TRIO Symposium

September 25, 2012

Mission Bay Conference Center

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Welcome!

Technology Resource Innovation Outreach (TRIO) Symposium

Aaron Panzer, Manager
Emerging Technologies Program
Pacific Gas and Electric Company

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Safety Message

In Case of Emergency

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Today's Agenda

8:30 AM	Welcome Address	**Industry Context**
9:00	Big Picture and Regulatory Context	
9:40	Codes & Standards	
10:00	Networking Break	
10:30	Supplier Diversity Program	**ET Program**
10:45	Emerging Technology Panel	
12:15 PM	Lunch and Keynote Speaker	
1:45	Incentive Programs	**Opportunities**
2:15	Third Party Programs and Solicitations	
3:00	Networking Break	
3:15	One-on-One Sessions	**Consultation**
3:15	Networking Reception	

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Background on TRIO

- Joint initiative of California's investor-owned utilities (IOUs): PG&E, SCE, SoCal Gas, and SDG&E
- Authorized for the benefit of California energy consumers by the California Public Utilities Commission
- Funded through electric and gas rates

- ➢Engage early-stage entrepreneurs in Energy Efficiency and Demand Response marketplaces
- ➢Support California's billion dollar rebate and incentive programs
- ➢Benefit from customer incentives, participate as a third-party implementer, or receive development support

The Big Picture: Primer on CA Energy Industry

Hazlyn Fortune, Supervisor
Demand-Side Residential Programs, Energy Division
California Public Utilities Commission

Robyn Zander, Manager
Emerging Technologies Program
Southern California Edison

Albert Chiu, Senior Program Manager
Demand Response
PG&E

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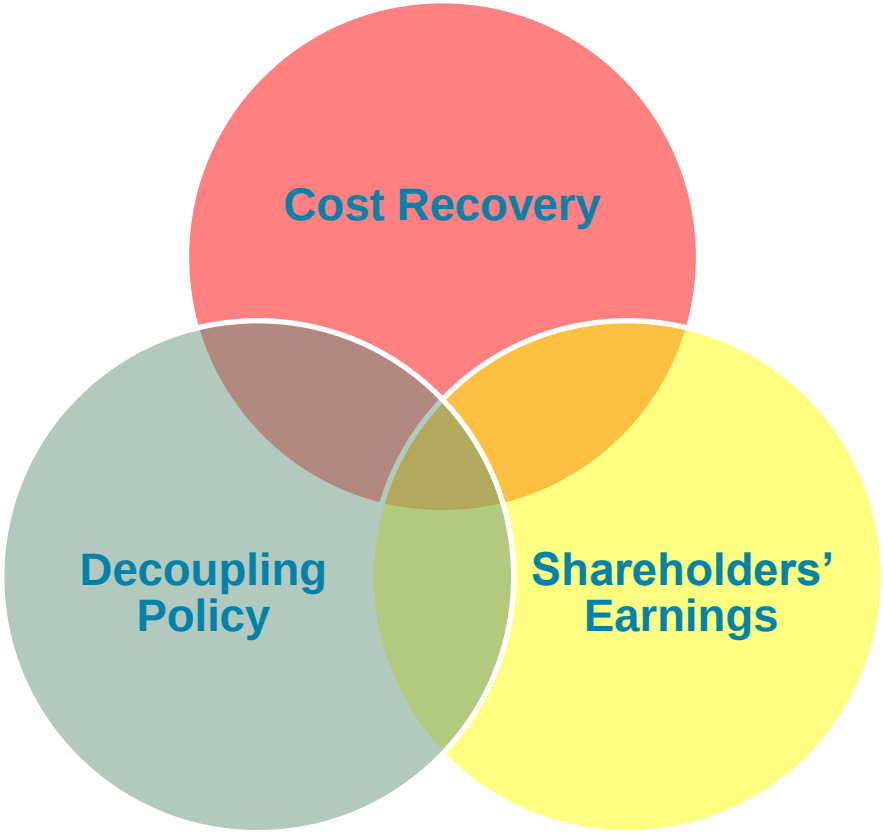
California's Progressive Utility Regulatory Model



California's Investor Owned Utilities have no incentive to sell more electricity

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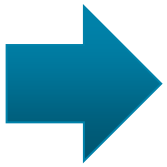
"Decoupled" Business Model

Under California's decoupling framework:

- Revenue is "decoupled" from earnings
- Regulated utilities collect only "authorized" revenues to run their business and provide a fair return on invested capital to investors
    - If sales rise above forecast levels, rates are adjusted downward
    - If sales fall below forecast levels, rates are adjusted upward



Decoupling removes the incentive to sell more

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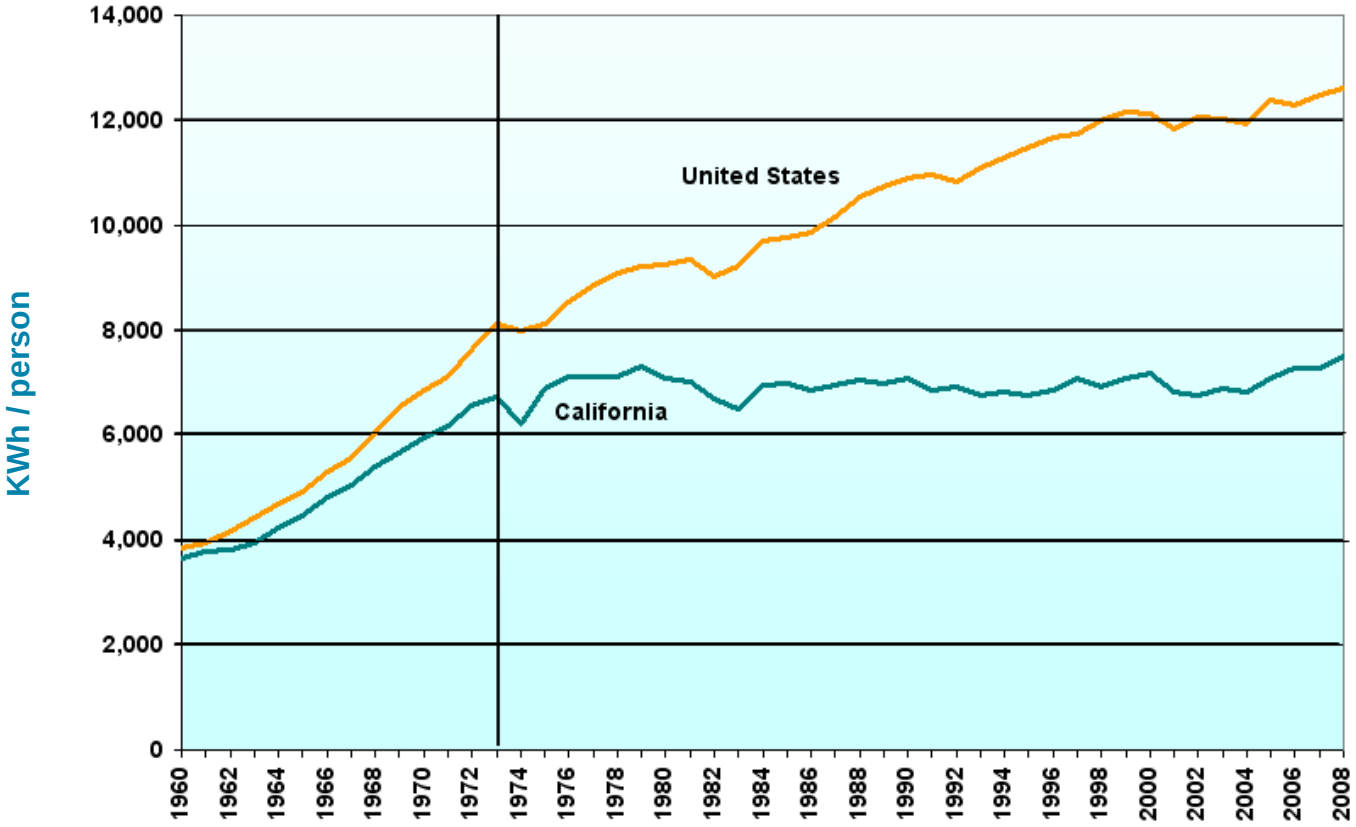
Legacy Of Energy Leadership



California Energy Commission

California per capita energy use has remained relatively flat, compared to the 50% increase in U.S. per capita energy use since 1974

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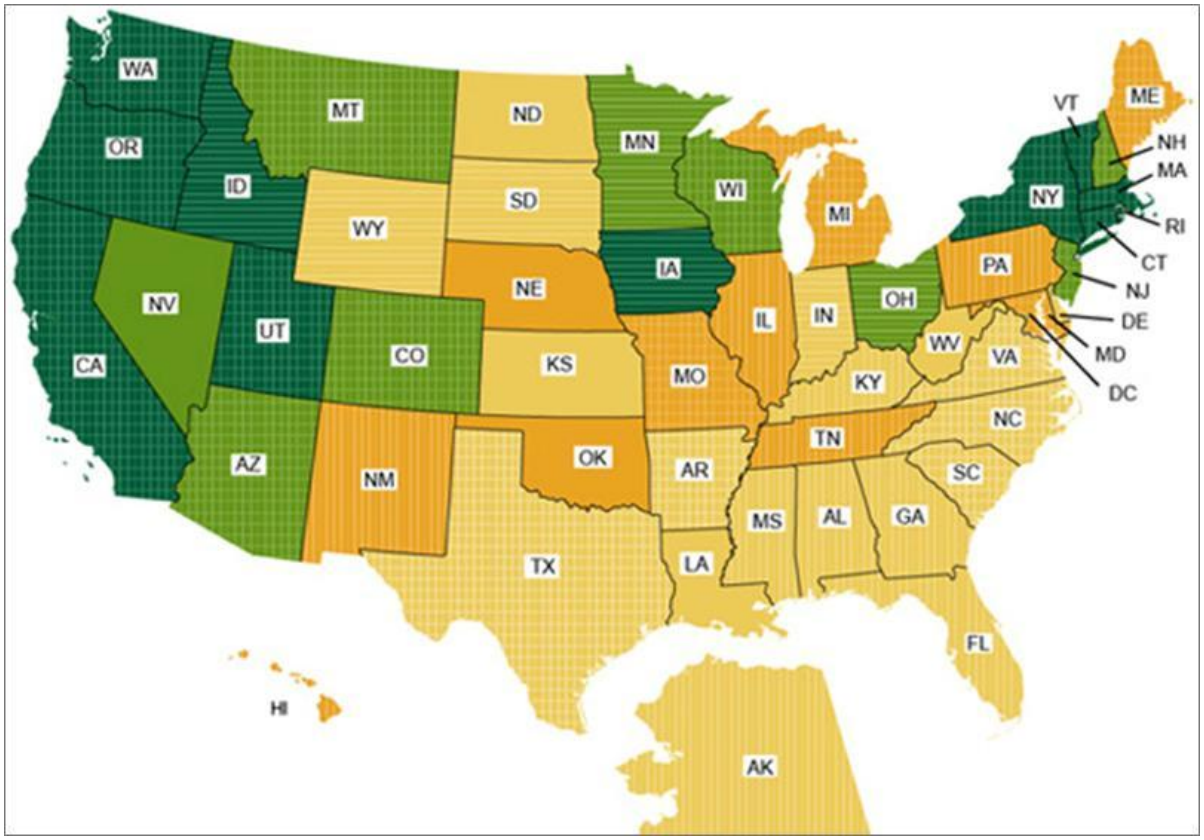
Energy Efficiency across the US



These states budgeted over 2% of electric revenues for electric energy efficiency programs in 2010

These states budgeted between 1% and 2% of electric revenues for electric energy efficiency programs in 2010

These states budgeted between 0.5% and 1% of electric revenues for electric energy efficiency programs in 2010

These states budgeted less than 0.5% of electric revenues for electric energy efficiency programs in 2010 or did not provide data

Source: DOE, Federal Energy Management Program, http://www1.eere.energy.gov/femp/financing/energyincentiveprograms.html, 2011

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Balancing Competing Priorities

Environmental Sustainability

Reliable Service

Reasonable Cost

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Utility Imperative: Balance the Grid

- Electricity cannot yet be stored easily or cheaply at scale; it must be generated as it is consumed
- Need to maintain **instantaneous balance** between electric demand and supply on the grid
- Traditionally, utilities have maintained balance by **ramping up and down supply** to match demand

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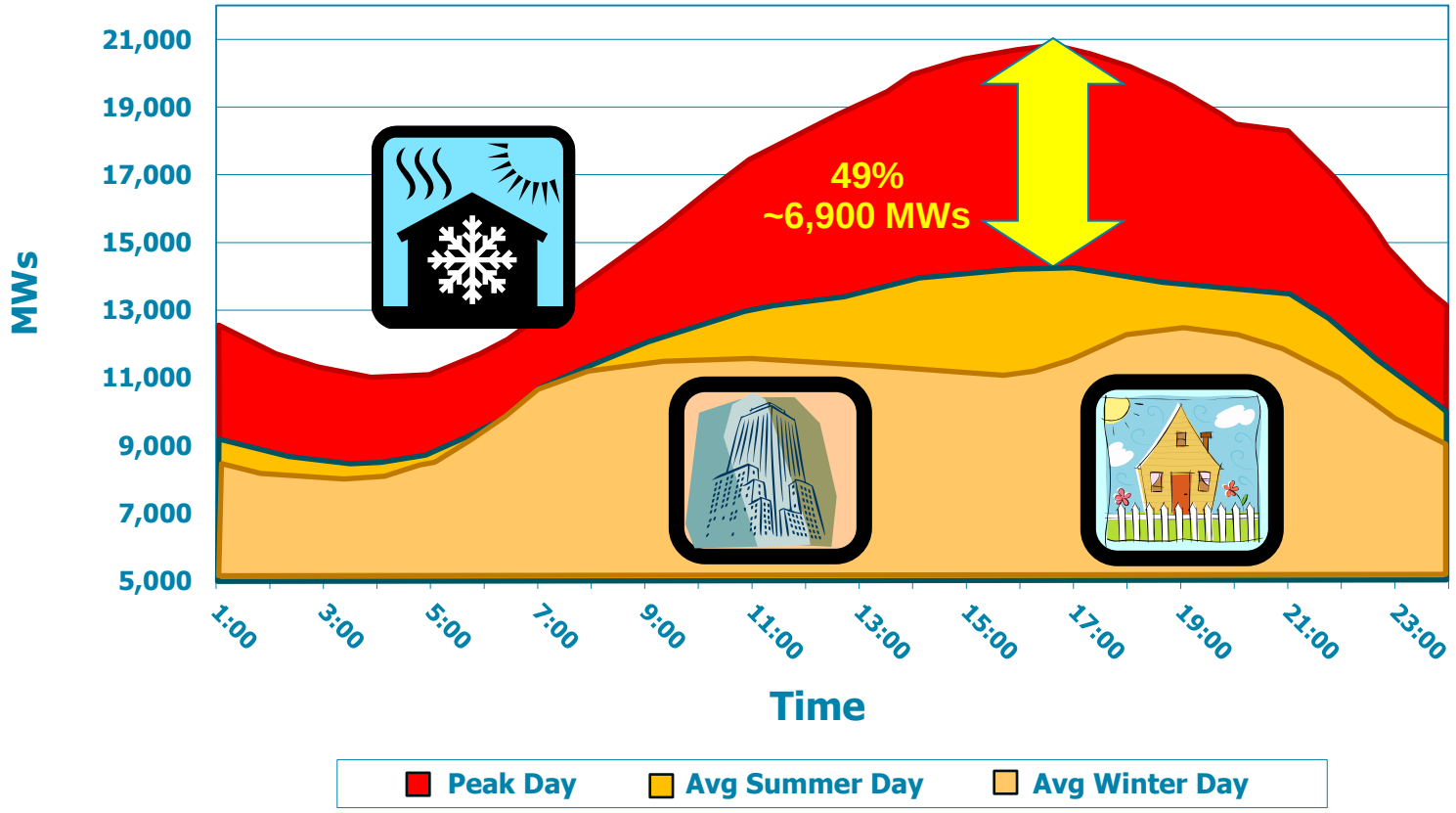
CA Summer Peak Occurs in the Late Afternoon on the Hottest Days



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Demand-side Management

Reducing electric demand is much cheaper than building new electric generation capacity

A “Negawatt” is not only cheaper, it can be delivered more quickly and has a much smaller environmental impact

Two primary ways to reduce electric demand:

1. Energy efficiency
2. Demand response

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Energy Efficiency vs. DR

Energy Efficiency

Permanent reduction in energy use at all times

Maintain the same levels of comfort / convenience

Typically, through better technology

Demand Response

Temporary reduction in energy use during peak times

Customers given an incentive to reduce their use

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EE programs impact behavior today

2010-2012 Energy Efficiency Budget and Projected Savings				
	Budget	Projected Savings (Electricity and Natural Gas)		
	(In Million)	GWH	MW	MMTH
PG&E	$ 1,338	3,100	703	108.8
SCE	$ 1,228	3,316	727	-
SDG&E	$ 278	539	107	24.2
SCG	$ 285	-	-	175.0
Total	**$ 3,129**	**6,965**	**1,537**	**308**

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Two approaches to motivating energy efficient choices

Rebates

- Large volume
- Standard systems
- Similar performance

Deemed

Standard energy savings attributed when measure deployed

Incentives

- Small volume
- Custom systems
- Unique performance

Calculated

Manual calculation of energy savings when measure deployed

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Energy Efficiency Portfolios

Multiple customer segments

Multiple channels

	Residential	Commercial	Industrial	Agriculture	Low Income
Direct to customer rebates					
In-store promotions					
Manufacturer or distributer incentives					
On-bill financing					
Third-party programs					
Government partnership programs					

Multiple market development mechanisms

- C&S advocacy / compliance training
- Emerging Technology assessments / demos / incubation
- Workforce education

Multiple technologies

- Appliances
- Lighting
- Electronics
- Buildings
  - New construction
  - Retrofits
  - Home / facility audits
- HVAC systems
- Food services
- Refrigeration
- Boilers / steam systems
- Industrial systems / processes
  - Motors
  - Pumps and fans
  - Energy Management Systems

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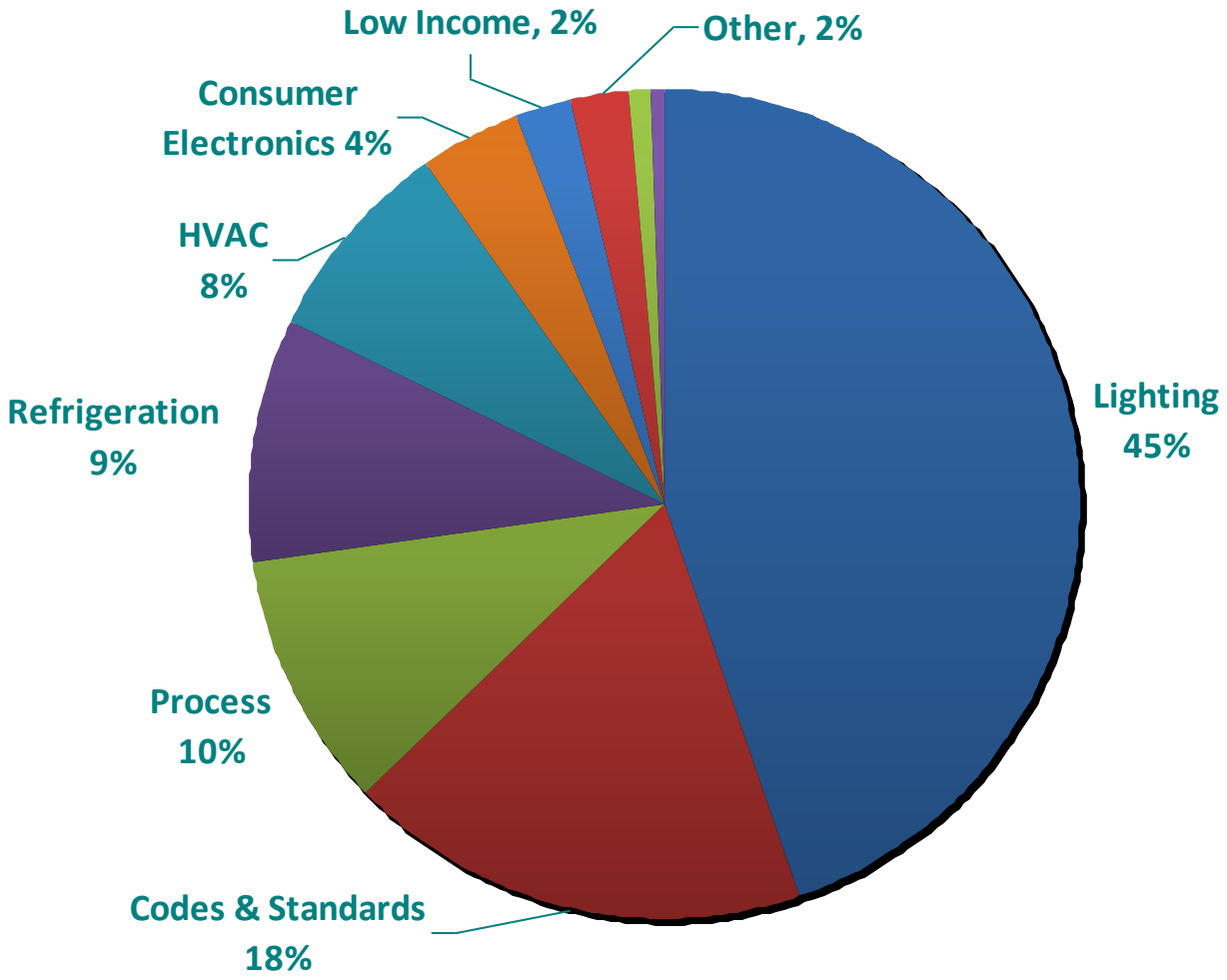
PG&E 2010 Electric Savings Drivers



Gigawatt Hour Savings: *Largest End Use Drivers*

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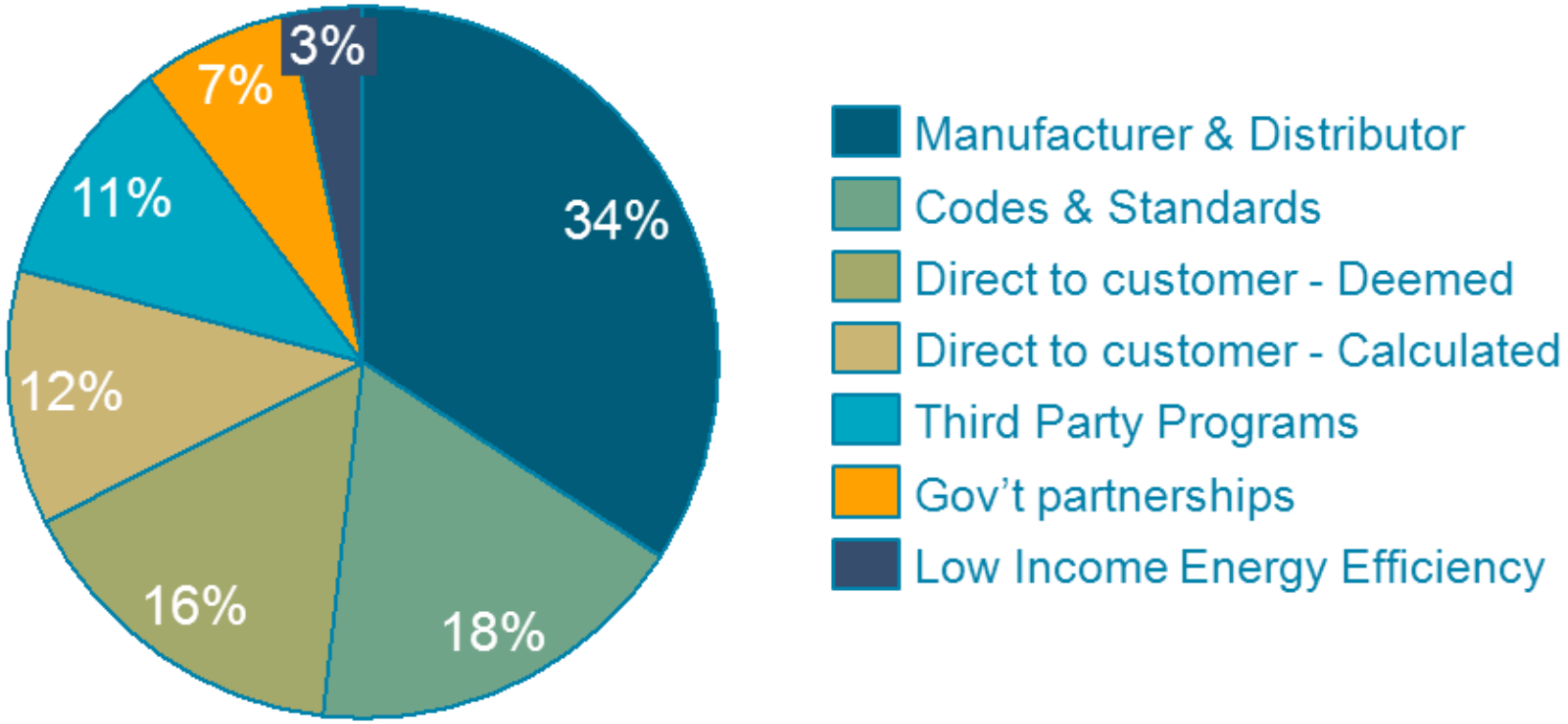
Electric Savings by Channel



2010 Peak Electric Savings by Delivery Channel (MW)

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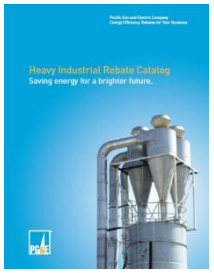
CA Success with Energy Efficiency

California has **saved more than 60,000 GWh** and more than **15,000 MW** of supply-side resources through past and present demand-side programs:

- Avoided need for **thirty 500-MW power plants**
- PG&E has contributed roughly half of the savings and has avoided 22.9 million tons of CO_2 emissions



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Some Frequently Used Terms

Acronym / Term	Detail
ET	Emerging Technologies
EE	Energy efficiency
DR	Demand response
Customized Program	Performance based incentive
Deemed Program	$ per item based incentive
TRC	Total Resource Cost
PDP	Peak Day Pricing

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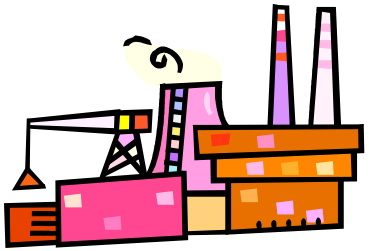
The Idea Behind Demand Response

Work with customers to reduce their electricity consumption during periods of peak demand

Keeps the light on for everyone



Reduces the need to build new power plants that may only run during peak days

Cleaner environment – reduces the need to run less efficient power plants

Reduces the overall cost of electricity

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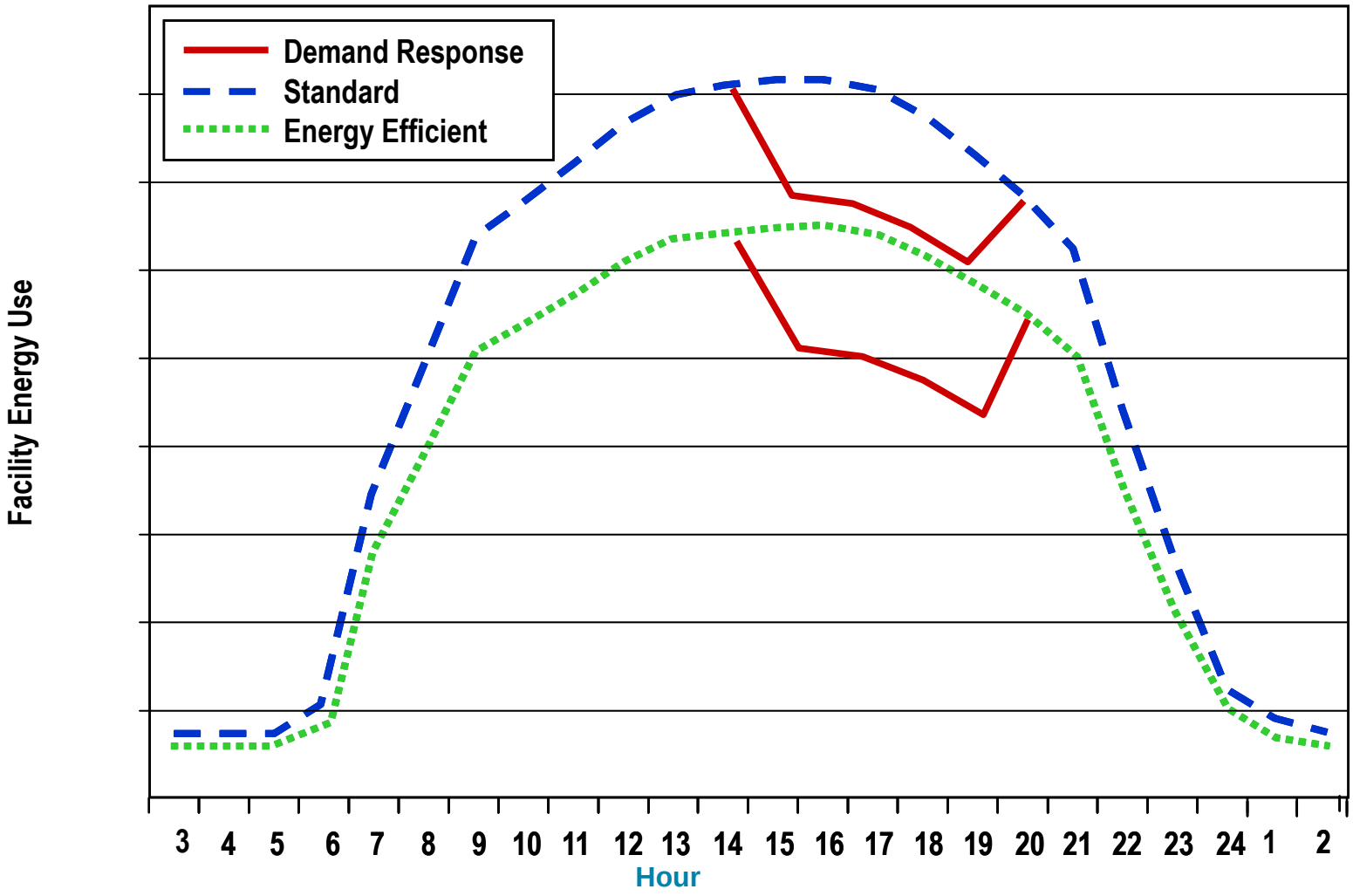
Impact of DR on customer load



Source: Public Interest Energy Research (PIER) Demand Response Research Center

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Demand Response

When requested, customers alter their routines to reduce electricity use during a relatively few critical hours of the year

Customers are given a financial reward for their reduction

Benefits:

- Reduce Stress on Grid - Power Reliability
- Substitute Peaker Power Plants

Programs:

- Dynamic Pricing Rates
- Permanent Load Shift
- Automated Demand Response

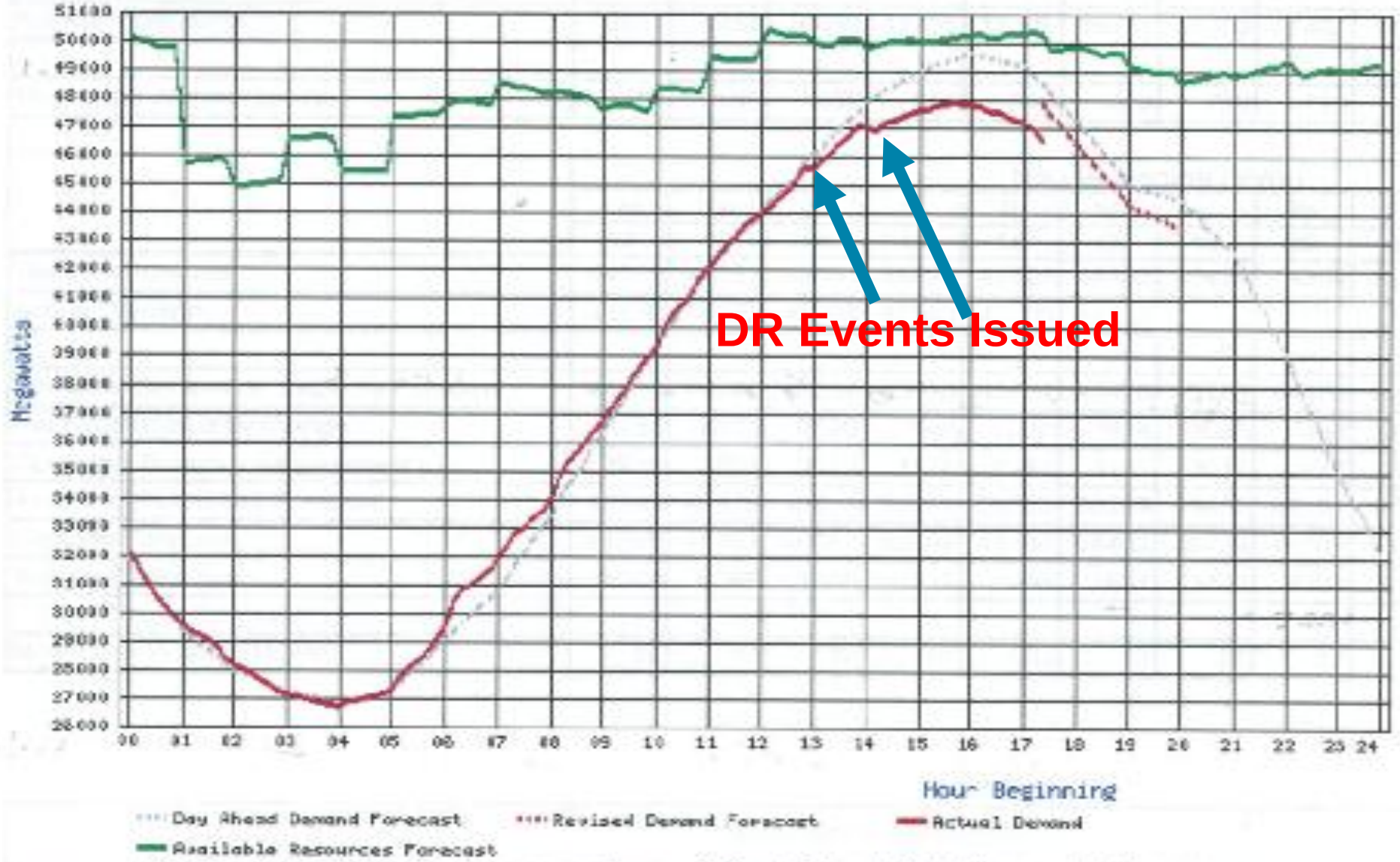
California ISO
Your Link to Power

PUBLIC MEDIA OPERATIONS CENTER

Today's Outlook /

Today's Outlook

August 30, 2007



Sudden spikes in resource curve graph may indicate false data briefly reported by system

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Demand Response Portfolios

Programs

- Price-responsive
- Reliability

Sample Program Components

- kW load reduction
- Contract period
- Eligibility (e.g. size, meter)
- Curtailment window
- Event trigger
- Notification time
- Incentive payment
- Non-compliance penalties
- Enabling technology

PG&E DR Offerings

Business Programs

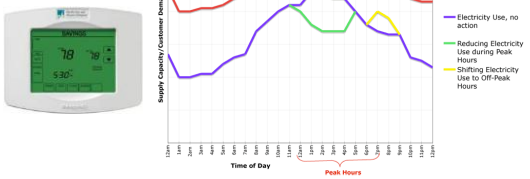
- Peak Choice
- Aggregator (retail, bilateral)
- Optional Bidding Mandatory Curtailment
- Scheduled Load Reduction
- Base Interruptible
- Critical Peak Pricing

Residential Programs

- Smart AC

Enabling Technology Programs

- Technology Incentive
- Automated Demand Response
- Permanent Load Shift



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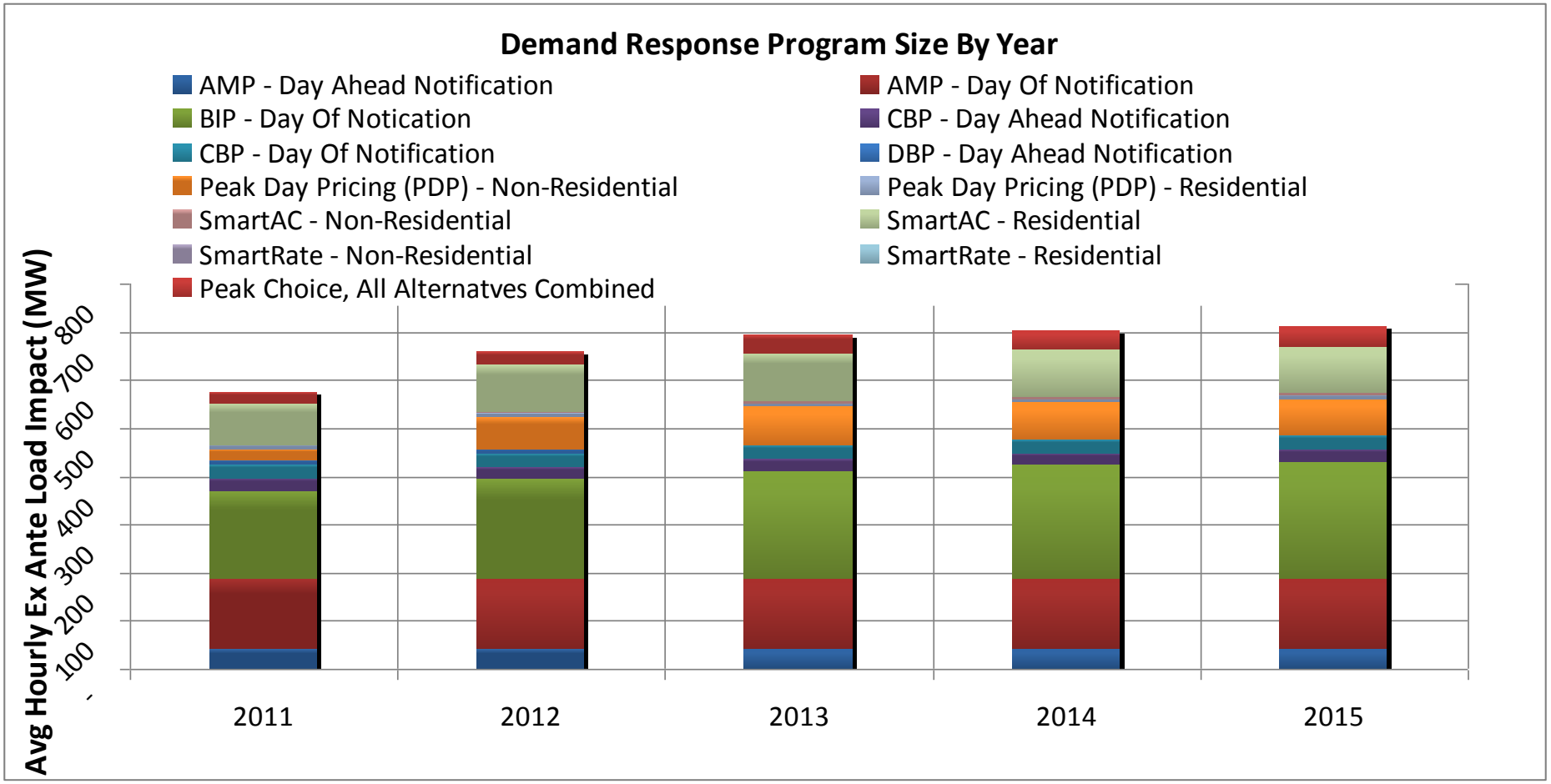
DR portfolio represents ~575 MW



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Electric Demand is a Balancing Resource

Renewable Resources

Smart Grid

Balancing Resources

Demand-side Resources

Storage

Back-up Generation

Codes and Standards

Pat Eilert, Principal

Codes and Standards

PG&E

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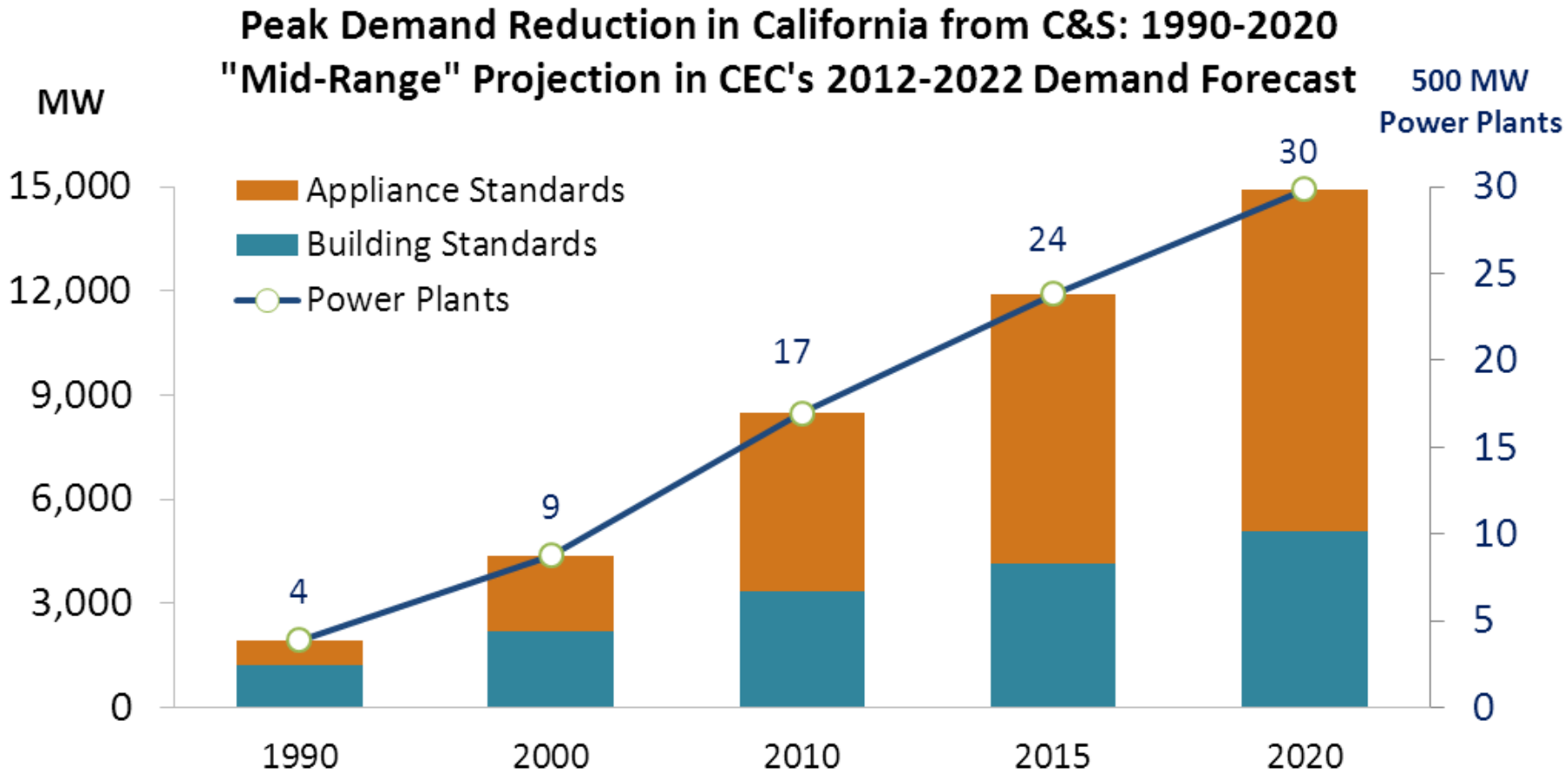
Statewide Impact of Codes & Standards



Source: Table 3-4 from CEC's 2012-20122 Demand Forecast. http://www.energy.ca.gov/2012publications/CEC-200-2012-001/CEC-200-2012-001-CMF-V1.pdf

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IOU C&S Statewide Program History

1998
First C&S program filed and approved with CPUC

→

2000
Activities expanded in response to the AB 970

→

2005
Transition from information-only to resource program

↓

2008
Increased involvement in federal standards

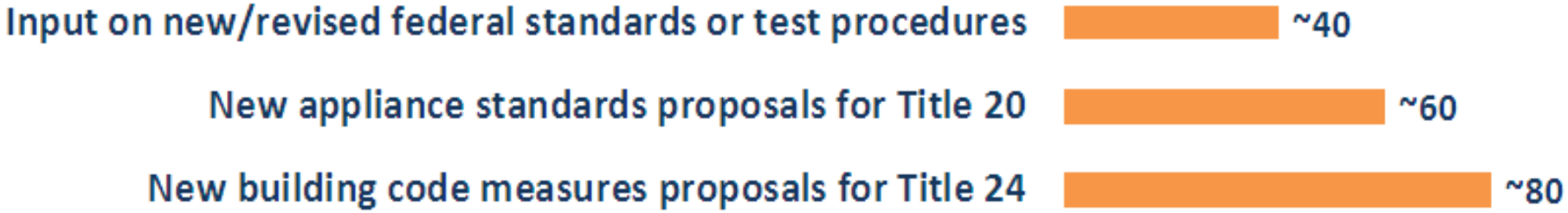
→

2010-12
Added compliance improvement and reach code

→

2013-14
Adding Planning and Coordination

C&S Program Output Since Inception:



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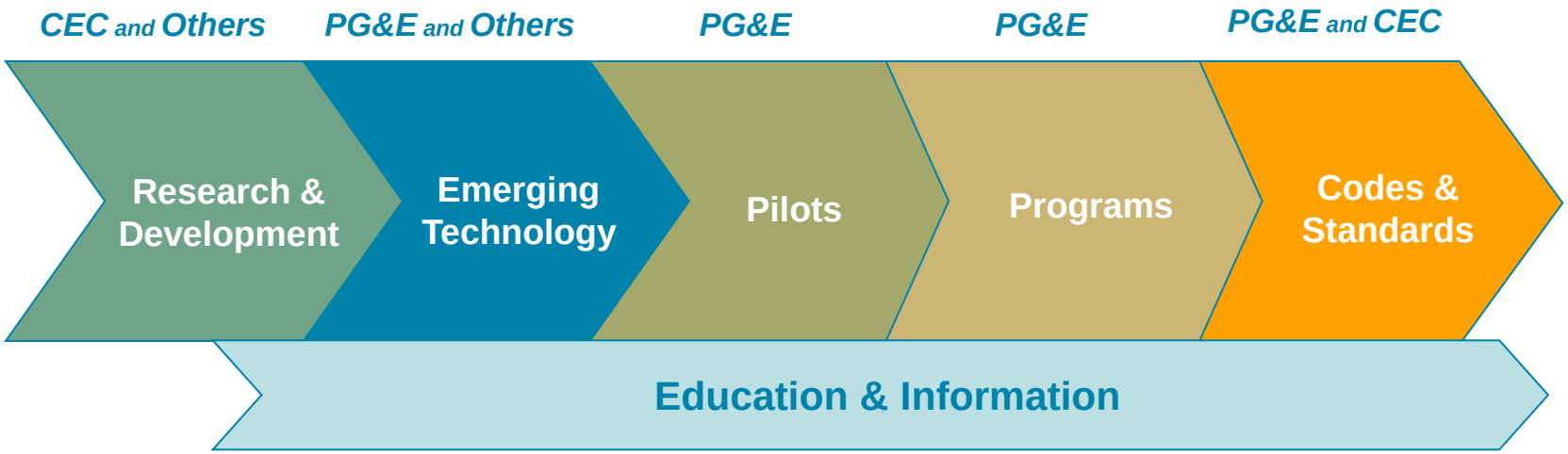
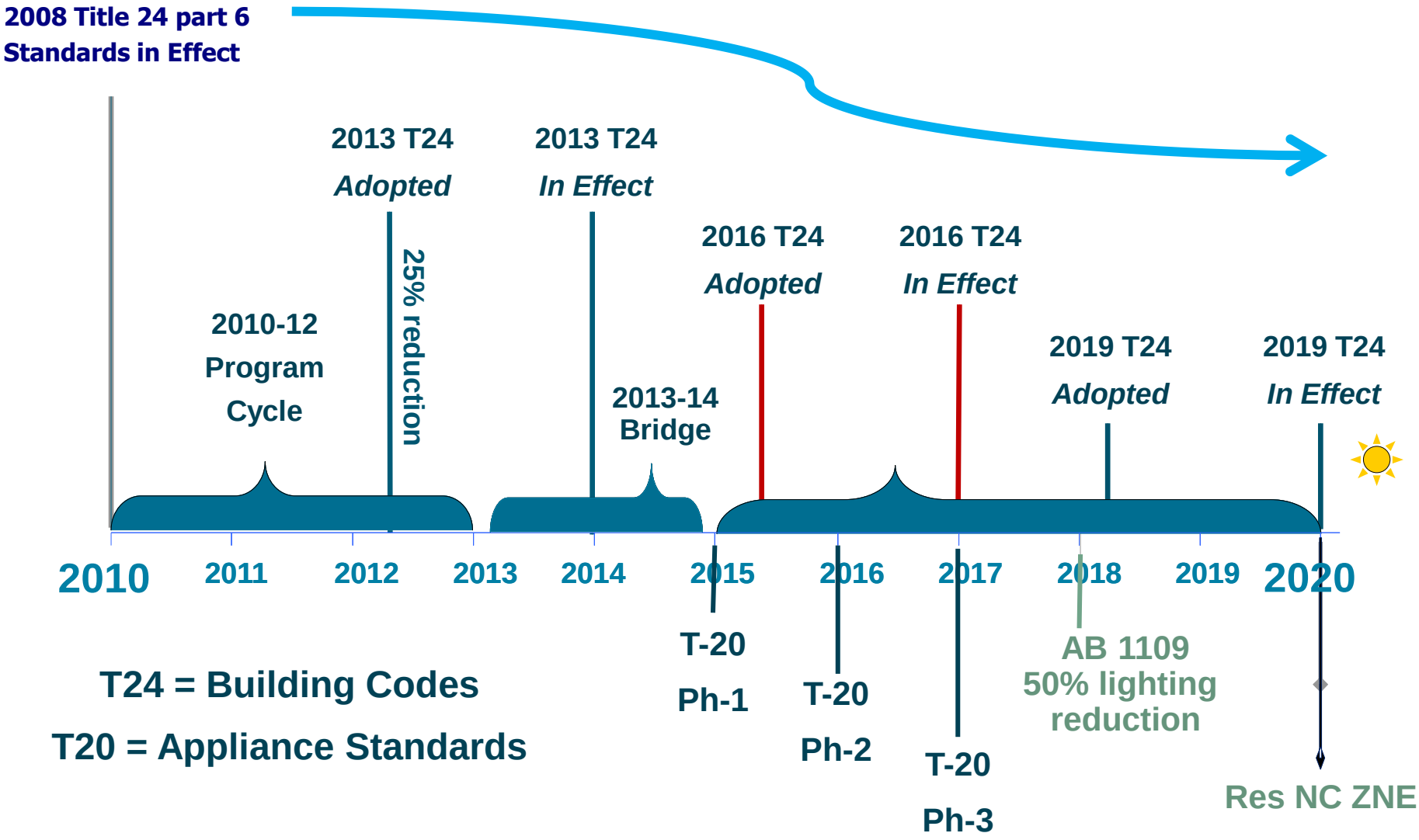
Energy Efficiency Product Lifecycle



PG&E is actively engaged after initial R&D

Residential Policy Timeline



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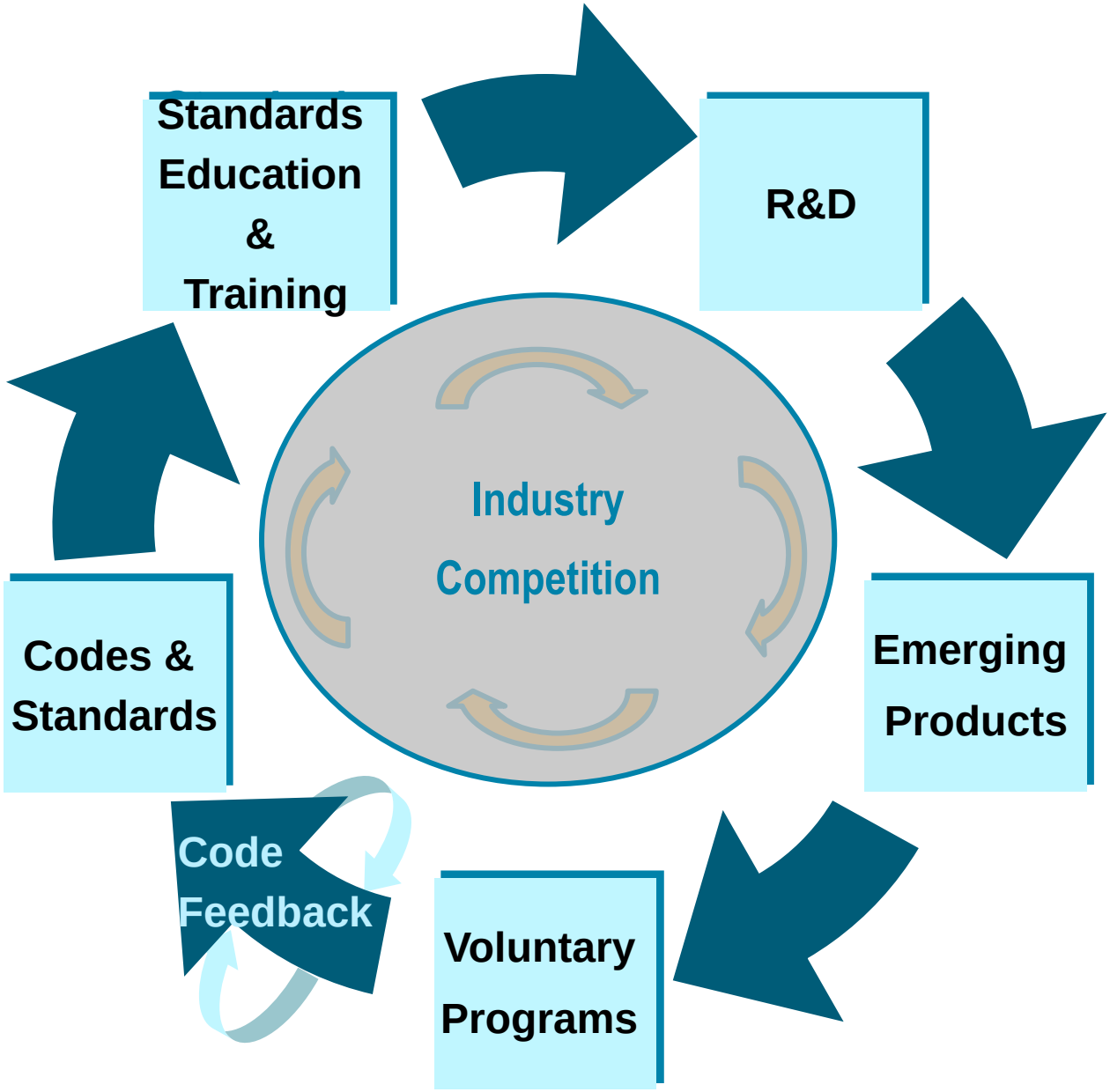
Innovation Doughnut



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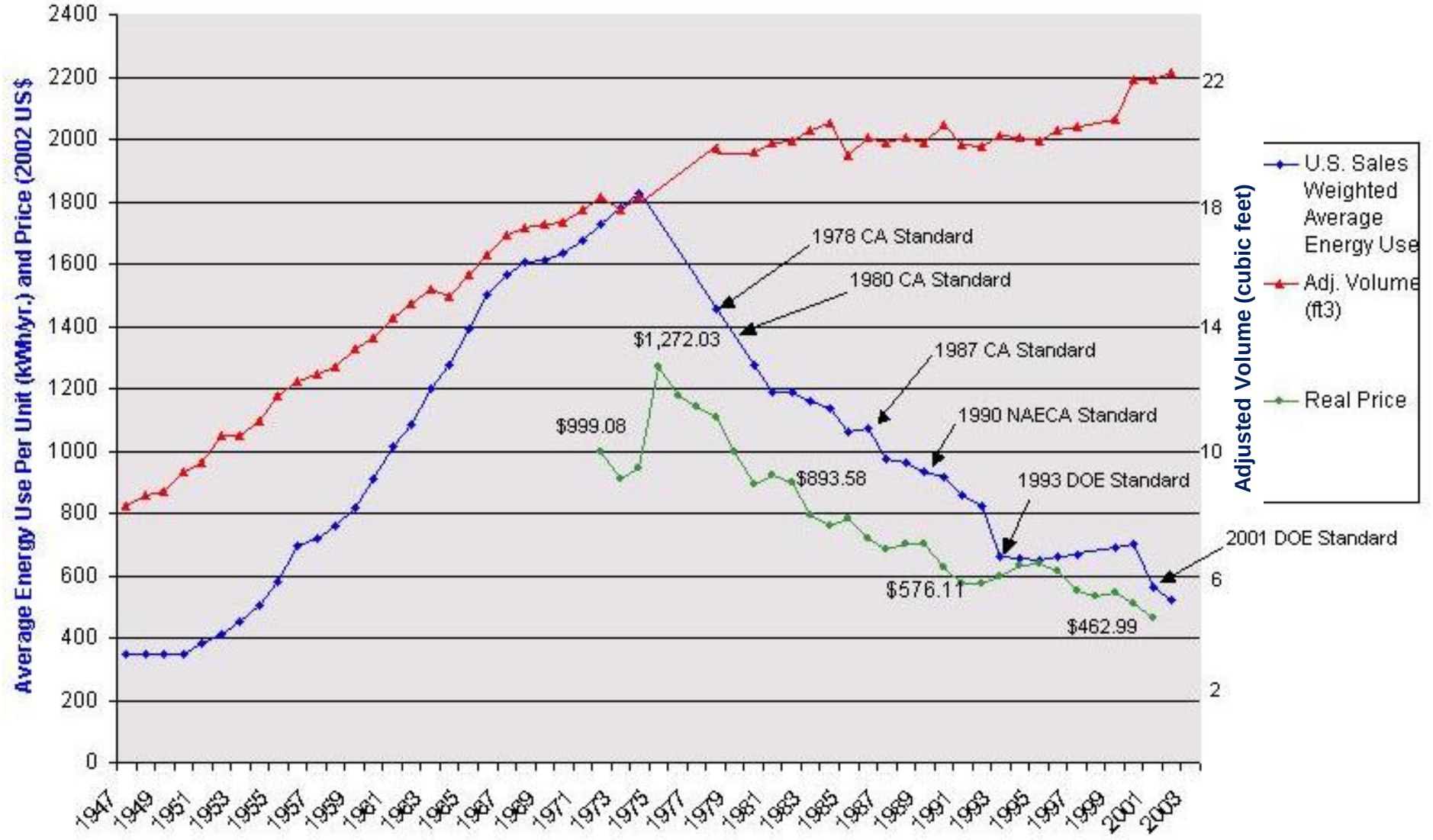
Success: U.S. Refrigerator Energy Use and Prices



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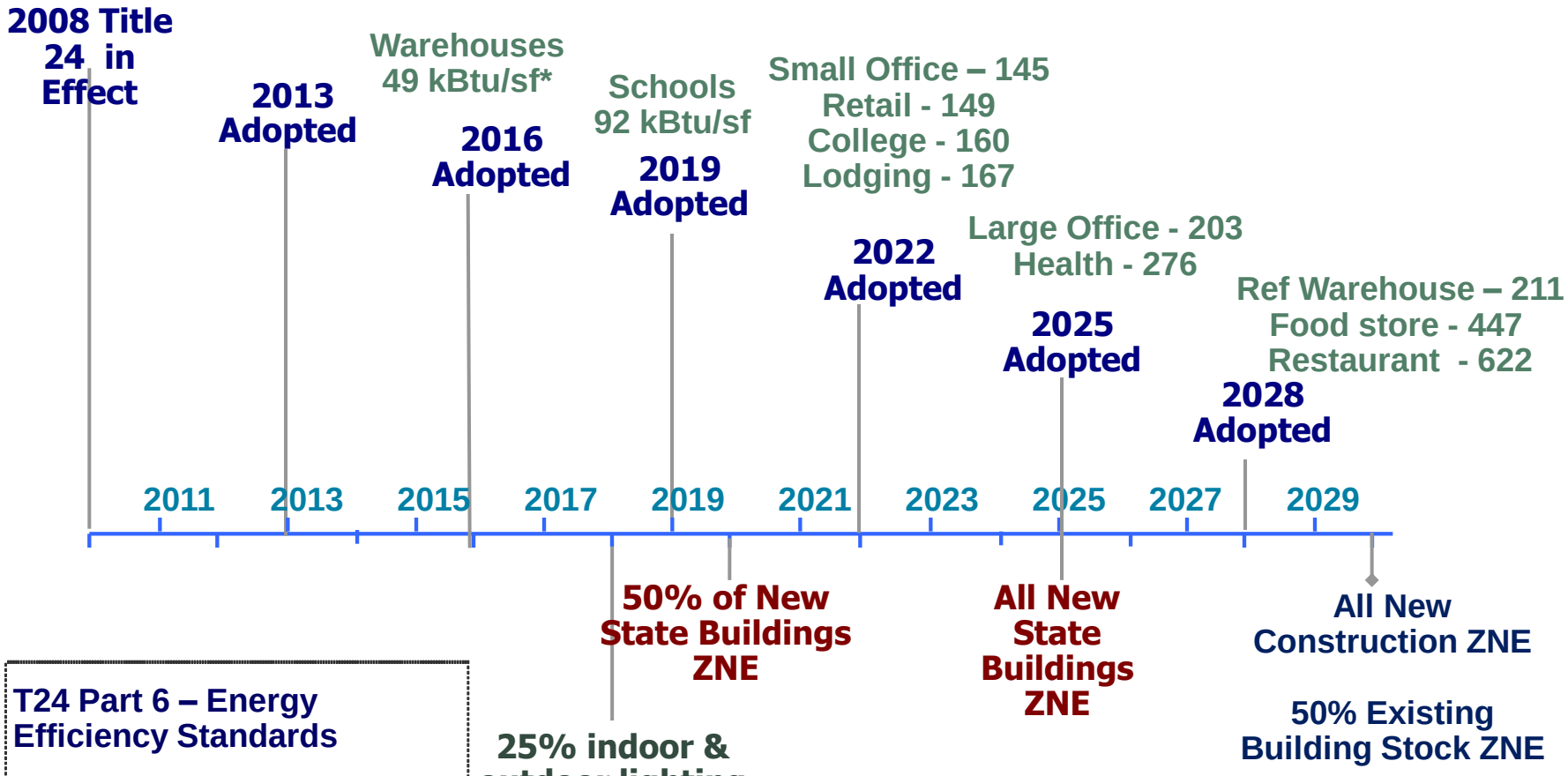
Nonresidential Buildings Policy Timeline



*Source energy kBtu/sf from CEUS

CA Commercial End-Use Survey

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Future Appliance Standards Under Consideration

CEC is moving forward with an ambitious schedule. Approved on March 14, 2012.

Topic	Phase 1 (Effective ~ 2015)	Phase 2 (~ 2016)	Phase 3 (~ 2017)
Electronics	• Displays • Game consoles • Computers • Set-top boxes	• Servers • Imaging equipment	• Low power modes • Power factor
Lighting	• Dimming ballasts • MR lamps • LED lamps	• EISA exempt lamps • Lighting Accessories • Outdoor Lighting	• Linear fluorescent fixtures
Water/ Other	• Comm. dryers • Toilets and urinals • Air filter labeling • Faucets • Pools and spas • Water meters	• Plug-in signs • Irrigation equipment	• Comm. Dishwashers • Recirc. pumps • Refrigeration condensing units

Residential Lighting ET Opportunities (LED products)

High quality LED fixtures (all types)

- Surface mount
- Pendant
- Recessed

Customer acceptance

- Finish
- Color quality
- Dimmability without flicker

High quality bath bar

- Displace 100+ W per bathroom
  - High eff and high quality
    - Low CCT (CCT <3000K) – warm flesh tones
    - High CRI (CRI > 90) - good color matching
    - Dimmable without flicker

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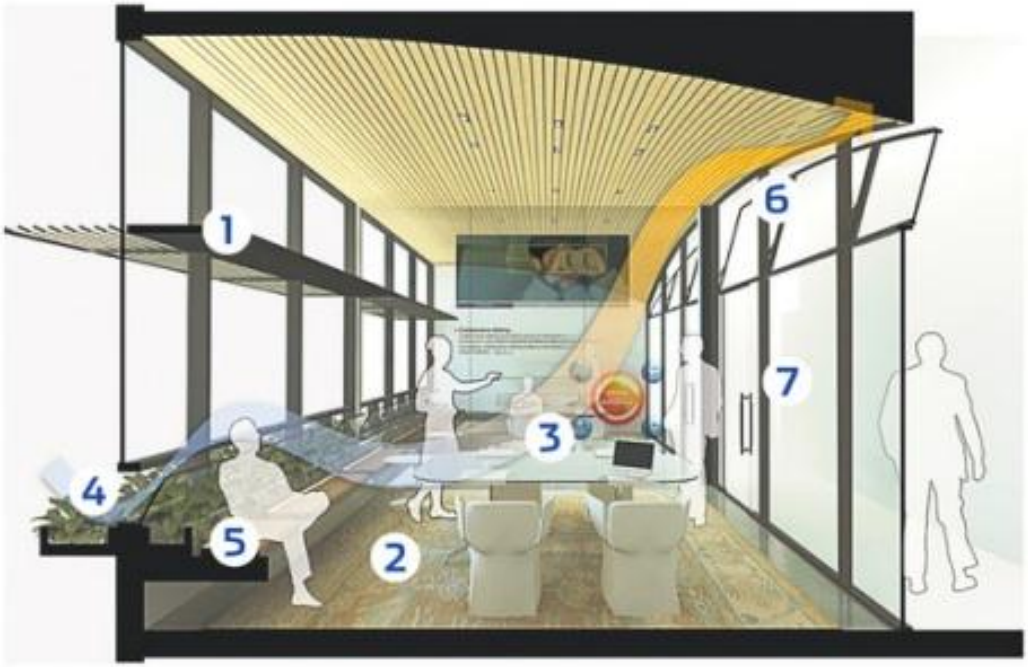
Office of the Future

- Task ambient lighting design
- High efficacy general and task lighting
- All luminaires are dimming +off
- Daylighting controls by windows
- Individual controls
- Vacancy controls
- Bi-level occupancy controls in hallways



- Occupancy and daylight sensing integration
- Simple tuning and IP address set-up

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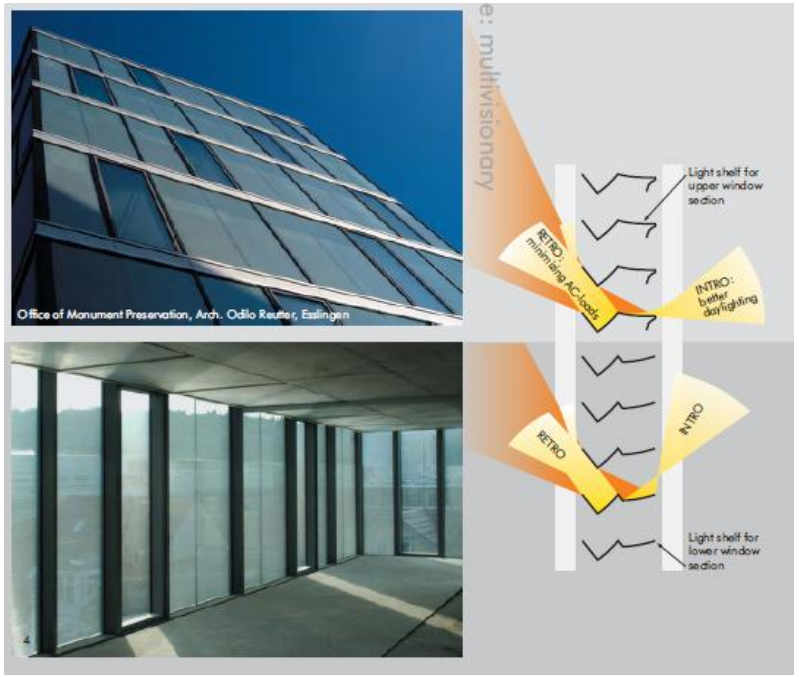
Building Envelope

Cost-effective skylighting in low ceiling heights

- Retail, Schools & Small Office

Light redirecting shades and blinds

- Use scattered light
- Manual vs auto?



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Outdoor Lighting

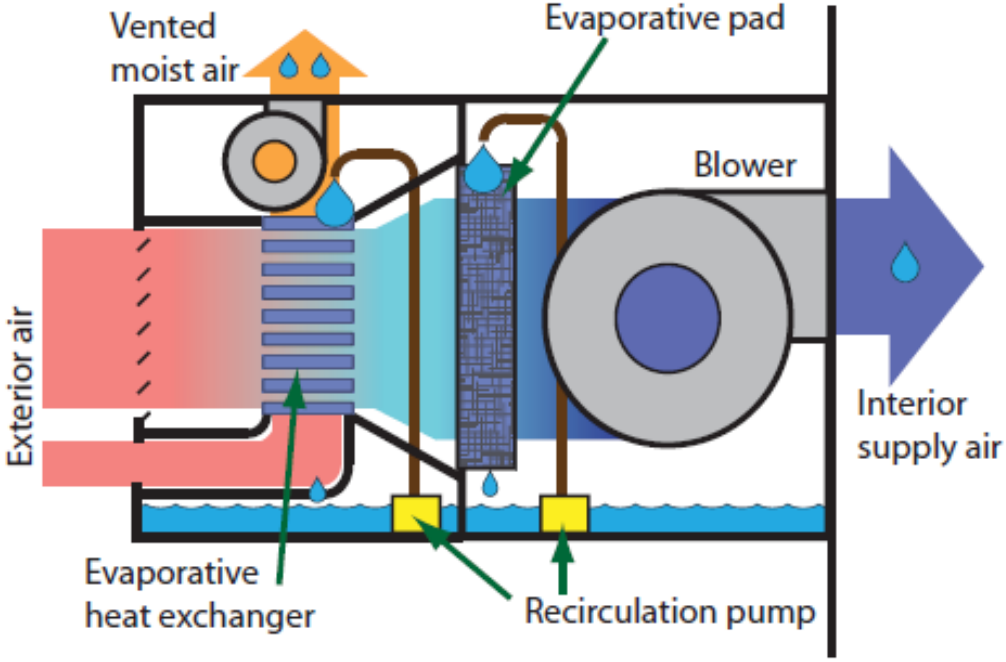
Security research
- Perception of security

Safety research
- Street lighting

Long distance motion sensing
- 120 ft. radius needed for standard parking lots

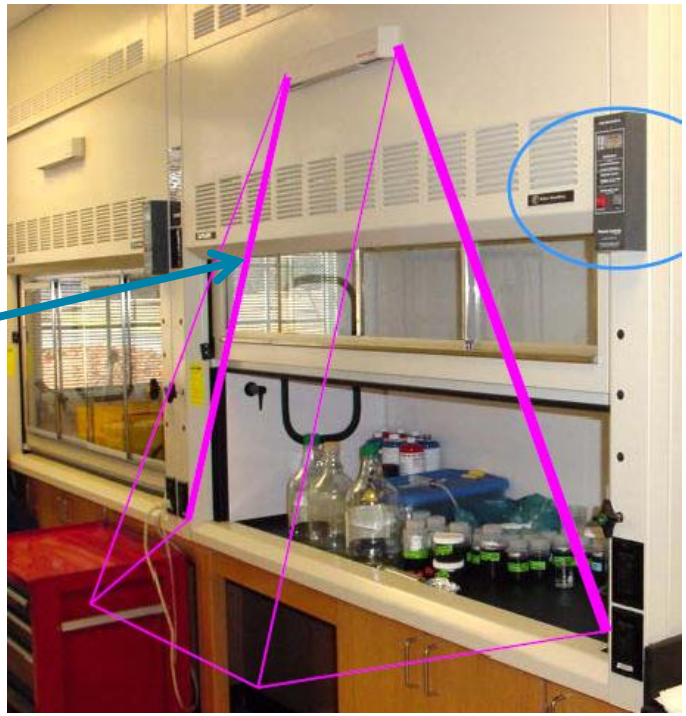
Partial retrofits of outdoor lighting
- Motion sensing
- Part-night control
- Networked controls

Mechanical Systems



Nonresidential HVAC

- **FDD with communication and data logging**
  - Automated acceptance test
- **Evaporative cooling**
  - Supply and condensing side
  - Reliable, low maintenance
- **Low fan W/cfm**
  - Chilled beam, dedicated OA, duct design, passive cooling etc.
- **Lab Vent hood - Occupant sensing sash positioner**



Networking Break

Supplier Diversity Programs

Joan Kerr, Director

Supplier Diversity and Development

PG&E

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Supplier Diversity is Good Business

- Supports **economic development and job growth** in the communities we serve
- Demonstrates a tangible **commitment to our customers** by reinvesting in their communities
- Provides **new business perspectives and ideas** that lower supply chain costs, increase flexibility and improve quality
- Provides **additional access** to community, government or global suppliers and markets
- Increases **brand value** and **community standing**

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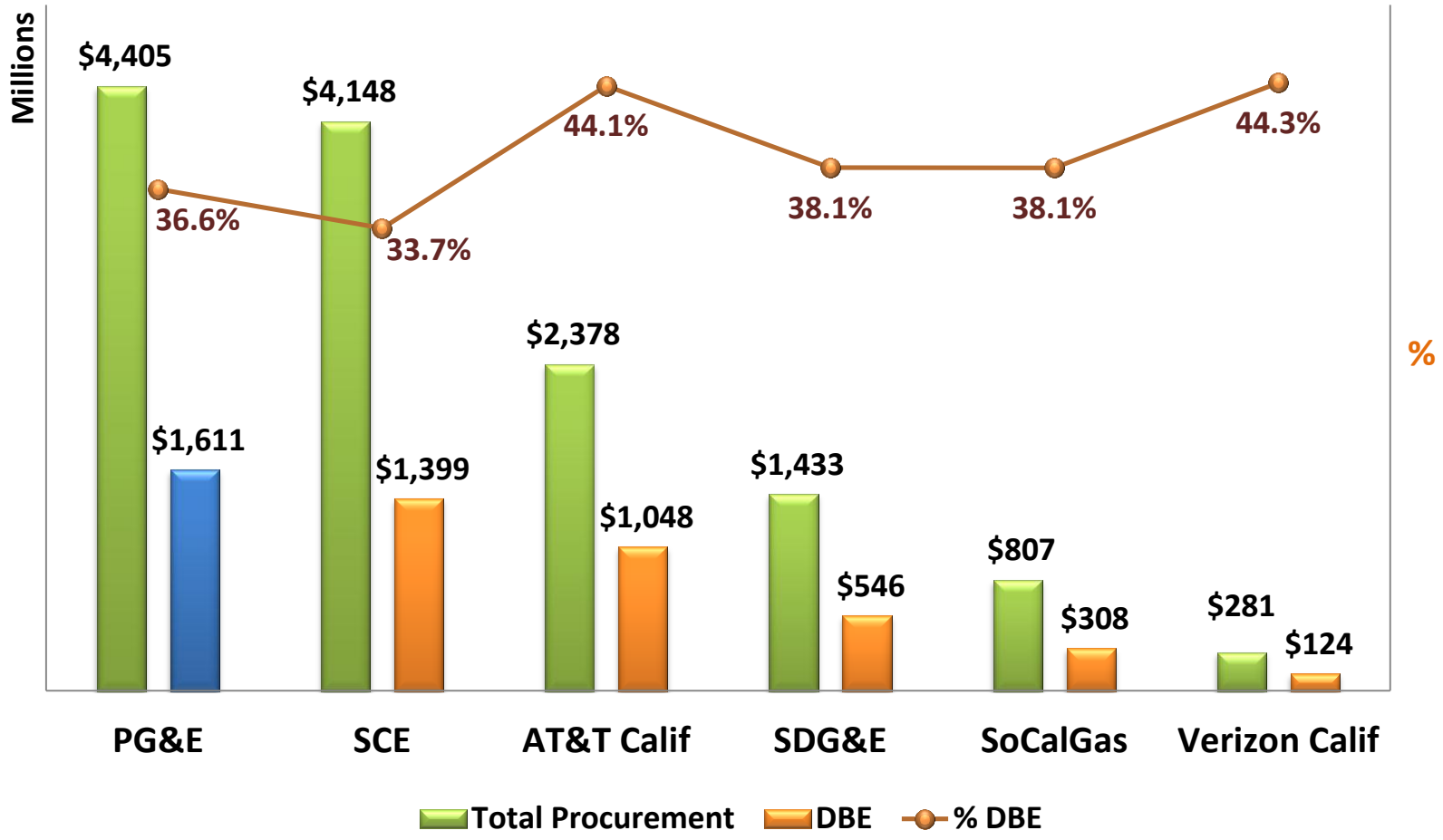
CA Utilities 2011 Supplier Diversity Results



The top 6 Utilities spent $5B on diverse suppliers out of $13.5B total spend in 2011 (37%)

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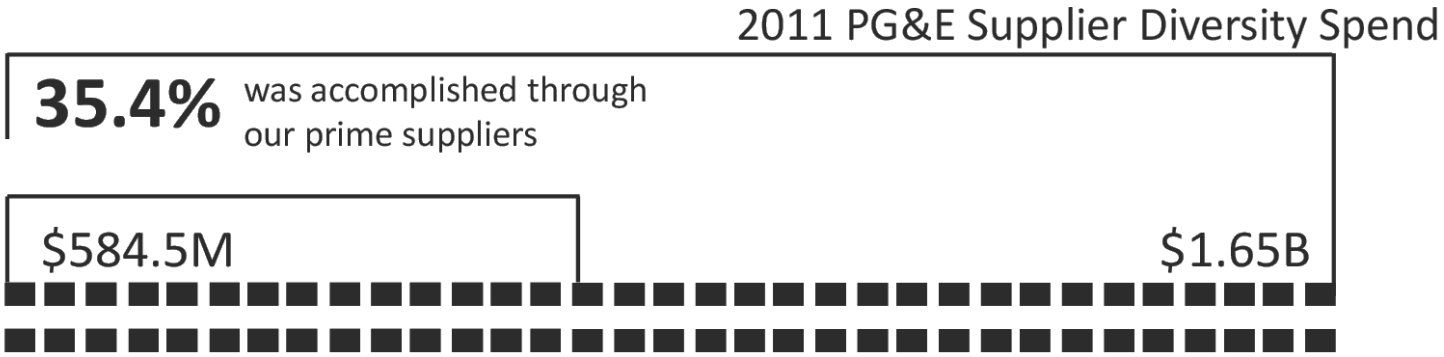
Prime Supplier Involvement

- PG&E's 2012 Supplier Diversity goal is 37.3%
- Suppliers are expected to join us in achieving that goal
- 35.4% of our 2011 SD Results were due to diverse subcontracting or value-added relationships



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Supplier Diversity Community Involvement

- **PG&E partners with over 20 Community-Based Organizations (CBOs)**
  - Recruiting new diverse suppliers
  - Training and developing diverse suppliers

- **PG&E attends over 60 diverse events annually**
  - CBO event sponsorships
  - Presentations / panelists
  - Stand-alone workshops / trainings
  - Business match-making
  - Trade shows / business expos

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Technical Assistance Programs (TAP)

A robust set of initiatives to support DBE development

- UC Executive Management Training (UCLA MDE / ATMI)
- Foundations in Leadership Excellence
- Diverse Suppliers Go Global
- Diverse Suppliers Go Green
- Diverse Suppliers Are Safe (new!)
- ISO Certification Training
- Industry Tradeshows
- Diverse Business Development Workshops

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Registration and Certification

Suppliers need to be certified to participate in the Supplier Diversity Program

- At least 51% owned, operated and controlled by one or more women, minorities or service-disabled veterans
- CPUC Supplier Clearinghouse (CHS) certifies WBEs and MBEs
- California State Department of General Services (DGS) certifies DVBEs

For applications and more information:

- **www.thesupplierclearinghouse.com** **(800) 359-7998**
- **www.dgs.ca.gov** **(916) 375-4400**
- **www.pge.com/supplierdiversity**

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Supplier Diversity Contacts

California Public Utilities Commission

- Stephanie Green - smallbiz@cpuc.ca.gov or (800) 253-0500

Pacific Gas and Electric Company

- Bob LeFave, R2LW@pge.com or (415) 973-6176

Southern California Edison

- Dennis Thurston, dennis.thurston@sce.com or (626) 302-8932

Sempra Energy Utilities (San Diego Gas and Electric Company and Southern California Gas Company)

- Eric Thomason, ethomason@semprautilities.com or (858) 650-4177

Emerging Technology Panel

Moderator:
Paul Fox, CalCEF Clean Energy Angel Fund

Panelists:

Aaron Panzer, ET Program Manager, PG&E

Albert Chiu, Sr. Program Manager, DR, PG&E

Ahmed Abdullah, ET Program Manager, Sempra

Paul Delaney, ET Assessment Manager, SCE

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Role of Emerging Technologies

Support increased energy efficiency market demand and technology supply by contributing to development and deployment of new and underutilized energy efficiency measures, and by facilitating their adoption as measures supporting California's Long Term Energy Efficiency Strategic Plan.

The ETCC provides a collaborative forum for the member organizations to exchange information on opportunities and results from their Emerging Technologies activities.

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What are we looking for?

NEW technologies that deliver NEW savings and therefore NEW returns to utilities.

- Saves energy
- Reduces peak demand
- Creates behavior change

Must show:

- Verifiable and sustainable savings
- Commercially available
- Market barriers addressed
- Scalable to large market
- Aligns with DSM Program Portfolio and California Long Term Strategic Plan

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Utilities implement savings via "Programs"

All "measures" implemented through a "Program".

Program Portfolio Includes:

- Energy Efficiency Programs
- Demand Response Programs
- California Solar Initiative Administration

Programs span:

- Statewide or utility specific.
- Upstream (i.e. manufacturer), midstream (e.g. retail or channel) or down-stream (end user).
- All market segments: consumer, commercial, industrial, hospitality, agriculture etc.
- Deemed and customized.

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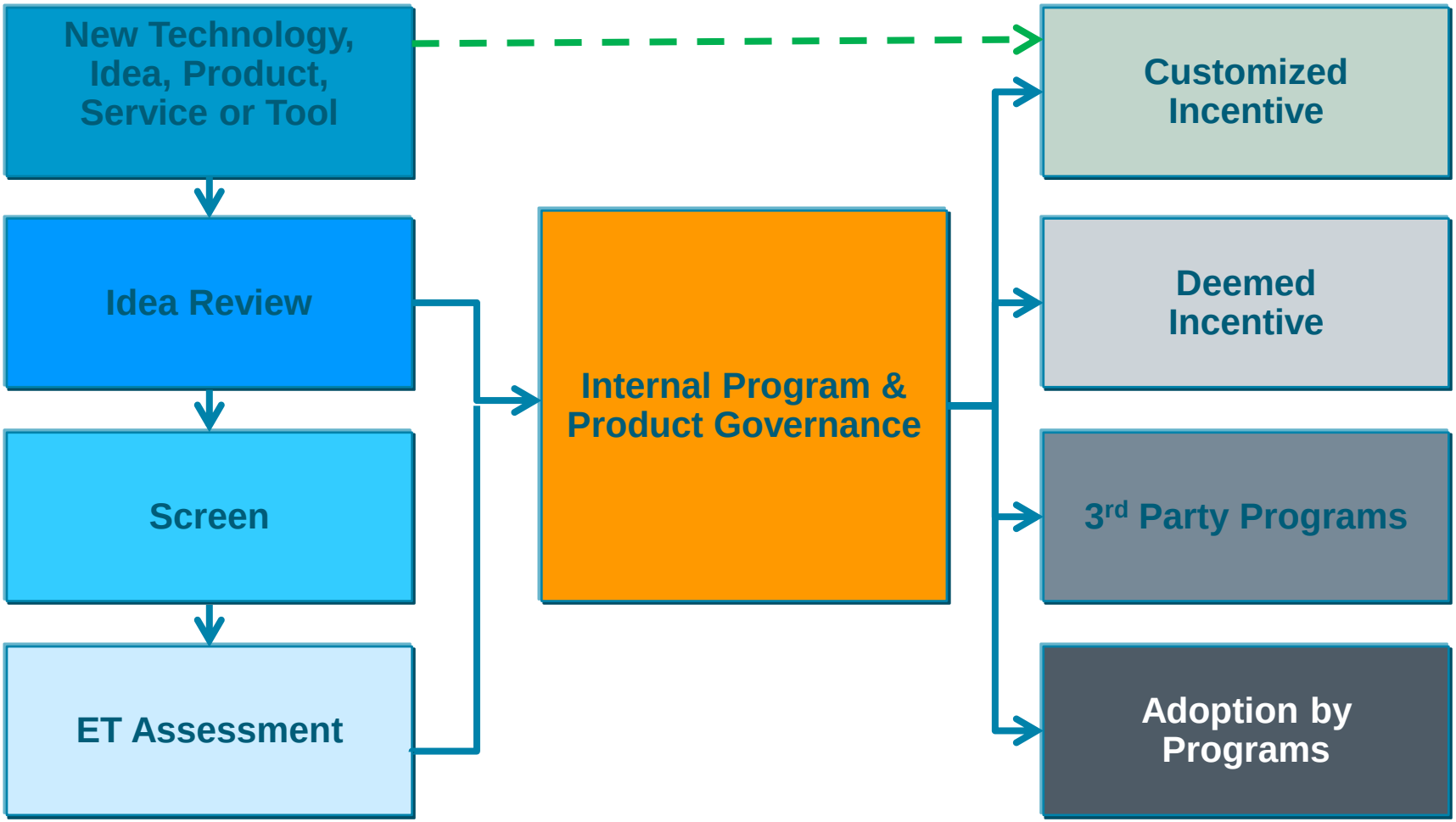
Roadmap into Utility Programs



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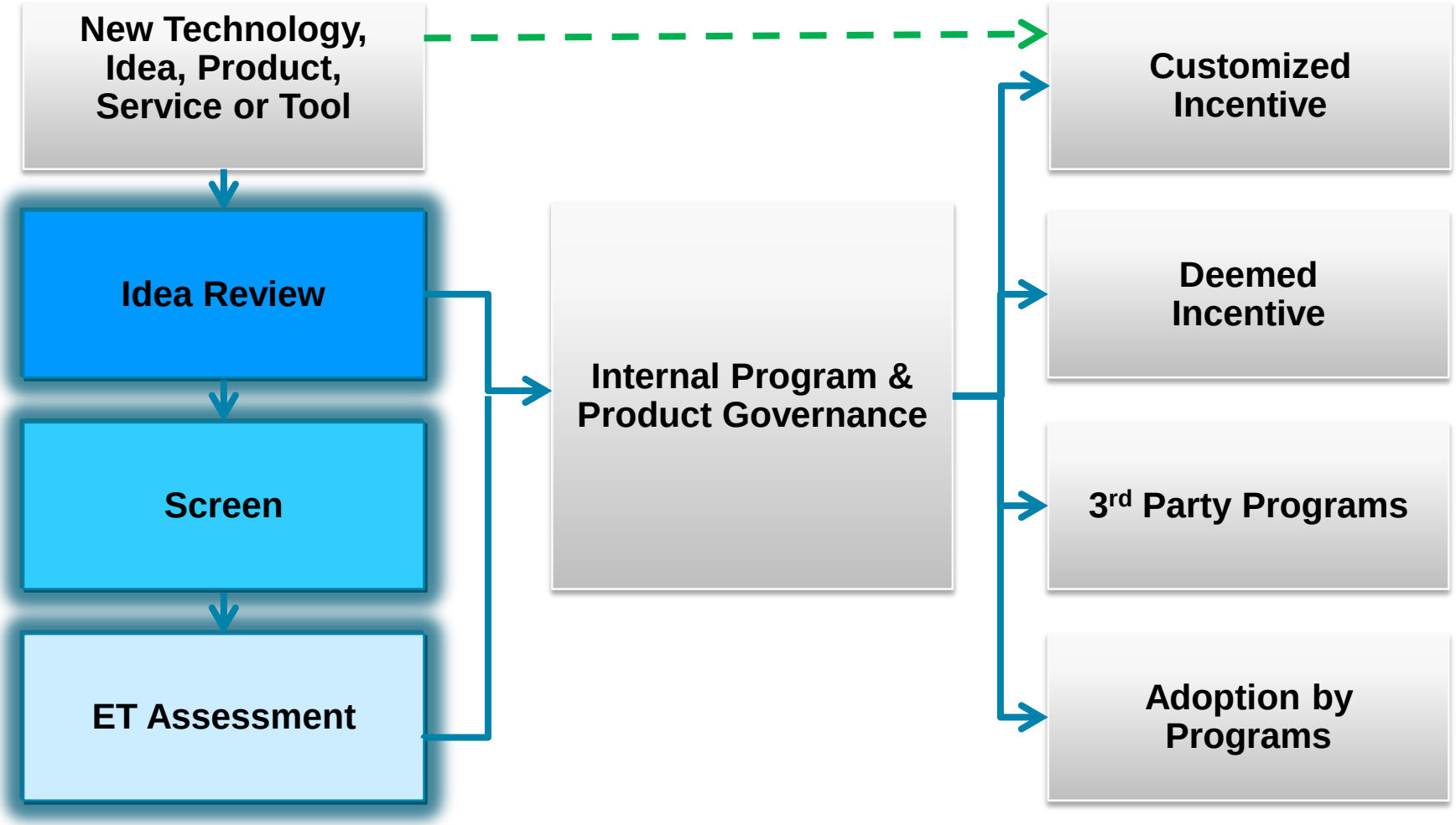
Roadmap into Utilities Programs



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ETP Activities

Scan/Screen to identify new technologies for all customer segments

Assess manufacturer's claims:

- literature search
- laboratory evaluations
- field studies

Analyze and compile findings and forward recommendations for adoption

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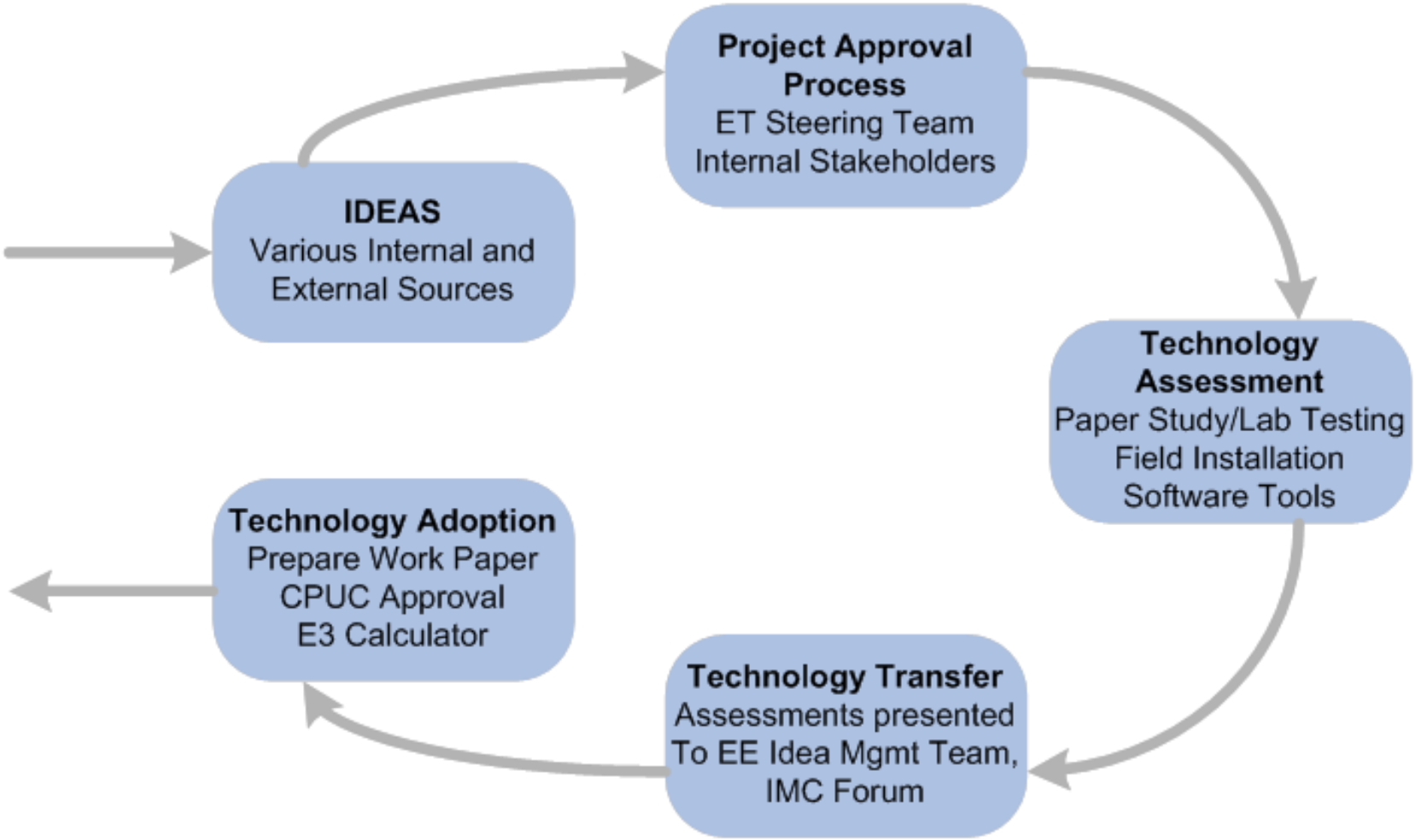
ETP Process



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Technology Stages / Actions

Stage 1: Unverified / Unavailable

Concept, Alpha or Beta Product.

Upstream ET Program

TRIO workshops

Technical review

Lab testing

Identify specifications

Stage 2: Unverified / Available

May be sales, but not part of existing CA utility programs.

ET Program

TRIO workshops

Idea Card

ET Assessment (Field/Lab)

Open Forum

Certifications

Stage 3: Verified / Available

Similar products on market already being sold in the market.

Existing Programs or 3rd Party Implementers

TRIO Workshops

ET Assessment

3rd Party Programs

Incentives

Customized Program

Solution Codes

Future Codes & Standards

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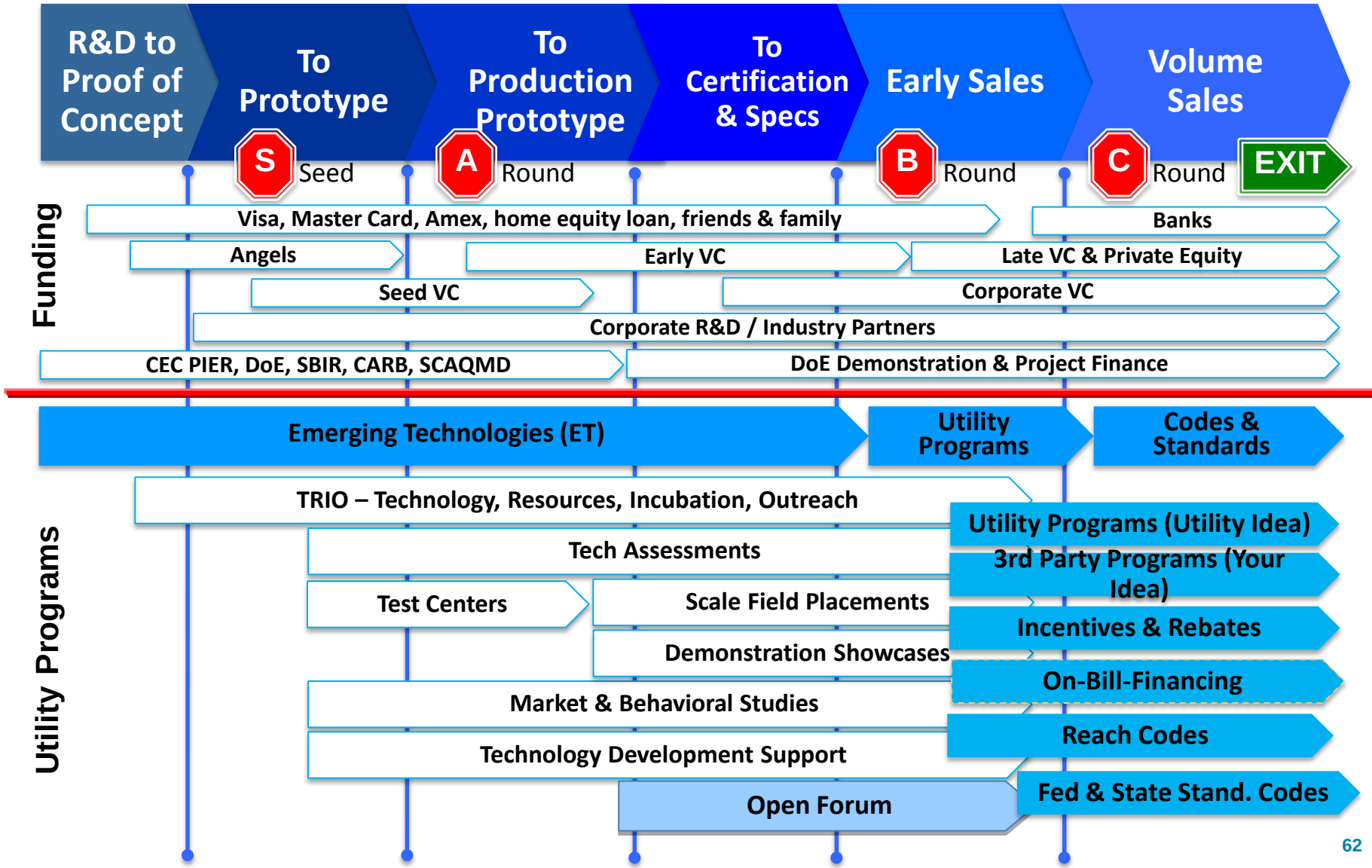
Road to Adoption



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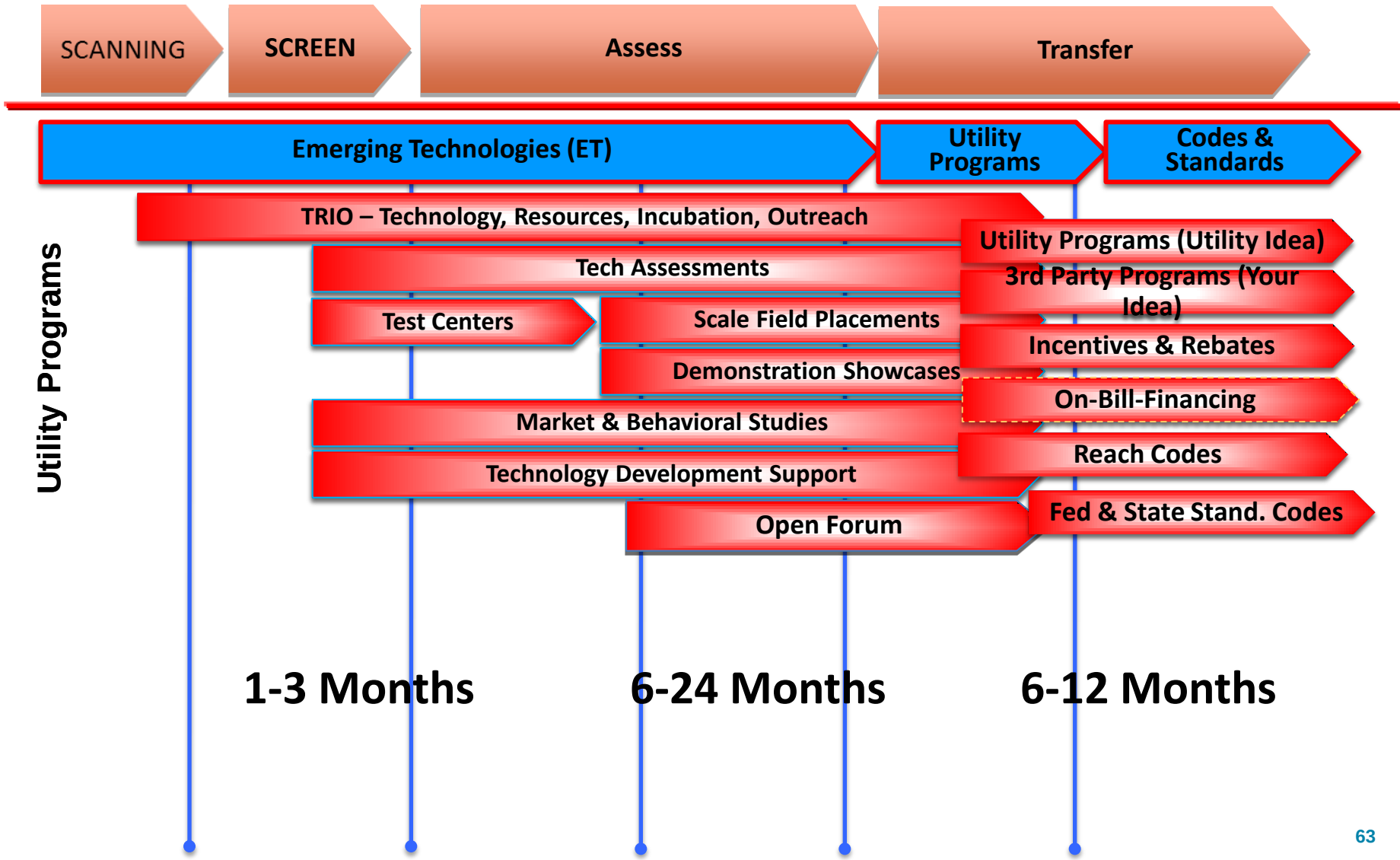
Road to Adoption



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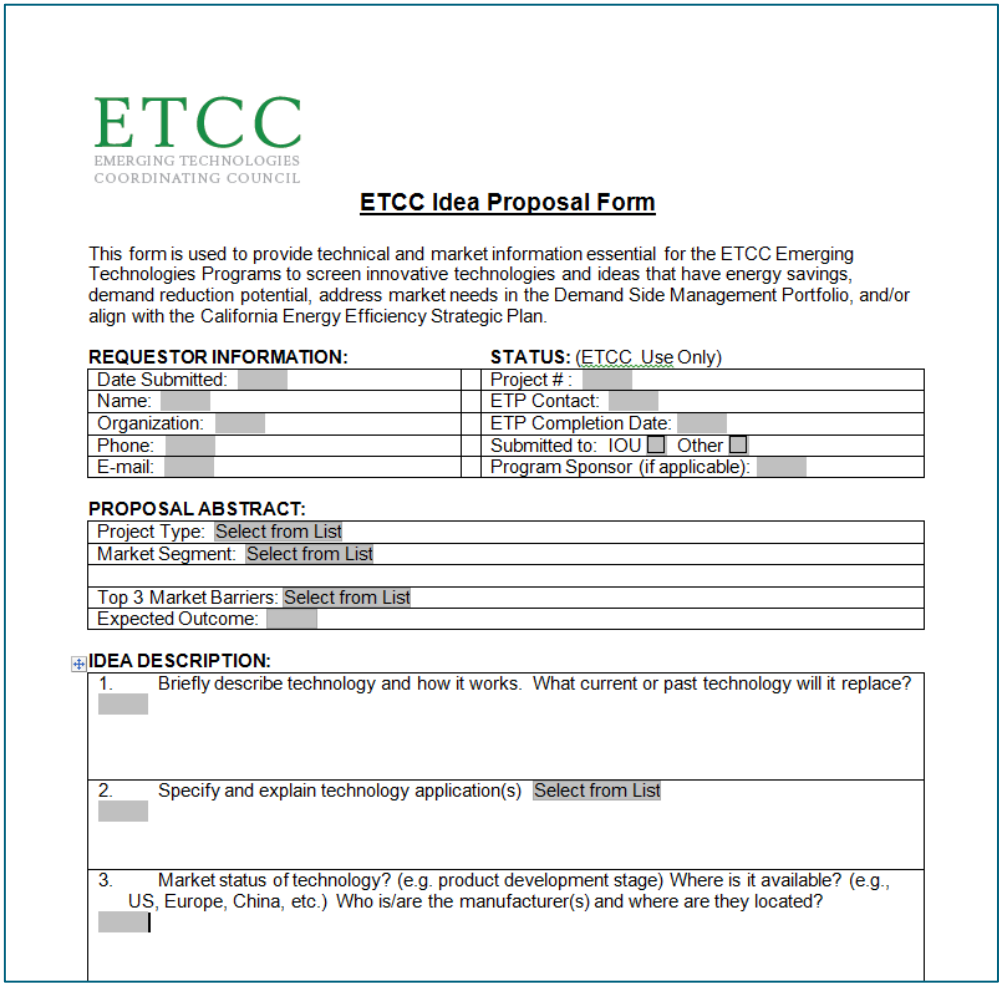
Idea Proposal Form

Submit inquiries to:
www.ETCC-CA.com

Internal and external parties may submit ideas by completing required fields of idea proposal form.

Initiates idea review, selection, prioritization, and feedback.



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ETCC Idea Proposal Form

This form is used to provide technical and market information essential for the ETCC Emerging Technologies Programs to screen innovative technologies and ideas that have energy savings, demand reduction potential, address market needs in the Demand Side Management Portfolio, and/or align with the California Energy Efficiency Strategic Plan.

REQUESTOR INFORMATION:		**STATUS:** (ETCC Use Only)
Date Submitted:		Project # :
Name:		ETP Contact:
Organization:		ETP Completion Date:
Phone:		Submitted to: IOU ☐ Other ☐
E-mail:		Program Sponsor (if applicable):

PROPOSAL ABSTRACT:

Project Type: Select from List
Market Segment: Select from List
Top 3 Market Barriers: Select from List
Expected Outcome:

IDEA DESCRIPTION:

1. Briefly describe technology and how it works. What current or past technology will it replace?
2. Specify and explain technology application(s) Select from List
3. Market status of technology? (e.g. product development stage) Where is it available? (e.g., US, Europe, China, etc.) Who is/are the manufacturer(s) and where are they located?

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ET Focus Areas

Controls

- Occupancy
- Pneumatic

Whole Buildings approach for “deep savings”

- Building = system of systems (lighting, HVAC, building shell)

Integration

- EE + DR + DG
- Zero Net Energy

Behavior-based approaches

- Energy information

OPower / Honeywell Behavior Thermostat Project

New Honeywell and OPower thermostat that can be controlled and monitored remotely via an iPhone app and website.

Features:

- Easily program, monitor and control heating and cooling energy use
- Create optimal thermostat schedules that fit their lifestyles or conveniently adjust thermostat settings while at home or away
- Personalized tips to help save energy and money

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Customer Pilot Eligibility Criteria

Must have:

- iPhone
- both PG&E electric and gas accounts
- single family homeowner or condo dweller
- central heating and air conditioning
- use one thermostat for central heating and AC
- broadband connection

Must not have:

- back-up heat or auxiliary/heat pump
- plans to move in the next 12 months
- Participation in PG&E's SmartAC program

Eligible population of PG&E customer is ~120,000

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Marketing Plan for Customer Trial

- **Target residential customers** in the following counties: Yolo, Solano, Contra Costa, San Joaquin
  - 4.6% of customers in these targeted areas are eligible
- **Recruit 1,000 eligible customers**
  - Retail intercept
  - 500 will receive thermostat, 500 placed in a control group
- **Branding** will reflect the role/relationship each entity has with the customer
  - Recruitment – PG&E primary branding with Opower/Honeywell as secondary
  - Post-Recruitment – Opower/Honeywell branded with legal messaging addressing PG&E's relationship with the vendors

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Retail Intercept

Events

Mobile station with staffers will explain the program, requirements for participation and demonstrate the iPhone app to qualify customers.

- Approximately **300 events** — in market for 10 weeks (July 19th – Sept 26th)
- Potential locations: Community events, Festivals and Retailers (Hardware, Office Supplies, Furniture, Home Goods, Electronic and Big Box stores)

Staffing

- 5 teams, 2 staffers per team (with option for additional staffer)
- Each team works one 6 hour event per day, 6 days a week

Goals:

- Overall goal is 3.33 sign-ups per event
- Actual sign-ups per event will be reported, assessed regularly

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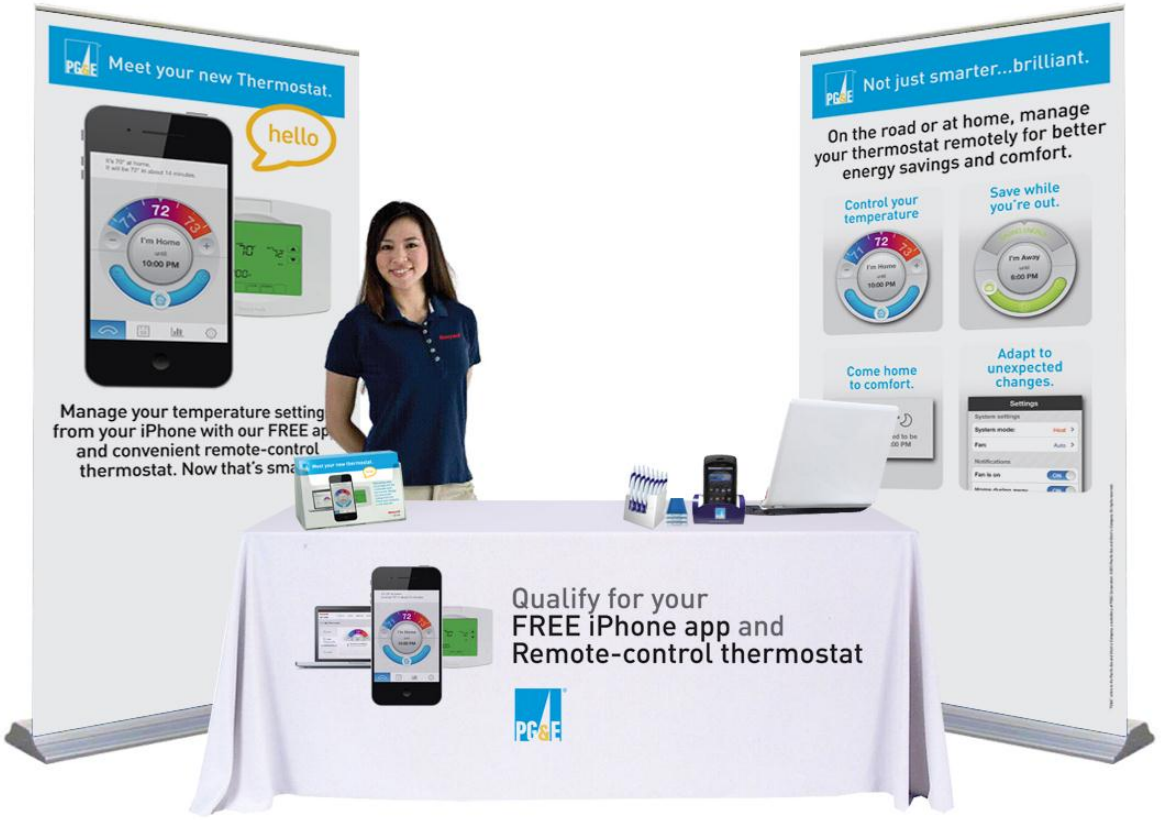
Event Set-up

PG&E branded, retail engagement stations set-up to attract and engage with customers.

The mobile station features:

- Branded table
- Pull-up banners communicating offer
- Sample thermostat
- iPhones to demonstrate the application
- Laptops with enrollment website to sign-up customers
- Program collateral
- Premiums



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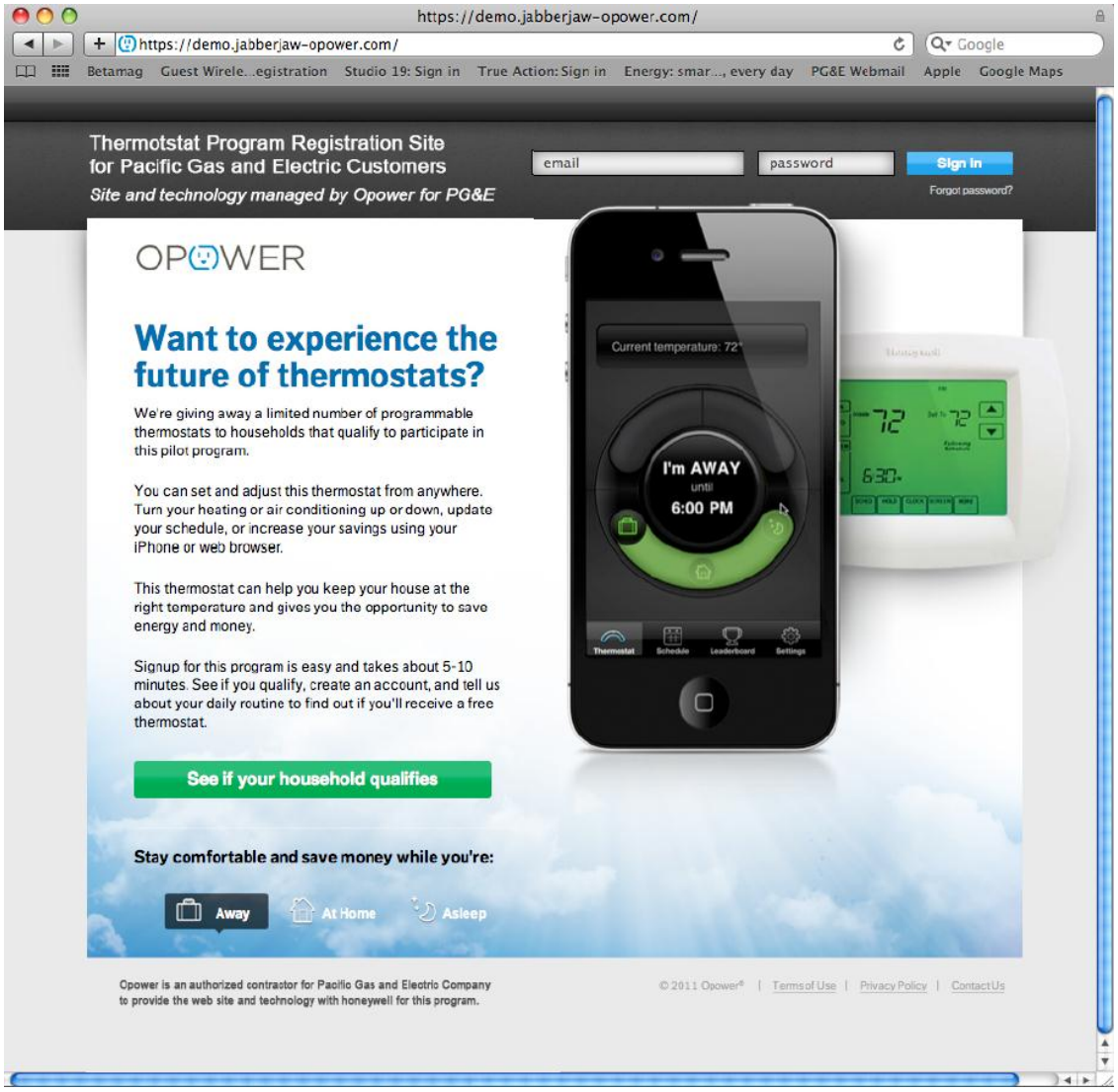
Enrollment Website



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Recruitment Experience

PRE-QUALIFY

FIRST FILTER

GoMODELS:

- Explain the program
- Show the features
- Point out benefits
- Ask top 5 questions

Customers who are interested and pre-qualify continue

Customers who do not interested or do not qualify for the program receive a pen

QUALIFY

SECOND FILTER

GoMODELS:

- Explain the program in further detail
- Demonstrate mobile application
- Invite customer to sign up on the spot
- Assist with sign-up

Customers who are unable to sign up on the spot receive a postcard with a link to sign up at home, and a pen

SELECTION

GROUP A

(Test)

Receives thermostat

Receives premiums:

Smartphone holder

Lens cleaner

GROUP B

(Control)

Receives premiums:

Smartphone holder

Lens cleaner

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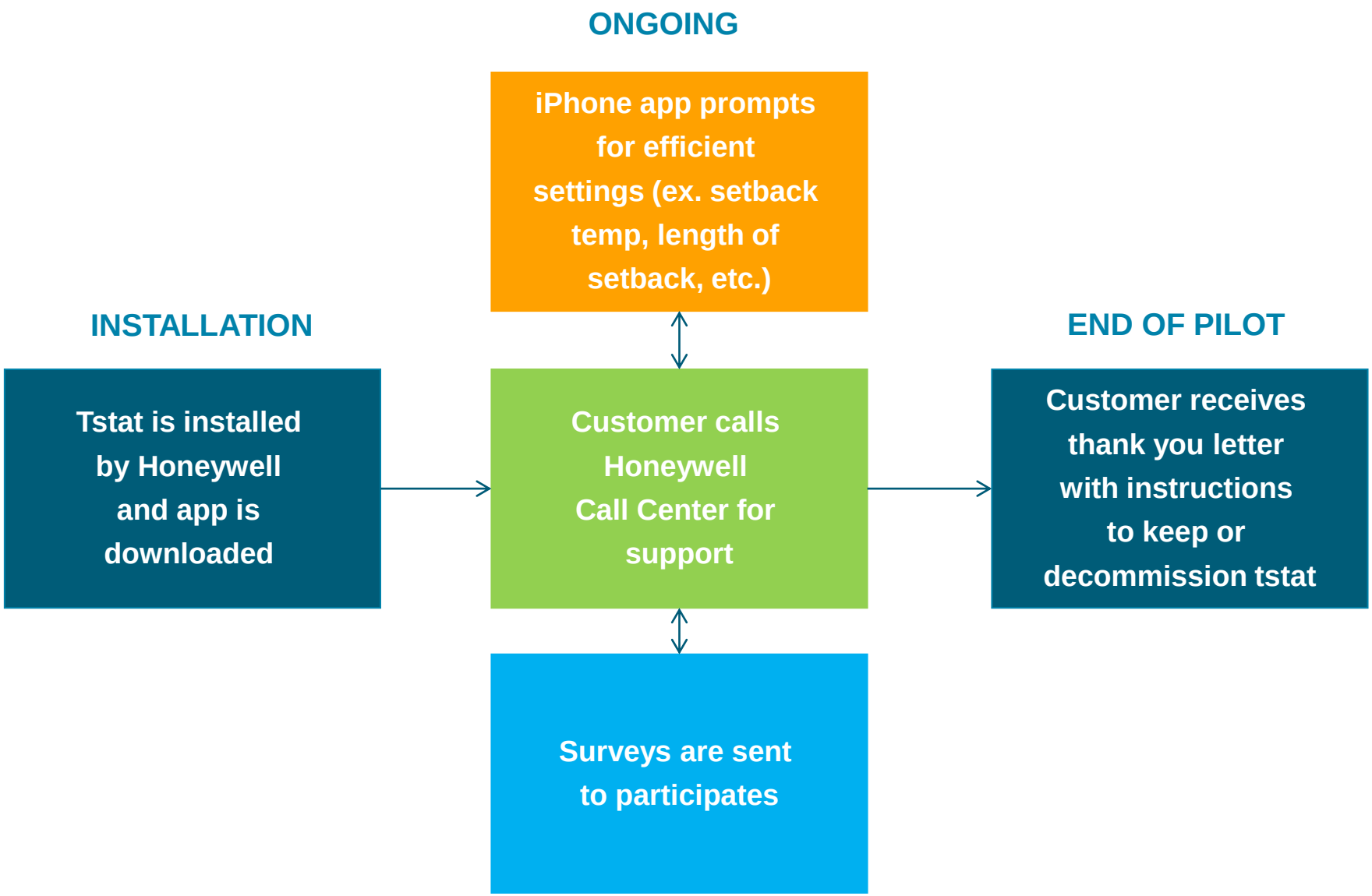
Post-Recruitment Experience



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Demand Response (DR) ET Focus Areas

Technologies that Increase:

- Customer control
- Awareness on operation status
- Tenants comfort and acceptance
- New technologies adoption (For example EVSE)
- Flexibility

Integration: energy efficiency + demand response + distributed generation

Behavior-based approaches

- Energy information (e.g. in-home displays)

Automation

- OpenADR

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Example of DR ET

- Advanced lighting controls
- Advanced HVAC controls
- Energy Management System
- DR solutions for Data Center
- DR solutions for Agricultural customers
- New Permanent Load Shifting Technologies
- HAN technologies
- EVSE equipment
- Building automation software

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Auto DR Lighting Control ET Test

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Upcoming Events

ET Summit – Pasadena October 15-17, 2012

Logon to www.ETCC-CA.com for more information

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Contact Info

Aaron Panzer (PG&E)

A1Pz@pge.com

Edwin Hornquist (SCE)

Edwin.Hornquist@sce.com

(626) 633-7186

Ahmed Abdullah

AAhmed1@semprautilities.com

(951) 768-0719


NETWORKING
LUNCH

Luncheon Keynote

Michael Peevey, President

California Public Utilities Commission

Incentive Programs

Jeff Gleeson, Manager

Custom, Industrial, and Finance Products

PG&E

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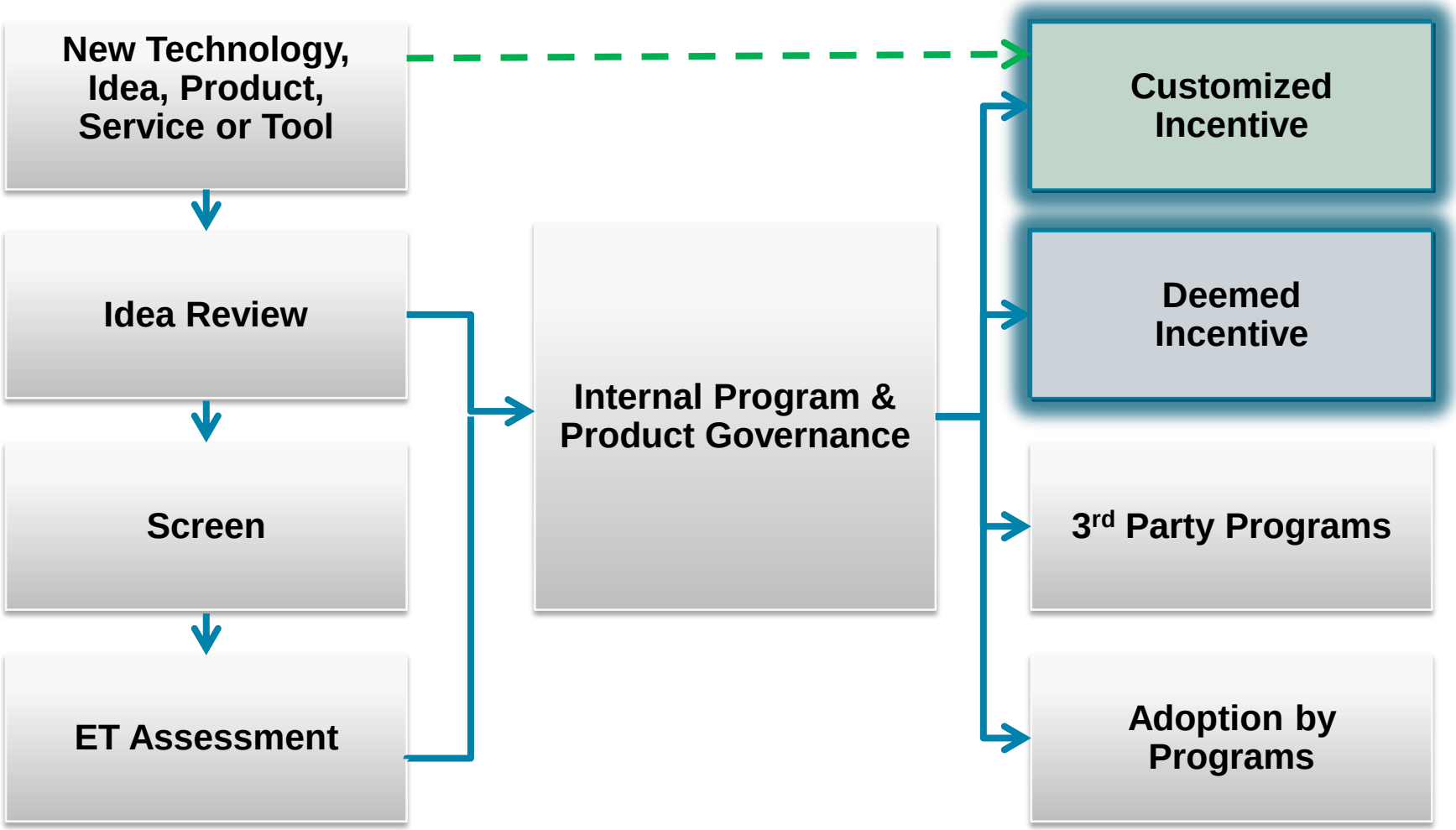
Roadmap into Utilities Programs



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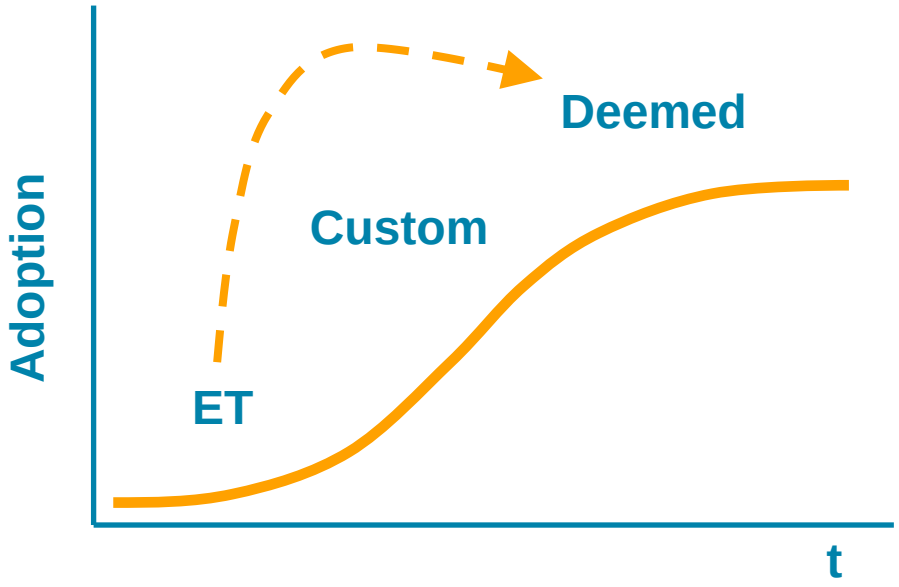
Product Governance

Business Case

- Technology overview
- Value proposition
- Market sizing
- Energy savings and related costs
- Voice of the Customer
- Go-To-Market strategy
  - Channel
  - Incentive approach



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Rebate Categories/Delivery Channels

PG&E offers three categories of rebates

Rebate Types	Description
Upstream Rebates	Incentives provided to manufacturers
Mid-stream Rebates	Rebates at the distributor/retailer/contractor level
Downstream Rebates	Rebates direct to customers

Note: Customer cannot receive a rebate for the same product from more than one California investor-owned utility.

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Single Family Rebate Program

Single family rebate programs include:

- Washers
- Refrigerators
- Heating & Cooling
- General Improvements
- Pool Pumps & Motors
- Lighting

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Residential "Deemed" Rebates

Product	Rebate	Savings
Natural Gas Furnace:	$150 - $250	Gas
Natural Gas Tank Water Heaters	$30 - $50	Gas
Wall Insulation	$0.50/sq.ft.	Gas/Electric
Attic Insulation	$0.15/sq.ft.	Gas/Electric
High-Efficiency Clothes Washer:	$50 + Water agencies: $50 - $75	Gas/Electric/ Water
Whole House Fans	$100	Electric
Variable Speed or Flow Pool Pump & Motor	$100	Electric
High-Efficiency Refrigerators:	$75	Electric
ENERGY STAR® Room AC:	$50	Electric
Appliance Recycling	$35	Electric
Electric Storage Water Heaters	$30	Electric

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AC Quality Care Rebate Program

Rebates are available only for work done by AC Quality Care participating contractors:

- There is a $50 Initial HVAC System Inventory and Assessment Rebate
- Post assessment - the customer may qualify for additional rebates based on:
  - work performed
  - and eligible product purchase

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AC Quality Care Rebate Program

Available rebates include:

$250 Airflow Correction Rebate

- Adjust, repair, renovate ducts and install new filters

$50 Refrigeration System Service Rebate

$150 High-Efficiency Blower Motor Retrofit Rebate

$50 One-Year Quality Maintenance Service Agreement Rebate

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Energy Upgrade California

Whole House Retrofit

Energy Upgrade California is a new, statewide program that offers incentives to homeowners who complete select energy-saving home improvements on a single-family residence.

- It encourages customers to take a **"whole house" approach** by combining several related improvements at once to increase a home's overall energy efficiency and achieve greater savings
- Homeowners can **choose from two incentive options** based on their improvement needs and budget
  - Basic Upgrade Package
  - Advanced Upgrade Package

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Basic Upgrade Package

Customers get up to a $1,000 incentive when they complete the following upgrades:

- Air sealing
- Attic insulation
- Duct sealing
- Hot water pipe insulation
- Thermostatic control valve
- Low-flow showerhead
- Combustion safety testing

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Advanced Upgrade Package

Customers get up to $4,000 in incentives when they complete additional upgrades customized for their home's needs.

Typical projects in the Advanced Package include Basic Upgrade package plus:

- High-efficiency furnace
- Energy-efficient cooling
- Water heater system
- Energy-efficient windows
- Duct replacement
- Wall insulation
- Other custom energy-saving measures

The calculated energy reduction from the project determines the amount of the incentives.

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Energy Efficient Electronics

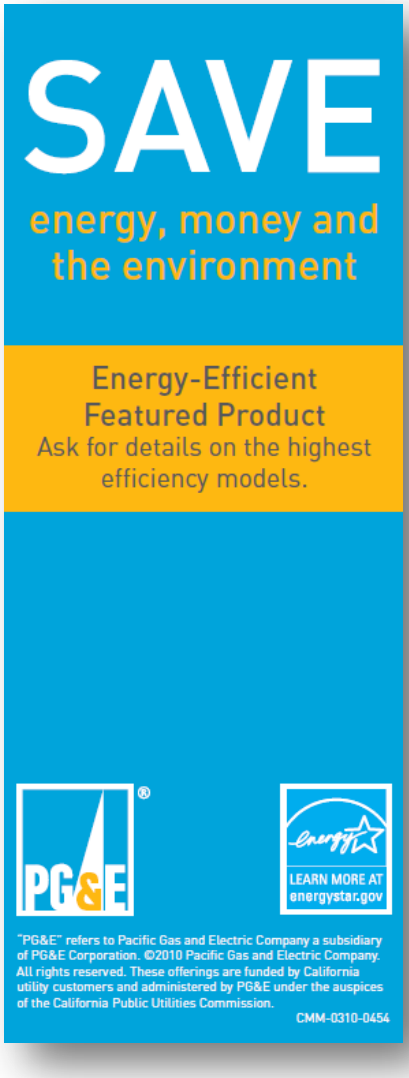
Consumer electronics account for up to 15% of household electricity use.

PG&E contracts directly with retailers, distributors and manufacturers

- incentives for stocking and selling energy-efficient consumer electronics

Goals:

- Accelerate new energy-efficient models to the market
- Stock, promote and sell TVs, desktop computers and monitors that meet or exceed ENERGY STAR® standards



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Energy Efficient Electronics

These retailers support PG&E's initiative for energy-efficient electronics

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Appliance Recycling Program

Incentive check amounts for items are:

- $35.00 check for refrigerator / freezer unit
- $25.00 for a room A/C unit picked up in conjunction with a refrigerator/freezer

If a customers has additional questions regarding the program or would like to schedule a pickup by phone refer them to:

- JACO Environmental at 1-800-299-7573
- Hours of operation
  - Monday - Friday 7:00 am - 6:00 pm
  - Saturday 7:00 am - 3:30 pm

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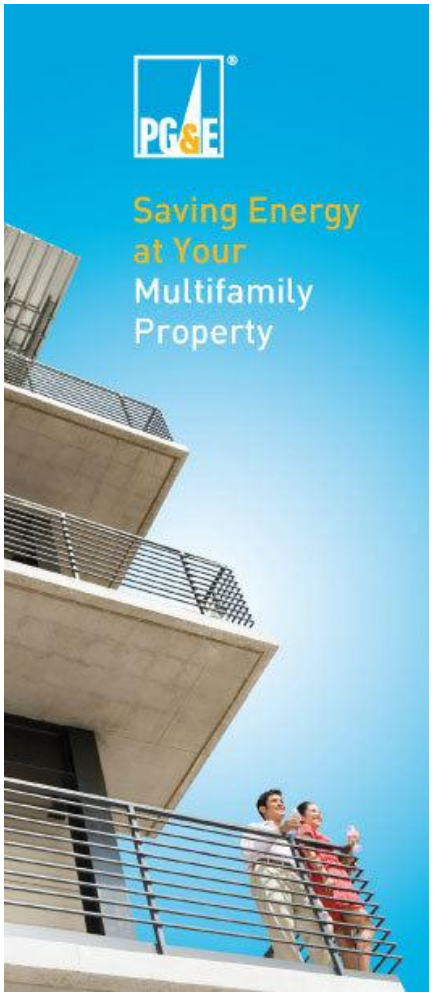
Multifamily Rebates

- **Rebates to property owners and managers of multifamily dwellings that contain two or more units**
- **Some examples of multifamily customer rebates:**
  - Central System Water Heaters/Boilers
  - Commercial Pool and Spa Heaters
  - Central System Furnaces
  - Low Flow Shower Heads
  - High-Efficiency Clothes Washers
  - Dual Pane Windows
  - Reflector Bulbs
  - Interior & Exterior Hardwired Fluorescent Fixtures



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Low Income Energy Efficiency

Energy Savings Assistance Program

- Operated by PG&E since 1983
- Funded through a public purpose charge on customer utility bills
- Serves single-family, multi-family and mobile homes and is available to both owners and renters
- Participants receive all feasible measures for which they qualify
- Serves customers at or below 200% of federal poverty guidelines

Financial Assistance

- CARE
- REACH
- LIHEAP
- Balanced Bill Payment

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Non-Res "Deemed" Rebates

General Improvements (Attic Insulation, $0.15/sq. ft.)

Business Computing (Plug Load Occupancy Sensor, $15.00/sensor)

Food Service (Commercial Combo Oven, $1,000/oven)

Cooling (Energy Star Ref, $75/unit)

HVAC (94% AFUE furnace, $150.00/unit)

Lighting (Exit sign, $27.00/sign)

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Custom Products

Custom Incentives	
Gas Incentive	$1.00/therm
kW Incentive	$100/kW
AC&R I	$0.15/kWh
AC&R II	$0.09/kWh
Other	$0.09/kWh
Lighting	$0.05/kWh

AC&R I: Air Conditioning and Refrigeration

- Equipment replacement (chillers, AC change-out, etc.)

AC&R II:

- System upgrades (controls, variable speed drives, etc.)

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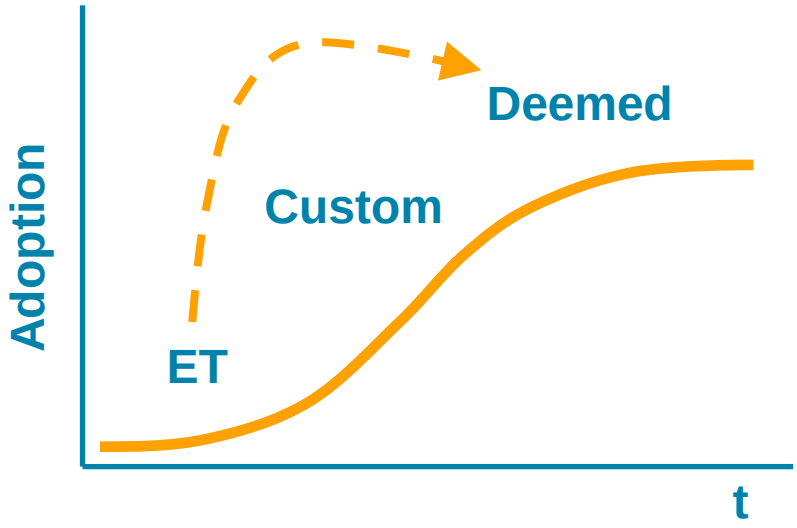
Current Initiatives

Custom and Industrial Products

- Retrocommissioning redesign
- New construction products
- Small-Medium Business offerings
- Ag initiatives

Financing Products

- On-bill financing
- Statewide pilots



Third-party Programs and Solicitations Panel

Moderator:

Susan Preston, CalCEF Clean Energy Angel Fund

Panelists:

Ila Homsher, Manager, Third Party Programs, PG&E

Jonathan Soper, Principal, Enovity

Mahon Aldridge, Vice President, Ecology Action

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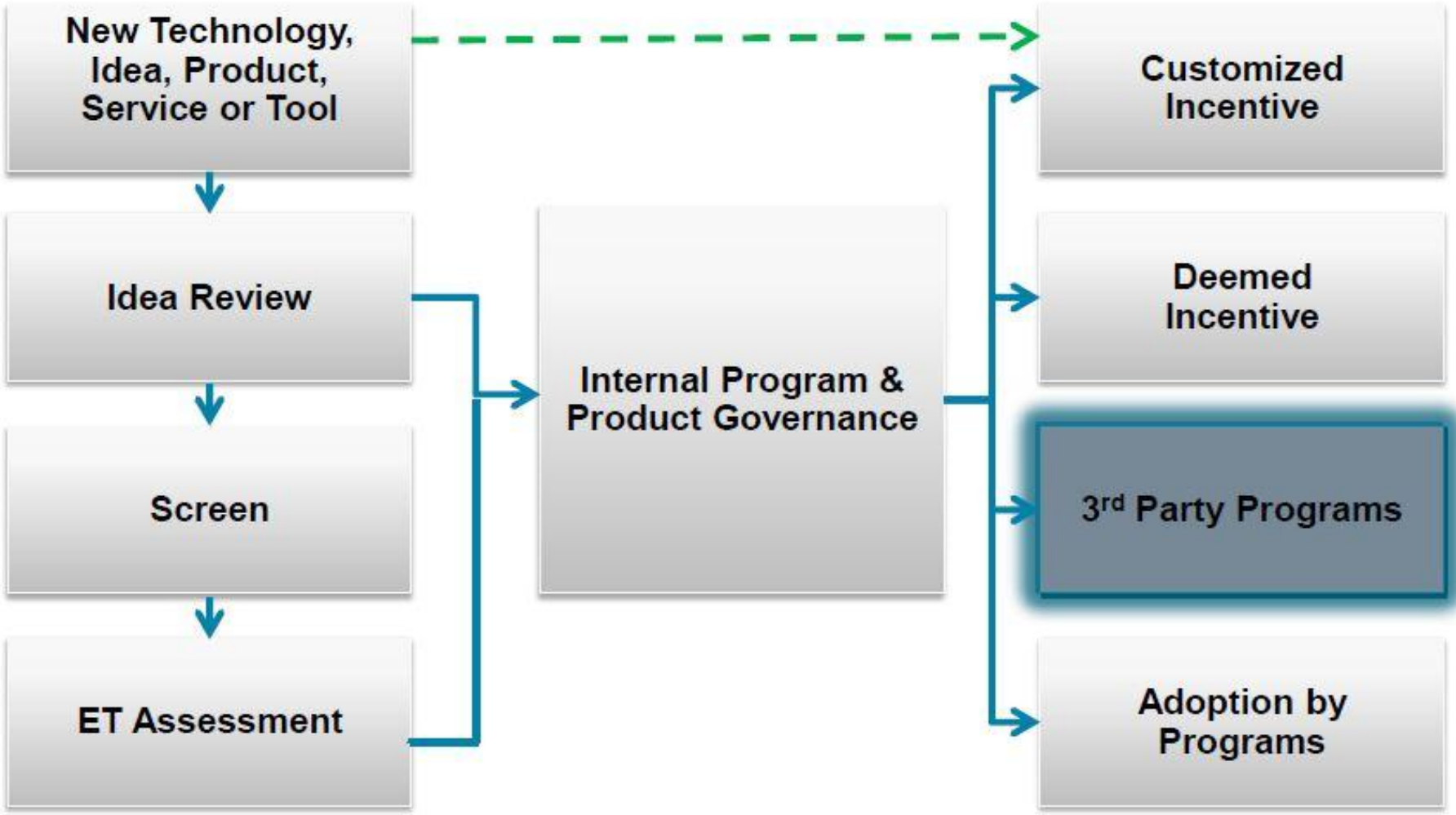
Roadmap into Utilities Programs



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Third Party Programs: Regulatory Background

- *"…to solicit innovative ideas and proposals for improved portfolio performance"* D.05-01-055, mimeo, p.90
- CPUC Directed Delivery Approach
- 2010-2012 Third Party Programs - Minimum of 20% of PGE Portfolio Budget – 3-year budget - $267M
- 2013-2014 2-year budget - $155M
- Focus on Unique, Hard to Reach, Untapped Markets
- Extensive RFP, Review and Selection Process
- Reviewed and Approved by CPUC-established Peer Review Group (PRG)

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2013-2014 Portfolio: Continuing Third Party Programs

(Filed July 2, 2012; Expect Approval November 8, 2012)

Continuing Programs include:

- 26 distinct implementers
- 39 unique programs
- Residential, large, medium, and small business customers
- Deemed, direct install and customized measures.

Programs span multiple market segments:

Agriculture 7	Industrial 7	Schools 3
Commercial 6	Residential 2	Small Business 5
Health Care 1	Residential NC 3	
Hospitality 2	Retail 3	

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How Third Parties Work

Third Parties provide a full range of Program Management Administration and Implementation functions:

- Identify customers
- Outreach and Marketing
- Audits/Assessment
- Make the sale
- Implement the projects
- Monitoring and QA
- Reporting and tracking/Data systems
- Program coordination, referrals, and integration

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2013-2014 Portfolio: New Programs

Innovative Designs for Energy Efficiency Approaches - IDEEA

New solicitation - $15M

Targeted: supports identified program and market needs and technologies

- Water/energy nexus
- Hard-to-reach markets (tenant-landlord in residential and commercial customers)

Innovative: promotes new ways to achieve savings and fund energy efficiency

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IDEEA Solicitation

Ideas under consideration by PG&E

- Emerging Technologies-programs/ideas ready for implementation or scaled field placements

Ideas generated by Bidders

- New delivery approaches, new technologies

Level of bidding expected - High

- Outreach through Technology Research Incubation Outreach (TRIO) events
- Many interested bidders registered on Sourcing website

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IDEEA Solicitation

Two-prong staged approach:

Stage 1 – Bidders submit abstract describing program concept. If approved, then move to Stage 2

Stage 2 – Bidders submit a more detailed proposal addressing areas such as measures, cost-effectiveness, marketing and outreach plans

Procurement /Negotiation Process

- In partnership with Sourcing and subject matter experts (i.e., Third Party PM's or Product Managers)

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References and Information

Link to External website (pge.com):
http://www.pge.com/mybusiness/energysavingsrebates/partnersandtradepros/eeis/search/

- Implementer Co-Branded Fact Sheet
- Implementer Website

Register for information on upcoming Third Party Solicitations:
www.pge.com/thirdparty/

If your company is interested in learning more about the IDEEA Solicitation please click on **register** and include the code: “Third Party Energy Efficiency”.

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About Enovity

California-based Company

- Founded in 2002
- 135 employees
- Offices in San Francisco, Sacramento, Irvine, San Diego, Phoenix
- Energy Services, Commissioning, Building Automation, Operations & Maintenance

Utility Third Party Energy Efficiency Programs

- Started out as sub-consultant to prime contractor in 2003
- First third party program with PG&E in 2006
- Currently have four (4) traditional third party programs; two with PG&E, one with SCE, one with City of Palo Alto
- Two Continuous Energy Improvement (CEI) programs with SCE and SDG&E

Approach for Third Party Programs

- Target larger buildings and facilities in the commercial and food/agricultural sectors
- Self perform all program activities; no sub-consultants

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Creating a Proposal

1. **Determine Market Sectors You Want to Address**
   - Commercial, Industrial, Residential?
   - NAICS codes
2. **Determine Program Approach**
   - All in-house versus teaming
   - Determine technical resources
3. **Build Program Model**
   - Select EEMs; DEER database for standard EEMs
   - Develop work papers for customized EEMs
   - Build spreadsheet model with program budget, costs and savings
   - Cost effectiveness model; E3 calculator
4. **Author proposal**
   - Describe program execution
   - Cost proposal: incentives/rebates to customer, payment structure
   - At least a 3-week effort for a good business development team

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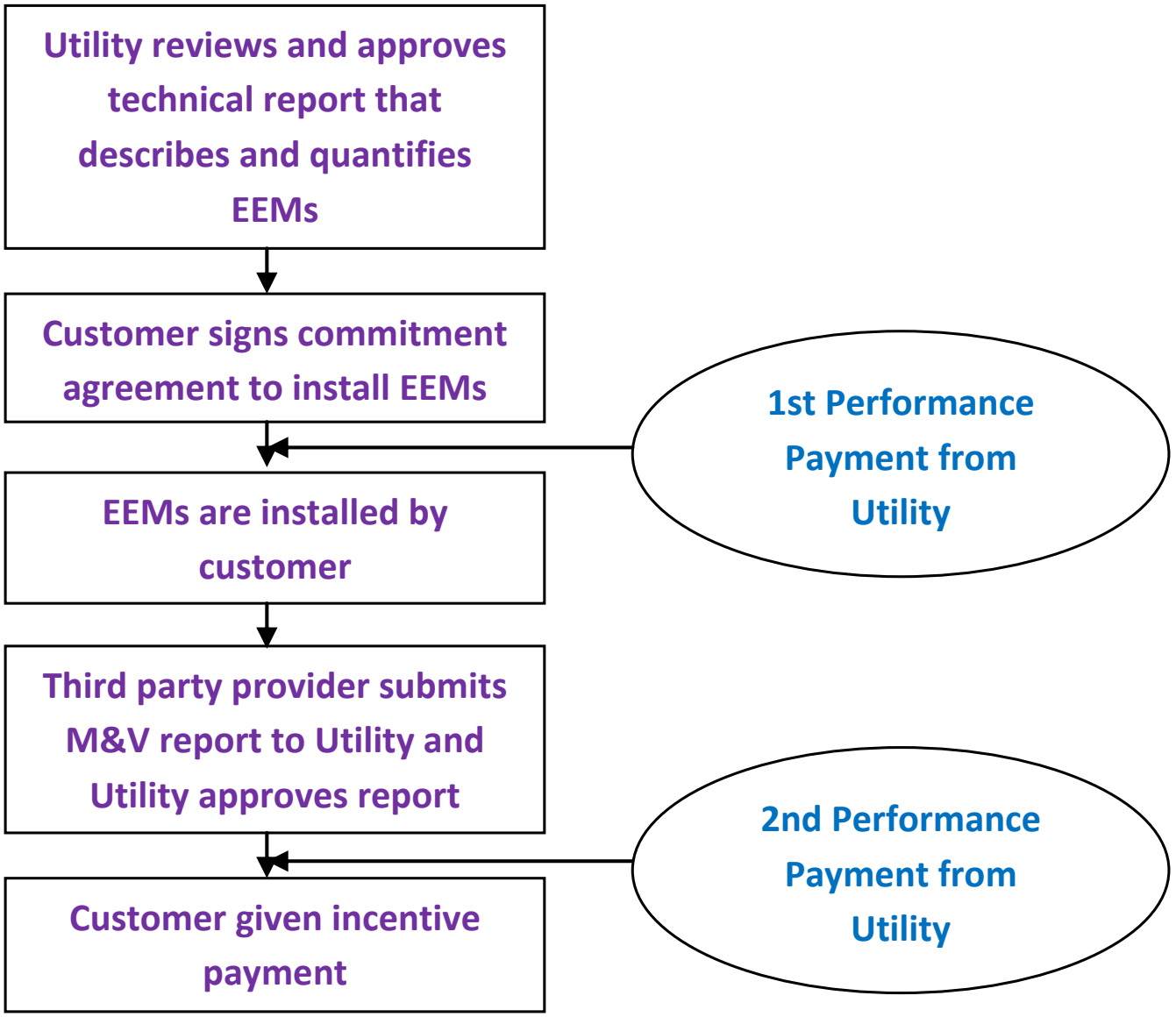
Third Party Payment Structure



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Third Party Program Execution

Activity	Detail
Planning and Program Documents	Marketing plan, coordination plan,
Marketing and Customer Engagement	Program brochures Meetings and seminars; trade events Engage partners Sign up customers
Project Identification	Site surveys, energy calculations, cost analysis, reports
Project Validation	Energy savings must be verified; methodology pre-defined

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Challenges

Competition

- Other 3rd party programs
- Coordinate with other third parties, partnerships and utility core programs

Unpredictable variables

- Electricity and gas prices
- Labor market for skilled professionals that will be needed to run your program

Cash Flow

- Delayed payment for engineering, administration and management time
- Accounting challenge; ‘unbilled revenue’

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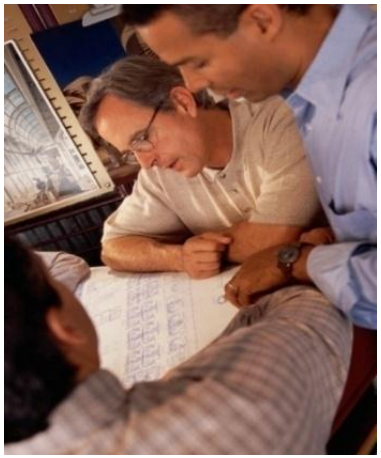
Keys to Success

Balanced Team

- Right mix of technical, sales and management staff
- If decide to partner/subcontract ensure complimentary



Respond to Utility Needs

- SMB Market
- Demonstrate process to ensure deep and persistent savings
- Don’t keep saving same kWh & therms

Program Management Tools

- Track customers
- Document energy savings
- Easy information flow

Project Funding

- Identify project funding with customer right away
- Financing and/or capital budgets

Good Energy Efficiency Measure (EEM) Mix

- Be clear on implementation path for EEMs
- Research current and future energy codes so you can project accurate savings for proposed program

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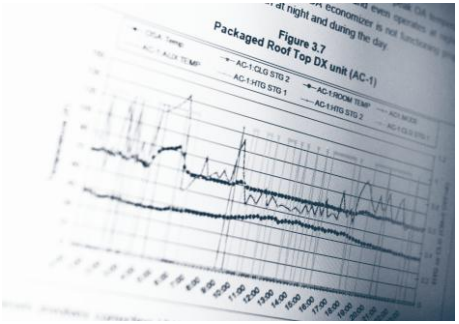
Monitoring Based Persistence Commissioning (MBPCx Program)

Focused on commercial sector

- Offices, labs, hotels, courts > 50,000 sq.ft; 17.5 million sq.ft to date
- Running since Year 2006

Energy Projects

- HVAC, building automation & lighting control
- Retro-Cx, repair and retrofit
- All demand side; no renewable, distributed generation or energy storage
- All energy project identification completed in house
- Self perform some installation work



Persistence Central to Program Design

- Metering and energy dashboards to track performance (top down)
- Diagnostics in place to detect system level faults (bottom up)

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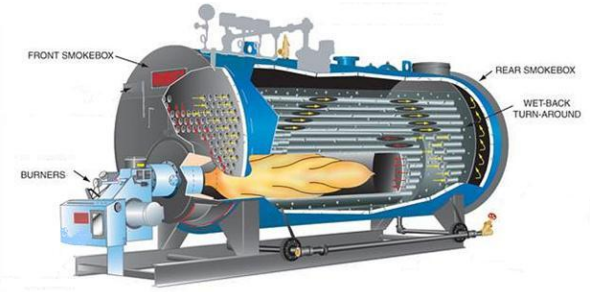
Commercial & Industrial Boiler Energy Efficiency Program (CIBEP)

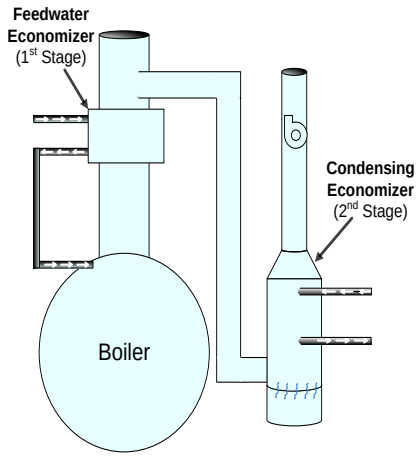
Focused on agricultural & commercial sector

- Food processing, some industrial, offices, labs
- Running since Year 2006
- Installing contractor relationships key



Energy Projects

- Boiler & central steam systems
- 90% of savings are gas/therms; PG&E priority
- Opportunity because boilers an end-use that was being neglected
- All evaluations and engineering in house
- All implementation by outside contractors



Challenges Moving Forward

- Drop in gas prices
- New regulations and energy codes

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EcologyAction

Finding On-Ramps to Third Party Programs

PG&E

SOUTHERN CALIFORNIA EDISON
An EDISON INTERNATIONAL Company

Southern California Gas Company

SDGE

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EcologyAction
Innovation • Partnership • Community

- 42 year old nonprofit focused on resource efficiency and conservation with 90 staff in California
- Energy clients include all California IOUs
- RightLights, LodgingSavers, CasinoGreen
- TRIO / TRIP program award Mid-Market Peak Plus
- Specialize in SMB deep energy retrofits, workforce training, marketing, community engagement, trade ally capacity building
- Have completed over 12,000 commercial retrofits
- Recruit, train and manage contractors to complete all upgrades
- Installed 57 GWh of savings in 2011

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On-ramp Options to Third Party Programs

1. **Get your technology/service adopted by an existing third party program**

2. **Get your technology/service included in a new program proposal**

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On-ramps to 3P Programs

Adopted into an Existing 3P Program

Pro: Less speculative than a new bid

Pro: Less work than a new bid

Pro: Many existing programs to approach (~ 95 programs currently in operation)

Con: Adoption time (~ 6 months)

Con: May be small part of overall program

Con: 3P programs highly segmented (may need to be in multiple programs to get significant sales volume)

Con: Early market technologies may be too risky

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On-ramps to Third Party Programs

Included in a New Program Proposal

Pro: Program can be designed around your technology

Pro: Greater budget could be assigned to your technology than if you are added mid cycle to an existing program

Con: Very competitive; 3 of 23 proposals were funded in last TRIO bid

Con: Time-to-sale is approximately 6-9 months

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The Ideal Partner

- Proven production readiness
- Established pricing
- Existing field placements
- Independent performance verification
- Documentation of savings assumptions in CPUC work paper format
- Lay-person marketing collateral describing how your technology saves energy

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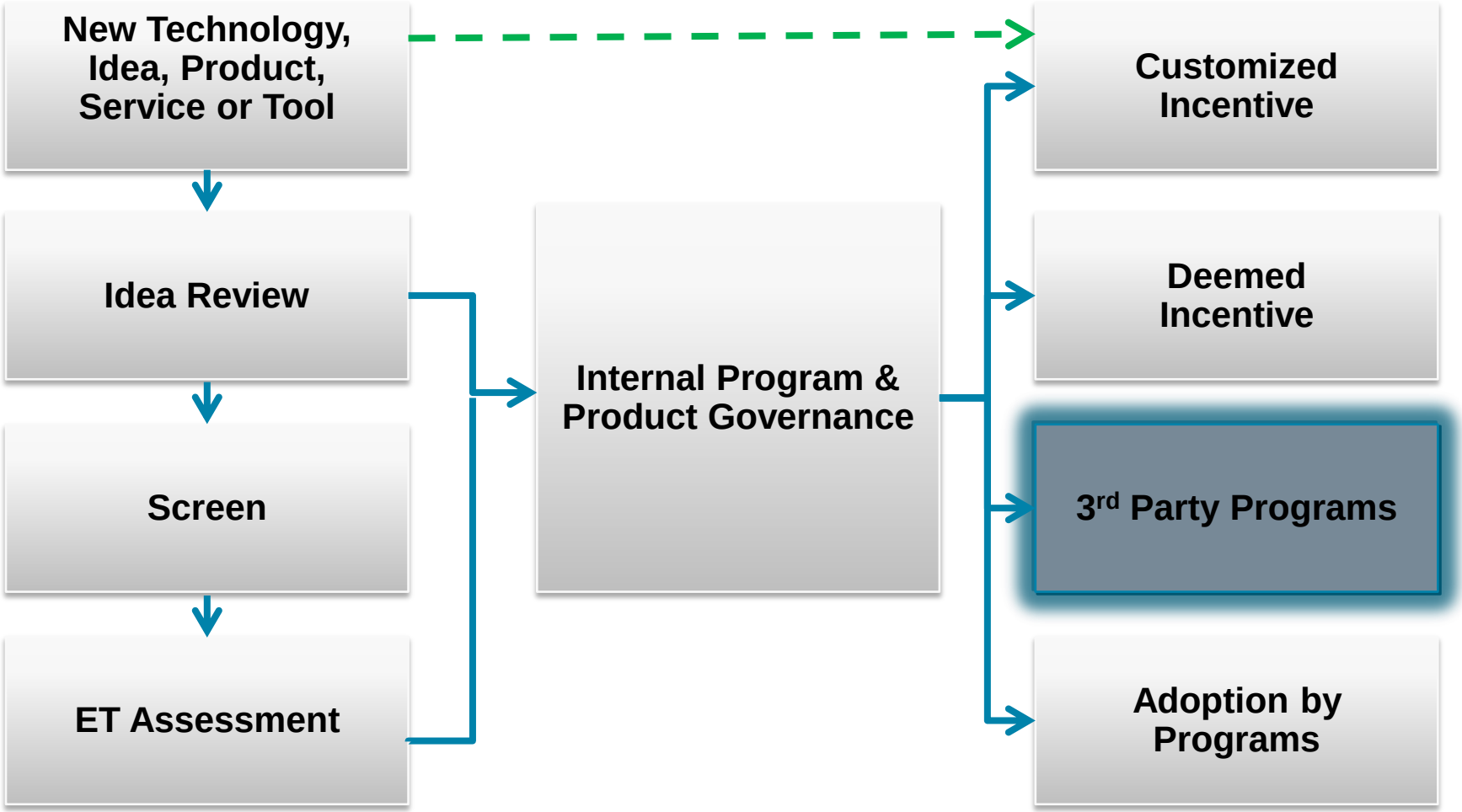
Roadmap into Utilities Programs



One-on-One Sessions and Networking

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Thank You!