BUILDING A BETTER ENERGY EFFICIENT FUTURE

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

May 2017
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

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

The plan articulates goals and budgets through 2025:

<table>
<thead>
<tr>
<th></th>
<th>Short-Term 2018-2020</th>
<th>Mid-Term 2021-2023</th>
<th>Long-Term 2024-2025</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Budget</td>
<td>$116,456,309</td>
<td>$116,456,309</td>
<td>$116,456,309</td>
</tr>
<tr>
<td>GWh Goal</td>
<td>236 – 238</td>
<td>223 – 214</td>
<td>214</td>
</tr>
<tr>
<td>MW Goal</td>
<td>44 – 45</td>
<td>43</td>
<td>44</td>
</tr>
<tr>
<td>Therm Goal (MM)</td>
<td>3.9 – 4.0</td>
<td>3.7 – 3.8</td>
<td>3.8</td>
</tr>
</tbody>
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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!

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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.

Stage 1
- Market Assessment and Gap Analysis

Stage 2
- Problem Statements, Ideas for Strategies and Metrics

Stages 3 & 4
- Draft Business Plans

Stakeholder Input
- AE and Customer Interviews
- Past and Targeted Surveys
- Coordinating Committees

California EE Coordinating Committee Website: www.caeecc.org
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

Past & Present

One of SDG&E’s largest sectors
- 36% of total electric consumption
- 32% of EE spending
- 24% of electric EE savings

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

66% of electric consumption is comprised of plug loads

FUTURE

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

Demand convenience
Desire for solar and electric vehicle continues to grow
The Past, Present, and Future of Residential Energy Efficiency

Delivery Approach

**Past & Present**

- 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.

**Future**

- 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 for expansion of behavioral programs.
- Leverage a platform to drive customers through the adoption curve to achieve zero net energy.

P.S. ut the chapter.
The Past Present, and Future of COMMERCIAL ENERGY EFFICIENCY

**PAST & PRESENT**

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

**FUTURE**

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

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

**Brought in savings**

Highly leveraged trade professional network to sell and deliver savings

**Did not foster comprehensiveness**

Resulted in single end-use, non-comprehensive projects

**Offered bonus to encourage comprehensive projects**

13 projects qualified in 2013-2015

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

### Future

- **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:
74% Small

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

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

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

Outsourcing and leveraging external expertise will help:
- Maximize resources
- Keep costs down

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

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

Limited number of comprehensive projects

Citations for data presented on this figure are included throughout the chapter.
The Past, Present, and Future of
AGRICULTURAL ENERGY EFFICIENCY

MARKET CHARACTERIZATION

A very challenging market
- Expensive land
- Poor soil
- Expensive and limited water

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

San Diego County has more farms than any other county in the U.S.

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

Separate and focused approach that allows for specialization to the market

Plan to outsource to attract expertise in area

Lack of customization to unique sector needs, barriers and challenges

Lack of collaboration with stakeholders and industry partners

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

Citations for data presented on this figure are included throughout the chapter.
The Past, Present, and Future of WORKFORCE EDUCATION & TRAINING ENERGY EFFICIENCY

MARKET CHARACTERIZATION

PAST & PRESENT

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

FUTURE

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

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)

FUTURE

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