

BUILDING A BETTER ENERGY EFFICIENT FUTURE

SDG&E's Energy Efficiency Business Plan
WCEC Affiliates Forum

May 2017



SDGE

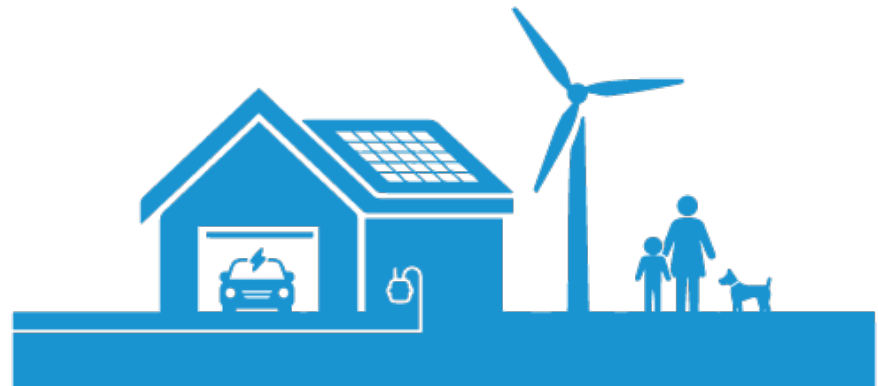
A  Sempra Energy utility®

Who We Serve

- **4,000+ employees** serve clean, reliable energy to **3.5 million customers** in San Diego and Southern Orange counties
- We **safely operate** 2,475 miles of **electric** transmission lines and 234 miles of **natural gas** transmission lines
- **We innovate** to serve our customers with **clean energy** through 1.5 million smart meters, employee inventions that make our customers' lives better and by offering customer choices that give them energy choice

Our Mission

We improve lives and communities by building the **cleanest, safest and most reliable energy company in America.**



Our Changing EE Landscape

Energy Efficiency Past	Energy Efficiency Today
3 Year Program Cycles	10 Year Rolling Portfolio
Stakeholder input via regulatory comments & protests	Ongoing stakeholder engagement via CAEECC
Individual rebates for “widgets”	Whole Building / Whole Home approach
Utilities designed and implemented programs	Utilities design portfolio and determine need - 3 rd Parties design and implement programs
Statewide consistent programs and local programs available	All upstream and midstream programs now administered by a single PA for the entire state



Overview of Business Plan Filing

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
GWh Goal	236 – 238	223 – 214	214
MW Goal	44 – 45	43	44
Therm Goal (MM)	3.9 – 4.0	3.7 – 3.8	3.8

New CPUC requirements for statewide program management and outsourcing:

- At least 60% of the total budget allocated to programs **designed** and **delivered** by third parties by 2020
- At least 25% of the total budget devoted to statewide programs that will be **administered by one lead IOU**

Statewide Program Administration

- CPUC Decision 16-08-019
 - “All upstream and midstream programs . . . shall be delivered statewide . . .”
 - Additionally, “at least four downstream programs to be piloted on a statewide basis”
- SDG&E proposed as lead Program Administrator for:
 - HVAC Residential and Commercial Upstream/Midstream
 - Residential HVAC Quality Installation and Quality Maintenance (QI/QM)

Statewide Upstream/Midstream HVAC

- SDG&E is not the Statewide PA until and unless confirmed in CPUC approval
- Final CPUC Decision not expected sooner than late 2017
- Existing robust statewide efforts will likely remain in effect until Statewide PA program takes effect
- Statewide PA program will very likely be designed and delivered by a third party

Highlights from SDG&E's Business Plan

- Upstream highlights:
 - Work further upstream with manufacturers and industry professionals to identify greater savings opportunities
 - Establish/maintain regional collaborations to increase market power and be better positioned for market transformation
- Residential QI/QM highlights:
 - Ensure HVAC measures are cost-effective, save energy and lower peak demand
 - Assist industry with developing a clear value proposition for a profitable QI/QM business
 - Promote increasing Customer awareness of the value of QI/QM

Thank you!

Paul D. Thomas
HVAC Strategy Lead
858-636-3931 office
pthomas@semprautilities.com



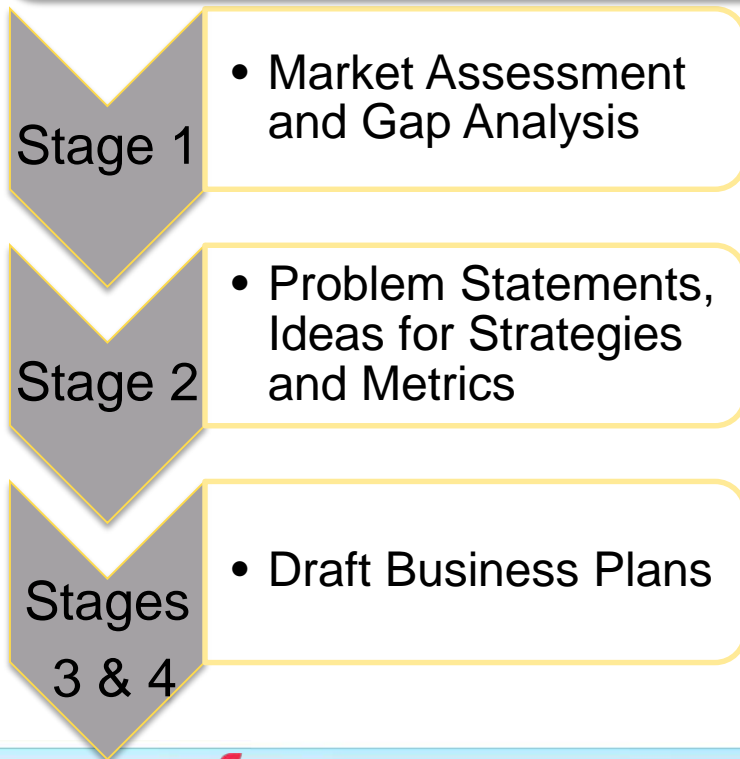
Appendix

Business Plan Guidance

- A template was provided in D.15.10.028
- Five main sectors were required for inclusion in the business plan
 - Residential
 - Commercial
 - Industrial
 - Agricultural
 - Public
- A cross-cutting chapter was also required
 - Workforce Education & Training
 - Codes & Standards
 - Emerging Technology
 - Finance

Business Plans and Commission Guidance

Business plans were filed with the CPUC on January 17th to describe our strategy for supporting the state's energy efficiency goals and seek funding approval



Stakeholder Input



Business Plan vs. Implementation Plan

- Business Plans
 - High level, strategic documents that articulate a path for achieving objectives set forth by the CPUC for the 10 year rolling portfolio
 - Six total sectors
 - Portfolio and sector level metrics, budgets and milestones
 - Includes strategies – not programs
- Implementation Plans
 - Details of programs that will implement the BP Strategies
 - Goes through the stakeholder process (CAEECC)
 - Replaces the old Program Implementation Plans (PIPs)
 - Will not be filed but posted to the CPUC website

The Past, Present, and Future of RESIDENTIAL ENERGY EFFICIENCY

ERIZATION

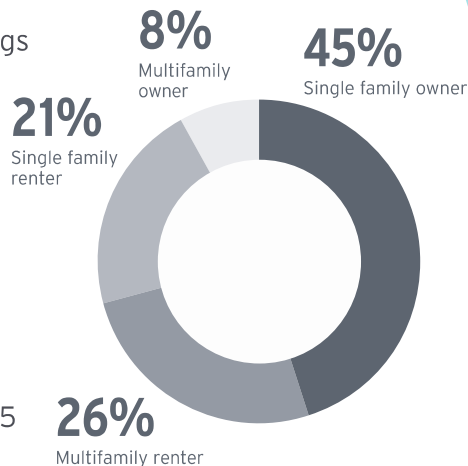
PAST & PRESENT



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

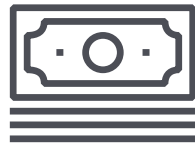
DELIVERY APPROACH

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

N

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**

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

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

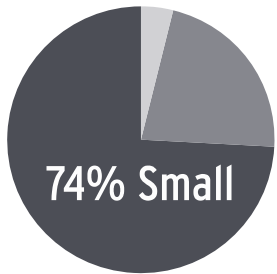


Enhanced marketing, education and outreach and reach code development will encourage participation and progress beyond existing codes and standards in private sector

The Past, Present, and Future of INDUSTRIAL ENERGY EFFICIENCY

Relatively small sector:

- 8% of electric consumption
- 5% of gas consumption
- 3% of EE spending
- 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

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

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

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



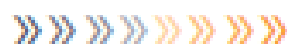
Strategic Energy Management for
agriculture can accommodate SDG&E's
agricultural sector



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

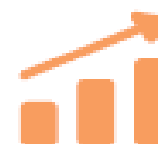


Code is dynamic and complex so market actors need continuing education

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

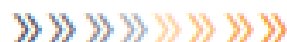
Trade professionals will shift focus from single end-uses to comprehensive approach

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