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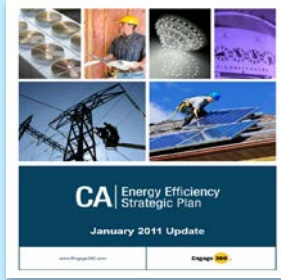
BUILDING A BETTER ENERGY EFFICIENT FUTURE

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



A  Sempra Energy utility®

Energy Efficiency is California's Preferred, Cost-effective Resource



SUPPORT STATE ENERGY
POLICY GOALS



PLATFORM TO PROVIDE
SOLUTIONS



IMPROVE CUSTOMER
EXPERIENCE &
ENGAGEMENT



PURSUE STREAMLINED AND
FLEXIBLE POLICY
FRAMEWORK



USE PROGRAMS TO
OPTIMIZE GENERATION
AND T&D COSTS

Overview of Business Plan Filing

- SDG&E's business plan provides a high-level discussion of how SDG&E will achieve CPUC statewide EE goals and strategies and charts a course towards achieving zero net energy and doubling energy efficiency savings
- The plan articulates goals and budgets through 2025:

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

EE 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

- New CPUC requirements for statewide program management and outsourcing
 - ▶ At least 25% of the total budget devoted to statewide programs that will be administered by one lead IOU
 - ▶ At least 60% of the total budget allocated to programs designed and delivered by third parties by 2020

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

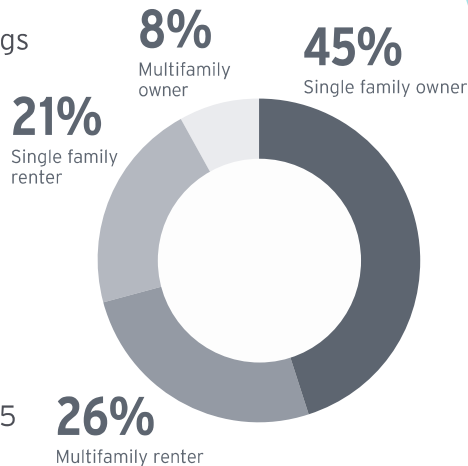
7% of customers
participated in 2013-2015
downstream EE programs



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

The Past, Present, and Future of RESIDENTIAL ENERGY EFFICIENCY

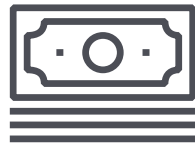
DELIVERY APPROACH

PAST & PRESENT



FUTURE

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

The Past Present, and Future of COMMERCIAL ENERGY EFFICIENCY

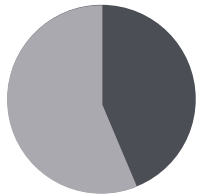
MARKET CHARACTERIZATION

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



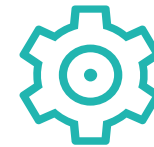
Small customers, small businesses

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**



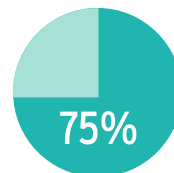
Automation will become more prevalent

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**

The Past Present, and Future of COMMERCIAL ENERGY EFFICIENCY

DELIVERY APPROACH

PAST & PRESENT



FUTURE



- 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.

The Past, Present, and Future of **PUBLIC ENERGY EFFICIENCY**

MARKET CHARACTERIZATION

PAST & PRESENT



FUTURE

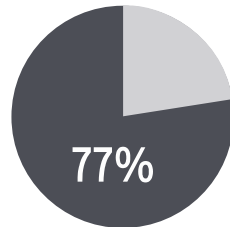
Relatively small sector

- 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

The Past, Present, and Future of **PUBLIC ENERGY EFFICIENCY**

DELIVERY APPROACH

PAST & PRESENT

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



FUTURE

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

The Past, Present, and Future of INDUSTRIAL ENERGY EFFICIENCY

MARKET CHARACTERIZATION

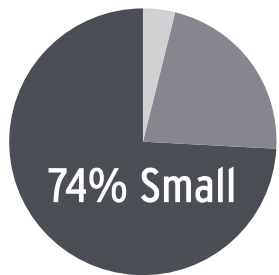
PAST & PRESENT



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

The Past, Present, and Future of INDUSTRIAL ENERGY EFFICIENCY

DELIVERY APPROACH

PAST & PRESENT



FUTURE

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



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

The Past, Present, and Future of AGRICULTURAL ENERGY EFFICIENCY

DELIVERY APPROACH

PAST & PRESENT



FUTURE

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



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

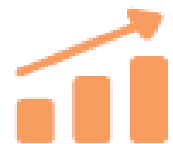


Code is dynamic and complex so market actors need continuing education

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

The Past, Present, and Future of WORKFORCE EDUCATION & TRAINING ENERGY EFFICIENCY

DELIVERY APPROACH

PAST & PRESENT



FUTURE

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