-party implemented) incorporates relevant finance components. Informing and educating program staff regarding likely future changes to Finance offerings will help improve program development and implementation.

On-Bill Financing

On-Bill Financing offers interest-free, unsecured, on-the-utility-bill loans that work in conjunction with utility energy efficiency programs. It is designed primarily to facilitate the purchase and installation of qualified energy efficiency measures by non-residential customers who may lack up-front capital to invest in real and sustainable long-term energy cost reductions. Loan terms range from up to five years for commercial customers and up to ten years for government agency customers. The eligible loan amount is based on the project cost, less incentives or rebates, up to the loan maximum of the OBF product and within the loan term thresholds. Customer loans are repaid through a fixed monthly installment on their utility bills. There is no prepayment penalty and loans are not transferable. Additionally, partial or non-payment of loans could result in shut-off of utility service.

It is important to have local implementation of OBF to ensure that financing opportunities can be tailored to SDG&E customers' needs, that the actual financing pool is well-administered, and that education and training for customers and contractors is maximizing participation while minimizing confusion about program rules and requirements. SDG&E will also be modifying its OBF offering for public sector customers as well as for small to medium commercial, industrial and agricultural businesses. These changes will facilitate a simple customer engagement for more comprehensive energy efficiency solutions delivered by contractors in combination with other EE incentive offerings. SDG&E will modify existing and develop new financial solutions to address the major challenges that public customers face, and to facilitate the completion of energy efficiency projects across public entities.

Figure 9.1 Finance Program Annualized Budget^a

	Near-Term 2018-2020	Mid-Term 2021-2023	Long-Term 2024-2025
Annual Budget	\$3,831,176	\$3,831,176	\$3,831,176

^a This budget includes SDG&E's OBF administration and Finance pilots budgets. SDG&E's OBF loan pool is in a separate two-way balancing account.

Such solutions will include customizing current OBF loan terms and limits to better suit the needs of the public sector, supporting creation of an energy efficiency revolving fund (or similar energy efficiency funding solutions) for public entities, and supporting customer pursuit of alternative funding sources.

Finally, as PAs come to understand ways to modify OBF and create other financing opportunities, SDG&E's local resources can help customers realize these benefits by assisting with implementation within SDG&E's service territory. There will be many changes to financing programs over the course of this business plan and SDG&E will be prepared to adapt these changes to SDG&E, customer and contractor needs.

Figure 9.1 outlines the proposed budget for SDG&E's Finance program.

10 CODES & STANDARDS



Codes & Standards (C&S)

Following the CPUC's direction per D. 16-08-019, program administrators (PAs) will administer on a statewide basis all upstream and midstream programs and those with market transformation objectives.¹ PG&E will be the Codes & Standards program statewide program administrator and is tasked with implementing the Building Code and State Appliance Standard (Advocacy) subprograms on a statewide basis. Please refer to the Codes & Standards chapter of PG&E's business plan for details regarding the statewide components of the C&S program.

SDG&E will both support implementation of the statewide C&S subprograms and locally implement the Reach Codes and Compliance Improvement subprograms. To support implementation of the Advocacy subprograms, SDG&E staff will assist the selected statewide implementer(s) in carrying out their responsibilities within SDG&E's service territory and help ensure that SDG&E's ratepayers' interests are well represented. The transition to statewide implementation of programs such as C&S through third parties may create potential issues regarding adequate coverage and representation of investor-owned utility service territories. For this reason, while this role may not be needed beyond the transition period, setting the proper foundation for future statewide implementation of the C&S program is important enough that dedicating these limited local resources makes sense.

¹ "Decision Providing Guidance for Initial Energy Efficiency Rolling Portfolio Business Plans," California Public Utilities Commission, Decision 16-08-019, August 18, 2016, p. 2.

SDG&E staff will also serve as local resources for its programs' staff to ensure that development and implementation of energy efficiency programs (whether local or third-party implemented) incorporates past and future updates to codes and standards. It is very important that updates to technical assumptions related to codes and standards are integrated into programs after adoption. In addition, informing and educating program staff and third parties regarding likely future changes to codes and standards helps improve program and measure development.

Finally, working jointly with SDG&E's local government partnerships group, SDG&E staff will support municipalities interested in pursuing reach codes and with their compliance improvement activities.

Compliance Improvement

California's building codes are the most advanced in the United States.² Yet, despite tremendous progress in developing and adopting strong building codes in California, there remains work to assure that codes are faithfully implemented. As articulated in the *Existing Buildings Energy Efficiency Action Plan*, "addressing the application, compliance, and enforcement of building standards in existing buildings is a high priority."³ SDG&E also considers this a high priority and plans to work locally with municipalities and customers to improve rates of compliance. As discussed in the Public chapter, SDG&E will work with local governments to improve the adoption of Title 24 standards by creating stakeholder engagement plans. These plans will enable SDG&E to better understand customers' needs and to create clear, constructive and tailored solutions. These solutions may include needs-based tools, training, resources, and outreach to relevant groups. Ultimately, it is hoped that these solutions will be replicable across municipalities and stakeholder groups, thereby leveraging successful approaches throughout the service territory.

Assistance to Local Governments in Developing and Passing Reach Codes

Reach codes are "codes that direct contractors to construct buildings significantly more energy efficient than required by conventional building codes."⁴ SDG&E understands the challenges associated with conventional reach code adoption, such as lengthy approval processes and business resistance due to concerns about added costs. It is, therefore, important for SDG&E to provide options that public entities can pursue in support of long-term zero net energy (ZNE) goals. To this end, as one option, SDG&E will equip local governments with the information required to implement policies and take actions that move beyond existing code. Local governments can consider a set of scalable options that allow for varying degrees of reach code progress. For example, governments can set percentage targets above existing code, which would provide flexibility in how constituents achieve beyond-code targets or adopt code changes that relate to specific technologies.

As another option, SDG&E will collaborate with local governments to facilitate adoption of "super reach codes" to mitigate timing risks and maximize savings realized. Super reach codes seek to avoid the need to continually update reach codes based on updates to Title 24 by anticipating code changes that will occur two cycles into the future (six years). This way, local governments can establish reach codes that produce savings beyond the code cycle that immediately follows the current year.

² "California Existing Buildings Energy Efficiency Action Plan," California Energy Commission (CEC-400-2015-013-F), September 2015, p. 10.

³ Ibid.

⁴ "California Energy Efficiency Strategic Plan: January 2011 Update," California Public Utilities Commission and California Energy Commission, p. 121.

SDG&E's C&S and local government partnership groups will work with PA codes and standards teams to share best practice information and remain apprised of developments in state and national codes. In addition, the groups will work with local governments to communicate clear and consistent value propositions within their organizations and with external stakeholders. These efforts will facilitate a dialogue on the importance of code changes as a tool in advancing towards ZNE.

Figure 10.1 and **Figure 10.2** outline the proposed energy efficiency savings goals and budget for SDG&E's C&S program.

Figure 10.1 C&S Program Annualized Net Savings Goals

	Short-Term 2018-2020	Mid-Term 2021-2023	Long-Term 2024-2025
GWh	96-89	76-59	56
MW	24	22-20	19
MMTherms	0.7	0.7-0.6	0.6

Figure 10.2 C&S Sector Annualized Budget

	Short-Term 2018-2020	Mid-Term 2021-2023	Long-Term 2024-2025
Annual Budget	\$1,035,710	\$1,035,710	\$1,035,710

APPENDIX A

Commission Clarifications Needed for a Successful Business Plan

This appendix to the Business Plan discusses assumptions based on clarifications or changes in exiting Commission direction that SDG&E used to develop its Business Plan. For the reasons discussed below, SDG&E considers such clarifications essential to increasing cost effective energy efficiency (EE) savings towards meeting Senate Bill 350 energy efficiency goals, and to improving the efficacy of program delivery.

A. Retain the 1.0 Cost-Effectiveness threshold

- The Total Resource Cost (TRC) and Program Administrator Cost (PAC) test estimates should exceed a 1.0 cost-effectiveness threshold for 2018.

Discussion:

D.14-10-046 specified that the TRC and PAC test estimates are to exceed a 1.0 cost - effectiveness. It states (at 109):

The TRC and PAC estimates are to exceed a 1.0 cost-effectiveness threshold for 2015; rather than the 1.25 we usually require, and will require for subsequent years.

The decision further clarifies that it “recognize[s] there is a tension between that expectation and this decision setting spending levels until 2015 or we change them. We do not resolve that tension, which is a 2016 and beyond issue, here.”¹ SDG&E requests that the Commission extend this same requirement to the 2018 EE Business Plan.

There are several new challenges observed in this planning process. The 2018 avoided costs

are significantly less than the previous avoided costs in the 2017 and earlier portfolios, thus keeping all other inputs (EE measures, budgets, etc.) constant would result in a reduction in cost effectiveness.² Changes in Codes and Standards, which usually promote higher efficiencies, also result in reductions in savings since the new code becomes the baseline for calculating savings for new equipment. With the requirement to bid statewide programs and increase the EE third party programs, specific program designs, budgets and savings are still unknown. As such, SDG&E used its 2017 EE program portfolio data as a basis for estimating the 2018 cost effectiveness.³ In spite of these unknowns, SDG&E is committed to working with the statewide program administrators/implementers and third party program implementers to maintain the cost effectiveness of its portfolio. Therefore, SDG&E requests that the Commission apply the same requirement that the TRC and PAC test estimates should exceed a 1.0 cost-effectiveness threshold for 2018.

¹ D.14-10-046 at 110, n. 96.

² *Avoided Costs 2016 Interim Update*, Energy and Environmental Economics, Inc., August 1, 2016, pp. 41-44. Available at: <http://www.energydataweb.com/cpucFiles/pdaDocs/1591/Avoided%20Cost%202016%20Update-OUT.pdf>.

³ See the “Budget and Cost Effectiveness” section of the Portfolio Overview, chapter 1 of the Business Plan.

B. Approve SDG&E's Statewide Administration Assignments

- SDG&E proposes that it be the statewide program administrator for the following three programs:
 1. **Upstream/Midstream Heating, Ventilation, and Air Conditioning (HVAC);**
 2. **Midstream Plug Load and Appliances (PLA); and**
 3. **Residential Quality Installation / Quality Maintenance (QI/QM) (Downstream Pilot).⁴**

Discussion:

D.16-08-019 states (at 53-54):

...[W]e will require that for each of the designated statewide programs (identified and discussed in further detail in the sections below), that the business plans brought forward by the program administrators designate the single lead administrator for each. This can be worked out in the discussions already occurring as part of the CAEECC⁵ process. While this process need not be strictly competitive, our hope is that the natural leads with the capacity to handle the statewide programs will either volunteer or be nominated by their peers, with a consensus approach brought forward to the Commission for our consideration. In response to comments on the proposed decision from PG&E, we clarify that if the CAEECC process cannot reach consensus, the business plans should identify the options considered and bring the proposals forward to the Commission to resolve.

SDG&E, together with the other utilities, presented the final statewide program administrator assignments at the CAEECC October 2016 meeting.⁶ Since that presentation, SDG&E has not received any

confirmation that there is CAEECC consensus on the proposed assignments. Therefore consistent with D.16-08-019 direction above, SDG&E's Business Plan proposes the specific programs it is volunteering to serve as the statewide program administrator: (1) Upstream/Midstream HVAC; (2) Midstream PLA; and (3) Residential QI/QM (Downstream Pilot).

SDG&E has attached as Exhibit 3 to its application submitting its Business Plan to the Commission, *Proposal for Statewide Program Administration Assignment and Governance*. This proposal presents the statewide program lead assignments for each of the utilities, SDG&E, Pacific Gas and Electric Company, Southern California Edison Company and Southern California Gas Company. Exhibit 3 presents the framework in which the program administrators will operate these statewide programs.

SDG&E has a history of lean, efficient program administration. Even though SDG&E's territory has key factors that work against cost effectiveness (e.g., limited Industrial sector and a relatively small portfolio - \$116.5M), SDG&E has been able to create a portfolio with a TRC greater than 1.5 in prior years as well as creating a competitive lifecycle cost for EE measures. Building upon this success, SDG&E's statewide lead assignments are based on its vision for the future of these statewide program offerings. The following discussion details SDG&E's vision for these two programs.

1. Upstream Heating, Ventilation, and Air Conditioning (HVAC)

SDG&E has proven leadership in HVAC innovation. As the residential HVAC lead for almost four years, SDG&E's statewide leadership has identified opportunities to synergize customer offerings with complete top-down services through our upstream, midstream and downstream HVAC programs. SDG&E has collaborated with HVAC industry stakeholders to increase and optimize the performance of the HVAC programs to increase customer comfort, improve air quality, reduce operating costs, and save energy for all customer segments. As the HVAC marketplace evolves, SDG&E

⁴ See the "Statewide Program Administration" section of the Portfolio Overview chapter 1 of the Business Plan.

⁵ California Energy Efficiency Coordinating Committee.

⁶ CAEECC meeting October 19, 2016. Minutes of the meeting are available at: http://media.wix.com/ugd/0c9650_97057b736aa74db19767a0c9cfc2dba9.pdf.

has incorporated Pay for Performance (PFP) contracts, customer centric design, cost reductions, increased energy savings, AMI data analytics, Integrated Demand-side Management (IDSM) solutions, whole building integration and cutting edge advanced technologies to meet the demands of the changing landscape of California legislation (e.g., AB 758, SB 793, SB 1414, SB 350, and AB 802).

The California IOUs invest tens of millions of dollars each year in HVAC EE measures. The HVAC upstream program provides hundreds of dollars per ton to distributors for stocking and installation of high SEER (≥ 16) units. The current program design, while having moderate success, has seen very low realization rates for air cooled units. Small tonnage air cooled units account for most of the units that participate in our upstream programs and these systems have the lowest realization rate (18%). Recommendations from the most recent impact evaluation⁷ include:

- Set program efficiency criteria for full-load and part-load combinations. Pre-identify units that meet the criteria such that savings claims are tied back to make and model numbers collected by participating distributors.
- Work with distributors to obtain extended performance maps that can be used in future simulations. DEER updates are limited by the availability of information from manufacturers, and the upstream program may be in a better position to obtain this information.
- Develop methods to obtain evidence that the economizer is fully functional before dispersing the final incentive payment. Obtain acceptance testing data for the technician to assure a functioning economizer that includes documenting economizer functionality with video/photographic evidence.

While modest gains can be achieved by working with distributors and installers to insure the most efficient units are installed and that these units operate as designed for their entire life, SDG&E

believes greater savings opportunities exist by working further upstream with the manufacturers and industry professionals. New opportunities become possible as SDG&E launches an upstream HVAC program for all of California. With California's purchasing power, and if California partners with other large energy efficiency organization, like Northwest Energy Efficiency Alliance, it will have a better ability to transform the HVAC market. Some areas to explore:

- Create a California SEER. Work with the Air Conditioning, Heating and Refrigeration Institute (AHRI) to establish a California SEER that is weighted in alignment with California's hot, dry climate.
- Modify HVAC design/diagnostics to add user alerts.

User alerts when refrigerant charge is too low or too high. Engage customers with alerts that are communicated to customer devices ranging from smart phones to energy management systems. These alerts would be similar to the "Check Engine" light on automobile dashboards that would alert customers to an immediate problem that requires attention.

User alerts for economizer fault detection. The idea, again, is to provide a user friendly call to action to repair one of the more fragile components of an HVAC system - the economizer.

a. Refrigerant Charge

The California IOUs have offered refrigerant charge programs for some time because, "[s]tudies have shown that more than 50 percent of all air conditioners suffer from improper charge or air flow problems causing them to operate 10 to 20 percent less efficiently than expected."⁸ These programs have produced savings, but additional savings can be achieved by proactively alerting customers as soon as the problem occurs.

⁷ California Public Utilities Commission (April 1, 2016), found at: Impact Evaluation of 2013-14 Upstream HVAC Programs (HVAC1).

⁸ American Council for an Energy Efficient Economy - 2008 ACEEE Summer Study on Energy Efficiency in Buildings, p. 3-209. See: http://aceee.org/files/proceedings/2008/data/papers/3_514.pdf

b. Economizer

Properly functioning economizers are a great energy efficiency measure, but the recent load impact study performed by DNV GL showed that only 75% of economizers were operational shortly after install. Anecdotal evidence suggests over time, and without proper maintenance, the number of properly functioning economizers drops to near zero. In addition to fault detection, an upstream program should investigate working with manufacturers to add economizers to smaller tonnage units.

c. Approach

Initially the program would look similar to the current offering - a distributor stocking program, but over time the program would focus more upstream where incentives would be directed to manufacturers to design systems for California and systems that increased energy efficiency through proactive customer alerts.

2. Midstream Plug Load and Appliances (PLA)

SDG&E's innovative approach will accelerate market-based energy efficient purchases. A strong drive to identify process improvements, reduce costs and resources to implement effective programs while improving the customer experience requires a core team of creative, thoughtful innovators. In early 2016, SDG&E overhauled and redesigned the water and energy-savings kit program, part of the Plug Load and Appliance (PLA) program. SDG&E leveraged its team's extensive experience with sourcing, fact-based negotiating and contracting to secure volume discount pricing and streamline processes resulting in a 50% reduction in the cost of water and energy-savings kit administration. Additionally, SDG&E reduced customer order fulfillment to less than 10 days, improving the customer experience. SDG&E believes that the statewide administration of the midstream plug load and appliances PLA program can elevate access of efficient end-use products while facilitating emerging energy management technologies.

As noted by the Environmental Protection Agency, "upstream/midstream incentives can affect larger markets than direct incentives targeted to individual customers, because upstream and midstream players are able to offer the desired products or services to all the customers they serve, not just those who learn about direct customer rebates."⁹

Currently, 66% of residential electric energy consumption in California is comprised of plug loads and plug load consumption, and this percentage is forecasted to grow to 77% by 2024. The Existing Buildings Energy Efficiency Action plan notes "[t]his load growth is a major barrier to reaching California and U.S. greenhouse gas emission reduction goals."¹⁰ However, due to the relatively small savings offered by each plug load device, SDG&E and other California PAs find it can be difficult to keep administrative costs low and achieve market transformation through a downstream rebate program. In these cases, upstream and midstream approaches may be more effective at increasing customer adoption.

As the statewide lead for the midstream PLA program, SDG&E will partner with manufacturers, distributors, retailers and other influential market participants to develop comprehensive and innovative initiatives that reduce energy usage across technologies with high savings potential. SDG&E intends to consider multiple intervention strategies for program delivery including, but not limited to Retail Products Platform, Point of Sale or a hybrid approach. Additionally, upstream and midstream partnerships will be leveraged to increase the visibility and eventually decrease the cost of energy management technology. SDG&E also intends to collaborate with those key market actors to increase demand for national connectivity standards and protocols, which will ultimately improve adoption and customer

⁹ U.S. Environmental Protection Agency, *Customer Incentives for Energy Efficiency through Program Offerings*, p. 6 (2010), found at: https://www.epa.gov/sites/production/files/2015-08/documents/program_incentives.pdf.

¹⁰ California Energy Commission, Existing Buildings Energy Efficiency Action Plan, p. 54 (2015), found at: http://docketpublic.energy.ca.gov/PublicDocuments/15-IEPR-05/TN206015_20150904T153548_Existing_Buildings_Energy_Efficiency_Action_Plan.pdf.

experience for those technologies. Finally, SDG&E recognizes that an energy management hub, be it physical or virtual, will be an integral part of home owner's energy management. Through this home network customers will have unprecedented access to information and control of their homes.

The benefits of this hub extend beyond energy efficiency and will give customers the ability to schedule their load to take advantage of TOU rates and dispatch their load to support demand response events. SDG&E will work with these market players to ensure these devices are easy to connect and that the market develops energy management automation macros and scripts that are easy to trigger and effective when triggered.

3. Residential QI/QM (Downstream Pilot)

The rapid growth of air conditioning in California homes has made it one of the state's largest energy consuming end-uses and the single largest contributor to peak demand. Thus, activities designed to improve HVAC efficiency provide a significant opportunity to improve energy efficiency and reduce peak power demand. Historically, programs that have targeted maintenance and installation aspects of the HVAC market have been plagued with poor cost effectiveness, low realization rates, and minimal market participation. This has resulted in mixed opinions and interest from the HVAC industry.

In alignment with the California Long Term EE Strategic Plan,¹¹ SDG&E will seek to overcome the barriers that have caused program performance issues in the past. This strategy will employ a five point approach:

- a. Improve HVAC system performance to generate greater savings for customers;
- b. Enhance requirements to insure that only qualified contractors can participate;
- c. Simplify the assessment and measurement approach to optimize cost effectiveness;
- d. Employ a pay-for-performance approach to align incentives with savings; and

- e. Create value propositions that address and overcome the "run to fail" mentality for equipment maintenance and installation.

In addition to the changes described above, these efforts will result in customers increasingly valuing the improved health and safety and lower maintenance or replacement costs better HVAC systems can provide.

C. Add EE to Independent Evaluator and Procurement Review Group Oversight

- SDG&E's existing Procurement Review Group (PRG) and Independent Evaluator (IE) process used for electric procurement should be modified to include review of competitive solicitations for EE products.¹²

Discussion:

Instead of continuing the separate Peer Review Group process currently used to review IDEA 365 solicitations, SDG&E's business plan proposes to modify its existing electric Procurement Review Group (PRG) and Independent Evaluator (IE) process for reviewing electric procurement solicitations to include review of EE solicitations.

The existing PRG consists of non-market participants who sign non-disclosure agreements, along with the Commission staff, and Office of Ratepayer Advocates.¹³ In general, the PRG's role includes the review and assessment of the IOUs' overall procurement strategy and solicitation processes.¹⁴ The current PRG process must be tailored to meet the needs of EE solicitations. For example, current PRG membership should be expanded to include non-market participants with particular experience or interest in EE issues. These additional EE-focused PRG members would not need to attend all PRG meetings, but only those where EE issues are on the agenda. This process of expanding the PRG when needed to include additional members with specific areas of interest already exists

¹¹California Energy Efficiency Strategic Plan (January 2011), Section 1, found at: http://www.energy.ca.gov/ab758/documents/CAEnergyEfficiencyStrategicPlan_Jan2011.pdf.

¹²See the "Statewide Program Administration" and "Sourcing Strategy and Transition Plan" sections of the Portfolio Overview, chapter 1 of the Business Plan.

¹³D.02-08-071 at 25.

¹⁴*Id.*

to accommodate issues that arise when IOUs intend to recover procurement costs from both bundled and unbundled customers (known as the Cost Allocation Mechanism (CAM) PRG).¹⁵ The process of incorporating EE-focused PRG members could mimic the CAM PRG process.

The Independent Evaluator (IE) advises the IOU and PRG on design, administration, and evaluation aspects of the solicitations to ensure that the process is fair. The specific functions should be tailored to meet the needs of EE solicitations. For example, the Commission has identified requirements for the technical expertise and experience of the IE, including familiarity with various standard contracts and industry practices, and experience analyzing the relative merits of various types of Power Purchase Agreements (PPAs).¹⁶ These requirements should be updated to refer not only to expertise with power markets and PPAs, but also to Energy Efficiency programs and contracts. Since the current pool of IOU IEs has been exposed to EE products through SDG&E's recent all-source solicitations, they have gained valuable experience that will lend itself well to providing services for EE-specific solicitations.

In general, the process for reviewing solicitations through the PRG/IE process currently includes the following steps, which may require adjustment to provide the appropriate level of oversight for EE solicitations.

1. Prior to drafting solicitation documents, IOUs meet with the IE, PRG, and Commission staff to outline their plans (quantities and types of products they intend to solicit, category definitions if multiple bid categories are envisioned, any unique circumstances to be addressed in the solicitation) and solicit feedback.

2. Draft bid documents that include clear descriptions of the bid criteria (including the rationale for selecting and weighting the criteria) and the evaluation and selection process are to be vetted through the IE and PRGs.
3. The IOUs and IEs then work simultaneously to review and evaluate bids according to the agreed upon protocols.
4. The IOU provides the PRG and Commission staff a decision rationale with respect to each selected and rejected bid upon completion of an RFO.
5. The IE also submits a report to the PRG and Commission staff that describes the process used to evaluate the solicitation, strengths and weaknesses of the evaluation methodology and recommendations.

SDG&E believes that the existing PRG/IE framework used for electric procurement, as described above, is a solid foundation from which to launch an efficient review of EE solicitations. Including EE in this existing framework will also help the state achieve the Integrated Resource Planning goals established by SB 350. SDG&E notes, however, that the advice letter approval process currently required for electric procurement contracts is not appropriate for EE at this time. D.05-09-043 did not require that programs from third party solicitations be submitted for approval through advice letter filings.¹⁷ Therefore similar to the current treatment of third party programs, contracts resulting from upcoming solicitations should not require additional Commission approval through the Advice Letter process as long as the solicitation process (applies to both statewide and third party programs) is overseen by this proposed PRG/IE framework. SDG&E proposes that timely submissions of Implementation Plans provide for transparency of the new program's operations.

¹⁵D.07-12-052 at 127-128.

¹⁶D.04-12-048 at 136.

¹⁷D.05-09-043 at 149, n. 150.

D. The Commission Should Confirm its Direction that the Joint Utility Statewide Administration Contracting is Subject to the State Action Antitrust Defense

- SDG&E requests that the Commission reiterate its findings regarding State Action Doctrine defense to an antitrust action articulated in D.10-12-054, ordering paragraph 8, which allow the utilities to engage in certain joint energy efficiency activities which are consistent with state policy and actively supervised by the Commission.¹⁸

Discussion:

D.16-08-019 directs the utilities to propose several statewide programs that will be outsourced.¹⁹ As such, SDG&E anticipates that it will be involved with the other utilities in the bidding and selection process for third party implementers to conduct these statewide programs. Subsequently, SDG&E anticipates that it will have a role in the management of these programs as articulated in Section C above. Therefore, SDG&E requests that the Commission reiterate its findings regarding State Action Doctrine defense to an antitrust action articulated in D.10-12-054, ordering paragraph 8, which confirms the Commission's direction for the utilities to engage in certain joint energy efficiency activities that are consistent with state policy and supervised by the Commission:

In further recognition of the importance of the state's investor-owned utilities' energy efficiency programs to California's ability to meet its clean energy goals, the Commission hereby determines that Southern California Edison Company, Pacific Gas and Electric Company, Southern California Gas Company, and San Diego Gas & Electric Company should jointly implement certain energy efficiency programs and that their exchange of confidential and/or competitively-sensitive information related to such implementation shall be deemed to have been undertaken at the express direction and under the supervision of the Commission in furtherance of an expressly-articulated state policy.

E. Conclusion

SDG&E requests that the Commission approve the Business Plan, including the clarifications described above.

¹⁸See the "Statewide Program Administration" section of the Portfolio Overview, chapter 1 of the Business Plan.

¹⁹D.16-08-019 at 73.

APPENDIX B

Budget & Savings Methodology

This appendix details the approach used by SDG&E to determine budget and savings goal values and estimate cost-effectiveness for the energy efficiency portfolio associated with the business plan. This section provides an overview of the analysis performed, focusing on balancing the comprehensiveness of the portfolio with cost-effectiveness, to reach the most balanced portfolio possible given the constraints.

SDG&E used the 2017 portfolio, as filed in Advice Letter 2951-E/2512-G (the “2017 portfolio”) as the base case for the analysis of future cost-effectiveness. SDG&E then calculated the cost-effectiveness of same portfolio measure mix using the E3 CET with the 2017 (Testing) implementation year.¹ The 2017 (Testing) implementation year reflects updated avoided costs, which were significantly reduced from previous values in order to reflect lower gas prices.² The updated avoided costs reduced the Total Resource Cost Test (TRC) of the 2017 portfolio mix from 1.10 (without codes and standards and market effects) to 0.7 TRC. While, SDG&E does not believe that the TRC is the appropriate cost-effectiveness test for the EE portfolio, please see policy appendix, extensive analysis and portfolio optimization was conducted to determine the most cost-effective and comprehensive portfolio possible.

SDG&E’s initial CE runs seek to preserve comprehensiveness, by examining increased efficiencies and savings within the existing

portfolio with minimal changes in program offerings. Because the portfolio is heavily constrained by measures with sub 1.0 TRCs in this scenario, cost-effectiveness is compromised by comprehensiveness. Considering this constraint, SDG&E first identified individual measures with relatively high TRCs and allocated additional funds to those measures. For example, SDG&E’s analysis identifies lighting, as outlined in the business plan, as a continued critical end use, thus SDG&E increased funding to upstream lighting by 25%. SDG&E then considered market driven reductions in measure unit costs, such as LED bulbs and fixtures prices trending negative. SDG&E then focused on increasing and aligning savings to business plan objectives for individual end uses, with low marginal costs and increasing potential, such as behavior programs.³ As indicated, all adjustments were based on the analysis previously discussed and the sector level goals. Changes of this nature achieved a TRC of 1.02 (without codes and standards) and a PAC of 1.19. Please see **Figure B.1** for results.

As a final step SDG&E SMEs looked at deeper programmatic changes, which compromise comprehensiveness of the portfolio but drive significant improvements to TRC. For instance, eliminating Home Upgrade would improve the portfolio TRC by approximately 5%. Home Upgrade alone contributes a -3.7 million-dollar net benefit to the portfolio, dollars that could be reallocated to more cost-effective programs and associated measures.

¹ CET tool is available at <http://eestats.cpuc.ca.gov/Views/CETLandingPage.aspx>. Decision 16-06-007 updates the cost-effectiveness framework.

² On average the avoided costs were reduced by 23.2%. This average is across sectors and time. The minimum reduction was 7.4% and the max was 47.2%.

³ Potential as identified in the 2015 Potential & Goals Study available at <http://www.cpuc.ca.gov/General.aspx?id=2013>.

Figure B.1 Sector Level Cost-Effectiveness

	Residential	Total public	Commercial	Industrial	Agriculture	Portfolio with C&S	Portfolio without C&S
TRC	0.9	1.0	1.4	0.6	0.4	1.20	1.02
PAC	1.0	1.1	1.7	0.9	0.5	2.18	1.19

Figure B.2 Budget by Sector and Cost Category

Sector Cost Category	Admin	Marketing	Direct Implementation	Incentives	TOTAL
Residential	\$5,047,313	\$1,880,309	\$11,606,301	\$29,974,036	\$48,507,957
Public	\$1,445,893	\$217,217	\$9,597,575	\$4,277,477	\$15,538,161
Commercial	\$3,840,501	\$469,467	\$10,736,295	\$21,893,802	\$36,940,065
Industrial	\$473,024	\$54,166	\$2,011,418	\$980,838	\$3,519,446
Agricultural	\$124,158	\$14,872	\$420,263	\$257,426	\$816,720
ET Program	\$91,009	\$10,700	\$1,268,366	\$0	\$1,370,074
WE&T	\$717,862	\$641,773	\$3,537,364	\$0	\$4,897,001
Financing	\$191,640	\$10,000	\$3,629,534	\$0	\$3,831,176
C&S	\$124,853	\$0	\$910,857	\$0	\$1,035,710
Portfolio	\$12,056,253	\$3,298,504	\$43,717,973	\$57,383,581	\$116,456,311

Admin includes \$4.7 million EM&V funds, which are not considered when calculating the 10% admin cap.

SDG&E focused on developing a cost-effective portfolio for the near-term. SDG&E believes there exist significant uncertainties in the future including DEER and avoided cost updates, technological and associated potential changes, goal updates, legislative and regulatory policy changes, and statewide and third-party program management. These uncertainties make forecasting beyond the near-term extremely difficult. This initial analysis should be considered a departure point for portfolio design in 2019 and beyond.

Figure B.2 presents budgets by sector and cost category.

Significant uncertainty exists around the long-term allocation of budget, making long-term budgeting of limited value. For instance, statewide consensus of roles and responsibilities for statewide programs, has yet to be concluded. Thus, it is not possible to accurately forecast large portions of the portfolio. Additionally, it is currently unclear how moving to 60% third-party implementation will impact programmatic budgets. SDG&E believes labor costs will remain relatively constant despite the shift to additional third-party implementation, due to the significant labor intensity of running solicitations, although efficiencies maybe achieved if more savings are delivered.

APPENDIX C

SDG&E Evaluation, Measurement & Verification (EM&V) Activities

Introduction

Decision (D.) 16-08-019 continues to support the current EM&V administration framework with some updates to account for changes resulting from Senate Bill (SB) 350 and Assembly Bill (AB) 802; and necessary updates to accommodate the change in program portfolio implementation, i.e., the Rolling Portfolio together with the Business Plan model. The overall EM&V administration framework has the Commission Staff as the EM&V administrator, with the program administrators (PAs) and Commission staff overseeing various required and/or approved evaluation studies and other stakeholders engaged in a transparent and collaborative process.¹

D.16-08-019 acknowledges that some shifts in responsibilities are necessary between Commission Staff and PAs, with ultimate accountability for savings verification remaining with Commission Staff. With the increased emphasis on (1) net-metered energy consumption (NMEC) and Pay for Performance; (2) up front planning and market assessment associated with the market transformation, and 3) other programmatic emphasis in SB 350 and AB 802, the Commission approved an increase of the PAs' portion of the EM&V funding from 27.5% to up a maximum of 40%.²

This appendix outlines EM&V considerations, methods, and approaches that apply to the business plan across sectors. The first section of this appendix outlines approaches to measuring energy savings associated with energy efficiency interventions including net-metered energy consumption. This section also provides a brief outline of the International Performance Measurement and Verification (IPMVP)³. Additionally, this section outlines metric tracking and updating.

NMEC and Pay for Performance Measurement and Verification (M&V) Activities

SDG&E considers whole building NMEC evaluation approaches the “gold standard” of EE evaluation. While NMEC encompasses various methodologies and research designs, such as randomized control treatment design, regression analysis, and so forth, SDG&E views NMEC as any approach that uses quantified metered data, and seeks to determine what treated groups consumption would be in the absence of an EE intervention. Because NMEC is the “gold standard” of EE evaluation, other approaches must be justified out of necessity. That is, deviations from whole-building metered energy consumption evaluation approaches, such as retrofit isolation approaches (sub-metered), or simulation methods, must be justified and considered after NMEC. In SDG&E's analysis this approach is consistent with requirements of AB 802.

¹ D.10-04-029, Decision Determining Evaluation, Measurement and Verification processes for 2010 through 2012 Energy Efficiency Portfolios, April 21, 2010.

² D.16-08-019, p. 80.

³ The IPMVP is available through the Efficiency Valuation Organization website at <http://evo-world.org/en>.

The December 30, 2015 “Assigned Commissioner and Administrative Law Judge’s Ruling Regarding High Opportunity Energy Efficiency Program or Projects” provides guidance on various methods for measuring savings based on NMEC. One of the Ruling’s cited references and most widely used M&V methods for verifying savings that incorporates NMEC, is the International Performance Measurement and Verification Protocols (IPMVP). The IPMVP has four high-level M&V options:

- **Option A:** Retrofit Isolation: Key Parameter Measurement;
- **Option B:** Retrofit Isolation: All Parameter Measurement;
- **Option C:** Whole-Building; and
- **Option D:** Calibrated Simulation.

Options A and B isolate individual systems or equipment; Option C and D generally consider the whole building. SDG&E’s preference is to employ Option C as the default M&V method so long as savings register at the whole building level. However, in the event that savings cannot be isolated, SDG&E will employ Options A, B, or D. SDG&E looks forward to participating in continuing discussions and workshops regarding establishing appropriate baselines and M&V techniques that will increase the reliability of measuring and verifying EE savings.⁴

Option C – Whole-Building

As stated above, Option C is the preferred M&V methodology, and would be considered the NMEC methodology of preference, using AMI billing data to produce net metered consumption data across time, and to establish a “baseline” consumption case.

IPMVP Option C entails creating energy use models for each metered utility entering a building using whole-building interval trend data. In order to create accurate energy models, at least twelve consecutive months of baseline and post-implementation whole-building energy trends shall be collected. The purpose of this

requirement is to ensure that energy use is trended over a period which captures a range of independent variables (IVs – typically outside air temperature) representative of most of the annual operating conditions.

Options A and B – Retrofit Isolation

Options A or B can be used if energy savings are expected to be very small compared to whole-building energy use and discrete measures are being implemented which can easily be calculated and supported by baseline and post-project sub-metered or spot measured data. Measurement periods for these Options should attempt to follow the requirements detailed in the Option C section; however shorter trending periods may be warranted depending on the equipment and measures being modeled.

Option D – Calibrated Simulation

Option D should be used only if either baseline or post-project whole-building trend data is unavailable. Use of Option D entails creating a whole-building energy use model and calibrating it to either baseline or post-project energy use. Depending on which data set the model is calibrated to, energy efficiency measures will then be implemented or un-implemented in the model to represent the actual project scope.

There exists considerable uncertainty regarding implementation, measurement, and reporting of NMEC as required by AB 802.

Until such time the regulatory requirements of AB 802 are implemented, SDG&E will prepare by engaging both internal and external experts in preparing systems, defining, testing, and validating models, and reviewing both existing studies and researching additional approaches where necessary.

⁴ “Assigned Commissioner and Administrative Law Judge’s Ruling and Amended Scoping Memorandum (Regarding Phase III of R.13-11-005),” November 2, 2016.

Metric Tracking and Measurement

Metric tracking, measurement, and interpretation will occur in addition to net-metered energy consumption savings analysis. The metrics are designed as leading indicators of programmatic success, as such they are measurable and interpretable without the need of full scale evaluation. Sector metrics and associated targets are milestones for PAs, and should not be viewed as an indication of program success, rather they provide direction for PAs, while success, or EE savings will be measured independently.

Upon implementation of the business plan, EM&V will measure sector and implementation level metrics proposed in each chapter. SDG&E EM&V suggests two types of analysis related to metrics. The first capitalizes on the objective of the metric as a quick indicator of programmatic success or direction, without the necessity of a full scale, resource intensive evaluation. This first type of analysis will use summary statistics of metrics to understand how the sector, program, and individual interventions are changing, operating, or succeeding over time. EM&V will provide program staff a regular report that tracks individual metrics.

Over time, SDG&E will engage in testing the validity of the metrics themselves, that is, are the metrics used proper indicators of programmatic success? In other words, are the metrics correlated to programmatic goals? This analysis requires significant savings and metrics data; thus the timeline will need to be determined at a future point. This analysis will likely be a simple ordinary least squares (OLS) regression to test correlations between metrics and savings, or other goals. Where evaluators identify metrics that are correlated with goals, SDG&E will continue to track these metrics. Where individual metrics lack statistically significant correlation, SDG&E will terminate tracking these and determine new metrics.

Other Research and Analysis

In addition to various SDG&E-specific program process evaluations, each year, several opportunities arise for the IOUs to participate in multi-client studies dealing with energy efficiency program issues. Multi-client studies (could involve several California IOUs and POU's or national studies, e.g., ACEEE studies) typically address a subject of broad, often strategic, interest within an industry or discipline. The costs of these studies are shared across multiple study subscribers enabling large, often very expensive research, to be acquired very cost-effectively. IOU-specific costs for these studies typically range from \$10,000 to \$50,000 which is a small fraction of the total study cost. These studies are a relatively low-cost option for gathering data. Typically regional or state-level breakdowns are available that are reasonably representative of IOU service territories. At times, the regional or state-level data available through these multi-client studies are the only data available regarding certain subject areas. In many cases, over-sampling within a specific area can be provided for an additional nominal cost, so that the client can compare local results with national or regional results.

Additional important research and analysis projects may be identified during the program cycle that do not fit clearly into any of the categories of EM&V work described in previous sections. The IOUs propose that if the Energy Division and the IOUs concur on a need for a study, that this additional study could be undertaken with EM&V funds. Further, the IOUs recommend to continue the existing small project authority that permits IOUs to perform studies that cost no more than \$30,000 after advising Commission Staff via Basecamp.

EM&V Budget

SDG&E's proposed EM&V budget is \$4.658 million, which is 4% of SDG&E's proposed EE portfolio budget. This budget is consistent with the 2015 adopted EM&V budget and SDG&E's most recently filed 2017 EE Annual Advice Letter, Advice Letter 2951-E/2512-G. This budget funds both SDG&E's own EM&V staffing and activities, which would include M&V for high opportunity programs and projects, Business Plan metric tracking, measurement, and process evaluations; and Commission Staff-led EM&V work, which includes impact evaluations, statewide potential and saturation surveys, etc. The Commission has approved allowing the utilities to increase their share of the EM&V budget up to 40% once the business plans are approved. SDG&E will be working collaboratively with Commission Staff, other PAs and stakeholders in developing the EM&V roadmap plans that will provide specific details on various EM&V activities and study plans and budgets.

APPENDIX D

Key Business Plan Elements

GOALS – the desired end result in support of the mission and vision for the sector

STRATEGIES – Approaches to overcome the barriers that are currently preventing the attainment of goals

SAMPLE TACTICS – Examples of specific activities to accomplish strategies

Business Plan Structure

Each chapter within San Diego Gas & Electric's (SDG&E) business plan follows a similar structure of content. This structure is described within this appendix.

Document Organization

SDG&E's business plan is organized into chapters, with each chapter corresponding to one of the sectors. Specifically, each sector chapter will:

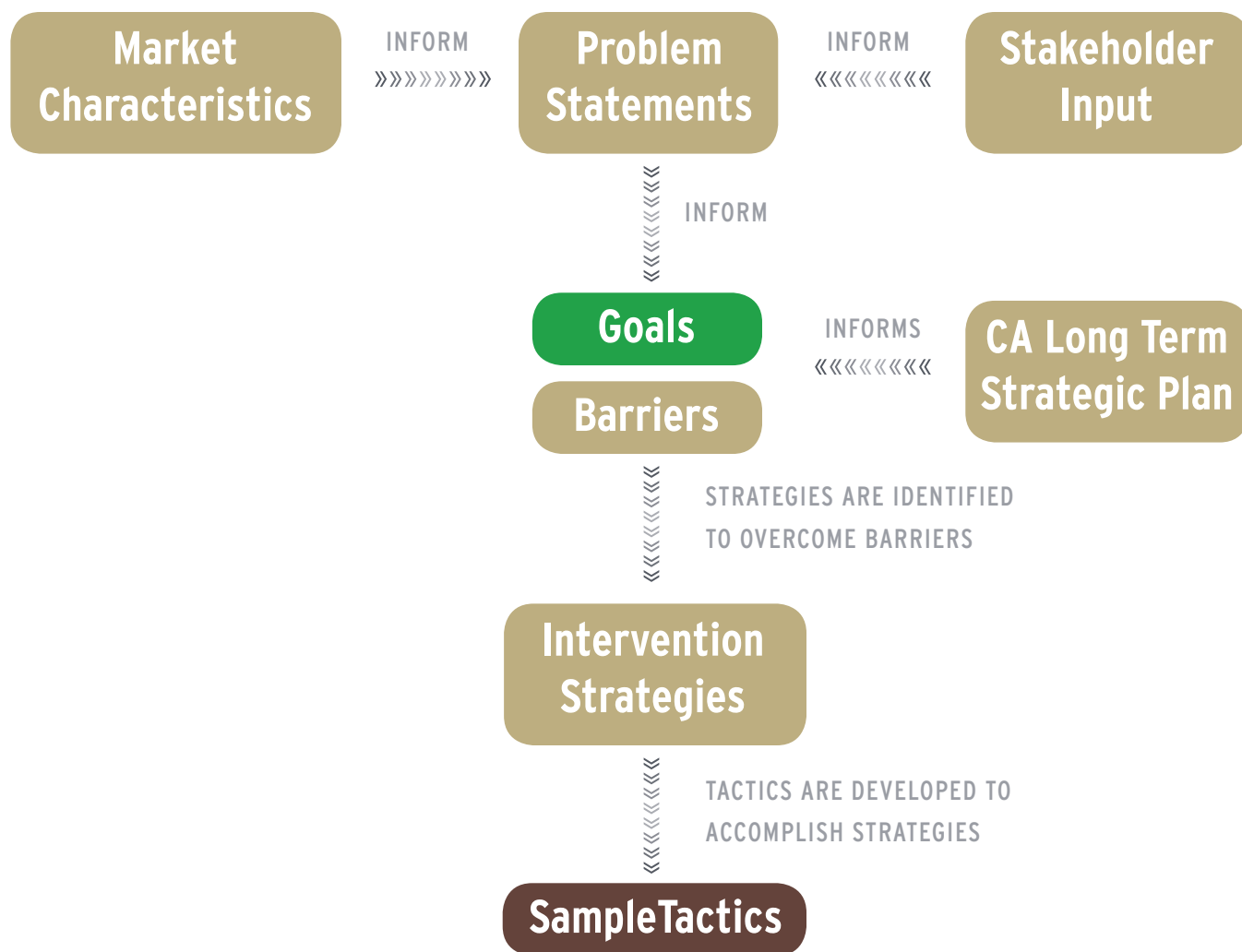
- summarize SDG&E's mission and vision for the sector's energy efficiency efforts;
- provide a market characterization of the specific sector, including size and types of customers, as well as highest consuming segments, end-uses, and measures;
- identify key challenges, problem statements and barriers that sector customers face in planning, executing, and managing energy efficiency efforts; and
- define the overarching energy efficiency goals, strategies, sample tactics, and metrics for the sector.

Based on the guidance provided in the Decision (D.15-10-028), as well as the consensus reached amongst the Program Administrators (PAs), each chapter will describe the degree of statewide coordination to be performed. In the case of areas that are not to be administered by SDG&E, the plan will utilize the consensus language provided by the statewide administrator. In all cases, program administration details will be deferred to the individual implementation plans. Finally, each chapter will conclude with a discussion of the Evaluation, Measurement, and Verification (EM&V) considerations for the specific sector energy efficiency efforts. Upon final delivery of the plan, SDG&E will include a document that describes the incorporation of stakeholder input through the California Energy Efficiency Coordinating Committee (CAEECC) process.

Figure D.1 Goal, Strategy, Tactic Structure



Figure D.2 SDG&E Business Plan Framework



SDG&E’s Business Plan Framework

As shown in **Figure D.1** SDG&E’s business plan used market and utility data, as well as qualitative input from stakeholders, provided through the CAEECC process, to identify problems. Based on these problems and key elements of the California Long Term EE Strategic Plan (CALTEESP), SDG&E developed a set of overarching goals for each sector. Next, SDG&E identified specific barriers to reaching the goals. For each barrier, SDG&E developed intervention strategies (also referred to simply as strategies) to overcome the barriers and reach the goal. In some cases, strategies may address more than one barrier and impact more than one goal. To further elaborate on the strategies, SDG&E has provided a description of sample implementation methods or tactics.

This business plan focuses on strategies spanning the short, medium, and long-term. Tactics may be sustained for the long-term but may also be modified as their effectiveness is determined. This business plan will also include a description of metrics, which will be used to measure the longer term advance towards meeting the business plan goals.

Figure D.2 depicts the relationships between the goals, strategies, and tactics.

Appendix E: Business Plan Review Checklist

Map to NRDC Compilation Document	Business Plan Element		Indicate Complete	Notes
Portfolio Summary			Complete	
0	Executive Summary		Complete	
		Company description	Complete	
		Definition of market	Complete	
		Mission Statement	Complete	
		Purpose of Business Plan	Complete	
I.A.1, II.D.2	Overview		Complete	
		About EE/DSM	Complete	
		CA Energy Needs	Complete	
		Regulatory Requirements	Complete	
		Strategic Plan	Complete	
		Legislation (e.g., AB 758, SB 350, AB 802, AB 793)	Complete	
		IOUs/PAs/CPUC/etc. overall role	Complete	
I.A.2		Broad socioeconomic and utility industry trends relevant to PA's EE programs (population, economics and markets, technology, environment / climate)	Complete	
I.B.1		Vision (e.g., How PA thinks about and uses EE over next 10 years)	Complete	
I.5		Compare/contrast to past cycles	Complete	
I.B.2	Goals & Budget		Complete	
I.B.2, I.C.2.a		Energy Saving Goals	Complete	
I.C.2.a		Portfolio Budget (sector and portfolio level per xls checklist)	Complete	
I.C.2.a, I.C.2.d		Cost-effectiveness (sector and portfolio level per xls checklist)	Complete	
I.C.2.b		Explanation of Admin Budgets (e.g., Direct/Indirect Labor, Professional/Admin personnel)	Complete	
I.C.2.c		Explanation of accounting practices	Complete	
I.C.3, I.C.4	Intervention Strategies (high level)		Complete	
		Overall issues/challenges/barriers	Complete	
		High level summary of strategies and tools (e.g., AMI data, AB 802, procurement model, up/mid/downstream, etc.)	Complete	

Appendix E: Business Plan Review Checklist

Map to NRDC Compilation Document	Business Plan Element		Indicate Complete	Notes
I.C.4, I.D	Solicitation Plan		Complete	
I.C.4		Solicitation strategies/areas that could be SW	Complete	
I.D, II.F		Proposal for transitioning the majority of portfolios to be outsourced by the end of 2020.	Complete	
Sector Chapter (commercial, residential, public, agricultural, ind			Complete	
II.A	Summary Tables		Complete	
II.A		Table with CE, TRC, PAC, emissions, savings, budget	Complete	Emissions data can be included with the more detailed analysis to be provided with the September 1 budget/savings advice letter.
I.C.7, II.E.1.b		Metrics for sector	Complete	
II.D	Market Characterization (overview and market/ga		Complete	
II.D.1		Electricity/NG	Complete	
II.D.2		State goals include acknowledgement of goals set by Strategic Plan, SB 350, AB758, guidance as appropriate)	Complete	
II.D.3		EE potential and goals	Complete	
II.D.5		Customer landscape (e.g., segments/subsegments, major end uses, participation rates, etc.)	Complete	
II.D.6		Major future trends that are key for the PA and its customers	Complete	
II.D.7		Barriers to EE and other challenges to heightened EE (e.g., regulatory, market, data)	Complete	
II.2.a	Description of Overarching Approach to the Sector		Complete	
		Goals/strategies/approaches	Complete	
I.C.6, I.D		How portfolio meets Commission guidance	Complete	

Appendix E: Business Plan Review Checklist

Map to NRDC Compilation Document	Business Plan Element		Indicate Complete	Notes
II.C		Description of how this chapter addresses the performance challenges/barriers	Complete	
I.C.4 a-c	Intervention Strategies (detailed)		Complete	
II.D.2.a, II.E.3		What specific strategies are being pursued (e.g., near, mid, long AND existing, modified, new)	Complete	
I [cmt with excerpt]		Why specific strategies were chosen (e.g., ID current weaknesses, best practices, or other rationale to support choice)	Complete	
II.E.1.a, II.E.4		How approaches advance goals discussed above	Complete	
I.C.4, I.E, II.D.4		How strategies use lessons learned from past cycles and EM&V	Complete	
I		How will interventions support/augment current approaches or solve challenges	Complete	
II.D.2		Explanation for how these strategies address legislative mandates from AB 802, SB350, and AB 793, as well as other Commission directives for this sector, including strategic plan.	Complete	
I.C.4		Future expectations for intervention strategies	Complete	
I.C.1, II.E.6		Description of pilots	Complete	
II.F		Key Partners	Complete	
I.C.5, I.D, II.B, II.C	Compare/Contrast to Past Cycles		Complete	
		Budget changes as appropriate	N/A	
		Modification to sector strategies	Complete	
	Cross-Cutting (sector chapters and ME&O)		Complete	
II.E., II.H, II.K		Local marketing and integration with SW MEO as applicable	TBD	SDG&E will work with the new SW ME&O implementor as their transition is finalized.
II.E.5, II.H		Workforce, education, and training	Complete	
II.H		Emerging Technologies	Complete	

Appendix E: Business Plan Review Checklist

Map to NRDC Compilation Document	Business Plan Element		Indicate Complete	Notes
II.H		Codes & Standards	Complete	
II.G	Cross PA and Offering Coordination		Complete	
II.G		How strategies are coordination among regional PAs	N/A	
II.G		Proposal of statewide program administrator/approaches for this sector	Complete	
II.G		How the sector strategies are coordinated with statewide program activities	Complete	
II.G		How are strategies coordinated with other state agencies and initiatives (e.g., AB 758)	Complete	
II.I	EM&V Considerations (statement of needs)		Complete	
II.I		Data collection needs	Complete	
II.I		Anticipated study needs	Complete	
II.J	Demand Response			
ED Guidance (p.8)		How EE measures use up-to-date DR enabling technologies to be "DR ready"	Complete	
ED Guidance (p.8)		How duplication of costs for ME&O, site visits, etc. is avoided for dual-purpose technologies	TBD	SDG&E is willing to work with the new SW ME&O implementor to avoid duplication.
ED Guidance (p.9)		How strategies facilitate customer understanding of peak load, cost, and opportunities to reduce	Complete	
II.K	Residential Rate Reform			
ED Guidance (p.9)		How BPs will help reduce load during TOU periods	Complete	
ED Guidance (p.9)		How BP will diminish barriers to load reduction during TOU periods	Complete	
ED Guidance (p.9)		How strategies will provide info to customers and/or provide a tool to show how program may impact customer energy usage during different TOU periods	Complete	

Appendix E: Business Plan Review Checklist

Map to NRDC Compilation Document	Business Plan Element		Indicate Complete	Notes
ED Guidance (p.9)		How strategies will analyze whether a customer may experience greater savings by switching to a different, opt-in TOU rate	Complete	
ED Guidance (p.9)		ME&O re: rate reform	Complete	
II.L	Integrated Demand Side Resources		Complete	
II.M	Zero-Emission Vehicles (EVs)		Complete	
II.N	Energy Savings Assistance		Complete	
	Appendices		Complete	
		Additional Customer Data	N/A	Included in the Business Plan
		Cited research	N/A	Included in the Business Plan
		CAEECC stakeholder input resolution	Complete	

Appendix F: External Stakeholder Observations

ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0011		Suggestion made to include 4 distinct ways to analyze the market in Business Plans: 1. End use efficiency opportunity 2. Building type/Business Type 3. Owner structure/sophistication/motivation factors 4. Delivery/installation channels	Addressed in Sector Chapter of BP	Issue addressed to the extent practical within the business plan.
0016		Suggestion to dive deeper into the data and get to the next level of understanding of the customer, including SMB, and other breakdowns (e.g., owner vs. renter) in order to finalize Overview of Commercial Market and Gap Analysis (Stage 1 assessment)	Addressed in Sector Chapter of BP	Issue addressed to the extent practical within the business plan.
0018		Request was made for information in Business Plans (e.g., data regarding service territory, percentage of budget, expected potential savings) that would be helpful to implementers in bidding on programs.	NA-closed because issue was resolved in some way	Acknowledged.
0021		The strategic planning goals are expressed as desired outcome for the market place. Currently, there are no baseline metrics for these goals other than we are not quite achieving them. It is important to ask these baseline metrics to be developed so progress to strategic plan can be monitored. For two days of discussions, I heard many requests for metrics. This requires urgent action and should be assigned to the M&E team	Addressed in Sector Chapter of BP	Addressed in Sector Chapter metrics section. Baselines will need to be established.
0037		Suggestion made to consider process of rolling out new programs before setting corresponding reach codes. It may be easier to set codes after people have participated in programs and learned about benefits of new technology.	Addressed in Sector Chapter of BP	Program Design targets customer in the early adopter to late majority of the adoption curve prior to codes and standards implementation.
0056		Request made for presenting data regarding middle income customers broken out from general residential segment.	Dropped--not sufficiently high priority relative to other items	

Appendix F: External Stakeholder Observations

ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0058		Suggestion to include description of how programs will affect the grid in Business Plans	Deferred due to policy barriers (and PAs not addressing in BP or Testimony)	While the strategies and tactics proposed considered grid impacts, this topic is better addressed through the IDER proceeding.
0059		Comment made that PA presentations did not address market gaps as related to overall goals. Example, strategy for targeting homebuyers market/point of sale has not been addressed. Discussion about engaging real estate industry in the BP process	Addressed in Sector Chapter of BP	
0066		Building permits required--All programs containing work that needs a building permit must be permitted and have proof of passing inspection before incentive is paid or credited to customer or service provider.	Deferred to Implementation Plan or Program Design Stage	SB1414 is now law and program implementation plans will need to incorporate
0068		Workforce Standards -- Programs shall have workforce standards based on certification, minimum performance standards, and pre-qualification process for programs that are not customer DIY type programs.	Insufficient Data	Will be addressed with implementation of SB350
0074		Meter Savings as Key Approach -- Most resource programs going forward should be based on metered savings for med-large Comm/industrial and institutional	Deferred to Implementation Plan or Program Design Stage	

Appendix F: External Stakeholder Observations

ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0075		WE&T Alignment with Programs -- Workforce development, training and job creating needs to be aligned with programs. Connect disadvantaged workers to middle class jobs. Prioritize funding for skills-building training that is linked to actual employment and leverages college, apprenticeship and labor-management training	NA - Out of Scope	WE&T is not a workforce development nor job creation program. Please see the Career and Workforce Readiness program for details on supporting disadvantaged workers.
0076		O&M -- Support behavioral and operational measures (and related training) Example: CCC and CLTC at Davis	Deferred to Implementation Plan or Program Design Stage	
0092		PAs residential business plans should explicitly address the idea of real estate engagement. There has been substantial investment in this area over the last 5 years, particularly through the RENs and it's highlighted in the Energy Commission's Existing Buildings Energy Efficiency Action Plan (strategy 4.1). Not clear in Market Assessments and Gaps that IOUs are considering this	Addressed in Sector Chapter of BP	
0094		Comprehensive guidance for PA consideration regarding completion of Stage 1 and Stage 2 assessment approach -- one page document	NA-closed because issue was resolved in some way	

Appendix F: External Stakeholder Observations

ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0107		<p>The IOUs' approach to WE&T doesn't address the scale of training needed to meet the Strategic Plan goal of a "qualified and fully engaged workforce by 2020".</p> <ul style="list-style-type: none"> • IOU engagement with the community colleges and Apprenticeship programs has been on a very limited one-off project basis. • There are NO Facility Management education or training programs in California at the moment, although the community colleges are working on it. Gaps like this probably aren't even on the IOUs' radar. 	Addressed in Sector Chapter of BP	
0120		Still working on a metric that connects WE&T expenditures with energy efficiency?	Dropped - not cost effective	We will continue to explore ways to measure this in the future with in the budget.
0124		A barrier mentioned was "siloeed professionals." I would also add "siloeed WE&T programs" with WE&T & there is opportunity for collaboration & coordination between Connections & Centergies programs. Connections programs are key to reaching all age/education levels as well as reaching disadvantaged communities, yet they seem to be almost absent from the gap barrier, opportunity discussions.	Addressed in Sector Chapter of BP	

Appendix F: External Stakeholder Observations

ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0126		<p>Achieving full compliance with Title 24 continues to be a significant challenge for the California building industry. This challenge will only increase as the standards evolve to meet State ZNE targets. PA developed compliance assistance tools are marginally helpful, but more effective solutions are available through development channels not directly managed by the PAs. There are a number of written and unwritten rules established by PAs that have impeded innovative compliance assistance tools from becoming a part of the efficiency portfolio. Advanced compliance solutions can deliver additional, measureable savings to the efficiency portfolio above and beyond what is delivered by Energy Code Ace and analogous resources.</p> <p>The current tools offered by PAs ultimately rely on CEC compliance forms. But the confusion generated by those CEC forms is a central impediment to improving compliance practices. A fully digitized compliance process that leverages building specific guidance should be made available to cities by PAs as an alternate approach.</p>	Deferred to Implementation Plan or Program Design Stage	

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0127		<p>The Coalition presentation emphasized the need for quality control in project implementation. The PAs seemed to be supportive of the concept, but are at something of a loss as to how to develop and enforce an effective QA protocol. My suggestion is that the PAs reinstate approved contractor lists, along with program rules that only approved contractors can participate in projects that receive EE incentives. The California IOUs successfully used these lists a decade or more ago, when relatively few contractors understood the new EE technologies, and the IOUs didn't want to waste ratepayer funds on poor quality or dangerous installations, and the lists proved to be successful in breaking down market barriers and establishing implementation standards.</p>	<p>Deferred to Implementation Plan or Program Design Stage</p>	<p>SDG&E does include workforce standards for its Trade Pro Alliance and will continue to enhance and refine the requirements of the Trade Professional Alliance.</p>
0128		<p>In response to statements by the Coalition that there are major unmet needs for EE in the MUSH market, the PAs asked for data to support the statements. There do not appear to be Commission-sanctioned potential studies that address the PAs' precise questions, because the recent potential studies have used the Title 24 and Industrial Standard Practice baselines, and so identify only a fraction of the available EE resource. Also please note that my goal in presenting this data is not to disparage or challenge the work of the PAs, whose program portfolios have been restricted within the confines imposed by Title 24. But I think we need to take a step back from those confines to see the true market potential that has been made available by AB 802.</p>	<p>Deferred due to policy barriers (and PAs not addressing in BP or Testimony)</p>	

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0129		<p>Shortage of Building Inspectors</p> <p>Several participants noted that requiring the completion of the building permit process before the payment of incentives would significantly delay program implementation and put financial strain on customers and contractors. I suggest that the solution is not to throw out the requirement, because in the vast majority of cases, the permit close-out process will not delay rebate processing. If it becomes obvious that there is a problem in a particular locality with an unresponsive building department, the PA should meet with the building department to ascertain the exact cause of the problem. If the problem is a lack of building department staff, the PA can use some of its Codes and Standards program money to subsidize the hiring of additional staff that are exclusively dedicated to EE projects, a method has been successfully used by Seattle City Light for a number of years. There are plenty of retired or semi-retired tradespeople available to fill these positions. Finally, if all else fails, the PA could announce a suspension of incentives in the locality on the grounds that providing incentives for projects that lack proven safety inspections</p>	NA - Out of Scope	

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0130		<p>California’s IOUs are, in many respects, the front line for compliance assistance for the California Energy Commission, even when funded by the CPUC. If there is a level of specificity in compliance assistance that IOUs are unwilling to provide for building officials because it crosses the line into “enforcement”, it would be good for all stakeholders involved in Title 24 compliance to understand where that line is.</p> <p>Can each IOU provide further clarity to the CAEECC Codes & Standards subcommittee on the types of assistance that they are unwilling to provide to building officials? Ideally, other PAs will be empowered by the CPUC to fill the need for detailed assistance to building officials that the IOUs cannot provide.</p>	Deferred due to policy barriers (and PAs not addressing in BP or Testimony)	
0137		Re MF programs--Does public housing belongs in the public or MF sectors?	Addressed in Sector Chapter of BP	Residential
0140		RE Home Upgrade --lack of time owners have to engage in the process. Has there been any thought into consolidating all programs into one and have program coordination from the PAs?	NA-closed because issue was resolved in some way	
0145		Problem statements don't address the difference between managing programs for comprehensive all at once services versus sequence/path to comprehensiveness over time	Addressed in Sector Chapter of BP	
0149		Will code readiness be addressed more fully in each sector chapter	Addressed in Sector Chapter of BP	See Codes & Standards chapter.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0151		Concern expressed that the increased focus on sector-wide solutions and customer focus, while good, could reduce the focus on increasing the reach and effectiveness of "early commercialization" programs (that bridge the chasm between ET efforts and main programs) that are necessarily measure specific, not very cost effective, yet build the pipeline for future portfolio measures.	Addressed in Sector Chapter of BP	See ET chapter.
0155		In the two presentation/narratives I read, I didn't always see consistent representation of barriers, observations, solutions, and metrics nor consistent linkages between them. Often 3 of 4 were shown in a given presentation, but not all four. PAs should do a more consistent job of that as they refine the documents. Please show how you get to your metrics tie into the strategies—do they really measure that strategy. It also wasn't always clear from the two documents how the strategies actually addressed the problem statement, nor did they articulate what's new, what's old and justification for keeping the old programs going. Examples given from both PG&E and BayREN documents referring to specific tables showing how linkages hadn't been consistently made.	NA-closed because issue was resolved in some way	
0156		Stage 1 analyses were helpful, but it appeared that everyone was using Navigant Potential study's "market" potential values. I think you should be considering economic potential as well, given that "market" potential presupposes current program strategies. Economic potential isn't biased by past EE program practices. Not expecting miracles on this, but think at least footnotes that point out the much large economic potential should be included.	NA-closed because issue was resolved in some way	

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0157		Need to include consideration for trigger points in your Business Plan description of solutions, especially real estate transaction triggers.	NA-closed because issue was resolved in some way	
0158		Need to work on simplifying offerings, especially from the customer perspective. Consistency across the market sector.	Addressed in Sector Chapter of BP	
0161		Can we look at differential variations by climate zone in the Business Plan description of the challenges and solutions. Consistency is key across the business plans, so everyone should attempt to address this if some already are.	NA-closed because issue was resolved in some way	Acknowledged.
0162		PAs asked to consider background for crafting EE investment/ improvement strategies for commercial buildings. This file (CM0254) COMBINES presentations by 2 organizations: 1. Institute for Market Transformation – including interviews with financial institutions and those familiar with commercial mortgage industry and 2. TIAA – a major pension/investment organization that invests in commercial real estate and has taken a leading role in selecting or spurring sustainable buildings.	Deferred to Implementation Plan or Program Design Stage	
0164		There is a lot of missed opportunity in class A and B office space, in particular...with more resources going toward education and programs that are attractive to tenants and landlords, we should be able to break through the barrier.	NA-closed because issue was resolved in some way	Acknowledged.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0165		There are major unmet needs for EE and EE funding in key MUSH market subsectors. See document PS0259 on CAEECC website for details on large gaps between various MUSH sector EE funding requirements versus funding available from PA programs, historically.	NA-closed because issue was resolved in some way	SDG&E believes that it has properly balanced the needs of the MUSH market with the rest of our other customer segments.
0167		Stakeholder has a concern about the mandates in response to SB350. Applauds the efforts of not doing a one size fits all approach to WE&T, but what we are seeing is an evolution and in order to make a change it needs to be dramatic, disruptive, and aggressively go over the strategic targets.	Deferred to Implementation Plan or Program Design Stage	The SDG&E Business Plan provides higher level goals and strategies for WE&T. Most of the tactics and issues we believe this comment discusses will be addressed at implementation level.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0176		<p>We want PAs to address disadvantaged workers in the Business Plans and portfolio management.</p> <p>We want PAs to agree to a definition of “disadvantaged worker” that they will adopt and include in their Business Plans. We propose the following definition: "a worker from census tract or zip code with income less than 80% of AMI and/or a worker from a census tract or zip code with rate of unemployment in excess of 150% of unemployment rate for their city.</p>	<p>NA-closed because issue was resolved in some way</p>	<p>PG&E is the SW Administrator for the Connections and Career & Workforce Readiness programs that focus on inclusion and disadvantaged workers. However, the PAs will continue to use the definition of disadvantaged workers that was approved in 2/2015 WE&T SW advice letter.</p>
0177		<p>we want to see data collection on job quality, workforce diversity and other measures. It is important to build a baseline and then track progress of workforce inclusion over time.</p>	<p>NA - Out of Scope</p>	
0179		<p>We would also like proposals for new projects to include a specific goal to connect disadvantaged worked with high-road energy efficiency jobs.</p>	<p>NA - Out of Scope</p>	
0180		<p>BPs should include a section about Jobs Creation, of which the disadvantaged community would be a subset</p>	<p>NA - Out of Scope</p>	

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0182		Comment confirming that it would be extremely helpful for PAs to identify specific market barriers in documents that get filed with BPs with respect to challenges with MUSH markets. It is recommended that PAs make persuasive arguments to CPUC supporting continuance of certain market transforming programs even if they are not non-costs effective programs. In addition to identifying barriers, PAs should provide alternative mechanisms to remove barriers.	Addressed in Sector Chapter of BP	SDG&E identifies and discusses market barriers for the MUSH market in it's Public sector chapter.
0189		Lack of funding and payback are significant barriers in rural settings. Ensure that the solutions that are devised are not solely for urban affluent areas but that the solutions have broader applicability to the state	NA-closed because issue was resolved in some way	Acknowledged and will be considered in implementation plans.
0192		In the discussion of Local Governments, separate out analysis of local governments from discussion of Local Government Partnerships. Building out the section that discusses the value of local government partnerships. These are successful partnerships that have developed and refined over the years of working together. We would like to see this reflected in the Business Plan, how we are going to build on this partnership strategically moving forward	Addressed in Sector Chapter of BP	SDG&E's public chapter addresses both local governments and local government partnerships.
0193		Re MF presentation on 4/18: Problem Statements: Add 2 problem statements: (1) multifamily sector is underserved compared to available potential and (2) programs not designed to meet needs of building owners.	Addressed in Sector Chapter of BP	SDG&E's residential goal number #2 address both multifamily sector and property owners. SDG&E believes that it has properly balanced MF with the rest of our other customer segments.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0202		<p>We see that the metrics for this segment adhere to traditional measures of cost-effectiveness – energy savings, TRC and PAC, and cost per unit of energy (page 4). Page 11 notes that energy efficiency has focused on energy savings, while 48% of customers cite the value of home upgrades as being non-energy related.</p> <p>Recommended Action</p> <ul style="list-style-type: none"> • We suggest metrics that include non-energy benefits and social ROI, in order to capture the true value of energy efficiency work, particularly given the new emphasis on behavioral programs and how customers value energy efficiency upgrades. 	<p>Deferred due to policy barriers (and PAs not addressing in BP or Testimony)</p>	<p>We agree that ROI is important especially as a tool to sell the job. Valuing it as a PA metric is a policy decision.</p>
0204		<p>The draft proposes a shift away from “traditional incentives” and simplifying the portfolio. We support these things, but encourage consideration of customers who may be left behind and lose opportunities as a result of this shift.</p> <p>Recommended Action</p> <ul style="list-style-type: none"> • We support the emphasis on data-driven targeting, metered- based savings, and behavioral programming and incentives (pages 3-4) as part of a holistic package of offerings that also includes traditional incentives. While they offer great potential and should be emphasized in incentives and programming as a way to promote long-term sustainability and change, behavior and motivation are extremely difficult to influence and measure. Direct install, for example, has the benefit of having an immediate impact that does not rely on an individual’s behavior. Traditional incentives that are proven to work should be combined with and enhanced by “new service and performance models”. 	<p>NA-closed because issue was resolved in some way</p>	<p>Acknowledged.</p>

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0207		All Program Administrators should collaborate to articulate a shared vision for data collection and provision to support consumer, industry, investor and policy decision making. This goes well beyond customer access to AMI data. Lack of access to customer level usage data has been an ongoing problem of local governments that severely inhibits effective program design, implementation and evaluation. We think it is appropriate for the PA business plans to articulate strategies to work across utility planning areas and local jurisdictions to establish common data exchange schemas, data repository infrastructure, data collection instruments and a publically available project portal. Further, we recommend that IOU business plans clearly state how customer level data will be provided to local governments and their regional networks. See CM0288 for more complete description.	NA - Out of Scope	
0208		Efficiency Procurement: It is important that the PA business plans articulate the vision to create a market for energy use reductions as a procurable resource. The multi-year business plans need to better articulate how HOPPS program results will inform ongoing implementation plans. We encourage PAs to include transition strategies from deemed and calculated incentive programs to those that depend on savings calculated from metered data. We think that it is appropriate for PAs to describe the administrative cost savings and participation growth expected from Pay For Performance (P4P) programs over the five year planning period.	NA-closed because issue was resolved in some way	This comment includes multiple issues. Some will be addressed in SDG&E's business plan, some in the implementation plan and some are acknowledged.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0209		Participant Burden: Program Administrators should communicate in their business plans how they will accept more of the risk in realizing energy savings from their programs. Currently it seems that much of this risk is passed on to potential and current program participants, with the result of reduced program participation and negative feedback on the experience of program participation. Program participants should not need to learn the efficiency program vocabulary or approval processes. The business plans should establish metrics for program participant burden and propose processes to track these metrics over time.	Dropped--not sufficiently high priority relative to other items	We agree that participant risk should be shared between the program administrator and program implementer/s, but this issues does not warrant it's own metric in a high level business plan.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0210		Public Sector: Business plans should articulate a vision to have this sector lead by example in every possible way. Data-driven ME&O is needed to demonstrate the benefits of efficiency to institutional decision makers. There is great opportunity to use college students and community workforce development participants in WE&T activities such as customer recruitment, project implementation, data analysis and data infrastructure development. Local and regional organizations could also play a new role as aggregators for community and institutional energy savings bid into IDSM/EE P4P auctions. Creative financing options could be piloted first with the public sector. The CEC is piloting an effort with Sonoma County to provide much better energy savings estimates for the built environment within Sonoma County’s climate action planning efforts. The CEC would like to see other local governments leverage the open source data and energy reduction estimation techniques developed in this pilot. The PA business plans should include high level strategies that communicate this important connection to local government GHG reduction mandates	Deferred to Implementation Plan or Program Design Stage	
0211	Residential	ME&O: We do not understand the intent of IOU strategies for “community-based ME&O” that are silent regarding the connection to Local Government Programs and RENs. It appears that IOUs, local governments and RENs are competing in this space – there needs to be a cohesive set of strategies articulated by all PAs that are consistent with each other.	Deferred to Implementation Plan or Program Design Stage	SDG&E will work with other stakeholders to address and minimize customer/ market confusion.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0212		<p>ME&O, EM&V & Emerging Technologies: These groups need to partner more extensively – ET should provide RD&D for decision support tools that ME&O delivers to consumers & industry. ME&O efforts should be much more data-driven. Types of decision support needed:</p> <ul style="list-style-type: none"> • How much should consumers expect to save for common EE projects? Probability distributions based on measured impacts (not necessarily delivered to consumers as distributions – how to communicate this info is the ME&O part) • How much of what types of efficiency market opportunities are available? Market characterization for the EE landscape – granular usage data by subsector and location (scrubbed 2 of PII) mapped to building/business characteristics. This is what the industry needs for business entry/refinement decision support; it is also hugely useful for CEC to have for policy work AND resource planning/forecast improvements • How to effectively define “control groups” for use in understanding net vs. gross savings. EM&V folks have said recently that these control groups can be defined in a 	Deferred to Implementation Plan or Program Design Stage	SDG&E believes its platform will help address these barriers. More details to follow in implementation plan.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0218		<p>Clearly articulate end-uses as part of or as an independent problem statement. For example:</p> <ul style="list-style-type: none"> o Example 1: End use challenge is embedded in a problem statement – “Cost-effective [single-family] program delivery remains challenging.” – HVAC is on key component of what is challenging and there are XYZ strategies to address this challenge. o Example 2: End use challenge is the problem statement – “Advanced lighting technologies are more expensive than incandescent or CFLs.” 	Deferred to Implementation Plan or Program Design Stage	SDG&E's platform will have tailored solutions for each customer. Additional details to follow in implementation plans.
0219		<p>Articulate how the PA plans to use available data to target customers (Could be internal data analytics or data of projects outside of PA jurisdiction. See examples below for the former. The latter could involve IOUs looking at where Prop 39 projects occurred. If the projects were insufficient to cover all of the school's facilities, the PAs could target projects that go above and beyond Prop 39 funding)</p> <ul style="list-style-type: none"> o Example: The problem statement is: “cost-effective [single-family] delivery remains challenging.” The strategy is to target those homes with the highest energy usage as one of a number of interventions to address this problem statement. o Example: Could alternatively/additionally articulate in the overview of the BPs how the PAs plan to use their internal data to strategically deliver the strategies they propose in the BP chapters. 	Addressed in Sector Chapter of BP	SDG&E's platform will have tailored solutions for each customer. Additional details to follow in implementation plans.

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0220		<p>The detail of the PA solutions to their problem statements varied.</p> <ul style="list-style-type: none"> • It was often unclear what exactly the PA was envisioning it would do to address the problem. Recommended Action • Include “such as” or “for example” wherever possible. While these will need to be high level for the business plans, it would still be helpful to understand what types of things might be explored in the implementation planning stage. Some examples: [see CM0290] 	<p>NA-closed because issue was resolved in some way</p>	<p>Acknowledged.</p>
0221		<p>There are a host of laws the PAs are expected to connect their BPs to.</p> <p>Recommended Action</p> <ul style="list-style-type: none"> o AB 758 – The CEC provided the following embedded tables as guidance, PAs should use these tables as they create their own “bridge” between their BPs and AB 758 (e.g., add a column to the table and indicate where there is alignment). http://media.wix.com/ugd/0c9650_cd39e8070738443c8de48fe4be11e1e1.pdf http://media.wix.com/ugd/0c9650_013341f007904b4a8c50a1e2c260db0d.pdf o SB 350 – The legislation calls for the CEC to set energy savings goals based on a “doubling of the mid-case estimate of additional achievable EE savings, as contained in the California Energy Demand Forecast Updated Forecast, 2015-2025.” (p.10, SB 350 bill) PAs should therefore reference this doubling goal, which contains an economy wide goal (and therefore is not a 50% reduction in building energy use). • AB 802 - Until the final decision comes out, NRDC understands the PAs cannot explicitly incorporate how 802 was put in the BPs. • Green Bldg Ordinance (Public buildings) – NRDC recommends this ordinance should 	<p>Addressed in Sector Chapter of BP</p>	<p>SDG&E's business plan includes information on how we will address legislation.</p>

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0226		<p>THIS COMMENT APPLIES TO ALL PROGRAM ADMINISTRATORS. Observations</p> <ul style="list-style-type: none"> • “Incremental market potential” (by end use) comes from the Navigant 2015 study. <p>Recommended Action</p> <ul style="list-style-type: none"> • Need to update potential values, perhaps starting with the Navigant Technical Analysis and does not consider implications for managers, tenants, design team, owner, ...”is appended to the April 2016 CPUC staff white paper on Existing Conditions Baseline. Alternatively, could look into merits of using the ECONOMIC potential identified in the Navigant 2015 study. (see CLN-3 in [CM0293]) 	Deferred due to policy barriers (and PAs not addressing in BP or Testimony)	
0227	Commercial	<p>RE SDG&E Commercial Stage 2 Presentations</p> <p>SDG&E Team urged to see source document posted on website [CM0293] --Seventeen distinct sets of observations and comments-- too many to fit in this cell</p>	Addressed in Sector Chapter of BP	Incorporated this feedback into draft submitted chapter.
0230		<p>For all IOU PAs, (see Input Document [PS0295] for more information)</p> <p>Observations</p> <ul style="list-style-type: none"> • All IOU PAs were effective at identifying unique barriers in the Public Sector • PG&E provided detailed strategies at the sub-segment level (i.e. Higher Education), which is most effective based on the significantly different customer needs by sub-segment • No mention of statewide consistency across IOU PA approaches for the same customer or sub-segment <p>Recommended Action</p> <ul style="list-style-type: none"> • IOU PAs should coordinate strategies based on PG&E’s sub-segment approach to address varying customer needs and statewide consistency 	NA-closed because issue was resolved in some way	Acknowledged.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0231		<p>For all IOU PAs: (see Input Form [CS0296] for more detail)</p> <p>Observations</p> <ul style="list-style-type: none"> • The Business Plans do not seem to address “reach standards” for products • The Codes & Standards Action Plan calls for the IOUs to explore creation of voluntary reach standards that would be the basis for utility incentive programs that provide market transformation pull for high performing appliances • Dynamic benchmarking of product efficiency is already being used by California IOUs and munis today and can support a dynamic reach standard <p>Recommended Action</p> <ul style="list-style-type: none"> • In view of the observations and comment above we recommend the IOUs integrate product reach standards as a strategy into their Business Plans • We specifically recommend consideration of dynamic reach standards to drive innovation on an ongoing basis 	Deferred to Implementation Plan or Program Design Stage	Reach codes are an agreement between the PA and local governments. SDG&E will work with local governments to establish reach codes.
0240		<p>There were many mentions of strategies to use data for improved and informed decision-making, but these strategies should be outlined in the business plans. BP should highlight the strategies that address or reduce the issues of program timing, uncertainty of funding and long approval processes.</p>	Addressed in Sector Chapter of BP	SDG&E's platform addresses data driven decision making. The unique needs of the public sector are called out in our strategies in the business plan.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0244		<p>RE Statewide WE&T Business Plan</p> <ul style="list-style-type: none"> ● Recommends that the IOUs increase collaboration with implementers (SMEs) to identify standardized best practices for establishing outcome-based metrics and evaluation techniques (actionable metrics) in place of or in addition to current metrics to track and analyze EE knowledge and behavior change, particularly in relation to building an effective K-postsecondary pipeline. ● Recommends that the IOUs work with implementers to identify a process by which to identify and reach consensus on quantitative metrics and appropriate, meaningful outcomes. Additionally, we recommend that the IOUs work with implementers to assess the nexus between program activities and the positive impacts around understanding of and knowledge gains in energy- use and energy efficiency, renewables, energy management and career connection topics. 	<p>Deferred to Implementation Plan or Program Design Stage</p>	

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0247		<p>Re SoCalGas Stage 2 plan & Statewide Stage 2 Plan Document (see TEC-4 [WE0301]) Supports the direction of the IOUs to combine Centergies and Connections and recommends that the Statewide IOUs implement a holistic, pipeline approach, to managing and implementing portfolio offerings and connect K-12 through postsecondary programs under one “Program,” thereby promoting inter-pathway partnerships between subprograms, encouraging best practices in design and implementation through collaboration, and providing opportunities to implement a longitudinal evaluation of EE knowledge and behaviors across offerings, strengthening the entire portfolio.</p>	<p>NA-closed because issue was resolved in some way</p>	
0255		<p>Re SoCalREN page 4 and PG&E pg 13, RHTR 5 see [PS0305] Observations</p> <ul style="list-style-type: none"> • PA presents staff education and training for CEM and Strategic Energy Management (SEM) to address Lack of Capacity problem statement • PA presents expanded training as a solution to lack of capacity. <p>Recommended Action</p> <ul style="list-style-type: none"> • We recommend other PAs consider this localized approach to building capacity. 	<p>Deferred to Implementation Plan or Program Design Stage</p>	

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0257		<p>Re SoCalGas Stage 2 WE&T doc, SJVCEO#1 in [WE0306]Observations</p> <ul style="list-style-type: none"> • Education/training content does not reach underserved communities and tends to focus on the incumbent workforce. • Offerings among education and training providers differ. <p>Recommended Action</p> <ul style="list-style-type: none"> • We recommend that IOUs partner with Workforce Investment Boards (WIBs), business associations and community colleges to increase reach and bridge the gap between industry needs and curriculum gaps. 	Addressed in Sector Chapter of BP	See WE&T subprogram table.
0261		IOUs should address the cannabis energy efficiency issues even though it is awkward because it will be a major impact in a very short time.	Addressed in Sector Chapter of BP	We will work with SCE on addressing this segment.
0268		As the utilities expand their knowledge of how to deliver unique energy efficiency offerings in the urban environment, it is increasingly important that diverse companies be utilized given their value: unique professional skills, insight, and expertise; and a direct stakeholder interest in broadening community access to long-term energy efficiency solutions.	Acknowledged	SDG&E has a robust DBE program that is a component of our solicitation strategy.
0269		include \$1 million annual funding for a new partnership with Administrative Office of Courts (AOC). CA Department of General Services is not involved in ownership, operation or contracting for the AOC facilities. Include additional funding for in depth audits	Deferred to Implementation Plan or Program Design Stage	This can be considered in the implementation plan phase of the Public Sector plan.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0270		<p>Create a long-term sustainable program to help the California Administrative Office of Courts (AOC) substantially reduce its energy use. The AOC Statewide Partnership Program (AOC Partnership) would fund a team of energy professionals through the energy efficiency public purpose program to assist the AOC to plan, evaluate, and implement projects to reduce facilities' energy use. The proposed budget for the program is approximately \$1 million per year (approximately five professionals at an average fully loaded cost of \$200,000 per person). The IOUs will select the team through a competitive process and contract with it to assist the AOC in the following services:</p>	<p>Dropped--not cost-effective or inadequate budget available to address</p>	<p>Additional Partnerships will need to be balanced with the portfolio due to cost effectiveness constraints.</p>

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0271		<p>REORG #1: We propose packaging all codes and standards (C&S) programs with residential and commercial new construction to be administered by PG&E. Similar to the discussion at the 9/22 Coordinating Committee meeting, the benefit of having the programs grouped in this manner would be to test out and build market share for new technologies and practices. In addition, pairing the programs in this way enables PG&E to gather data on cost, performance, and related items in order to feed that information into the next code cycle. NRDC strongly supports PG&E leading all aspects of C&S and does not see a benefit to dividing up the subprograms across different program administrators (PAs). However, we anticipate that leading the effort would continue to involve coordinating and collaborating with other interested PAs. Last, having one PA administer the collective set of programs would enhance efficiencies across the implementer(s) chosen to carry out the various tasks.</p>	<p>Addressed in Sector Chapter of BP</p>	
0272		<p>REORG #2: Since a number of players in the upstream and midstream arena are potentially overlapping (e.g., home depot) and because upstream and midstream programs often have a similar program approach (e.g., reducing cost of the product, increasing availability, training sales reps, working with the manufacturers, retailers, etc.), NRDC suggests that the</p>	<p>Addressed in Sector Chapter of BP</p>	<p>This feedback was thoughtfully considered when arriving at our statewide proposals.</p>

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0273		<p>At the last CAEECC, SCE presented the Utilities’ proposed leads for the Statewide activities. The presentation stated that “analysis” was used to determine the “best” leads for various activities, but that analysis was not conveyed. ORA’s expectation was that for each of the Statewide programs there would be a single utility identified as the Statewide lead; not the Lead role with several sub-leads as was presented. The proposed approach does not appear to be consistent with the Commission’s guidance and expectations for statewide efficiencies by having a single administrator for a particular program. For ORA to endorse the proposal, the IOUs will need to provide analysis that shows the reductions in costs expected from their approach, as well as the basis for selecting one utility as an administrator over another.</p>	<p>NA-closed because issue was resolved in some way</p>	<p>Directors presented at CAEECC after the receipt of this comment.</p>
0274		<p>Some areas that were divided among multiple IOUs would have overlaps for upstream and midstream programs. Some of these activities should be aggregated under a single Administrator for increased efficiency.</p>	<p>NA-closed because issue was resolved in some way</p>	<p>Directors presented at CAEECC after the receipt of this comment.</p>

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0275		TURN opposes the proposal to assign PLA, HVAC, and Lighting upstream and midstream programs to different statewide administrators because it forecloses the opportunity to reduce redundancies and increase economies of scale and scope by integrating interventions across different end uses with the same up/midstream market actors.	NA-closed because issue was resolved in some way	PAs have reassessed the original proposals with this feedback in mind.
0276		A single administrator could (and should) conduct a comprehensive analysis of the end uses and market actors currently being targeted through existing single PA contracts with manufacturers, distributors, and retailers, in search of optimization opportunities. The Commission in D.16-08-019 (at p. 66) encouraged the PAs to undertake this bottoms -up review before proposing to carry forward the existing configuration of separate statewide programs and subprograms. TURN submits that without it, the PAs are neglecting an important opportunity to reduce avoidable administrative costs and expand the impact of ratepayer funded up/midstream EE interventions.	NA-closed because issue was resolved in some way	A proposal for a SW bottoms up review was presented at the 12/7/16 CAEECC meeting.
0290		#1 - The state is interested in more creatively exploring other options for project execution and is strongly reaching out to IOUs and other program administrators to be a partner with us in finding creative solutions. Adapting OBF to include upfront construction costs would help to enable the state to leverage this financing approach. Most of the projects in large state buildings exceed the current \$1M limit for financing via OBF. Increasing this limit would address another barrier	Addressed in Sector Chapter of BP	Modifications to OBF are addressed in the Public Sector chapter and further expansion/modifications will be explored in the implementation plan phase.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0291		<p>#2 - There is a need to more strategically identify the retrofit opportunities with the highest and most comprehensive savings potential long term. Implementing investment grade audits for all buildings would be cost prohibitive. The state is seeking support from IOUs and PAs to provide this strategic targeting support.</p>	<p>Addressed in Sector Chapter of BP</p>	<p>We agree that this is a valuable task and will support to the extent that budgets will allow.</p>
0292		<p>#3 - It is critical that the state utilizes a fair, appropriate, transparent, competitive process in soliciting work. Given those parameters, the state is seeking support in executing retrofit projects that comply with these requirements while offering more time saving and efficient approaches.</p> <p>--The state is exploring alternative models for engaging with ESCOs more effectively, at lower costs and more timely execution. The Federal Government has effectively modeled an energy services relationship with the IOUs that may be modified to work with State entities. We encourage the Partnership to work with us to develop alternative ways of delivering efficiency projects to state customers</p> <p>--The state is open to piloting metered based savings approaches with incentives tied to measured savings</p> <p>--Extending the current direct install program to small/medium state facilities statewide would help to save time and resources. Further expanding the direct install program to include HVAC measures and control measures would capture a larger portion of the current needs.</p>	<p>Addressed in Sector Chapter of BP</p>	

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0306	Multiple Sectors	NRDC-1 - (throughout) It would be helpful to better understand how the BP intersects with existing offerings (similar to Jeanne Clinton's comment re: SDG&E's sample chapter) and what rationale was used to continue existing offerings or cancel approaches.	NA-closed because issue was resolved in some way	NRDC's later comments supercede these issues.
0307		NRDC-2 - NRDC agrees with ORA's comment to provide more complete citations with page #s to enable follow up if interested.	Addressed in Sector Chapter of BP	
0308		NRDC-3 - For partnerships, describe what it is the PA plans to do. For example: <ul style="list-style-type: none"> o SCG at p.27 includes a helpful set of bullets under its partnership with PAs w/specification items it plans to pursue. o BayREN, p.32 has a list of partners, but unclear what the strategy/plan is with each of them. 	Addressed in Sector Chapter of BP	
0309	Multiple Sectors	NRDC-4 - Whenever "leverage" or "integrate" is used, please provide a clear description of what would happen as a result.	Addressed in Sector Chapter of BP	This feedback was thoughtfully considered and incorporated into the final draft.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0310		<p>NRDC-5 - NRDC recommends that each PA include a short high level summary of the key learnings from EM&V, similar to SCE's @ p.14. NRDC recommends PAs include something similar to SCG @ p.11: "SoCalGas response to each identified EM&V recommendations directed at the industrial sector from program year 2006 through 2015 as listed in Attachment C of this business plan." Each PA should clearly indicate the linkage in a table, which could also remove prose and shorten the chapter.</p>	<p>Deferred to Implementation Plan or Program Design Stage</p>	<p>SDG&E's business plan approach was to look to the market and the barriers that the market experiences when trying to participate in EE. While some EM&V studies have proven insightful, they focus more on the details of program design which SDG&E is planning to address in the implementation phase with market inspired solutions.</p>
0312	Multiple Sectors	<p>NRDC-7 - NRDC proposes a comprehensive market characterization (same data compilation as before). Having all PAs provide the same data when available would provide the reader a consistent understanding of the various sectors in different territories as well as provide for a more complete picture of which areas need to be targeted when implementing the BP after Commission approval.</p>	<p>Addressed in Sector Chapter of BP</p>	<p>This feedback was thoughtfully considered and incorporated into the final draft.</p>

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0313		NRDC-8 - NRDC appreciates the detailed descriptions of what the PAs are thinking the types of approaches would achieve their intended goals. However, we understand ORA's concern that these details could potentially be used to create restrictive RFPs. To address this, NRDC proposes to maintain the level of detail but include a caveat that these are descriptive for the BPs, but not necessarily prescriptive for the IPs. That said, it is also important to note that the PAs are responsible for complying with specific legislative mandates, such as benchmarking and energy management programs. The caveat should allow sufficient flexibility for the PAs to be able to include legislative needs in the RFPs, but without being prescriptive as to how such goals would specifically be achieved. These details can be worked out in the IPs.	Addressed in Sector Chapter of BP	
0314	Multiple Sectors	NRDC-9 - NRDC recommend all PAs include similar tables. Specifically: EM&V (see NRDC-5), Legislation/CPUC directives, Tactics/strategy table Stakeholder feedback	Addressed in Sector Chapter of BP	SDG&E reviewed other PA plans and created some similar tables to create consistency.
0315		NRDC – 10 - NRDC proposes inclusion of a definitions Appendix for all PAs with at least the following items: Tactic, Strategy, Objective, Intervention	Addressed in general section of BP or Testimony in Application	

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0384		CEE-1 Review previous Commission decisions and legislative requirements and ensure that chapters have concrete plans to implement state policy directives. Provide another opportunity for early review of draft chapters once all draft chapters are available and once sufficient detail is available for each draft chapter to allow for more meaningful stakeholder input. (see detailed list of deficiencies in Input Source document CM0343 from The Coalition for Energy Efficiency)	NA-closed because issue was resolved in some way	See later comments from the 10/18 business plan drafts.
0385		CEE-2 The draft chapters fail to address workforce quality issues set forth in the applicable guidance decisions and raised by the CAEECC stakeholder process. (Extensive details related to this deficiency are provided in the Input Source document CM0343.	NA-closed because issue was resolved in some way	See later comments from the 10/18 business plan drafts.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0386		<p>CEE-3 The draft Business Plan Chapters should be amended to include a description of how incentive programs will be designed to provide an employment link to workforce education and training programs and opportunities for workers of color and workers from low-income and disadvantaged communities. In addition, metrics need to be identified in the business plans to address diversity goals. The Intervention or Intervention Strategy would be to ensure incentives support middle class career pathways for workers from disadvantaged communities. The metric would be the percentage of incentives that are installed by contractors that have demonstrated a commitment to provide middle class career pathways to workers from disadvantaged communities. Without clear metrics to assess implementation of the goal to provide opportunities for middle class career pathways for workers from disadvantaged communities, the Commission is unlikely to see any meaningful progress.</p>	<p>NA-closed because issue was resolved in some way</p>	<p>See later comments from the 10/18 business plan drafts.</p>

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0388		CEE-5 The draft Business Plan Chapters fails to identify (1) lost energy savings opportunities that are stranded in existing buildings for decades when retrofits are poorly installed, and (2) the gap between assumed and actually achieved outcomes as problems that need to be overcome in this sector. These problems/barriers were raised repeatedly through the CAEECC feedback process. Identify (1) lost energy savings opportunities that are stranded in existing buildings for decades when retrofits are poorly installed and (2) the gap between assumed and actually achieved outcomes due to poor design, installation and enforcement as problems that need to be overcome in this sector. Identify goals and strategies for achieving these goals.	NA-closed because issue was resolved in some way	See later comments from the 10/18 business plan drafts.
0389		CEE-6 (re pages: Commercial at pp. 12, 13, App B. Residential at p. 28.) These draft Business Plan Chapter fails to identify lack of compliance with permit, inspection and compliance documentation requirements as problems that need to be overcome in this sector. This issue was raised multiple times by stakeholders throughout the CAEECC feedback process. Identify lack of compliance with permit, inspection and compliance documentation requirements as problems that need to be overcome in this sector. Identify goals and strategies for achieving these goals.	NA-closed because issue was resolved in some way	See later comments from the 10/18 business plan drafts.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0390		CEE-7 More specific goals, standards and metrics need to be set forth in the business plans. For example, the business plans need to include clear and detailed guidance for determining what sort of EM&V will be applicable, where it will be applicable and to what extent. In addition, the implementation and oversight process must be set forth in detail.	NA-closed because issue was resolved in some way	See later comments from the 10/18 business plan drafts.
0394	Commercial	CSE-1 - (re page 16) SDG&E should consider working with PG&E and the Energy Upgrade California implementer to coordinate activities around an online tool such that efforts are not duplicative but rather complimentary and straightforward for all customers.	Deferred to Implementation Plan or Program Design Stage	Will ensure that platform is coordinated.
0395	Commercial	CSE-2 The State's ZNE goals are mentioned briefly in the introduction on page 1, but ZNE is not referenced throughout the document in strategies, tactics, etc. CSE recommends that SDG&E address ZNE 2030 commercial sector goals in Future Trends and Legislative Impacts sections, include a goal for increased awareness of 2030 ZNE goals among commercial sector stakeholders, acknowledge that ZNE will not be feasible for all commercial properties due to siting constraints and emphasize the importance of reducing load through EE activities.	Addressed in Sector Chapter of BP	SDG&E agrees that ZNE is an important organizing principle but has prioritized more tangible and immediate goals.
0399	Multiple Sectors	In sum: PA Business Plans should identify strategies to advance Strategic Plan / market transformation objectives (and other policy guidance), particularly as advanced in upstream/midstream interventions.	Deferred to Implementation Plan or Program Design Stage	Agreed. These details will be teased out as we further develop the SW Implementation plans.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0408		<p>TURN-9 (General Comment) Customer sector goals and program savings, budgets ,and cost-effectiveness are forward looking. The BPs are intended to be integral to California moving the current generally flat or stagnant needle on energy efficiency. Some quantitative context to the current portfolios and programs would be very helpful.</p> <p>We recommend that all data on projected customer sector goals and program savings, budgets, and cost-effectiveness be given some context relative to ongoing customer sector activities and accomplishments. There needs to be some demonstration as to how the BP will advance savings and improve cost-effectiveness.</p>	Addressed in Sector Chapter of BP	2016 and 2017 budgets are being included in the business plan for context.
0415		<p>TURN-6 (General Comments) Customer sector goals and program savings, budgets, and cost-effectiveness are forward looking. The BPs are intended to be integral to California moving the current generally flat or stagnant needle on energy efficiency. Some quantitative context to the current portfolios and programs would be very helpful.</p> <p>We recommend that all data on projected customer sector goals and program savings, budgets, and cost-effectiveness be given some context relative to ongoing customer sector activities and accomplishments. There needs to be some demonstration as to how the BP will advance savings and improve cost-effectiveness.</p>	Addressed in Sector Chapter of BP	2016 and 2017 budgets are being included in the business plan for context.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0424		<p>TURN-7 (General Comment) Customer sector goals and program savings, budgets, and cost-effectiveness are forward looking. The BPs are intended to be integral to California moving the current generally flat or stagnant needle on energy efficiency. Some quantitative context to the current portfolios and programs would be very helpful.</p> <p>We recommend that all data on projected customer sector goals and program savings, budgets, and cost-effectiveness be given some context relative to ongoing customer sector activities and accomplishments. There needs to be some demonstration as to how the BP will advance savings and improve cost-effectiveness.</p>	Addressed in Sector Chapter of BP	
0432	Commercial	TURN-1 (re page 9) It would be very helpful if SDG&E included some discussion of the possible segment-specific barriers, with references to EM&V and other information and data.	Addressed in Sector Chapter of BP	
0433	Commercial	TURN-2 (page 10) SDG&E discusses EE potential from commercial HVAC as follows: "For instance, while HVAC was a large percentage of the commercial sector market potential in 2013, due to code changes, it diminishes to a very small percentage by 2024." TURN recommends that SDG&E reconsider this statement and HVAC efficiency potential, or at least continue to target commercial HVAC potential in the near-term, even if potential may be expected to diminish by 2024.	Addressed in Sector Chapter of BP	Past success is not an indication that we do not plan to focus on HVAC. We see HVAC as an integral part of the portfolio.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0434	Commercial	<p>TURN-3 (re page 13) TURN observes that SDG&E has about 50% more commercial (and residential) programs and subprograms than the other IOUs. TURN appreciates SDG&E's recognizing the need to simplify and streamline its offerings.</p> <p>What is unclear to TURN is whether SDG&E is considering consolidating programs and subprograms, or simply improving the linkages between. TURN recommends that SDG&E consider consolidating programs and subprograms, rather than improving linkages between them.</p>	Deferred to Implementation Plan or Program Design Stage	SDG&E agrees with this statement and plans to explore in the implementation plan phase.
0435	Commercial	<p>TURN-4 (re page 20) It would be very helpful to have some discussion regarding "more financing opportunities and make financing programs easier to use". Also, the statement "trade professionals often must front the project costs for their customers until a project is completed" deserves more discussion, including possible specific mitigating strategies and tactics. TURN also recommends that SDG&E consider PG&E's proposed expansion of OBF and OBR and new financing partnerships to address problems around capital availability for first costs.</p>	Addressed in Sector Chapter of BP	SDG&E agrees that financing is a key component of the portfolio. OBF will be tailored to meet specific sector needs. SDG&E continues to support OBR.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0436	Commercial	TURN-5 (re page App A pp 24-27) Regarding Strategy 1, repackaging the value of efficiency to building owners as asset value, may be a helpful incremental step forward to overcoming the split incentive issue, but we do not believe it will not solve the problem. TURN recommends that SDG&E also consider BayREN’s residential BP proposal for the multifamily sector to leverage financial trigger events, such as refinancing and recapitalization events, and insert energy efficiency scopes. TURN suggests that SDG&E explore using AMI data and innovative meter-measured performance strategies for site-specific whole building programs to stimulate broader market interest in NMEC-based pay-for-performance programs.	Deferred to Implementation Plan or Program Design Stage	
0437	Commercial	TURN-6 (Overview) TURN reads SDG&E’s commercial BP chapter as a work in progress, lacking in sufficient detail to satisfy items 2 d -g. For instance, quantitative goals on efficiency penetration, savings, and program efficiencies, and commercial sector goals and budgets pp 12-13, are blank.	Addressed in Sector Chapter of BP	
0438	Commercial	TURN-7 (General Comments) We recommend that all data on projected customer sector goals and program savings, budgets, and cost-effectiveness be given some context relative to ongoing customer sector activities and accomplishments. There needs to be some demonstration as to how the BP will advance savings and improve cost-effectiveness.	Addressed in Sector Chapter of BP	We have proposed a plan that we feel will achieve the goals set forth in the potential study. Challenges with cost effectiveness will be outlined in the policy issues section.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0439	Commercial	TURN-8 (General Comment) It is not clear whether projected savings are gross annual. We recommend that SDG&E provide projected customer sector goals and program savings in net annual and net cumulative form, with the basis for net provided, and cumulative specified by the estimated average EUL by customer sector and key programs. Indicate the basis (i.e. end use, measures) for the estimated average EUL(s).	NA - Out of Scope	SDG&E has provided short, mid and long term net savings goals for the portfolio and the sectors.
0440		UC/CSU-1 (re page 38) At the top of page 38 under section b) Statewide Program Coordination, there are several key topics that have only been addressed with placeholders, including "How lead PA will operate", "IOU/PA lead coordination" and "Solicitation strategy for implementation". Based on the intent of the decision to create statewide consistency and efficiencies, these items must be addressed in a way that effectively supports these goals. There needs to be very clear language on how all IOUs will work together to provide consistent offerings (i.e. identical program processes and project eligibility) for customers in statewide partnerships. The lead PA can leverage the authority provided in the decision to standardize all program processes and project eligibility across all IOUs as needed	Addressed in general section of BP or Testimony in Application	SDG&E agrees that this is an important component of the new statewide structure.
0444		NAESCO - We suggest that the IOUs use the information described below to create a common template for all their business plans. A common template will greatly facilitate stakeholder review and the Commission's analysis which is necessary for approval of Business Plans. [see source input document PS0360 for several page description of the outline]	NA-closed because issue was resolved in some way	

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0445		<p>NAESCO - NAESCO believes that the Commission’s requirements for statewide administration and third party implementation are very clear. In their October 19 presentations, SCE and the other utilities should describe overall bidding plans, including programs not specifically identified in the decision, for 2017, 2018, 2019 and 2020. Those plans should include bidding timelines from issuance of RFPs to contract signing for every program to be bid out. For each year, the utilities should list the programs implemented in their service territories, broken out by utility-implemented and third party implemented programs.</p> <p>In order to meet the Commission’s requirement of filing a plan that demonstrates their achieving the Commission’s minimum of 60 percent third party program spending as a percent of the total portfolio spending, each utility’s Business Plan filing should include annual budgets for the years 2017 through 2020 broken out by major category: administration; Implementation (further broken out into utility-implemented programs versus third party programs).</p>	<p>Addressed in general section of BP or Testimony in Application</p>	<p>High level schedule is provided in business plan; specific targets for solicitation will be available in the implementation phase.</p>
0446		<p>NAESCO</p> <p>Prior to any utility program implementation, the utilities, working with the CAEECC and other stakeholders, should (1) establish an objective framework with clear criteria that must be applied in determining that a utility must deliver a program, and (2) show how those criteria are met in the case of utility implementation of a particular program. The utilities Business Plans should describe this process and how outcomes were achieved.</p>	<p>NA-closed because issue was resolved in some way</p>	

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0447		NAESCO - The public sector and the residential sector are two markets that are served by a large, sophisticated community of implementers. The end use technologies used in these sectors have seen significant technological improvements in recent years (advanced lighting, energy management systems, smart thermostats, heat pumps, etc.). For both the MUSH and residential markets, SCE and the other utility administrators should establish meaningful budgets for truly open solicitations that allow third parties to propose new, innovative program designs.	NA-closed because issue was resolved in some way	Acknowledged.
0448		CPUC/CLN-1 (re pages 3, 14, and 15) Seem to be three different foci or targets on 3 pages, lessees, then landlords, then property managers. Justify your targets with relevant profile info and be clear about your targets	Addressed in Sector Chapter of BP	
0449		CPUC/CLN-2 (re page 7) There is extensive info profiling by NUMBER of customers, but this does not necessary comport with ENERGY CONSUMPTION profile – e.g. a small number of customers may account for much larger portion of consumption. THAT profile is equally if not more important.	Addressed in Sector Chapter of BP	
0450		CPUC/CLN-3 (re page 10) Navigant uses the end use “Whole Building”, but I assume that is comprised of lighting & HVAC& plug loads in some general proportions by building type. Navigant is misleading, as is anyone who copies their categories to show “Whole Building” in addition to specific end-uses.	Dropped-- Insufficient data/evidence to support addressing proposal or claim	We agree that "Whole Building" is misleading but we lack sufficient data to more accurately identify the end-uses.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0451		CPUC/CLN-4 (re page 13) Text says Biz Plan complements and does not replace current ... program level interventions. Please clarify what previous programs and services are retained, and what COMBINATIONS you anticipate going forward. Will these combinations be cost- effective?	Addressed in Sector Chapter of BP	
0452		CPUC/CLN-5 (re page 16) This discussion seems to expect that CUSTOMERS will solve the problem of the failure of provider business models to serve across end uses. Will the “customer hub” (aka “concierge” be able to overcome that? Through what means? Has it been done successfully elsewhere – especially for small businesses who are busy and may prefer “one stop” solutions?	Addressed in Sector Chapter of BP	
0453		CPUC/CLN-6 (re page 20) Seems to view OBF as the SOLE finance tool – which makes sense only if you expect to use traditional loans, below the \$100K cap. OBF draws upon 100% ratepayer funded capital. Have you estimated how much capital this market is likely to absorb? There has been a gap on finance for equipment leasing with the CHEEF pilots, with credit-supported leasing, about to launch. Is this not a consideration? Will any customers need finance above the \$100K OBF limit?	Deferred to Implementation Plan or Program Design Stage	Agree that the CHEEF pilots will be an important offering and will collaborate with PG&E as the SW lead. Will investigate the true market need to inform future program design and budgets.
0454		CPUC/CLN-7 (re page 20) Text discusses contractors and vendors’ need for construction loans or working capital while waiting to get paid via incentives and OBF proceeds upon completion of project. What solution(s) do you expect to work on the providers’ needs for working capital?	Addressed in Sector Chapter of BP	Modifications to financing offerings will be explored in the implementation phase.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0455		CPUC/CLN-8 (re page 26) Metric #2 states desired outcome to penetrate the untapped property management market. And strategy sounds more like an outcome – “transform tenant savings into asset value for property owners”. What strategy will you employ? And how will you navigate the interests and actions of property managers vs owners to achieve this?	Addressed in Sector Chapter of BP	Strategies and metrics have been revised based on this feedback.
0456		CPUC/CLN-9 (re page 26) Metric #4 seeks to improve the customer experience. How does an online platform to cross-promote (multiple?) programs reduce complication and help to enroll participants?	Addressed in Sector Chapter of BP	More clearly articulated the connection between the platform and improved customer experience.
0457	Commercial	CPUC-10 (re page 3) How will SDGE determine the commercial sector goals (XX%)?	Addressed in Sector Chapter of BP	Commercial sector goals are informed by the potential study and past performance.
0458	Commercial	CPUC-11 (re page 7) If the small commercial customer is 85% (under 20kW) – where is the profile on the spending on this sector?	Dropped--not sufficiently high priority relative to other items	Since the large majority of SDG&E's commercial sector is under 20kW, the spending profile for the commercial sector is representative.
0459	Commercial	CPUC-12 (re page 14) SDGE recognizes that they need a new approach to reach very small business. One major approach is reaching out to property managers. A three-pronged approach should developed because the problem with non-motivated owners is challenging	Addressed in Sector Chapter of BP	

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0460	Commercial	CPUC-13 (re page 14) Shifting away from focusing on energy savings is great but how will SDGE transform the focus?	Deferred to Implementation Plan or Program Design Stage	SDG&E identifies some sample tactics that will lead to transforming this focus. (Education & benchmarking)
0461	Commercial	CPUC-14 (re page 15) Working with third-party implementers has to be in compliance with Energy Efficiency Business Plan Guidance decision (recent EE decision) .	NA-closed because issue was resolved in some way	Acknowledged.
0462	Commercial	CPUC-15 (re page 18) Barriers and a new approach to encourage innovation is an ongoing challenge- SDGE has identified many barriers- how can a barrier be used to open the door to a new approach? A gap analysis of the products available to the small business sector may help guide the type of innovation that is needed to expand the market	NA-closed because issue was resolved in some way	Acknowledged.
0463	Commercial	CPUC-16 (re page 20) It might be helpful to gather financing resources and add funding for educating customers on finance options	NA-closed because issue was resolved in some way	Acknowledged.
0464	Commercial	CPUC-17 (re page 26) SDGE may be able to expand on number of metrics and another metric source.	Addressed in Sector Chapter of BP	See updated metrics section.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0465	Commercial	<p>CPUC-18 (re page 5, 21 and throughout) The chapter references the CEC forecast, CEUS, the potential study and multiple PA led studies, but it is not clear if SDG&E referred to any of the other CPUC led evaluation studies that target the commercial sector? Perhaps review the CMST study or other studies on www.energydataweb.com/search that are grouped under “commercial”.</p>	Addressed in Sector Chapter of BP	
0466	Commercial	<p>CPUC-19 (re page 12, 13) The chapter references AB 758 (aka EBEE action plan) a few times, and specifically identifies Goal 1 as directly related to EBEE action plan; however, there are 28 strategies in the EBEE action plan, and I could not really tell how much the commercial chapter looked at those strategies that related to the commercial sector.</p> <p>Review and include relevant EBEE commercial related strategies (maybe in Appendix A, along with the CA LTSP strategies).</p>	Addressed in Sector Chapter of BP	
0467	Commercial	<p>CPUC-20 (re page 26) Looking at the metrics table for SDGE’s commercial chapter and PG&E’s agricultural chapter, they are different.</p> <p>Should the PA’s try to have consistent tables, maybe at least within the same sector and perhaps work together on statewide metrics for this sector?</p>	NA-closed because issue was resolved in some way	Acknowledged.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0468	Commercial	<p>CPUC-21 (re page 11ish) CEUS (2006) is cited as a source of information on measures and market status. Include consideration of the more recent Commercial Saturation and Commercial Market Share Tracking Studies conducted in 2014. The full reports (titles listed below) are available on http://calmac.org/search.asp</p> <ul style="list-style-type: none"> ☐ Commercial saturation and Commercial Market Share Tracking Study Telephone Survey Findings (2014) ☐ California Commercial saturation Survey (2014) ☐ California Commercial Market Share Tracking Study (2014) 	Addressed in Sector Chapter of BP	
0469	Commercial	<p>Silent Running-1 (General Comment)</p> <p>Include in the narrative some indication of which BP elements may be considered for outsourcing vs those that are likely to be in-sourced based upon current thinking</p>	Addressed in general section of BP or Testimony in Application	
0470	Commercial	<p>Silent Running -2 (General Comments)</p> <p>Provide Breakdowns of businesses by major demographic categories (e.g. low income and disadvantaged communities, English as Second Language, etc.) to better frame the market. Include in the narrative whether there are currently unique approaches to businesses in these communities or whether this is considered to be an important future need.</p>	Addressed in Sector Chapter of BP	SDG&E believes its approach and breakdown of the market will provide benefits and address the needs of all commercial customers.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0471	Commercial	Silent Running -3 (re page 3) Goals #1 and #2 reference increasing energy efficiency penetration without providing a specific definition of penetration. It is suggested that energy efficiency penetration be measured along two parameters: 1) Total # of program participants/Total # of eligible participants; and 2) Total Energy Savings/Total Energy Consumption. Stratification along vertical segment and other market segment parameters may also be relevant.	Addressed in Sector Chapter of BP	See updated metrics section.
0472	Commercial	Silent Running-4 (re page 5-9) While the BP provides ample market segment data and characterization, it does not provide sufficient breakout or parameters that would be useful for planning purposes. Where possible, it is suggested that both number of locations or premises and energy consumption be provided for a given market segment.	Deferred to Implementation Plan or Program Design Stage	
0473	Commercial	Silent Running-5 (re page 11) No mention is made of “mixed use” facilities that combine both commercial space and residential space. Provide high level discussion of growth trends for Mixed Use Facilities in SDGE Territory to validate that they are growing at a high rate and note plans for customized approach and/or a planning need to be addressed.	Dropped--not sufficiently high priority relative to other items	

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0474	Commercial	Silent Running-6 (re page 12 Figure X) "Collaborate with trades" is listed as a source for identifying problems and goals. Suggest incorporating into the market characterization section some indication of the participation levels that contractors and trade ally's play in delivering energy efficiency savings based upon market penetration measures suggested above. To what degree are contractors and trade ally's originating projects vs self-applications vs SDGE Account Execs? To what degree are contractors and trade ally's delivering single end use projects vs comprehensive projects?	NA - Out of Scope	
0475	Commercial	Silent Running-7 (re page 18) Tactic reference targeting under-performing / high potential end-uses such as refrigeration and food service. Consider tactic targeting under-performing/high potential market vertical segments (i.e. segments at the 2 digit NAICS code level)	Deferred to Implementation Plan or Program Design Stage	Final tactics will be developed by third party implementers.
0476	Commercial	Silent Running 7 (sic) (re page19) Provide greater detail around what is meant by "District Level" in reference made to "District Level E and ZNE"	Dropped-- Insufficient data/evidence to support addressing proposal or claim	Could not find this reference
0477	Commercial	Silent Running-8 (re page 20) SDGE references providing more financing opportunities and making financing programs easier to use, but only specifically mentions On Bill Financing. Provide support narrative from New Financing BP (under development) and some indication of current market need/market barriers for the use of finance, as experienced by SDGE customers (e.g. Capital Access, interest rates too high, lack of available lenders, etc.)	Deferred to Implementation Plan or Program Design Stage	Finance pilots and OBF are cornerstones to the commercial plan. A more detailed offering will be developed during the implementation phase.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0478		ORA BP General - In almost every case, the draft chapters would be greatly improved if they provided a more clear and thorough analysis of background conditions in the sector before moving on to intervention 'strategies.' Each business plan should provide clear understanding of the existing state of the sector analyzed and how policy, economic forces, and technology are likely to affect the sector going forward.	Addressed in Sector Chapter of BP	
0479		ORA BP General - In this regard, PG&E's chapter on Agriculture is a notable exception and an example for other PAs to emulate when constructing their own sector analysis. Specifically: PG&E makes good use of existing evaluation and other studies and adds in-house data to provide a specific and detailed picture of the sector and specifically characterize market barriers. Their analysis includes a thorough discussion of global economic and policy changes affecting the sector and an analysis of end-use data describing barriers to energy efficiency (EE) and opportunities in the sector. This is supported by numerous citations. PG&E includes specific proposals for addressing real market barriers. The systematic listing and comparison with past intervention strategies (Tables 4, 5, and 6) are particularly useful as they provide the reader a baseline (what was done before) against which to evaluate the adequacy or innovative qualities of new proposals.	Addressed in Sector Chapter of BP	

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0480		ORA BP General - In almost every draft chapter, the metrics (where they were addressed at all) lack clear definition, fail to focus on desired outcomes, lack targets and require data that may not be regularly available. Much greater attention needs to be given carefully defining metrics that are measurable and are focused on desired outcomes. Furthermore, baselines data against which a metric is compared need to be provided for the metric to be meaningful.	Addressed in Sector Chapter of BP	See updated metrics section.
0481		ORA BP General - At this point in time, none of the draft chapters reflect the requirement of implementer designed programs through a competitive bidding strategy. To be in alignment with the requirements of D.16-08-019 each of the BPs will need to focus on their background analysis (as detailed above) and analysis of market barriers and opportunities. This information will help frame solicitations and provide a benchmark against which the relative success of strategies can be understood. The BPs should also include a discussion of solicitation strategies, including timelines for various solicitation milestones.	Addressed in Sector Chapter of BP	

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0482		<p>ORA BP General - Business plan applications should take a zero-based budget approach to funding requests. The PAs have not submitted – and the Commission has not fully examined – energy efficiency budgets since D.12-11-015. In order to fulfill the Commission’s mandate to ensure just and reasonable rates, the PAs must submit detailed budgets projections and supporting documentation in the business plan applications to enable effective review of the reasonableness of all proposed expenditures. The budgets should not be “change proposals” that assume prior spending levels with minor alterations; this is more appropriate for annual budget advice letters once long-term funding has been approved. Rather, the budgets in business plan applications should be “zero-based” and include justification for spending levels for all relevant budget line items such that the Commission can review and approve long-term funding.</p>	<p>Deferred to Implementation Plan or Program Design Stage</p>	

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0483		ORA BP General - Since PAs appear likely to propose continuing many program activities through current implementation arrangements for at least the first year of the ten-year budget cycle, PA budget proposals should have sufficient information to make detailed budget proposals for relevant line items and to justify budget projections using bottom-up analysis of need and projected costs. Areas in which PAs propose to hold solicitations in 2017 for which costs are uncertain should include a placeholder budgets that represent the PAs best estimate of the likely cost for third-party implementation. However, any in-house administrative cost projections for third-party programs should be accompanied by detailed, bottom-up analysis of need and projected cost.	Deferred to Implementation Plan or Program Design Stage	The PAs are coordinating a SW analysis of the portfolios to conduct the bottom up review.
0484		ORA-1 - Absence of a budget makes it impossible to verify whether it aligns with strategy and plan. Emphasis on a ten-year end point with little to no incentives should mean substantial budget reductions in out years	Addressed in Sector Chapter of BP	
0505	Commercial	ORA-1 (re page 3) Obviously the goals have not been quantified yet. SDG&E needs to set clear goals for the Commercial sector.	Addressed in Sector Chapter of BP	
0506	Commercial	ORA-2 - Following on our observation on goal-setting, the 'background' sections should help establish these goals by assessing: what has been accomplished; what has not; and what technological, economic, or policy changes are happening or likely to happen and how will these effect your ability to find EE savings within the Commercial sector. One exception to this is the discussion of TOU rates on P.11, but the implications of this is not fleshed out.	Addressed in Sector Chapter of BP	

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0507	Commercial	ORA-3 - Currently the background sections read in a disjointed manner. There is some material for market characterization, but it is relatively superficial. The section on Legislative impacts seems disconnected from early discussions. There is no discussion of the consumption within the sector or the EE potential from past evaluations or potential studies. These would seem essential for setting reasonable goals. With the exception of the split-incentive issue, the economic motivation of small commercial actors are not really discussed.	Addressed in Sector Chapter of BP	
0508	Commercial	ORA-4 - The BP Draft Chapter does not provide a framework within which 3rd party implementers might understand the needs of the Commercial sector and provide innovative offering to address them. (Instead, this chapter seems to have been written with specific 'solutions' /programs already in mind. In order for this chapter to provide really value as a guiding and regulatory document, the analysis of the market needs to be much more comprehensive and nuanced.	Addressed in Sector Chapter of BP	
0518		Notes page 3, I like the principle of considering the customer. I'm interested to see how transition will affect customers. I want to make sure the transition takes into account the long lead time for these projects and not to transition in a way that makes the customer experience more difficult.	NA-closed because issue was resolved in some way	Acknowledged.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0522		Notes page 5 - I'd like to recommend that PAs look at implementers as customers, as well. Implementers work with customers for a long time and developing relationships with them. It takes a long time to develop a new program and get it approved. Once program is finally approved, may take up to 18 months to implement. Often looking at 2-1/2 years before implementer gets paid for anything. New programs are huge investments for implementers.	NA-closed because issue was resolved in some way	Acknowledged.
0523		Notes page 5 - We should also think about contractors who operate in our programs as customers. We need to have programs that work for contractors. Programs need to include financial incentives for contractors. The process of getting RFPs out will be very important. This should be included in BPs. It would be great if PAs could propose a model transition for contractors. It would be great to have a plan in place which would provide an idea of how PAs could make transitions easier. This issue should be in long term work plan for CAEECC.	NA-closed because issue was resolved in some way	Acknowledged.
0524		Notes page 7 - From the Final Decision, BPs will include method for delivering. I am not expecting that 40% stays with utilities. I expect that eventually everything will be put out to bid. I think we should have a discussion about what the showing will be. It would be best if utilities shift to pay for performance for utility-implemented programs. PAs need to have discussion about how things will get bid out. ORA does not expect utilities to bid out entire portfolio in the first year. But a roadmap of how you will get there needs to be included in BPs.	Addressed in general section of BP or Testimony in Application	

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0525		Notes page 7 - How do you characterize local business partners? This is an important distinction. There is a pervasive thought that utilities do a lot of implementation. I don't really agree. Please consider this when discussing bidding out the entire portfolio.	NA-closed because issue was resolved in some way	Acknowledged.
0526		Notes page 8 - Bidders need to design the programs. As we transition to more focus on carbon reduction, having more programs that focus on that would be great. It would be great to have programs that make that transition faster. We need to think about programs that focus on de- carbonizing.	Deferred due to policy barriers (and PAs not addressing in BP or Testimony)	The C/E tool needs to be updated to account for the time dependent GHG reduction so that it is properly valued. Program design follows cost effectiveness
0527		Notes page 9 - Once again we are talking again about deadlines and schedules. I'd like to see months attached to deadlines. We also don't see 60% as a maximum.	NA-closed because issue was resolved in some way	Acknowledged.
0530		Notes page 12 - In terms of effectively demonstrating that an IOU would be an implementer, it would not be acceptable to say, "We know our customers and we are doing a good job so we are going to keep running our own program." That is not enough. Everything should be put out to bid. PA should put out expectations of cost. Standard for retaining work in house would be that outside firms were not qualified or bids were way higher than what PA expected it to cost. As for cost, it would be inappropriate for PA to reject bids because too high and then go out and do the project at higher than expected cost. Expected cost should set ceiling for what PA can charge to run project.	NA-closed because issue was resolved in some way	Acknowledged.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0531		<p>Notes page 14 - Coalition for Energy Efficiency read aloud comments regarding Additional stakeholder thoughts on how BP chapters should address the goal of ensuring and continuously improving workforce and installation quality for energy efficiency measures, including ensuring that minority, low-income, and disadvantaged communities fully participate in training and education programs</p> <p>[Please see text of notes for more details discussion of issues presented.]</p>	NA-closed because issue was resolved in some way	Acknowledged.
0532		<p>Notes page 14 - Comment (from ED): Regarding WE&T issues, I leave it to the PAs to set forth approach in BPs once you develop programs that reflect this information. When you develop programs for IPs, it would be great to understand how we will track this. How do we get information? If you want a certain level of detail addressed in IPs, please make a proposal. I want to understand the level of detail that is expected.</p>	Deferred to Implementation Plan or Program Design Stage	
0534		<p>Notes page 2 - Part of the idea was to reduce the amount of administrative overhead by having one Statewide lead. If all PAs are still working on these, it is not what we are looking for.</p>	NA-closed because issue was resolved in some way	Acknowledged.
0535		<p>Notes page 3 - I thought you would provide more analysis for these[statewide lead assignment] decisions. Examples of criteria would be: which PAs exceeded their goals for the past few years; which utilities have won national awards. Can you explain why you think each PA will exceed goals in the areas for which it will now be Statewide lead? I'd like to see analysis of why PAs were chosen for each particular area. Can you provide this next time?</p>	NA-closed because issue was resolved in some way	Acknowledged.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0536		Notes page 4 - I agree with these comments. I'm concerned that this appears to be more division and complication, than less. I'm concerned with lack of analysis or lack of presentation of analysis. I'd like to see a bottom up approach to midstream activities in keeping with the Decision (at p. 56) which encourages that type of analysis. This sort of extreme mincing of Statewide programs precludes the opportunity for that to happen.	NA-closed because issue was resolved in some way	
0537		Notes page 5 - I support the general concept [WE&T Program Proposal]. I have a concern that selection of implementers or entities who will receive funding may not have appropriate awareness of local characterizations. We'd like to see local PA in role of selecting winning bids for services in their area.	Deferred to Implementation Plan or Program Design Stage	
0539		Notes page 7 - A lot of upstream/midstream strategies often follow a similar recipe. I'm wondering if you were strategically trying to divide to make this more efficient? A lot of dividing up makes more challenges. It would be great if there was a consistent effort to make this more efficient.	NA-closed because issue was resolved in some way	Acknowledged.
0540		Notes page 8 - Regarding transition issues, I think it is important to hear from PAs how they plan to minimize transition as they move to one PA. This may not be in BPs. Maybe PAs can provide supplemental documents on possible issues and proposal for resolution.	NA - Out of Scope	PAs are working together with stakeholders on the best ways to move to the new SW model.
0541		Notes page 8 - Currently, we don't have a program implementer for our [UC] partnership. I see no value in introducing a program implementer. I'd like to know more about the process for introducing program implementer for our partnership.	NA-closed because issue was resolved in some way	SDG&E is working with the other IOUs and UC/CSU to identify a path forward.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0542		Notes page 11 - We included comments from Decision that solicitations by utilities that happen outside EE-funded programs should be reflected in documents that deal with EE programs. Not a lot of detail since much will be speculative but it would be valuable to have total budget, what activities are, etc. so stakeholders can look at BPs and see the big picture, not just EE.	NA - Out of Scope	
0543		Notes page 12 - [regarding Third party bidding], my expectation is that BPs would look at market segments and include areas where its best to put bids out first. That would be an initial part of each BP chapter: here's our general strategy for when we will put these programs out to bid and timeline for doing that.	Deferred to Implementation Plan or Program Design Stage	Overarching plans by sector are laid out in the solicitation strategy. Specific programs that will be bid out will be determined in the implementation stage.
0544		Notes page 13 - Plan for bidding out should be included in BP drafts on October 18th.	Addressed in general section of BP or Testimony in Application	

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0550	Commercial	<p>Notes page 19 - • There are still opportunities for gas savings. TURN would like to see more focus on gas savings.</p> <p>• On split incentives issue for landlords and small commercial, the proposal misses the point on limited and competing capital needs. Landlords are strapped on capital so SDG&E suggests they can just raise the rent to cover the costs. This is not really what we should be promoting.</p>	Addressed in Sector Chapter of BP	<p>The split incentive discussion is more robust in the final commercial chapter. The intent was not to imply that landlords can just "raise the rent" rather that there are other value propositions that should be explored to make energy efficiency more attractive to landlords. Details around tactics will be explored in the implementation phase.</p>

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0551	Commercial	<p>Notes page 19-20 -</p> <ul style="list-style-type: none"> • Effective oversight of actual activities is not clear. There needs to be something more like the energy procurement model. BPs are sort of like long-term procurement plans. Independent Evaluator and stakeholders would participate in that process. Utilities should file something before they sign contracts. Otherwise, not enough oversight of BPs. There is potentially a place for utilities to say, “we are best to handle program.” • To SDG&E, draft provided high level discussion. BPs for utilities need to be guidance for characterization of sector, what strategies were used in the past, and where the potential really is. SDG&E sort of missed this. 	Addressed in Sector Chapter of BP	Oversight issues are deferred due to policy issues. Commercial chapter was re-written to better articulate the goals and objectives of the sector as well as the market characterization.
0552		Notes page 20 - I’m interested in understanding better how much we want to see BPs address ZNE in terms of emulating the vision. SDG&E did a good job of integrating ZNE in its strategies and tactics.	NA-closed because issue was resolved in some way	Acknowledged.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0553	Commercial	<p>Notes page 20 - Comment (from CPUC):</p> <ul style="list-style-type: none"> • P. 13, It is important to recognize that SDG&E will to complement and not replace its existing programs, but I thought these BPs were supposed to tackle entire sector and not just discuss incremental plans as SDG&E has done. • I saw three different statements about targets for the sector (p. 13: lessees, p. 14: asset value to landlords, p. 15: property managers). Three different targets need to be woven together somehow. I'm trying to understand strategy and how it is going to work. • p. 20, solutions: On-bill financing seems like sole solution. But this won't work for issues with landlords and property managers. On same page, talks about timing of payment, but no strategy. • I'm looking for given profile of market and barriers. What are strategies for trying to overcome? 	Addressed in Sector Chapter of BP	
0554		<p>Notes page 20 -</p> <ul style="list-style-type: none"> • With regard to increasing RFOs, I'm seeking clarification of measure of success for solicitations. • There was also mention of online data platform. How will this interlink with statewide platforms? 	Deferred to Implementation Plan or Program Design Stage	<p>Platform details will be further defined in the implementation plan stage. Where there are appropriate linkages, then those will be made.</p>

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0555		Notes page 20 - Comment: In commercial sector, goals (p.12) and appendix with commercial goals alignments: provides tremendous opportunity for people with experience in market to work with IOUs – offering broader bandwidth, working with underserved communities, access through professional architects and engineers who have direct contact with building owners. That facilitation provides tremendous opportunity to increase utilities’ opportunity to have real impact on the market.	NA-closed because issue was resolved in some way	Acknowledged.
0556	Public	Notes page 21 - Comment (from ED): Primary focuses on downstream strategies and tactics. The Decision identifies that Statewide programs should be designed to achieve market transformation. SDG&E is tentatively assigned Statewide administrators for non-residential and residential HVAC. Where will Statewide strategies appear in this BP?	Addressed in Sector Chapter of BP	Described in Res and Com Chapters
0557		Notes page 22 - With regard to bundling, we want to make sure PAs make room for smaller implementers. Hopefully smaller contractors will also have a voice.	NA-closed because issue was resolved in some way	Acknowledged.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0561		Notes page 23 - I'd like to second comments of CPUC that BPs should start with market estimate from available data. First, always start with an estimate of what the market is. There are other evaluations besides Navigant studies. Second, PAs need to set up what the target market is. Third, PAs need to make an overarching statement about what kind of investment is required to capture the target market and what the benefits will be. If you go through this process, you will see that Southern California Edison public sector program is off by 1-2 orders of magnitude. We very much support comments of the Coalition for Energy Efficiency about draft chapter lacking mandates and specifics about what is required to be included.	Addressed in Sector Chapter of BP	
0564		Notes page 24 - • p. 37 includes a large list of to dos. IOU/PA coordination should be customer driven partnerships, not market driven programs. • When you have institutional partnership, Statewide process is more difficult. I would like to know why institutional partnerships were included in Statewide. This doesn't work with institutional partnerships.	NA-closed because issue was resolved in some way	Acknowledged - SDG&E will continue to work with the IOUs and the Institutional Partners to find a path forward.
0569		Notes page 26 - I am mostly reflecting on remarks from ad hoc discussion on September 8 that customer service reps provide valuable service in getting programs going. I want to keep this as an option. Implementers should be able to include using utility customer service reps as part of their programs, but it should be part of implementation costs of programs. I want a clear distinction between implementer and administrator. This does not conflict with tariff rules.	Deferred due to policy barriers (and PAs not addressing in BP or Testimony)	The discussion of how to categorize the account and customer service representatives (and who pays for them) needs to be addressed before we can fully address this input.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0570		Notes page 26-27 - Implementers depend on account reps when we work with customers. We rely on account reps as long term trusted advisors for customers. Account reps are there before and after we implement our projects. Customer service reps don't want projects to disrupt customer relationships. I have a concern with using implementer budgets for customer service reps. This is not the direction we want to go. It creates a conflict.	Deferred due to policy barriers (and PAs not addressing in BP or Testimony)	The discussion of how to categorize the account and customer service representatives (and who pays for them) needs to be addressed before we can fully address this input.
0578		Notes page 29-30 - There was little in BPs or discussion today addressing the Guidance Decision ordering directive that Statewide programs are also designed to achieve market transformation (Op., p. 106). The logistics of setting up the Rolling Portfolio, and moving Statewide PAs are overshadowing this question right now, understandably, but it will need to be addressed over time. I hope to provide comments on how Statewide MT approaches could begin to be advanced in a way compatible with the Energy Division Market Transformation Program Design and Policy Framework White Papers (2014) in the Business Plans by September 28.	Addressed in Sector Chapter of BP	

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0579		<p>Notes page 30 - Facilitator: Synthesis of general issues raised in comments to BPs (from Easel Paper):</p> <ul style="list-style-type: none"> • Need adequate level of justification for existing interventions • More detailed citations are needed • Need to fully address guidance from CPUC Decisions • Are we sufficiently addressing the move to procurement future in these drafts? • Stronger connections between assertions, strategies and targets, metrics are essential • Need concrete goals • Tension between detail versus flexibility (are BP statements about intervention strategies to be treated as restricting/definitive or more descriptive and illustrative) • Need more detail on how key partnerships will work • Need more justification for changing strategies • Need more justification for timing of programs (near, mid, long term) 	Addressed in Sector Chapter of BP	
0580	X-Cut: WE&T	<p>CEE - The proposed pilot goal—the integration and addition of EE funding into existing workforce development efforts — should be further refined to target funding for pre-apprenticeship bridge programs that are linked to state-certified apprenticeship programs.</p>	NA-Input not applicable to this PA	SDG&E will collaborate with PG&E, the SW PA, on this issue.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0581	X-Cut: WE&T	CEE - The pilot must also ensure that it creates a pipeline, for disadvantaged workers, that leads to job placement and retention in the EE sectors. IOUs should leverage their relationships with construction contractors who participate in IOU programs, to help develop pathways for participants into higher skilled and higher wage EE-oriented construction jobs and to incorporate workforce qualification, diversity and inclusion goals into their third-party contractor selection process.	NA-Input not applicable to this PA	SDG&E will collaborate with PG&E, the SW PA, on this issue.
0582	X-Cut: WE&T	CEE - We also suggest that the pilot align with the California Workforce Development Board, which is using Proposition 39 funding to support pre-apprenticeship programs via a 2014 RFA.CWD Band the Green Collar Jobs Council spent considerable time on this issue and have already initiated their grants.	NA-Input not applicable to this PA	SDG&E will collaborate with PG&E, the SW PA, on this issue.
0583	X-Cut: WE&T	CEE - Finally, we want to ensure that pilots such as these are a complement, rather than a barrier, to the imposition of workforce qualification, diversity and inclusion requirements throughout entire incentive programs. The Commission will not meet its goal of having a fully engaged, trained energy efficiency workforce by 2020 if workforce quality efforts continue to be limited to small pilot programs.	NA-Input not applicable to this PA	Moving forward, the point of pilots is to prove concepts. SDG&E will apply the lessons learned from the pilots as results become available and as they are beneficial to meeting SW goals.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0584	X-Cut: WE&T	We would like to direct the CAEECC's attention to the results of a recent workshop (July 20, 2016) convened by the Greenlining Institute and the Asian Pacific Environmental Network. The workshop brought together experts in the field to identify and discuss "barriers preventing disadvantaged and low income communities from accessing and thriving in clean energy jobs". While the purpose of the workshop was to provide input into the CEC SB 350 Barriers Study draft report, we believe that the content is relevant to the Career & Workforce Readiness Downstream Pilot proposal put forth via the CAEECC as well.	NA-Input not applicable to this PA	SDG&E will collaborate with PG&E, the SW PA, on this issue.
0585	Multiple Sectors	Please see CAEECC.org website http://www.caeecc.org/statewide-administration for input from multiplied parties on Statewide Administration	Addressed	
0587	Commercial	P20 SDGE states" although most customers qualify, trade professionals often must front the project costs for their customers until a project is completed, at the risk of the customer being disqualified from financing if the project scope changes." Suggestion: SDGE should explore feasibility of defining the projects scopes in modules and secure financing approval per modules and in total to reduce risk of disqualification if scope changes.	NA-Input not applicable to this PA	SDG&E will collaborate with PG&E, as the SW Finance Lead, to determine communications regarding characteristics of qualifying projects.
0596	Residential	CAR - 9 - Please note that "REALTOR®" is a collective membership mark owned by the National Association of REALTORS® and is used by C.A.R. with permission. Guidelines for using "REALTOR®" can be found on the National Association of REALTORS®' website: www.realtor.org .	Addressed in Sector Chapter of BP	Changed "REALTOR" to "real estate professional"

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0648	X-Cut: WE&T	NRDC - 1 - Good snapshot, but needs source data ☐ Either cite the data in the snapshot or if all of that information is footnoted elsewhere in the chapter, indicate that in a footnote.	Addressed in Sector Chapter of BP	
0649	X-Cut: WE&T	NRDC - 2 - The barriers don't all lead into the strategies and goals. (E.g., the first goal is to ensure a sufficient workforce, but there isn't a barrier that there isn't a strong workforce. Similarly, there is a strategy to collaborate to expand access and reach but there is no related barrier). P.189 – is there data re: how many disadvantaged workers SDG&E trained? (e.g., PG&E (and maybe SCG?) used zip codes to assess how many of their participants were from disadvantaged communities). Suggest reviewing PG&E's EM&V trends (p.22) to see if additional evaluation lessons apply.	Addressed in Sector Chapter of BP	Acknowledged.
0650	X-Cut: WE&T	NRDC - 3 - The reader would benefit from a bit more description of changes and why. Include a bit more description of the changes (which I read under 'future trends.')	Addressed in Sector Chapter of BP	Acknowledged.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0651	X-Cut: WE&T	<p>NRDC - 4 - Modify Goal 1: It is unclear what competency demonstration is vs. knowledge gain. Also, based on the strategies, trends, and barriers, seems like Goal 1 should be something like: “Upskill current workers and increase the overall amount of workers that are properly skilled to serve the highest needed sectors (e.g., com/res/HVAC/construction) to help the state meet its goal of doubling efficiency by 2030.” The third strategy – educate decision makers on the value of hiring skilled workers – seems to be a strategy for a different goal. Maybe that goal would be “Increase the demand for highly skilled workers.”</p> <ul style="list-style-type: none"> o An added strategy for Goal 1 (based on the additional prose on p.193) could be “Ensure education classes provide training on a comprehensive suite of end uses and approaches and are easily accessible.” o The sample tactic of “support certification” (p.194) is unclear re: whether SDG&E plans to develop new ones or align its curriculum with state/nationally recognized certifications <p>Clarify Goal 2: The rationale for focusing Goal 2 on customers in addition to workforce (like facility managers) is not clear. Seems like those activities would be more components</p>	Addressed in Sector Chapter of BP	Goals, strategies, and tactics have been refined.
0656	Residential	<p>HEA - 1 - On pages 13, 18 and 33 SDG&E lays out a set of goals for the coming 10 years. What’s missing is how we get to this 10 year goal both year by year (or even better, quarterly) and program by program.</p>	Deferred to Implementation Plan or Program Design Stage	Incorporated as consistent with CAEECC outline. Further detail will be developed as part of the program design stage.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0657	Residential	HEA - 2 - We need to more accurately characterize how energy is used so we can approach energy efficiency in a cost effective manner. As indicated in Figure Rex-X on page 25, plug loads represent 66% of home energy consumption and continue to grow as a percentage. Costly home upgrades don't address this type of energy use. There are low cost ways to reduce plug load consumption. The reason this distinction is important is that we need to design EE programs that address energy consumption where they can achieve the most cost effective energy reduction.	Dropped-- Insufficient data/evidence to support addressing proposal or claim	SDG&E agrees that plug load is a large contributor to load growth and will continue to pursue cost effective solutions.
0658	Residential	HEA - 3 - The goal for all PA's should be to drive to the greatest savings per dollar spent. Measuring GWh, therms and GHG savings achieved is an important first step but the long term goal should be to get the greatest savings for dollar spent in this portfolio of programs, or drive down \$/kWh and \$/therm.	Dropped-- Insufficient data/evidence to support addressing proposal or claim	Agreed, the number of new will be driven by the value of those approaches; however, lowest \$/kWh and \$/therm are not the only metrics used (e.g. lifecycle cost) to drive market transformation.
0659	Residential	HEA - 5 & 6 (HEA - 4 was a compliment, not an issue) The 2nd list includes "Efficient products are more expensive...". What products is this referring to? If products refers to home upgrades then the comments under HEA-2 apply. Home upgrades are expensive and do not provide a good ROI for most people. Some homes will benefit from expensive homes but not most. As an industry we need to explore interventions that present a greater ROI for the consumer.	Addressed in Sector Chapter of BP	Home Upgrade vs Efficient Plug Loads have been better defined.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0660	Residential	HEA - 7 - Customer size for all problems is “all”. Customer segmentation should be categorized in percentages or numbers to help determine the value of goals	Addressed in Sector Chapter of BP	Because SDG&E provides customized solutions to residential customers through it's behavior programs, SDG&E does not further targeted strategies based on Residential customer size.
0661	Residential	HEA -8 - If I understand the 2 charts on this page, 66% of the housing stock is SFR and 34% is MFR. Explain how the charts were derived. If the energy breakdown is as is shown in Figure Res-6, we shouldn't spend any effort reducing MFR energy use because it is so very small.	Addressed in Sector Chapter of BP	Updated chart provided.
0662	Residential	HEA -9 - It isn't clear what Account, Projects, Gas and Electric mean in Res-7. Show many customer does each segment represent? Does it make sense to include accounts and projects with gas and electric? Can a project also include gas and electric?	Addressed in Sector Chapter of BP	
0663	Residential	HEA - 10 - The comments behind Res-9 indicate that energy savings potential will drop significantly starting in 2017. The affect of new building codes will take a very long time to ripple through the housing stock. Indicate why this is an important consideration.	Addressed in Sector Chapter of BP	Text added based on Climate Action plan.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0664	Residential	HEA - 11 - There needs to be a link between these high level responses and how they fit into an overall strategy. What percentage of savings do you hope to achieve from each response? If that isn't possible to assign, where do we start assigning energy reduction values to specific responses or activity?	Deferred to Implementation Plan or Program Design Stage	
0665	Residential	HEA - 12 - The table doesn't provide enough details to comment on. The same responses/tactics are in several tables but there needs to be more details to provide any feedback. It's hard to say whether "promote in ads" will be effective when it's unclear what it's trying to achieve. See HEA-11.	Addressed in Sector Chapter of BP	Table has been updated.
0666	Residential	HEA - 13 - The final paragraph states that MFR account for 24% of electric and 23% of gas consumption. This seems realistic but is different from the chart in Res-6. Possibly, the Res-6 is representing another breakdown. If so, please make the distinction clear.	Addressed in Sector Chapter of BP	Res-6 is at the portfolio level and does not break out residential into SF/MF.
0667	Residential	HEA - 14 - "... energy efficient buildings rent for an average premium of 2-6%, can sell for a premium of as much as 16%..." There is a danger of promoting an increased monetary benefit of energy upgrades without understanding the economics of achieving those benefits. If it costs \$20,000 to make a significant improvement to an apartment renting for \$2,000, the owner will only see an increase of \$120. The ROI is quite long and may not be appealing. Dig into the economics to determine a realistic cost/benefit breakdown. Is a 2-6% a compelling economic incentive?	Dropped-- Insufficient data/evidence to support addressing proposal or claim	Specific metrics will be determined by Implementers.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0668	Residential	HEA - 15 - Define why real estate professionals have an economic incentive to promote home upgrades.	Dropped--not sufficiently high priority relative to other items	
0682	Commercial	CPUC_Clinton - 1 - Of the four IOU PAs, this commercial sector BP best exemplifies my expectations for a business plan. The approach seems well conceived and carefully connects market segmentation, EE opportunities, barriers, challenges, desired outcomes, and strategies to accomplish. Since BPs are inherently not at the implementation level, the key challenge for SDG&E, its ratepayers, and California will be to see SDG&E's upcoming ability to translate and deliver via the Implementation Plans.	Deferred to Implementation Plan or Program Design Stage	
0693	Residential	No resolution confirmation requested for NRDC - 1, 2, 4, 5, 6 see Source Document of recommendations	Addressed in Sector Chapter of BP	Acknowledged.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0694	Residential	<p>NRDC - 3</p> <p>P. 17 Goal 1 – Does the focus on “self-service tools and data driven insights” mean less focus on traditional programs to reach this customer base? Or just a new on-ramp to the programs? Would be good to clarify.</p> <p>P.25 the tactic “customized and targeted offers” – are these linked to other programs as well like home upgrade?</p> <p>P.25 – the 3rd bullet under the additional items “connection to online solution” – is that different from the marketplace listed above under “customized and targeted offers”? Same question re: the next bullet “integration of online solutions with rebates” and it’s connection to marketplace as well as the bullet above noting integration of My Account, etc. Suggest making one “integration” bullet and describing the details and benefits of that approach, pulling from the last paragraph on p.26</p>	Dropped--not sufficiently high priority relative to other items	Marketplace is a component of the online solution.
0701	Commercial	NRDC provides a number of editorial and other recommendations for SDG&E consideration, but is not looking for any kind of acknowledgment regarding resolution.	Addressed in Sector Chapter of BP	Acknowledged.
0707	Public	NRDC provides a number of editorial and other recommendations for SDG&E consideration, but is not looking for any kind of acknowledgment regarding resolution.	Addressed in Sector Chapter of BP	Acknowledged.
0760	Residential	CPUC - 1 - SDG&E should provide substantive evidence that program participation has been limited due to the myriad programs and entry points. It may well be the case that participation rates have fluctuated overtime, with multiple factors contributing to these participation rates.	Dropped--not sufficiently high priority relative to other items	Acknowledged.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0761	Residential	<p>CPUC-2 - SDG&E includes home energy report/behavior program recipients in its larger total of residential program participants. It would be helpful to separate these opt-out programs from the opt-in programs so a clearer picture is evident. ☐ SDG&E presents general SF and MF owner/renter and savings information. It may be more useful to break these properties out by vintage and climate zone to get a better understanding of where potentially larger savings opportunities are available. While programs are open to all, if SDG&E is indeed targeting customers, homes in Escondido and Santee may have greater potential than those in Mission and Pacific Beach.</p>	Dropped--not sufficiently high priority relative to other items	<p>Bullet 1: -SDG&E does not differentiate opt-in vs op-out in its reporting Bullet 2: Deferred to Implementation Plan or Program Design Stage -- SDG&E provides customized solutions through it's behavioral programs.</p>
0762	Residential	<p>CPUC - 3 - Energy Efficiency potential – SDG&E seems to suggest that savings opportunities are diminished for new homes, which is clearly the case as these will be built to the most recent code. However, these homes are a small portion of SDG&E's overall residential market. ☐ Figure Res-9 appears to be misinterpreted. The potential decline after 2017 is attributable to code changes for lighting, which will overwhelmingly affect existing homes with a limited effect on new homes (which will likely fluctuate with the economy). Clarify residential potential as it affects SDG&E's residential program efforts for existing buildings, which constitute the majority of target customers in the territory.</p>	Addressed in Sector Chapter of BP	

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0763	Residential	CPUC - 4 - Figure Res-2 is unclear and gives the impression that SDG&E will go after all customers with all program options, which really shouldn't be the case. Certainly a refined understanding of the SF and MF customer segments, including climate zone, building vintage, customer usage, etc., would help shape which approaches work best for each segment. The table as currently configured does not present this subtlety.	Deferred to Implementation Plan or Program Design Stage	Approach will be further refined in the design stage.
0764	Residential	CPUC - 4 SDG&E lists "sample tactics". Are these a sample from a broader set? Are they under consideration but may not make the final cut to be presented in January 2017?	Addressed	Sample tactics represent potential approaches to address goals / strategies. Final tactics will be determined by third party implementers.
0765	Residential	CPUC - 5 ☒ Residential sector metrics – the metrics as presented in the chart may not be helpful in terms of measuring program performance and determining if the right customers are being reached.	Addressed in Sector Chapter of BP	Metrics and baselines have been refined. We will continue to refine our metrics going forward and establish appropriate baselines as more specific data becomes available.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0769	Multiple Sectors	CCAG-1 - Some of the issues cited by PAs as current issues under existing program administration may be traceable back to requirements by the CPUC and challenging to the work of LGP's, and not necessarily the result of current PA practices. PAs should work closely with stakeholders and the CPUC to identify and resolve any barriers to successful outcomes.	Addressed in Sector Chapter of BP	
0770	Multiple Sectors	CCAG - 2 - Significant experience, energy technical expertise, administration, coordination, contracting, and budgeting expertise is required to continue or assume the role as PA for the Public/Commercial sectors and to lead LGPs. Any business plan proposer whose plan does indicate this depth of experience should receive additional scrutiny.	NA-Input not applicable to this PA	
0771	Multiple Sectors	CCAG - 3 - Any changes in administration of LGPs should be phased in over multiple years, to avoid the start and stop issues for which this business plan process was intended and designed to alleviate.	NA-Input not applicable to this PA	
0772	Multiple Sectors	CCAG - 4 - All business plans that strive for statewide consistency should also build in flexibilities to allow local implementation based on unique local characteristics. Additionally, include efforts to cross-pollinate approaches to program delivery and allow for diversity to fit local needs.	NA-Input not applicable to this PA	

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0773	Multiple Sectors	CCAG - 5 - Market Transformation: Market transformation is key to the success of meeting state goals for energy efficiency of existing buildings. All programs combined are unlikely to serve every energy efficiency opportunity site in the State. All business plans should include a specific section that addresses an approach for connecting building owners to contractors with less or no intervention from State programs. Program implementers should be working on systems that provide incentive education and implementation justification, even before a site is identified by an administrated program in order to drive the market.	NA-Input not applicable to this PA	
0788	Agriculture	CFBF - 1 - Because usage can vary from one year to the next in a substantial way, measurements of usage must account for the variability and incorporate a level of flexibility that may be unique to agricultural customers.	Addressed in Sector Chapter of BP	Addressed as appropriate for SDG&E's service territory.
0789	Agriculture	CFBF - 2 - Water Pumping is the Common Link among Agricultural Operations The PAs all recognize the diversity of the agricultural class, however, water usage and pumping equipment is central to substantially all agricultural operations, and thus is the key portal to energy savings on California farms.	Deferred due to policy barriers (and PAs not addressing in BP or Testimony)	There are a number of policy issues related to what savings/incentives can be applied to water pumping.
0790	Agriculture	CFBF -3 - Depending upon how customers elect to adapt to the new TOU periods, changes in usage could be driven by that new element.	Addressed in Sector Chapter of BP	Addressed in Market Characterization and Approach sections.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0791	Agriculture	SFBF - 4 - Agricultural customers statewide are facing significant regulatory mandates affecting their operations in labor and water management. Because such mandates drive inputs into electricity usage in this sector, usage is driven by compliance with such requirements and may impact abilities to make or apply operational/equipment changes.	Addressed in Sector Chapter of BP	
0792	Agriculture	CFBF - 5 - Balanced review and thought must be afforded between new entrants (marijuana growers) to the sector and traditional producers who have undertaken continuing efforts to increase the efficiency at which all inputs are used to grow crops.	Addressed in Sector Chapter of BP	
0801	Industrial	CPUC-Hardy-1 - Overall, a good chapter. Clear, well written, informative.	Addressed in Sector Chapter of BP	
0802	Industrial	CPUC-Hardy-2 - Metrics table: sector metric is month by month growth in projects but with targets measured in years -- too granular. Also, would like to see this by segment/size. In addition, a metric showing increase in industrial-process focused projects as opposed to the commercial measures routinely offered in the past, by size and maybe segment. Do not see metrics tied to goal of doubling savings.	Addressed in Sector Chapter of BP	
0803	Industrial	CPUC-Hardy-3 - EMV Considerations: SDGE appears to be of the view that whole building, top down, NMEC measurement applies to industrial projects. This is the case for building-related projects per D. 16-08-019, but is not the default for custom calculated projects.	Addressed in Sector Chapter of BP	Agreed, text clarified. Please see Sector Chapter EM&V section and EM&V appendix.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0804	Agriculture	<p>CPUC-Hardy-1 - Metrics not really developed. Would hope to see some tied to increased participation by segment, water-energy projects.</p> <p>☐ EMV: noting that D.16-08-019 states: “With respect to programs in the agricultural sector, we believe there are opportunities to capture maintenance and operational savings and retrocommissioning savings using an existing conditions baseline and NMEC, and we authorize this approach for agriculture. Custom agriculture sector projects will remain subject to custom program rules.”</p>	Addressed in Sector Chapter of BP	Have added strategic metrics which include Ag end-uses and O&M.
0808	Residential	<p>EEFA - 1 - We recommend that the PAs review the following sections:</p> <ul style="list-style-type: none"> • Suggest reviewing BayREN entire multifamily section (pg. 2.21-2.30), as an example of a multifamily residential section that includes data, strategies, barriers and opportunities for the sector, and expand scope to include low income. • Suggest reviewing BayREN Figure 5 (Pg. 2.23) for example of characterizing multifamily. • Suggest reviewing BayREN Business Plan Figure 6 for example of program metrics (See p. 2.25, “BAMBE Completed Projects”). • Suggest reviewing SoCalREN p. 7 for characterization of different multifamily market segments. 	Deferred to Implementation Plan or Program Design Stage	
0809	Residential	<p>EEFA - 2 - IOU Business Plans do not currently provide information on On-Bill Financing terms for the multifamily residential sector.</p>	NA - Out of Scope	Business Plan does not address the ESA Decision and will be addressed within the Low-Income proceeding.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0810	Residential	EEFA - 3 - SDG&E (pg. 19-20): Market Characterization and Segmentation: does not include market characterization of multifamily sector, low-income sector, or low-income multifamily sector. BP also omits any description of overall approach to these sectors. Include market characteristics on multifamily residential sector, including low income multifamily. These characterizations could help inform a more descriptive approach to coordinating with the ESAP multifamily offerings (see CHPC-EEFA comment #8 for more information)	Addressed in Sector Chapter of BP	
0811	Residential	EEFA - 4 - All Business Plans should include as a barrier: Multifamily projects take longer to cultivate and implement. See pp. 23-25 of the Cadmus Multifamily Study, http://www.energydataweb.com/cpucFiles/pdaDocs/1000/ESA%20MF%20Segment%20Study%20-%20Volume%201%20Final%20Report%2012-04-13.pdf , citing timing of upgrades and long-term planning as critical needs for owners and barriers presented by existing programs.	Deferred to Implementation Plan or Program Design Stage	
0812	Residential	EEFA - 5 - While recognizing the constraints posed by existing cost-effectiveness requirements, Business Plans should support the continuation and expansion of EUC multifamily whole building programs.	Deferred to Implementation Plan or Program Design Stage	

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0813	Residential	<p>EEFA - 6 - SDG&E (p.33): Missing metrics related to reaching low income customers, and low-income multifamily sector.</p> <p>Recommended Action: EM&V metrics for multifamily should be outcome-oriented, rather than output-oriented, and include multifamily low-income specific metrics. Recommend including a metric such as: “Within the multifamily sector and low-income multifamily sector, increase program participation number from X% in 2017 to XX% over the 10-year period.”</p> <ul style="list-style-type: none"> • Recommend tracking uptake and attrition from initial consultation through completion of retrofit for multifamily programs. • Recommend including metric to track coordination between low-income and general income programs, particularly for the multifamily sector e.g. number of projects jointly participating in ESA and general EE programs and percent increase from X% in 2017 to XX% over the 10-year period. 	NA - Out of Scope	SDG&E will, however, offer the correct solution to each specific customer type
0814	Residential	EEFA - 7 - Business Plans should commit to meet zero net energy goals for multifamily buildings through whole building programs, including LI MF buildings not served by ESA.	Dropped--not sufficiently high priority relative to other items	
0815	Residential	EEFA - 8 - All Business Plans should include strategies for coordinating with ESA multifamily programs. Given that some multifamily buildings will be excluded from the ESAP comprehensive MF offerings, we recommend PAs coordinate with the ESA program to leverage single end use offerings and provide a more comprehensive approach to those buildings since they are unable to be fully served by the ESA program.	Addressed in Sector Chapter of BP	Please see goal 2, strategy 2, sample tactics on efforts with ESA.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0816	Multiple Sectors	NAESCO - 1 - The BPs offer no explanation or justification for the selection of the lead administrators for statewide programs.	Addressed in general section of BP or Testimony in Application	
0817	Multiple Sectors	NAESCO - 2 - The draft BPs appear to ignore the explicit Commission direction in D.16-08-019, which was reinforced by ALJ Fitch's extraordinary November 15 response to questions posed by CAEECC facilitator Ted Pope, that Third Party (3P) programs are to be designed and implemented by third parties.	Addressed in general section of BP or Testimony in Application	SDG&E intends for 3P programs to be designed and implemented by the third parties.
0818	Public	NAESCO - 3 - The draft BPs do not appear to offer the detailed bidding plans that the Commission requires.	Deferred to Implementation Plan or Program Design Stage	
0819	Public	NAESCO- 4 - The draft BPs appear to offer no plan or schedule for the implementation of the clear mandate of AB 802 that the measurement of EE program savings be reset to existing baselines and that the measurement of savings be based on normalized energy meter (NEM) analysis.	Deferred to Implementation Plan or Program Design Stage	Calculation of EE program savings is more appropriately addressed in the implementation plans, and is dependent upon CPUC policy guidance.
0820	Public	NAESCO - 5 - The draft BPs appear to offer no realistic approach to the mandate of SB 350 that the California EE programs double their production of energy savings and their reduction of GHG emissions.	Addressed in Sector Chapter of BP	Strategies and tactics included in the Business Plan are specifically created to achieve State goals.
0822	Public	NAESCO - 6 - The draft BPs appear to be incomplete, in that they do not include all of their currently planned EE programs and activities. [Distinction between EE portfolio programs and RFOs]	Deferred to Implementation Plan or Program Design Stage	Refer to Overview of Current Offerings section of the chapter.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0823	Public	CCCCO-1 - We recommend the statewide lead PA for California Community College should reside with one IOU that has full authority to implement a consistent program across the state. At this point given other considerations the preferred IOU would be PG&E.	NA-Input not applicable to this PA	
0842	Commercial	CPUC - 6 - The “future” approaches include “Increase focus on energy efficiency in legislation”. Recommendation: This doesn’t seem appropriate to include in strategies – if it stays it should be more specific so the Commission can judge appropriateness in review of the business plans.	Addressed in Sector Chapter of BP	Text has been modified and this reference is no longer included.
0843	Commercial	CPUC - 7 - Consider that aptitude may also include knowledge of programs (not just familiarity with rules); and would locational grid value and potentially compensating for it come in to this binary framework? Similarly how would longitudinal/long term engagement fit into aptitude or attitude?	Addressed in Sector Chapter of BP	
0844	Commercial	CPUC - 8 - “Need to innovate” is cited as a Problem. The problem may be lack of innovation – but calling this out requires more explanation of WHY you “need to innovate”.	Addressed in Sector Chapter of BP	
0845	Commercial	CPUC - 9 - Missing the Goals and strategies tied to deemed, direct install, premium cooling, retrocommissioning, etc. Finish the table - This is an interesting and useful linkage table.	Addressed in Sector Chapter of BP	
0846	Commercial	CPUC - 10 - The 0-4 employee group that makes up a large number of customers, in figure 9. Are there other external groups that support this “micro employer” group that SDG&E can leverage for outreach and understanding? Or is the potential too small to warrant significant outreach?	Addressed in Sector Chapter of BP	We believe the best partner to reach these employers is the property management group providing their working space.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0847	Commercial	CPUC - 11 - CEUS is the common source for the end use pie charts Recommendation: Not clear why the Commercial Saturation and Commercial Market Share Tracking data from 2012 are not being used as more recent data.	Addressed in Sector Chapter of BP	
0848	Commercial	CPUC - 12 - Elaborate on the potential connection with whole building potential and the commercial refrigeration and food service potential which is presumably called out in Figure 5.	Addressed in Sector Chapter of BP	Our understanding of the market potential study is that the majority of whole building measures are envelope and not related to food service and commercial refrigeration.
0849	Commercial	CPUC - 13 - More quantitative summary of which strategies may contribute most to SB350 (amongst those cited: intuitive energy platform, innovative procurement vehicles).	Deferred to Implementation Plan or Program Design Stage	
0850	Commercial	CPUC - 14 - Strategy for Property Management Market – does not include locational value opportunities. Consider locational value amongst the sample tactics	Addressed in Sector Chapter of BP	
0851	Commercial	CPUC - 15 - Continuous information to encourage advancement. In the “easy to understand, customized energy plan” be sure to include documentation strategies for those things done OUTSIDE the program (with and without) to understand progress more completely	Addressed in Sector Chapter of BP	
0863	Commercial	CPUC - 1 - The approach presented for the commercial section seems to stand out from the other business plans.	NA-closed because issue was resolved in some way	

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0864	Commercial	CPUC - 2 - The outsourcing strategy presented here for third party programs to achieve the 60% threshold by 2020 as required in D.16-08-019, is a great start. However, what type of programs will meet these requirements, offering innovation and new technologies? How will SDG&E seek new EE programs in 2017?	Deferred to Implementation Plan or Program Design Stage	
0865	Commercial	CPUC - 3 - One of the barriers for customers is the project implementation process, which can be long and complicated with policy changes in the middle of the process. Customers seeking more than one contractor on a project may present challenges and become more cumbersome for customers without technical experience-this would be an Aptitudinal barrier. More thought about how to assist customers and streamline the process would be beneficial.	Addressed in Sector Chapter of BP	
0866	Commercial	CPUC - 4 - Metrics- are good and informative but no idea of term target?	Addressed in Sector Chapter of BP	
0889	X-Cut: C&S	CPUC-CF - 6 - Insufficient time to read all IOUs plans. Please review comments above based on SCE's chapter, and incorporate in your C&S chapters.	NA-closed because issue was resolved in some way	Acknowledged.
0905	Commercial	CPUC-CF - 22 - Didn't have time to make the same comments for all IOU commercial chapters. All IOUs should review and incorporate the intent and ideas in the above into your commercial chapters, clarifying where such activities advance 2030 commercial building goals, and when/where they advance other goals.	Addressed in Sector Chapter of BP	Acknowledged.
0907	Public	CPUC-CF - 24 - Not enough time to comment on all IOUs chapters. Please review comments on PG&E's Public Sector chapter and reflect in your final Public Sector chapters as well.	Addressed in Sector Chapter of BP	Acknowledged.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0908	X-Cut: WE&T	CPUC-CF - 25 - Eliminate or reduce funding for Connections starting in 2018; transition (a relatively small portion of the current Connections) budget to career and workforce readiness educational activities for K-12, if prioritized	NA-Input not applicable to this PA	SDG&E will collaborate with the lead PA and other PAs. We do believe that career awareness and the Connections program are important and should be funded as part of the portfolio. We will collaborate with PG&E to determine the appropriate budget for Connections and CWR.
0909	X-Cut: WE&T	CPUC-CF - 26 - Most stakeholders prefer hands-on training, and Centergies classes typically don't offer this. We would hope to see in 2018 going forward, the Centergies budgets reduced and the Partnership budgets increased, to support hands-on training via curriculum development or improvement activities with Partners.	Addressed in Sector Chapter of BP	We agree hands-on education is critically important and best addressed in the Centergies program. We've carved out specific initiatives around supporting core energy education providers thru curriculum support, train the trainer, and special project seed funding.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0910	X-Cut: WE&T	<p>CPUC-CF - 27 - The Centergies programs and locations have been in place for years, so it is eye-opening to read that lack of awareness of offerings amongst key targeted audiences / industry members remains a barrier</p> <ul style="list-style-type: none"> - Add a metric to track and drive improvements in awareness - Decrease Centergies budgets if not able to drive currently employed, key targeted industry workers & professionals to needed classes 	<p>Deferred to Implementation Plan or Program Design Stage</p>	<p>Implementation level metric</p>
0911	X-Cut: WE&T	<p>CPUC-CF - 28</p> <ul style="list-style-type: none"> - Adopt a metric to track the number of entities IOUs partner with, and what is provided: a) curriculum development support; b) train the trainer support; - Commit to a non-financially interested stakeholder Advisor Committee for this function; include key state and other government entities - This effort could also establish a dedicated non-financially-interested Advisory Sub-Group solely dedicated to the unique challenges of working to integrate disadvantaged communities into EE/IDSM - Commit the majority of the SW (and local) IOU WE&T budgets to this curricula development/ improvement and partnership function 	<p>Addressed in Sector Chapter of BP</p>	<p>SDG&E has an existing Stakeholder Engagement Forum and partners are an existing program performance metric.</p>

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0912	X-Cut: WE&T	<p>CPUC-CF - 29 - Training programs for local building inspectors regarding new technologies in buildings advancing “ZNE” type goals is an important need but is not included here, nor information provided to cross-reference to C&S plans.</p> <ul style="list-style-type: none"> - Initiate action within IOUs to develop a tracking and communication for ALL IOU WE&T activities, whether these are funded and developed in: 1) the dedicated WE&T programs; of, 2) via other resource or non-resource programs. - Develop an approach to track and communicate to non-IOUs (CPUC, stakeholders, other agencies, etc.) the overall allocation of training funds between these two general buckets and their overall goals, metrics and targets 	Deferred to Implementation Plan or Program Design Stage	
0913	X-Cut: WE&T	<p>CPUC-CF - 30 - Metrics are included to track # of partnership organizations “touched,” but not to track the effectiveness of the trainings subsequently offered that were “improved” by these IOU/ratepayer-funded touches. Develop a standardized beginning / end of course survey for students participating in trainings for partnership groups touched by IOU/ratepayer-funded support; develop, fund and implement a standard database for partner organizations to provide this information; Implement a metric to track student learning and satisfaction in partnership trainings impacted by IOU “touch”.</p>	Addressed in Sector Chapter of BP	<p>Similar high-level WE&T metrics have been proposed in the business plan at the appropriate level. Additional metrics will be considered at the implementation phase.</p>

Appendix F: External Stakeholder Observations

ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0914	X-Cut: WE&T	<p>CPUC-CF - 31 - Chapter not clear on plans to address workforce skill needs or certifications with various installation practices touched by IOU rebates or programs. Clarify this in next iterations. Give strong consideration to working with Apprenticeship and other existing educational or certification bodies (such as architects/ designers/ energy raters, modelers programs) to develop Continuing Education requirements and curricula for these existing training/certification entities. Work with these partner groups to incorporate up-to-date EE installation requirements and hands-on training relevant to that target group of workers as requirements for these new (or improved) Continuing Education requirements</p>	Addressed in Sector Chapter of BP	WE&T supports and collaborates with EE Resource programs to offer trainings and certification programs that help achieve EE Savings. WE&T will ensure that training is provided to help the workforce meet any program requirements as determined by individual EE programs.
0915	Residential	<p>RHTR - 1 - Establish that Residential will be considered a Strategic Market Transformation (SMT) program until such time those markets are transformed. Recommended that an effective EM&V timeline is set in either phase 3 or in the PIP. Design residential programs as SMT programs to build capacity and demand in products and services in a way that increases economic returns for service providers and manufactures beyond current levels to promote localized reductions in price points.</p>	Deferred due to policy barriers (and PAs not addressing in BP or Testimony)	

Appendix F: External Stakeholder Observations

ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0916	Residential	<p>RHTR - 2</p> <p>Successful Residential DI EE delivery should be localized and fully integrated across channels. For example, local governments partners should be able to engage consumers, provide low income, MIDI and HU services through one trusted agency (LGs). SDG&E suggests employing a “one-stop” strategy in relation to MF interventions. We would contend that this strategy should be accepted throughout the Res Sector due to challenges unique to the sector. ☐ Define “hard-to-reach”. ☐ Design intervention strategies and alternative key performance indicators to more comprehensively measure program effectiveness. ☐ Support and enable LGs and local service providers to influence program design and implement programs that leverage their knowledge of and ability to identify local market conditions and identify intervention points.</p>	Addressed in Sector Chapter of BP	The SDG&E BP approach is geared towards all segments and sub-segments of residential inclusive of hard-to-reach.

Appendix F: External Stakeholder Observations

ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0917	Residential	<p>RHTR - 3 - Current cost effectiveness criteria (TRC) should not be applied to Residential programs. Residential programs may never be competitive with other resource based programs (SMB/Industrial) under the TRC. This creates a situation where PAs and implementers must balance portfolios in a way that minimizes investments into the residential sector proportional to realized savings in more effective sectors. This is not aligned with state EE and GHG reduction goals. Model programs in such a way where it becomes a SMT (non-resource) program. Explore key performance indicators that more comprehensively capture program performance and objectives that include but are not limited to the following: GHG reductions, Human health and safety gains, Reduced environmental impacts, Localized economic multipliers, Other standard non-energy benefits. Incentivize PAs in Res sector based upon market saturation.</p>	<p>NA-closed because issue was resolved in some way</p>	<p>Current Commission direction is that residential is a resource program.</p>
0918	Residential	<p>RHTR - 4 - Regions served by multiple PAs experience a profound lack of coordination and discordant messaging in regards to establishing priorities and implementing programs. In regions or service territories with multiple or overlapping PAs, the Energy Division could direct IOUs to determine and establish a lead/single program administrator.</p>	<p>Deferred due to policy barriers (and PAs not addressing in BP or Testimony)</p>	<p>This would need to come from Commission direction.</p>

Appendix F: External Stakeholder Observations

ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0919	Residential	<p>RHTR - 5 - Program designs and customer process flow should be evaluated for redundancies and should be assessed based upon the value of the data, not the fact that it's a legacy requirement. The CPUC should express the intent to promote simplified downstream delivery approaches to internal processes as well as incentive calculations.</p> <p>☐ Simplify incentive calculation methods in order to facilitate residential consumer uptake commensurate to ambitious statewide goals.</p> <p>☐ LGPs which have a proven track record should be afforded extended contract cycles with options to amend based upon changes in the market place, changes in budget allocation needs, or to amend the scope of the contract.</p>	Deferred to Implementation Plan or Program Design Stage	
0920	Residential	<p>RTHR - 6 - Allow ALL Residential sector program participants (ESA, MIDI, EUC, LIWP) to participate in pay for participation (P4P) style behavioral programs. Simplify pay for performance style incentive calculation.</p>	Addressed in Sector Chapter of BP	
0929	Multiple Sectors	<p>TURN - 1 - TURN recommends that the PAs jointly sponsor their proposed statewide program administration leads in one exhibit (or BP chapter) developed collaboratively.</p>	Addressed in general section of BP or Testimony in Application	
0930	Multiple Sectors	<p>TURN - 2 - TURN recommends that the jointly sponsored exhibit suggested in TURN-1 provide the information and data considered by the PAs in their assessment of the 3 primary and 4 secondary bullet points identified in their CAEECC presentation, as reproduced above.</p>	Addressed in Sector Chapter of BP	

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0931	Multiple Sectors	<p>TURN - 3</p> <p>TURN recommends that the PAs focus on statewide program-level (not subprogram-level) costs and benefits in demonstrating how the proposed structure provides administrative and other cost savings over the status quo.</p> <p>TURN recommends that the jointly sponsored exhibit in TURN-1 provide a rigorous quantitative analysis of the projected costs and energy savings. That is: the current and projected statewide programs costs for each IOU and statewide aggregate totals.</p>	NA - Out of Scope	
0932	Multiple Sectors	<p>TURN - 4</p> <p>TSCE's response to ORA-DR-2 states: "SCE has not performed, to date, an analysis related to the proposed structure and potential administrative cost savings." To TURN, costs and savings per kWh are not on the face of it a reasonable basis or criteria for statewide administration designations. TURN recommends that the jointly sponsored exhibit suggested in TURN-1 include the results</p>	NA-closed because issue was resolved in some way	The SW PAs shared plans for a bottoms up review at the December CAEECC meeting.
0933	Multiple Sectors	<p>TURN - 5 - TURN recommends that the jointly sponsored exhibit suggested in TURN-1 provide any analysis conducted in determining whether or not to propose this configuration in the final BPs.</p>	NA - Out of Scope	
0934	Multiple Sectors	<p>TURN - 6 - TURN recommends that the jointly sponsored exhibit suggested in TURN-1 consolidate and harmonize these challenges and opportunities, and discuss potential benefits of modifying the current statewide UP- and MID-stream programs and subprograms, and in transitioning some downstream programs and measures to UP- and MID-stream programs. We see these issues as germane to the bottom-up review discussed in TURN-4.</p>	NA - Out of Scope	

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0935	Residential	TURN - 7 - The above underscored statement appears to imply that PG&E is concerned about its discretion to significantly modify the programs and subprograms on a going forward basis. If this is the case, and if that concern is shared by other PAs, TURN recommends that the jointly sponsored exhibit we suggest in TURN-1 acknowledge this concern, while also presenting recommendations to change the existing construct to the extent supported by the PAs' analysis, including but not limited to the "bottom up review" urged by the Commission in D.16-08-019.	Deferred to Implementation Plan or Program Design Stage	
0936	Residential	TURN - 8 - PG&E's, SCE's, and SDG&E's Residential Chapter BPs appear to place increasing reliance on the intervention strategy direct install (DI). TURN recommends that the IOUs enhance their discussion of their plans to expand the use of DI as a strategy to promote early retirement by adding more explanation and support, given the relatively high cost of this intervention strategy. Related, we recommend that they (1) specify the types of measures that are appropriate to target through DI, and (2) clarify whether DI will be used to promote above-code and/or to-code measures and why.	Deferred to Implementation Plan or Program Design Stage	This will be discussed more in the implementation plan.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0937	Residential	TURN - 9 - TURN finds the apparent continued reliance on CFLs to be counter to market trends and market transformation efforts, and counter to the CPUC Strategic Plan and D.09-09-047. PG&E and SCE should modify their primary lighting strategies to not incent or otherwise promote CFLs in lieu of LEDs (for product categories in which LEDs are commercially available). If applicable SDG&E should also adjust accordingly. These changes should be explicitly called out in the BPs.	NA-Input not applicable to this PA	
0939	Residential	TURN - 11 - TURN recommends that SCE and SDG&E consider adding to their BPs PG&E's proposed strategy to renovate residential HVAC programs going forward that would target customers through AMI data, and through participating contractors, recommend a suite of HVAC efficiency options or packages. TURN recommends that PG&E, SCE, and SDG&E provide additional detail in their BPs regarding their plans to provide training and support for contractors to prevent oversizing in HVAC installations and promote the completion of permits, and indicate if they are considering providing incentives to contractors, at least initially, to promote and reward compliance, only education and training.	Deferred to Implementation Plan or Program Design Stage	As SW Administrators, we plan to include training curricula for HVAC QI as well as other HVAC topics.
0940	Residential	TURN - 12 - To the extent that PG&E, SCE, and/or SDG&E intend to target second refrigerators – not just primary units -- in residential dwelling units for early retirement and/or replace-on-burnout as part of promoting appliance EE, TURN recommends that the BPs make this objective explicit.	Dropped--not cost-effective or inadequate budget available to address	SDG&E does not plan to target second refrigerators.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0941	Residential	TURN - 13 - TURN recommends that PG&E, SCE, & SDG&E consider proposing changes to the cost-effectiveness methodology applied to the Home Upgrade Program to remove “project-related, non-efficiency related costs” from total project costs, as invited by the Commission in D.14-10-046 at p. 100.	Deferred due to policy barriers (and PAs not addressing in BP or Testimony)	SDG&E agrees that cost-effectiveness analysis needs a thorough review.
0943	Residential	TURN - 15 - TURN recommends that PG&E, SCE, SDG&E, and SCG include in their BPs a discussion of the changing role of behavior programs and activities, including high level changes in budgets and savings, and reasoning behind this evolution.	Addressed in Sector Chapter of BP	Please see EM&V section. We discuss expanding the definition of Behavior.
0944	Residential	TURN - 16 TURN recommends that PG&E, SCE, SDG&E, and SCG provide a high-level roadmap from 2016 through 2020, which shows the evolution in the top 10 measure groupings expected to drive portfolio savings. ☐ TURN recommends separate roadmaps for gross and net GWh, MW, and therm savings, as applicable to the portfolios, using the same assumptions regarding net savings used in the 2017 Budget Advice Letter (or indicate otherwise if other assumptions are for post-2017 projections of net savings).	NA - Out of Scope	This information is provided by the potential study. The potential study will be updated next past the BP due date.

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0945	Residential	TURN - 17 - TURN recommends that PG&E, SCE, and SDG&E describe in their BPs their plans, if any, to promote the incorporation of cost-effective EE, particularly HVAC, by residential customers who are considering rooftop solar so as to reduce solar system sizing and associated costs, and promote dual-fuel (where appropriate) EE opportunities.	Addressed in Sector Chapter of BP	This is the thought behind some of the strategies related to helping customers on their journey to ZNE. Goal 3, Strategy 2 describes our HVAC activities.
0946	Residential	TURN - 18 - TURN recommends that SCE explain in its BP whether the RFP process will be designed to solicit bids that integrate EE and other distributed energy resources (DER), such as demand response, at geographically targeted customer sites to address distribution planning issues and reduce infrastructure costs. ¶ If PG&E and SDG&E are similarly considering possible efficiency solicitations in their BPs, TURN recommends that they also explain whether the RFP process will be designed to solicit bids that	Addressed in Sector Chapter of BP	SDG&E will also be soliciting bids and is always looking for IDSM opportunities.
0947	Multiple Sectors	TURN - 19 - We recommend that all data on projected customer sector goals and program savings, budgets, and cost-effectiveness be given some context relative to ongoing customer sector activities and accomplishments. There needs to be some demonstration as to how the BP will advance savings and improve cost-effectiveness (or at least prevent an erosion in cost-effectiveness).	NA - Out of Scope	

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ID #	Chapter Reference	Issue	SDG&E Resolution Type	SDG&E Resolution Discussion
0948	Multiple Sectors	TURN - 20 - If not already included, we recommend that the IOUs provide projected customer sector goals and program savings in gross and net annual and net cumulative form. We suggest that these projections be supported with information in an appendix explaining the basis for net and the calculation of cumulative (e.g., based on estimated average EUL by customer sector and key programs, with the basis – such as end use, measures -- for the estimated average EUL(s) specified).	NA-closed because issue was resolved in some way	Although the Business Plan includes sector specific forecasts, net to gross will be covered in the annual September Advice Letter.
0949	Public	CA - 1a - Adapting OBF to include upfront construction costs would help to enable the state to leverage this financing approach	NA-Input not applicable to this PA	SDG&E will collaborate with the IOU lead for this Statewide Partnership
0950	Public	CA - 1b - Most of the projects in large state buildings exceed the current \$1M limit for financing via OBF. Increasing this limit would address another barrier.	NA-Input not applicable to this PA	SDG&E will collaborate with the IOU lead for this Statewide Partnership.
0951	Public	CA - 2 - To target the limited partnership budget most effectively, it is important to strategically identify the best retrofit opportunities within the portfolio of state buildings. The state does not have the financial or technical resources to do so and would greatly benefit from support from the Partnership in this area.	NA-Input not applicable to this PA	SDG&E will collaborate with the IOU lead for this Statewide Partnership.

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EXHIBIT 2

STATEWIDE ADMINISTRATION APPROACH

Statewide Administration Approach

January 17, 2017

By

Pacific Gas and Electric Company

Southern California Edison Company

Southern California Gas Company

San Diego Gas and Electric Company

STATEWIDE ADMINISTRATION APPROACH

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I. INTRODUCTION

Decision (D.) 16-08-019 modifies the energy efficiency program administrative structure by requiring that all upstream and midstream programs, market transformation efforts, and at least four pilot downstream programs be delivered uniformly throughout the four large Investor-Owned Utility (IOU) service territories, and overseen by a single lead Program Administrator (PA). In requiring these programs to be administered on a statewide basis, the California Public Utilities Commission (CPUC or Commission) wants to prioritize ease of program access to customers, and in part, lower transaction costs for PAs and implementers.¹

This document presents the IOUs assignments for Lead Administration of statewide programs, along with the rationale for said assignments. Ultimately, a PA is responsible for managing their program portfolio, and is accountable for achieving savings goals in their territory.² Statewide programs contribute to the PA’s goal achievement; effective administration and implementation of these programs is paramount to achieving these goals. In this document,

¹ D.16-08-019, p. 51.

² D.16-08-019 p. 71, “We wish to continue to push the utilities to focus more on their role as determiners of “need” and portfolio design.”

the IOUs also describe a governance process that represents a joint collaborative commitment to the success of the statewide model.

II. DIRECTION

D.16-08-019 directs statewide programs to be administered by one Lead PA, with the capacity to handle statewide programs. The Commission left the Lead PA assignments for each statewide program to be determined by current program administrators and put forth the designations in the business plans to be filed on January 17, 2017.³ With the exception of capacity, the Commission did not prescribe qualifications for Lead PAs. The Decision expected that “natural leads with the capacity to handle the statewide programs will either volunteer or be nominated by their peers, with a consensus approach brought forward to the Commission for [their] consideration.”⁴ At this point, the four IOUs have taken lead roles in administering the statewide programs.

Once a Lead PA is determined for the statewide programs, the Commission recognizes that the remaining PAs still play an important role in the administration of statewide programs.⁵ The Commission calls for a consultative and collaborative relationship between the Lead PA and other administrators on key aspects of the portfolio,⁶ and states that they “are deliberately not specifying in this decision the exact form such collaboration should take.”⁷ With this direction, the IOUs describe a governance process that presents the consultative and collaborative relationship in the statewide administration model.

III. APPROACH

To improve program delivery and efficiency, the IOUs holistically evaluated potential Lead PAs using six program administration criteria. The six criteria used in determining Lead PA assignments are described below.

³ D.16-08-019 p. 53

⁴ D.16-08-019 p. 54

⁵ The seven current PAs are: Pacific Gas and Electric, Southern California Edison, Southern California Gas Company, San Diego Gas and Electric, Bay Area Regional Energy Network, Southern California Regional Energy Network, and Marin Clean Energy.

⁶ D.16-08-019 p. 54

⁷ *Id.*

1. **Portfolio Approach and Natural Bundling:** The IOUs considered an overall portfolio approach and grouped programs to support a cohesive program strategy and an emphasis on increasing the effectiveness of energy efficiency, improving cost-effectiveness, balancing localized considerations, and providing the most value for our customers. As an example, the same lead was assigned to both the Residential and Commercial HVAC Programs so that the Lead PA can determine if these programs can be consolidated to gain efficiencies. In addition, through the bundling of interdependent programs, such as Electric Emerging Technologies and the Savings By Design (SBD) programs as well as the grouping of the Gas Emerging Technologies and Residential New Construction programs, the IOUs will achieve greater continuity for oversight and focus on zero net energy (ZNE) policy goals, along with increasing energy efficiency.

The IOUs also considered specific factors in the marketplace such as regional, climate, and locational resource constraints which could have a bearing on the relationship with major customers, vendors, and suppliers. For example, different end uses or technologies require different skillsets, a different set of manufacturers, trade organizations, and distributors to engage. This is particularly true in the area of lighting and HVAC where the suppliers and experts in each area are vastly different. The Lead PA assignments consider these unique factors and bundle programs accordingly.

2. **Cost-effectiveness:** The IOUs reviewed program administrators' ability to deliver energy savings in the most cost-effective manner. For each of the Lead PA assignments listed below, the Lead PA chosen was typically the lowest in administering a program on a \$/kWh or \$/therm basis, or has the highest Total Resource Cost (TRC) ratio for the program.
3. **Capacity:** Each IOU's capacity to administer a given program at the statewide level was considered, with the understanding that establishing this new structure and process may require shifting significant work across administrators. Given the requirement to begin the transition to this structure, all IOUs will need to participate and take the lead in key areas. No single PA can or should lead all statewide programs, and these assignments consider balancing administrative burden and responsibilities with diversity in experience. We anticipate that the structure of the statewide portfolio and lead

assignments may evolve over time as we gain experience with the new statewide model. There may also be staffing impacts due to the transformative changes being undertaken that will likely unfold over time as we continue to execute and prove the success of this new model.

In addition, the IOUs reviewed each of the statewide programs and used historical information and experience to help estimate the capacity each IOU has to administer statewide programs. Examples of information used are: total savings for each program for the past 6 years, total savings for 2015, and knowledge of the support infrastructure necessary to effectively administer and support delivery of programs and services to customers.

4. **Expertise:** Expertise, experience, and knowledge are important factors to consider regarding statewide program administration, both from a technical and an administrative perspective. Understanding that implementers will be designing and delivering these programs, expertise in administration will be required to ensure proper program oversight, achievement of program goals, strategic portfolio management, and a full understanding of Commission rules. From a technical perspective, in an effort to ensure speed to market, agility, and program management discipline, the IOUs qualitatively reviewed and evaluated the relative expertise each IOU had for a given program to assist in the assignment process. For example, the technical expertise available to support the Emerging Technologies Program (ETP) for both gas and electric technologies was considered, including how such expertise may be used to support other important efforts such as the development of the grid of the future. Of particular importance with ETP is the close connection to fuel-specific expertise, which resulted in the decision to create two distinct electric and gas ETPs. Knowledge of the characteristics and needs of key strategic customers and partners was also considered, such as with the Institutional Partnership programs.
5. **Relationships:** Inter-utility (including publicly-owned utilities) and external industry relationships are also an important factor to consider regarding statewide program administration. The IOUs qualitatively reviewed and evaluated the relationships each had with key stakeholders for a given program to assist in the assignment process.

Relationships each IOU had with key upstream vendors, emerging technology organizations, and State entities were considered. The relationships held by each IOU are important to ensure the new statewide programs launch quickly, and with minimal disruption to the market or customers.

- 6. Feedback from Stakeholders:** Through the California Energy Efficiency Coordinating Committee (CAEECC) process, stakeholders have provided input to the IOUs on proposed lead assignments.⁸ This input includes bundling similar programs, recognition of prior leadership, and leveraging demonstrated expertise. The IOUs have considered stakeholder recommendations, and have made adjustments to proposed Lead Assignments, as appropriate.

IV. GUIDING PRINCIPLES

The following Guiding Principles represent the shared commitments of IOU PAs in the delivery of statewide-administered energy efficiency programs.

- 1. Support the State's energy efficiency policy goals.** Orient portfolio design around State and Regulatory objectives and act in the best interests of all customers.
- 2. Do no harm.** Make decisions that preserve our collective ability to meet energy savings goals, achieve cost-effectiveness goals, and minimize impacts to existing local and downstream programs.
- 3. Advocate for all PAs.** Recognize that the whole is greater than the sum of its parts. Be willing to collaborate with other PAs in planning and decision-making efforts.
- 4. Assume best intentions.** In an environment of shared goals and shared directives, be humble in the approach and ambitious for the broader group's success.
- 5. Be good listeners.** Take responsibility for the environment by which decisions are made such that all participants have the opportunity to participate.
- 6. Take a stand for customers.** Take into consideration the customer experience and strive for simplicity, clarity, and ease.
- 7. Wisely pursue change.** Demonstrate open-mindedness to changes in design, delivery and administration.

⁸ IOUs presented proposed Lead Assignments to the CAEECC on September 21, 2016, October 19, 2016, and again on November 16, 2016.

V. LEAD ASSIGNMENTS

The final Lead Assignments, by IOU, are put forth as follows:

Pacific Gas and Electric Company	Institutional Government Partnerships: State of California and Department of Corrections
	Financing: New Financing Offerings
	Codes and Standards: Building Codes Advocacy and Appliance Standards Advocacy Programs
	Workforce Education and Training: Centergies K-12 Connections Programs
	Workforce Education and Training: Career & Workforce Readiness (<i>downstream pilot</i>)
	Indoor Agriculture Program (<i>downstream pilot</i>)
Southern California Edison Company	Electric Emerging Technologies Program
	Lighting: Primary Lighting, Lighting Innovation and Lighting Market Transformation
	Commercial New Construction: Savings by Design
	Institutional Government Partnership: University of California and California State University
	Water/Wastewater Pumping Program for non- residential Public sector (<i>downstream pilot</i>)

Southern California Gas Company	Residential New Constructions
	Gas Emerging Technologies Program
	Foodservice Point-of-Sale (POS) Program
	Midstream Commercial Water Heating
San Diego Gas and Electric Company	Upstream Heating, Ventilation, and Air Conditioning (HVAC)
	Midstream Plug Load Appliance (PLA)
	Residential HVAC Quality Installation/Quality Maintenance (QI/QM) (<i>downstream pilot</i>)

What follows is a brief discussion on the rationale behind these choices.

Pacific Gas & Electric (PG&E)

1. State Government Partnerships (State of California and Dept. of Corrections)

Following the principle of natural bundling, the IOUs believe that combining the two State partnerships under one lead would result in economies of scale and increased efficiencies. PG&E believes that engaging public customers through strategic partnerships enables customers to take action while demonstrating leadership that inspires their constituents to pursue their own energy efficiency projects. PG&E is presently the statewide lead for these partnerships and PG&E benefits from ready access to state agency leadership due to geographic proximity. PG&E will rely on its proximity to help facilitate effective management of these partnerships. As PG&E’s business plan explains, PG&E sees a great opportunity to engage more state agencies, including the Judicial Council through expanded and new partnerships to share technical expertise and to achieve greater participation in energy efficiency programs and drive deeper savings achievement.

2. Financing (New Finance Offerings)

PG&E believes that investments in finance programs will allow program administrators to more cost-effectively achieve energy efficiency savings, which aligns with the state's vision for energy efficiency financing. PG&E's finance team has professional financing expertise and experience in implementing energy efficiency financing programs both in and outside of California. PG&E has demonstrated statewide leadership in the realm of finance programs for the last four years, particularly in the development of the statewide on bill repayment (OBR) pilots. Not only has PG&E collaborated well with its IOU partners, it has built strong working relationships with the Commission and the California Alternative Energy and Advanced Transportation Financing Authority (CAEATFA) to help shape the future of energy efficiency financing in California.

As the Lead PA, PG&E will continue to work closely with CAETFA to build the finance pilots that work best for California. PG&E has seen growth in the On-Bill Financing (OBF) program. PG&E has dedicated itself to continuous improvement of the OBF program by integrating it into our programs, and focusing on making the program easy for contractor participation. PG&E has seen a steady growth in its financing loan pool since 2012 and is on track to continue that growth through 2016. PG&E now has the largest loan pool amongst the IOUs, and has thus far only experienced minimal defaults. PG&E has demonstrated its leadership by implementing a non-rebate OBF pathway for customers – the OBF Alternative Pathway. PG&E believes that its new process for OBF has potential to increase participation in energy efficiency from customers who have previously chosen not to participate in IOU programs. This Alternative Pathway should become a model for energy efficiency financing investments statewide, and a model for other financing programs beyond OBF.

In PG&E's finance business plan chapter, PG&E has shown a commitment to continuing to innovate and test new financing structures that can have an incremental impact on our customer's ability to fund their energy efficiency investment. PG&E understands what drives customers to undertake energy efficiency investments, which has led to exploring financing structures that will overcome specific barriers customers face to investing in energy efficiency. PG&E has shown a commitment to financing as a strategy for residential energy efficiency adoption through its on-bill loan program for this sector. As detailed in its Business Plan, the goals for statewide financing include overcoming customer transaction barriers to investment and increasing the supply and access to affordable capital.

3. Codes and Standards (Building Codes Advocacy and Appliance Standards Advocacy)

Codes and Standards (C&S) represent an extremely cost-effective way to help meet the State's ambitious goal to double energy efficiency by 2030 and reduce greenhouse gas emissions. PG&E has demonstrated leadership in C&S for over 10 years at both the state and federal level. PG&E has the engineering and strategic resources available to successfully lead the statewide C&S advocacy sub-programs. PG&E has the expertise to lead and direct the program to meet the California Energy Commission (CEC) and CPUC's goals for the C&S program. PG&E has developed strong relationships with the statewide PAs, CEC, Department of Energy, efficiency advocates, industry stakeholders, and CPUC staff. These relationships allow PG&E staff, in conjunction with the other IOUs, to navigate upcoming Title 24 and Title 20 rulemakings successfully. These relationships have allowed PG&E to work on agreements with industry to gain their support for the CEC's proposals and achieve additional energy savings.

PG&E has managed CASE studies through careful planning and execution while maintaining quality. The resulting CASE studies have provided the basis for considerable cost-effective energy savings for California. A strong CASE study increases the likelihood and the speed that the CEC will begin a rulemaking since it provides a solid foundation for their work. PG&E has experience directing primary data collection to support CASE topics so that supporting data is timely, statistically relevant and comprehensive. As statewide lead, PG&E will continue to partner with the IOUs, CEC, and CPUC, and shape the next generation of codes and standards 2.0, which the statewide C&S business plan details.

4. Workforce Education and Training (K-12 Connections)

As the current statewide lead for K-12 Connections, PG&E brings the expertise required to effectively engage the broader educational communities (schools, colleges, professional organizations) for a successful K-12 WE&T initiative. PG&E's WE&T staff include trained, professional educators who bring the right expertise to lead evaluation efforts on program design proposals. PG&E's experience in working directly with disadvantaged communities and organizations that serve disadvantaged workers sets PG&E up for success as the IOUs respond to

Senate Bill (SB) 350 and look for ways to broaden outreach and engagement of these communities in energy efficiency programs.

PG&E is currently the statewide lead for the Connections subprogram. For over 25 years, PG&E has supported the K-6 sector with a cost-effective education program which serves elementary school students at an average cost of \$3.30 per student. Furthermore, PG&E's existing online career awareness portal for high school students can serve a broader audience than the PG&E service territory. PG&E has conducted a variety of education programs that have served K-12 schools. For example, Energenius has evolved to incorporate the latest curriculum standards. Energenius has reached about half of all K-8 schools across PG&E's diverse service territory while receiving above 90% satisfaction ratings. PG&E has leveraged programs and experts across organizations to offer comprehensive K-12 resources to serve its diverse service territory (e.g., working with the low income programs CARE and Energy Savings Assistance (ESA) to incorporate energy, conservation and environmental education in the Out of School program delivered to low income students and their families).

As statewide lead, PG&E plans to leverage internal and external partnerships to cost-effectively deliver resources to the K-12 marketplace, such as the IOUs' Local Government Partnerships and Energy Savings Assistance program implementers, the California Student Aid Commission, the California Apprenticeship Coordinators Association, and several UC/CSU campuses. PG&E has also used marketing efforts of organizations such as the California Department Education and the California Teachers Association. As the Business Plan explains, PG&E envisions a workforce capable of meeting California's energy savings goals and implementing its utility programs. This includes the current workforce and the next generation of the workforce. PG&E believes firmly that its role as statewide lead for K-12 Connections and Career Workforce Readiness will help meet this vision.

5. WE&T Career Workforce Readiness (CWR) Program

As statewide lead administrator for the CWR program, PG&E brings the expertise required to effectively engage the broad array of workforce and community partners, stakeholders and other interested parties for a successful career and workforce readiness initiative. PG&E has experience working with disadvantaged workers and with organizations that serve disadvantaged workers and disadvantaged communities. Our experience in working

with disadvantaged communities sets us up for success as the IOUs respond to SB 350, exploring ways to broaden outreach and engagement of these communities in our energy efficiency programs. As our Business Plan explains, PG&E envisions a workforce capable of meeting California's energy savings goals and implementing its utility demand-side management programs. We believe firmly that our role as statewide administrator for CWR will help us meet this vision.

6. Indoor Agriculture (IA) Program

PG&E will dedicate its decades of experience serving California's agricultural community to being the statewide lead administrator for the IA program, PG&E has provided agricultural customers a variety of energy efficiency solutions from technical assistance to rebates and low/no interest loans. PG&E understands that energy is a key resource for farmers, and that smart energy management can be a powerful tool in addressing rising energy costs, regulatory standards, and safety issues. Leveraging our years of knowledge of agricultural customers, and what motivates them to make energy efficiency investments positions PG&E well as statewide administrator for this new downstream program.

Southern California Edison (SCE)

1. Electric Emerging Technologies Program

The IOUs propose to divide the ETP by fuel source to account for the specialized knowledge and skills that are associated with each fuel type and distribution system. Because it is ETP's role to support the resource program portfolios with new innovations, fuel-specific subject matter experts (SMEs) will be critical to providing strategic planning and quality assurance functions. The two functions are central so that policy and technology are developed into measures. SCE and the Southern California Gas Company (SoCalGas) have unique fuel-centric expertise that will be leveraged for these critical functions that the implementers will not provide under the new administrative model for ETP. The expertise in administration is necessary to ensure proper program oversight, achievement of program goals, strategic portfolio management, and a full understanding of Commission rules. Fuel-specific SMEs at SCE and SoCalGas will bring an understanding of the implementers' roles in designing and delivering

these programs as they relate to both electric or gas measures. Collaboration between electric and gas statewide program administrators, as well as other PAs, are essential to the success of this model, which ETP has over 12 years of experience through the Emerging Technologies Coordinating Council (ETCC).

The IOUs assign SCE as the statewide PA for the Electric ETP. SCE has been the statewide lead for over 10 years providing leadership in program design, planning, implementation, policy input, and program evaluation for the statewide program. Under SCE's leadership, the ETP has been successfully restructured⁹ to meet the evolving policy needs of California (SB 350, Assembly Bill 802) and the Commission while maintaining cohesive and collaborative working relationships with other IOUs and CPUC staff. In addition, SCE has had consistent commitment to ETP in terms of expertise, resources, and budget allocation and has successfully met or exceeded all program goals since the program's inception over 10 years ago.¹⁰

SCE has led efforts with innovation-focused organizations such as the Los Angeles Cleantech Incubator (LACI), CEC grant programs (CalSEED and Regional Clusters), and CleanTech Open. SCE has also helped foster innovation through outreach activities such as the Technology Resource Innovation Outreach (TRIO) initiative and through collaboration with the Department of Energy's early stage technology completion effort (First Look West – FloW) and the newly formed Rocket Fund; both managed by CalTech. In addition, SCE has reviewed over 500 ideas and launched over 100 new measures or technologies and various pilots through its ideation process, many of which were funneled into the process or reviewed with the support of SCE's ETP.

SCE also has a team of technical experts within ETP to review potential products and services for SCE's demand-side management (DSM) programs. SCE's team of DSM technical

⁹ The PY2013-2014 ETP Targeted Effectiveness Evaluation (Calmac ID # CPU0112.01) concludes "ETP consistently exceeds PIP objectives. Moreover, the ETP exceeded some objectives by significant amounts....Objectives were achieved within allocated budget,...[and] projects align with CEESP end-use areas." " p. 41-42.

¹⁰ "PY2013-2014 ETP Targeted Effectiveness Evaluation", CPUC, 2015 (Calmac ID #CPU0112.01); "PY 2010-2012 California Statewide Emerging Technologies Program Phase I", CPUC, 2013 (Calmac ID #CPU0066.01); "PY 2010-2012 California Statewide Emerging Technologies Program Phase II", CPUC, 2013 (Calmac ID #CPU0066.03); "Evaluation of the California Statewide Emerging Technologies Program [PY2006-2008], CPUC, 2010 (Calmac ID #CPU0031.01)".

experts brings the expertise required to effectively engage with ETP's collaborators and peers. SCE's staff includes trained, professional engineers who have the necessary skills and proficiency to oversee technology projects. SCE's Lead Program Manager has over seven years of leadership as the statewide ETP lead, over 10 years at SCE, and over 15 years in technology development within the utility and DSM context. SCE's team also includes a full-time staff that brings a combined 75 years of expertise to administrating the statewide ETP. In addition, SCE's DSM technical experts also collaborate closely with other experts across SCE to coordinate projects and to help determine how new technologies will impact the grid. This is vital to help California build the grid of the future that supports customer choice, the two-way flow of electricity, and the ever-expanding adoption of distributed energy resources — energy efficient equipment, rooftop solar, onsite energy storage, electric vehicles, and energy management systems — to achieve cost savings, cleaner energy, conservation, and enhanced reliability. SCE will continue to leverage this expertise through its Electric Emerging Technology Program to support the IOUs and the State of California so that the plug-and-play-grid-of-the-future reaches its potential. SCE looks forward to continuing and building upon its effective leadership of ETP¹¹ as it transitions to administering the statewide Electric ETP in 2018.

2. Lighting (Primary Lighting, Lighting Innovation and Lighting Market Transformation)

The IOUs recommend that SCE be the statewide PA for the Lighting programs. SCE leads the state in energy savings claimed through the statewide primarily lighting programs¹² and is the low-cost leader compared to the other IOUs on a \$/kWh basis.¹³ In addition, SCE's upstream lighting approach concept has been replicated in other states.

SCE has also been the historical lead for the Lighting Market Transformation (LMT) and Lighting Innovation (LI) programs, which have contributed to SCE's effective Primary Lighting program in the past. Through these programs, SCE has embarked on various pilots that have provided valuable data related to future program design and implementation. Sample successes

¹¹ SCE has demonstrated strong statewide leadership in the realm of Emerging Technologies. Not only has SCE collaborated well with its IOU partners, it has built strong working relationships with Energy Division, CEC-PIER, SMUD, LADWP, BPA, NEEA, NYSERDA, DOE, and industry leaders across the U.S.

¹² SCE's claims 75% of all energy savings claimed through the statewide primary lighting program.

¹³ SCE Advice 3465-E Southern California Edison Company's 2017 Annual Energy Efficiency Program and Portfolio Budget Request.

include the development of a midstream delivery channel for lighting technologies that continues to expand into other technology categories today. This and other pilots conducted by SCE have focused on customer engagement and partnering with large organizations established at a nationwide level. SCE has the expertise in lighting to continue developing and researching energy efficiency lighting products that will aid towards future initiatives.

In its 2017 budget Advice Letter, SCE planned to defund both LMT and LI as stand-alone program areas, noting that some aspects of the programs could be integrated into the Emerging Technologies program. In the immediate term, SCE sees no need for this strategy to change, and funding is already set aside to complete its remaining pilots; however, SCE may also leverage third-party solicitations to garner new program ideas in this space as long as overall portfolio cost-effectiveness can be maintained.

3. Commercial New Construction – Savings by Design (SBD)

The IOUs recommend that SCE be the statewide lead for the Commercial New Construction – SBD Program.

Coupling of SBD and the Electric ETP under SCE will help California reach ZNE in the commercial sector by 2030 as we endeavor for the two programs to work together to shepherd nascent technologies from ETP into SBD. In addition, the grouping of Electric Emerging Technologies, all Lighting program areas, and SBD programs under SCE will provide California with an end-to-end focus on lighting that begins with the evaluation of new lighting technologies and ends with code readiness through nonresidential new construction. This combined programmatic approach will also be an important factor in SCE's pursuit of achieving ZNE on behalf of our customers and for California given that lighting is one of the primary end-use measures in both the commercial and the residential markets.

However, SCE's approach to SBD will be much more holistic. We will also focus on supporting a Whole Building Approach to project opportunities. This will be done by streamlining the design and implementation activities with customers, design teams, and partner trade associations, all with the common goal of developing and constructing the most energy-efficient buildings and communities possible, with a focus on preparing the industry for zero net energy buildings.

In addition, SCE has over 18 years' experience in administering the SBD Program and has stimulated whole-building energy modeling & ZNE building designs by supporting the development of more advanced modeling programs. SCE is a top-two performer in terms of cost on a \$/kWh basis and also has the capacity to administer the program on a statewide basis.¹⁴ SCE also has a long-standing partnership with SoCalGas for program delivery, in which SCE provides recommendations, pays the customer incentives, and processes the Therm savings on the behalf of SoCalGas. Some examples of these programs are the SBD Program and PLA Program. This partnership demonstrates SCE's ability to partner with other PAs to administer programs.

To strengthen SBD moving forward, SCE will issue a competitive Request for Proposal (RFP) to enhance resources in the areas of program design, implementation, and processing, as appropriate.

4. Government Institutional Partnerships – UC/CSU and CA Community Colleges

The IOUs recommend that SCE be the statewide lead for the Government Institutional Partnerships – UC/CSU and CA Community Colleges program. SCE is the current statewide lead for the UC/CSU Partnership. SCE has deep knowledge of the customer base and has dedicated resources committed to helping the UC/CSU system and other higher-education partners meet our shared DSM, ZNE, and environmental goals. SCE's Program and Account Management team has the institutional knowledge and the relationships with this customer base to provide guidance and to help meet evolving energy and environmental goals, which are unique for the higher-education customer segment.

SCE has been successful in meeting its goals in a cost-effective manner and is the low-cost leader in administering the UC/CSU Program and a leader in administering the CCC Program on a \$/kWh basis.¹⁵ In addition, SCE also has the information technology systems infrastructure necessary to support program administration at the statewide level, including unique online application capabilities.

¹⁴ SCE Advice 3465-E Southern California Edison Company's 2017 Annual Energy Efficiency Program and Portfolio Budget Request.

¹⁵ (<http://eestats.cpuc.ca.gov/views/EEDataPortal.aspx>, 2013-15)

SCE is driving innovation in the higher-education segment and has submitted a high opportunity project or program (HOPPs) proposal to the Commission for the Public sector with a UC/CSU focus to help drive deeper savings.¹⁶ SCE has also helped UC/CSU partners meet their DSM, ZNE, and environmental goals through SCE's ETP, for which SCE is also the proposed statewide lead, thus ensuring a continued synergy between the Electric ETP and the Institutional Partnership programs.

1. Water Infrastructure Systems Efficiency Program (WISE)

WISE is a DSM program designed to provide EE solutions to water production, distribution, and treatment systems. The program serves water agencies, special districts, and local governments with a focus on water treatment, wastewater treatment, and pumping facilities and systems. The WISE program was originally launched out of SCE's IDEEA 365 solicitation, was a pilot for approximately 18 months, and is now transitioning to a mainstream third party-implemented program. SCE's extensive experience with the WISE pilot will be useful for conducting the program on a statewide basis as a downstream pilot.

Southern California Gas Company (SoCalGas)

2. Residential New Construction

SoCalGas is committed to administering dual-fuel energy efficiency program offerings on behalf of all PAs and many publicly-owned utilities in its shared service territories. SoCalGas has demonstrated that it has been the most cost-effective administrator of the Residential New Construction program, on a \$/therm basis. SoCal Gas' demonstrated experience of successfully managing dual-fuel energy efficiency programs to customers, coupled with the discipline on cost-effective implementation, well-positions SoCalGas to assume statewide leadership of the Residential New Construction program.

SoCalGas has the infrastructure, systems, and discipline in place to manage complex, multi-dimensional energy efficiency programs across multiple service territories. For example, SoCalGas has 28 joint programs with municipal electric utilities and water agencies, such as Los

¹⁶ SCE Advice 3460-E.

Angeles Department of Water and Power (LADWP), including the Residential New Construction Program. SoCalGas also has long-standing partnerships with PG&E, San Diego Gas and Electric (SDG&E), and SCE in delivering joint gas and electric programs throughout the shared service territory. Since 2013, SoCalGas' California Advanced Homes Program has enrolled more than 25,000 new home units in its shared service area with combined builder project incentives of over \$15 million – the most in California.

In addition to partnerships with other utilities, SoCalGas has strong relationships with manufacturers, distributors, and builders to deliver the Residential New Construction program. SoCalGas works together with all its market actor partners to help the building industry design and develop more environmentally-friendly communities and support California's efforts for new single family homes to reach ZNE by 2020. SoCalGas seeks to leverage its learning from active partnerships with Metropolitan Water District and LADWP's Water Conservation teams to increase the speed to market as water conservation becomes an increasingly important component of the Residential New Construction equation throughout California. SoCalGas intends to administer a program with a crosscutting focus on sustainable design and construction, green building practices, energy efficiency, and emerging technologies. SoCalGas' experience in delivering dual-fuel programs by bringing all market actors together in an engaged partnership, positions it to implement this vision.

3. Gas Emerging Technologies Program (ETP)

As a gas-only utility, SoCalGas is focused on developing efficient new natural gas technologies to fit the needs of California customers. The statewide ETP initiative has been successful in bringing new and underutilized technologies into the utility energy efficiency portfolios based on the strong, collaborative network (the ETCC) formed among the ETP staff at the four IOUs, as well as Sacramento Municipal Utility District and LADWP. These relationships will not disappear in the new statewide Administration model, but rather will be enhanced under SoCalGas' administrative leadership. As described for the Residential New Construction program, SoCalGas has a strong reputation for collaborative leadership among a wide range of market actors and key ET information and policy organizations, such as the American Council for an Energy-Efficient Economy (ACEEE), Consortium for Energy

Efficiency (CEE), and Energy Solutions Center (ESC). This leadership will extend to Gas Emerging Technologies.

Creating two distinct gas and electric Emerging Technologies Programs will allow for greater focus on a wider range of energy-specific new technologies. SoCalGas is a recognized leader in bringing new efficient gas technologies to market. Gas ETP will build on the existing statewide program framework, such as using the ETCC collaboration structure, in-house and external testing facilities, and the experience of more than a hundred heating technology assessments delivered in the past five years. SoCalGas has close relationships with the CEC natural gas Public Interest Energy Research programs and the Gas Technology Institute, to bring new, energy-efficient gas technologies into the portfolio. As the statewide ET program currently operates, natural gas technologies can often be a secondary focus to electric technologies given the higher portion of electric energy efficiency budgets among the IOUs. However, SoCalGas' ET efforts have ensured that progress in gas technologies continues to reap the significant energy saving sought by the state. With two distinct electric and gas ETPs, the programs can laser focus on the development, assessment, and introduction of more new and underutilized technologies, without regard to fuel prioritization. It will also enable a more relevant engagement with stakeholder organizations, given the manufacturers, distributors, trade allies, and member organizations associated with natural gas technologies are significantly different than the electric counterparts. For technologies with dual benefits, such as energy management systems, SoCalGas and SCE will closely partner, as they often do already, to efficiently use program resources. They will also collaborate to ensure that program administration, strategy and product and process quality controls are set at high levels, enforced and cost-efficient. SoCalGas looks forward to continuing its successful program administration and collaboration as it transitions to administering the statewide Gas ETP.

4. Foodservice POS Rebate and Midstream Water Heating Programs

Ordering Paragraph 8 of D.16-08-019 requires that all upstream and midstream programs in the existing portfolio, including but not limited to those listed in the decision, plus new programs proposed in business plans that are market transformation, upstream, or midstream, shall be delivered statewide. SoCalGas currently offers two midstream programs: Foodservice POS Rebate and Midstream Water Heating, which SoCalGas intends to continue to offer as part

of the rolling portfolio. In this new paradigm, these programs will be delivered statewide, led by SoCalGas.

The Foodservice POS Rebate program seeks to increase the sales of high efficiency commercial foodservice equipment by engaging midstream market actors to stock and actively market high efficiency equipment. The Midstream Water Heating program's objective is to push higher efficiency water heaters into the non-residential market by leveraging the distributor and contractor communities. SoCalGas will leverage its experience in administering these programs to expand their delivery statewide.

San Diego Gas & Electric (SDG&E)

SDG&E is a lean, efficient program administrator. Even though SDG&E's territory has key factors that work against cost-effectiveness (limited Industrial sector and a relatively small portfolio – \$116.5M), SDG&E has been able to create a portfolio with a TRC greater than 1.5 as well as creating a competitive lifecycle cost for energy efficiency measures. Building upon this platform for success, SDG&E's statewide lead assignments are based on its vision for the future of these statewide program offerings.

1. Upstream Heating, Ventilation, and Air Conditioning (HVAC)

SDG&E has proven leadership in HVAC innovation. As the residential HVAC lead for almost four years, SDG&E's proven statewide leadership has identified opportunities to synergize customer offerings with complete cradle to grave innovative through our upstream, midstream and downstream HVAC programs. SDG&E has collaborated with HVAC industry stakeholders to increase and optimize the performance of the HVAC programs to increase customer comfort, improve air quality, reduce operating costs, and save energy for all customer segments. As the HVAC marketplace evolves, SDG&E has incorporated Pay-for-Performance contracts, customer-centric design, cost reductions, increased energy savings, Advanced Meter Infrastructure data analytics, Integrated Demand Side Management solutions, whole building integration, and cutting edge advanced technologies to meet the demands of the changing landscape of California's Legislation (e.g. AB 758, SB 793, SB 1414, SB 350, AB 802).

2. Midstream Plug Load and Appliances (PLA)

SDG&E's innovative approach will accelerate market-based energy-efficient purchases. A strong drive to identify process improvements, reduce costs and resources to implement effective programs while improving the customer experience requires a core team of creative, thoughtful innovators. In early 2016, SDG&E overhauled and redesigned the water and energy-savings kit program, part of the Plug Load and Appliance program. SDG&E leveraged our team's extensive experience with sourcing, fact-based negotiating and contracting to secure volume discount pricing and streamline processes resulting in a 50% reduction in the cost of water and energy-savings kit administration. Additionally, SDG&E reduced customer order fulfillment to less than 10 days improving the customer experience.

SDG&E will be leveraging the team's strengths and experience from the other IOUs to realize significant results on a statewide scale. SDG&E believes that the statewide administration of the midstream PLA Program can elevate access of efficient end-use products while facilitating emerging energy management technologies.

As the statewide lead for the midstream PLA Program, SDG&E will partner with manufacturers, distributors, retailers and other influential market participants to develop comprehensive and innovative initiatives that reduce energy usage across technologies with high savings potential. SDG&E intends to consider multiple intervention strategies for program delivery including, but not limited to Retail Products Platform, Point of Sale or a hybrid approach. Additionally, upstream and midstream partnerships will be leveraged to increase the visibility and eventually decrease the cost of energy management technology. SDG&E also intends to collaborate with those key market actors to increase demand for national connectivity standards and protocols, which will ultimately improve adoption and customer experience for those technologies. Finally, SDG&E recognizes that an energy management hub, be it physical or virtual, will be an integral part of a home owner's energy management. Through this home network, customers will have unprecedented access to information and control of their homes.

3. Residential QI/QM (Downstream Pilot)

The rapid growth of air conditioning in California homes has made it one of the state's largest energy consuming end-uses and the single largest contributor to peak demand. Activities designed to improve HVAC efficiency, therefore, provide a significant opportunity to improve energy efficiency and reduce peak power demand. Historically, programs that have targeted maintenance and installation aspects of the HVAC market have been plagued with poor cost

effectiveness, low realization rates, and minimal market participation. This has resulted in mixed opinions and interest from the HVAC industry.

In alignment with the California Long Term EE Strategic Plan¹⁷, SDG&E will seek to overcome the barriers that have caused program performance issues in the past. This strategy will employ a five point approach:

- a. Improve HVAC system performance to generate greater savings for customers;
- b. Enhance requirements to insure that only qualified contractors can participate;
- c. Simplify the assessment and measurement approach to optimize cost effectiveness;
- d. Employ a pay for performance approach to align incentives with savings; and
- e. Create value propositions that address and overcome the “run to fail” mentality for equipment maintenance and installation.

In addition to the changes described above, these efforts will result in customers increasingly valuing the improved health and safety and lower maintenance or replacement costs better HVAC systems can provide.

VI. GOVERNANCE

To ensure success of this new statewide administration model, the IOUs are working to develop a statewide program governance structure for a number of administration elements, such as program budgets and customer satisfaction. The PAs will attempt in good faith to resolve any dispute or concern arising out of or in relation to the statewide administration of energy efficiency programs through negotiations between an authorized representative of each of the PAs with authority to settle the relevant dispute via Regular Meetings. When agreement cannot be reached via these meetings, any PA can trigger the formal Commission dispute resolution process. The following is a discussion of how IOUs intend to address certain topics that may benefit from governance. The governance process must be flexible in order to allow PAs to adjust as they gain experience with statewide program administration.

Communication

To promote statewide program collaboration, all PAs will participate in periodic meetings to review key issues including program performance, implementer performance (key

¹⁷ California Energy Efficiency Strategic Plan, Section 1 located at http://www.energy.ca.gov/ab758/documents/CAEnergyEfficiencyStrategicPlan_Jan2011.pdf.

performance indicators) and program direction. The Lead PA is responsible for hosting these meetings. All PAs will file regulatory documents and provide periodic reporting. The Lead PA will file on behalf of the overall statewide programs and the other PAs will report on local impacts (savings and budget). All PAs are responsible for regular and ongoing communications, above and beyond compliance filings and regulatory reporting requirements, for program elements specific to their own service territory.

Contract and Fiscal Management

The Lead PA is responsible for program monitoring and oversight, including but not limited to savings, budget, key performance indicators and other contract terms. The Lead PA is not authorized to unilaterally make budget decisions without explicit approval from affected PAs. Upon which time, the Lead PA is responsible for following the regulatory compliance process should said change trigger an Advice Letter or update to the Implementation Plan.

Downstream Programs: Custom Project Support

For downstream statewide programs, the Implementer, in coordination with the Lead PA, is responsible for consistently applying regulatory requirements for custom projects. Custom projects may be additionally supported by local account representatives that can help the customer and Implementer with project development.

New Programs, Material Scope Changes, Program Closures

In the event that a PA identifies a need for a new upstream or midstream program, this proposal should be presented to all PAs for consideration within their portfolios. If all PAs agree that the new program meets a market need in a cost-effective manner that leads to market transformation, the program will be put forth as a statewide program through an Advice Letter to the Commission. No one PA can unilaterally launch a statewide program without the broad support, including budget and energy savings commitments, from the other PAs. Additionally, the PA that proposes the program is not the presumptive lead and the determination for Lead PA for the new program is to be addressed among all PAs. If consensus cannot be reached for a proposed new upstream or midstream program, a non-statewide approach can be brought to the Commission for consideration with sufficient justification from the proposing PA.

Changes to existing program scope and budget must be discussed among all PAs as there may be a material impact should one PA assert a material change to their budget commitments. Proposals to close a program must have agreement among all PAs before filing an Advice Letter to advise the Commission of intent to close a program.

Statewide Program Council

A Program Council will be formed for each statewide program, to serve as an oversight body to support the PAs in decision-making and strategic direction. The Program Council is comprised of authorized representatives of participating PAs. All participants must be invested in the chosen outcome and a consensus approach is preferred to prevent those in the minority feeling marginalized or left out of the decision-making process.

Program Council Responsibilities to Include:

- Informed Decision-making: review materials, provide feedback and ask questions, as necessary to make an informed decision on the matter-at-hand.
- Active Participation: Attend meetings, share opinions and experience, ask questions and designate a delegate when necessary.

Dispute Resolution

In the event of a dispute between the PAs concerning the design, implementation or performance of any statewide-administered energy efficiency program, such matter or matters in dispute shall be finally settled in a meeting of the Program Council or, if necessary, by the Commission.

VII. ROLES AND RESPONSIBILITIES IN STATEWIDE PROGRAM ADMINISTRATION

In D.16-08-019, the Commission laid the foundation for the relationship between a Lead Administrator and the other Program Administrators, expecting “a consultative and collaborative process with the other administrators, either via the CAEECC or via separate sector and/or program-level coordination venues created and hosted by the lead administrators and involving all other relevant administrators.”¹⁸ In a collaborative and inclusive process, identification of key program administrator responsibilities and the corresponding roles between the Lead

¹⁸ D.16-08-019 p. 54

Program Administrator, Non-Lead Program Administrators (herein referred to as Other Program Administrators), and Statewide Implementer(s) are essential in the successful management of statewide programs. It is expected that the assigned duties will vary among upstream, midstream, and downstream programs. However, the Commission notes that maintaining the connectivity between the IOUs and their customers is considered critical for success.¹⁹ Customers will largely continue to engage in energy efficiency programs through the local utility websites, use of local marketing campaigns, local outreach efforts, and call centers, and potential engagement from local account representatives.

For each statewide program, the IOUs will detail specific roles and responsibilities in the distinct implementation plans, to be developed following Business Plans filings. Following are some key principles governing the relationship between the Lead and Other Program Administrators:

- The Lead PA has lead responsibility for program design and delivery, procurement, contract administration (including co-funding agreements where appropriate), invoicing, and contract payments. Final decisions regarding program design and delivery, in collaboration with Implementer(s), shall be agreed upon by all IOU administrators with guidance from the Program Council as necessary.
- The Lead PA is responsible for overseeing Implementer performance, including the achievement of contract goals, meeting energy savings and cost-effectiveness goals, and achieving customer satisfaction service levels in all IOU service territories.
- The Lead PA should consider, support, and where feasible, facilitate all local HOPPs and program partnerships, including those with publicly-owned utilities and public agencies, which address local issues or locational constraints.
- The Lead PA (or Implementer) shall provide regular reports including energy savings accomplishments, energy savings forecasts, incurred costs, forecasted costs, and other relevant metrics to Other PAs.

¹⁹ D.16-08-019, Conclusion of Law 61: “Utilities have an ongoing ability and responsibility to determine the needs to serve their customers.”

- The PAs will work together to grant relevant and appropriate data access and/or operations system access to selected Implementer(s), and ensure Implementer complies with Commission data security and privacy requirements.
- The Lead PA is not authorized to exceed approved IOU service territory budgets without written consent of all IOU administrators through the Program Council, as necessary.
- All IOUs may propose changes in program funding, or propose cancelation of program activity, based on local concerns or portfolio needs, including fund shifting. Changes should be approved by the impacted IOU administrators through the Program Council.

Statewide administration will require the coordination and collaboration of the statewide Lead PA, other PAs funding the statewide program, and Implementer(s) chosen to design and deliver the statewide programs. Clear roles and responsibilities for each party should result in efficiencies by minimizing duplication of effort. The IOUs envision four high-level functional areas:

- Solicitation Management
- Program Management
- Program Support
- Evaluation, Measurement, and Verification (EM&V)

A high-level overview of the various roles and responsibilities by function and task are provided below. While the categories will remain consistent, roles and responsibilities for the various tasks may differ across types of programs and market interventions and updates will be made as necessary. As statewide administration is a new concept, roles and responsibilities may evolve over time to ensure we achieve the objectives for statewide administration, as set forth by the Commission in D.16-08-019.

Category 1: Solicitation Management

Request for Proposal (RFP) Design	
Lead PA	(1) Host RFP design meeting to gather input on the general vision and direction of the program and determine applicable intervention strategies to be addressed by RFP. (2) Develop appropriate metrics for each strategy including budget, savings and cost-effectiveness targets, target sectors / subsectors, key performance indicators, etc.

Request for Proposal (RFP) Design	
Other PA	(1) Provide input on the general RFP design and vision for the program.
	(2) Provide input regarding appropriate metrics for each strategy including budget, savings and cost-effectiveness targets, target sectors / subsectors, key performance indicators, etc.
Implementer	Not yet engaged.

RFP Management	
Lead PA	(1) Issue RFP.
	(2) Host PRG meetings in accordance with RFP process.
Other PA	(1) Participate in PRG meetings.
Implementer	Not yet engaged.

Category 2: Program Management

Program Design (as reflected in IP)	
Lead PA	(1) Provide input to Implementer on program design once bids are solicited.
Other PA	(1) Provide input to Lead PA on program design once bids are solicited.
Implementer	(1) Design program approach based on intervention strategies; budget, energy savings, and cost-effectiveness targets; other key performance indicators; and target sectors / subsectors.
	(2) Incorporate stakeholder input into final program design as collected via the CAEECC process.

Implementation Plans	
Lead PA	(1) Upon selection, Lead PA and Implementer will refine program scope, as needed.
Other PA	(1) Participate in CAEECC to provide input on Implementation Plans.
Implementer	(1) Upon selection, Lead PA and Implementer will refine program scope, as needed.
	(2) Implementer will act as primary author of Implementation Plan, to be approved of initially by Lead PA before presented to CAEECC for stakeholder input.
	(3) Present Implementation Plan at CAEECC to solicit input on Implementation Plan.

Key Performance Indicators	
Lead PA	(1) Upon contract award, and as a part of post-award refinement, Lead PA and Implementer finalize Key Performance Indicators.
	(2) Gather data on a monthly basis and review Implementer performance along with program performance on a quarterly basis.
	(3) Lead PA is the sole determiner of rewards or corrective action based on Implementer performance.

Key Performance Indicators	
Other PA	(1) Other PA is kept informed of Key Performance Indicators.
	(2) Provide feedback to Lead PA and/or Implementer based on Key Performance Indicators, and any concerns or comments on efforts/results in own territory.
Implementer	(1) Implementer gathers data for Key Performance Indicators on a rolling or monthly basis (as relevant).

Program Delivery	
Lead PA	(1) Provides support to Implementer, including use of local utility website, local marketing campaigns, local outreach efforts, call centers, and engagement from account representatives.
Other PA	(1) Provides support to Implementer, including use of local utility website, local marketing campaigns, local outreach efforts, call centers, and engagement from account representatives.
Implementer	(1) Independently deliver program to target sectors / subsectors. Implementer(s) may collaborate with local account representatives as relevant.
	(2) Monitor performance to ensure program meets budget, energy savings, and cost-effectiveness targets as well as other key performance indicators.
	(3) Continuously improve program delivery based on evaluation of program performances.

Program Support and EM&V needs for statewide programs will be determined after Implementation Plans are developed.

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**

Application of San Diego Gas & Electric
Company (U 902-M) to adopt Energy Efficiency
Rolling Portfolio Business Plan Pursuant to
Decision 16-08-019.

Application No. A.17-01-____
(Filed January 17, 2017)

CERTIFICATE OF SERVICE

I hereby certify that a copy of **APPLICATION OF SAN DIEGO GAS & ELECTRIC COMPANY (U 902-M) TO ADOPT ENERGY EFFICIENCY ROLLING PORTFOLIO BUSINESS PLAN** has been electronically mailed to each party of record of the service lists in R.13-11-005. Any party on the service list who has not provided an electronic mail address was served by placing copies in properly addressed and sealed envelopes and by depositing such envelopes in the United States Mail with first-class postage prepaid.

Copies were also sent via Federal Express to the Chief Administrative Law Judge Karen V. Clopton.

Executed this 17th day of January, 2017 at San Diego, California.

/s/ Tamara Grabowski

Tamara Grabowski



California
Public Utilities
Commission



[CPUC Home](#)

CALIFORNIA PUBLIC UTILITIES COMMISSION

Service Lists

PROCEEDING: R1311005 - CPUC - OIR CONCERNIN

FILER: CPUC

LIST NAME: LIST

LAST CHANGED: JANUARY 12, 2017

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