



---

# **SEMPRA ENERGY UTILITIES (SCG, SDG&E)**

## **EMERGING TECHNOLOGIES PROGRAM (ETP)**

**A.Y. Ahmed**  
*Emerging Technologies Program Manager*  
*January 14, 2010*



# *SCG and SDG&E EMERGING TECHNOLOGIES PROGRAMS (ETP)*

## **INTRODUCTION**

- ✧ ETP Challenges and Changes
- ✧ ETP Budgets
- ✧ Navigant Third Party (POF) Program
- ✧ Utility RD&D Programs
- ✧ ETP organization, Project selection and Tech Transfer
- ✧ Program achievement to date
- ✧ Current technology evaluations
- ✧ Questions



# *SCG and SDG&E EMERGING TECHNOLOGIES PROGRAMS (ETP)*

---

## **CHALLENGES and CHANGES**



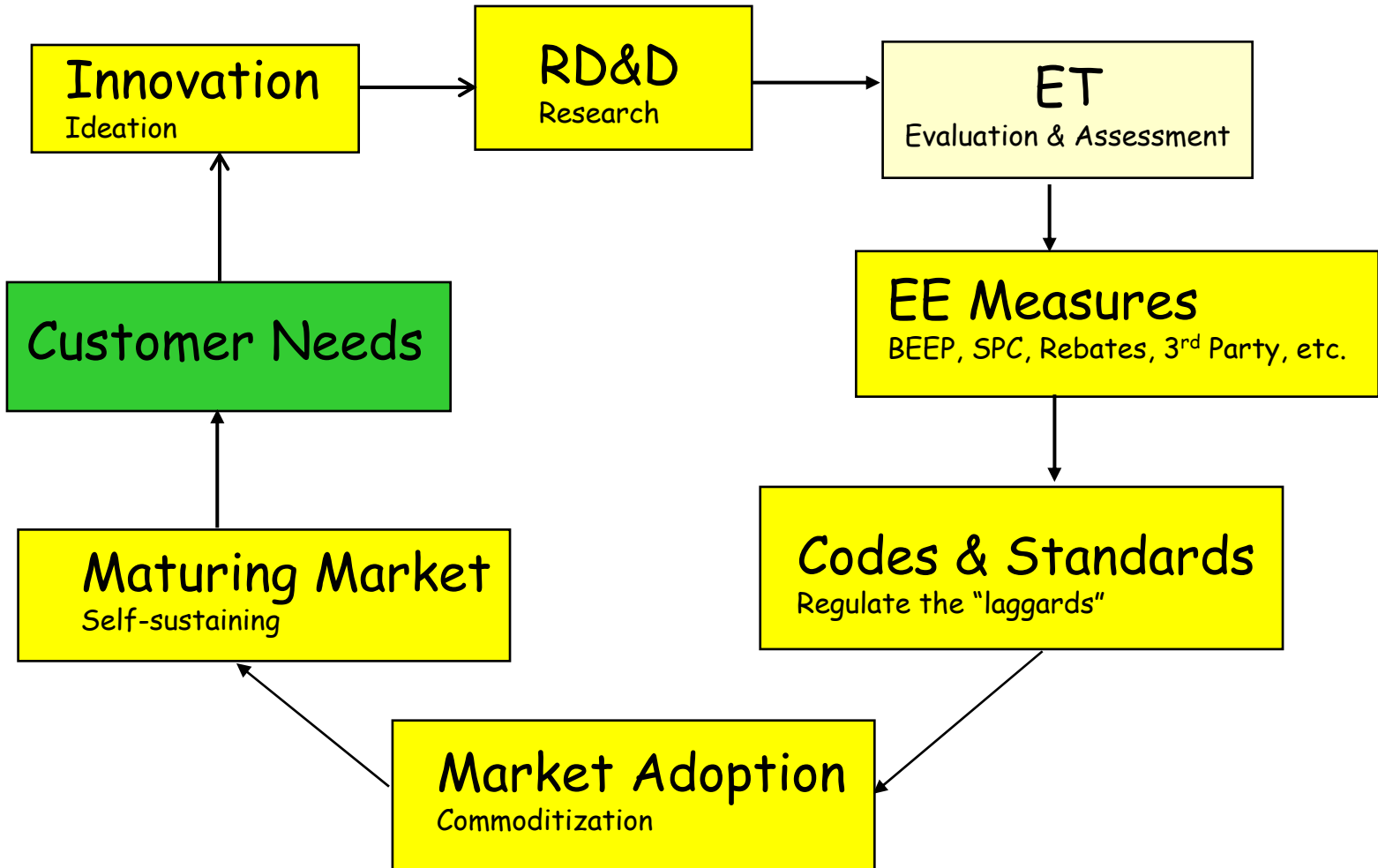
## *Business Environment for California UTILITIES New & Intensified Directives*

- Meet the California Long Term Strategic EE Plan (CLSEEP) goals
  - ✧ Transform the HVAC market
  - ✧ Zero Energy New Homes by 2020
  - ✧ Zero Energy New Commercial Buildings by 2030
  - ✧ Significant reductions in energy use in existing residential and commercial buildings
  - ✧ Integrated DSM offerings
  - ✧ Advanced lighting technologies
- Meet AB 32 Goals
  - ✧ By 2020, reduce carbon emissions to 1990 levels. (~ 25 % reduction)
  - ✧ By 2050, reduce carbon emissions to 80 % below 1990 levels



## *How Will UTILITIES Meet These Changes & Challenges?*

- Find, research and evaluate new cost effective technologies
- Develop a statewide systems approach to energy efficiency offerings
- Increase the use of collaborations and statewide partnership activities
- Increase outreach activities to technology innovators, federal government and international programs
- Identify innovative strategies for new and effective program delivery (e.g. social marketing, behavior change)
- Develop new training (WET)





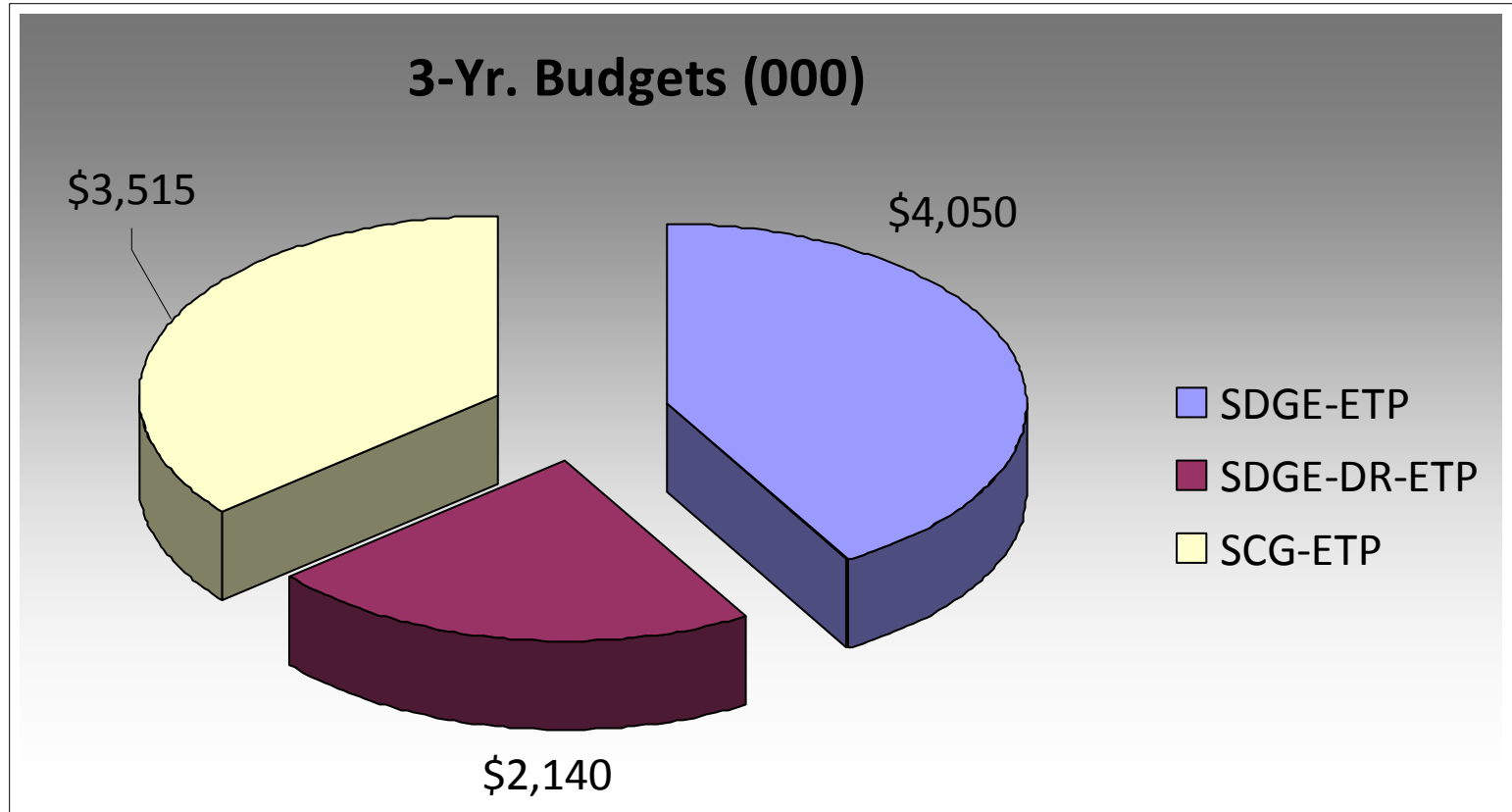
# *SCG and SDG&E EMERGING TECHNOLOGIES PROGRAMS (ETP)*

---

## **ETP BUDGETS**

# Energy Efficiency and Demand Response ETP Budgets

Total Funding: \$9,705,000 for 2010-2012



Note: 1) EE-ETP's have 2010-2012 funding cycle  
2) DR-ETP funding cycle began in 2009 and ends in 2011



# *SCG and SDG&E EMERGING TECHNOLOGIES PROGRAMS (ETP)*

---

## **NAVIGANT POF**



## *Energy Efficiency and Demand Response ET Budgets Third Party POF Funding: \$3,670,000 for 2010-2012*

---

- Third Party Program with Navigant (NCI)– Portfolio of the Future (POF)
- Objective is to identify new EE measures for the utilities’ future programs
- Been in place since the 2006-2008 program cycle and the 2009 “bridge” period
- Contract Value for 2010-2012: \$3 million with SCG and \$670K with SDG&E
- Contract technical management is by ETP

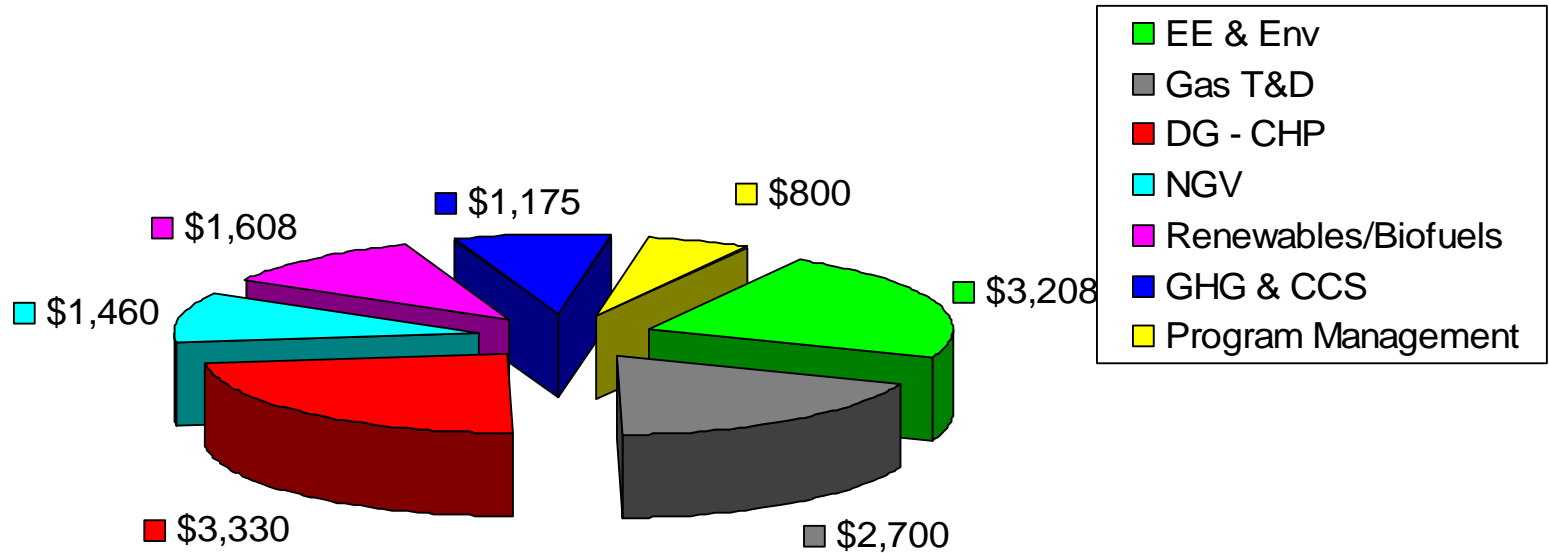


# *SCG and SDG&E EMERGING TECHNOLOGIES PROGRAMS (ETP)*

---

## **UTILITY RD&D PROGRAMS**

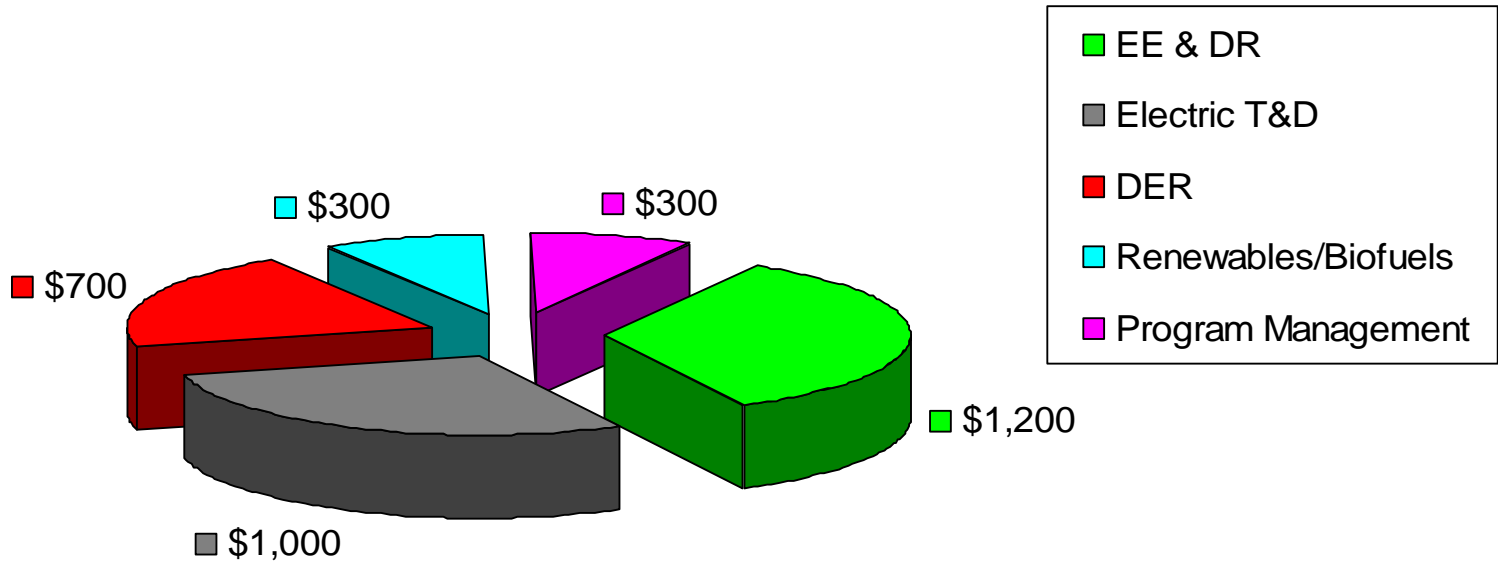
## 2010 Proposed Gas RD&D Portfolio (\$000)



**Total 2010 Proposed Gas RD&D Budget = \$12.5 million**

**EE & Env Budget = \$3.2 million**

## 2010 Proposed Electric RD&D Portfolio (\$000)



**Total 2010 Proposed Electric RD&D Budget = \$3.5 million**

**EE & DR Budget = \$1.2 million**



## *SUMMARY OF RD&D ACTIVITIES*

---

### ➤ SoCalGas

#### ✧ Gas T&D

#### ✧ Customer Applications

- ✧ Residential Appliances
- ✧ Commercial Cooking and Facilities
- ✧ Industrial Boilers and Processes
- ✧ Distributed Generation & CHP
- ✧ Natural Gas Vehicles

#### ✧ Renewables

- ✧ Solar-Thermal
- ✧ Biofuels



## *SUMMARY OF RD&D ACTIVITIES*

---

### ➤ SDG&E

#### ✧ Electric T&D

#### ✧ Customer Applications

- ✧ Smart Appliances
- ✧ Home Area Network
- ✧ Net Zero Energy Homes
- ✧ Advanced Lighting
- ✧ HVAC
- ✧ Electric Vehicles
- ✧ Energy Storage
- ✧ Distributed Energy Resources

#### ✧ Renewables

- ✧ Solar
- ✧ Wind
- ✧ Biofuels



# *SCG and SDG&E EMERGING TECHNOLOGIES PROGRAMS (ETP)*

---

## **ETP organization, Project selection and Tech Transfer**



### **SIX PRIMARY AREAS OF ACTIVITY**

- ✧ Technology Assessments
- ✧ Scaled Field Placements
- ✧ Demonstration Showcases
- ✧ Market & Behavioral Studies
- ✧ Technology Development Support
- ✧ Business Incubation Support

The first three activities will account for over 80% of the SEU ETP activities



# *Project Selection Criteria & Approval Process*

---

## **Project Selection Criteria**

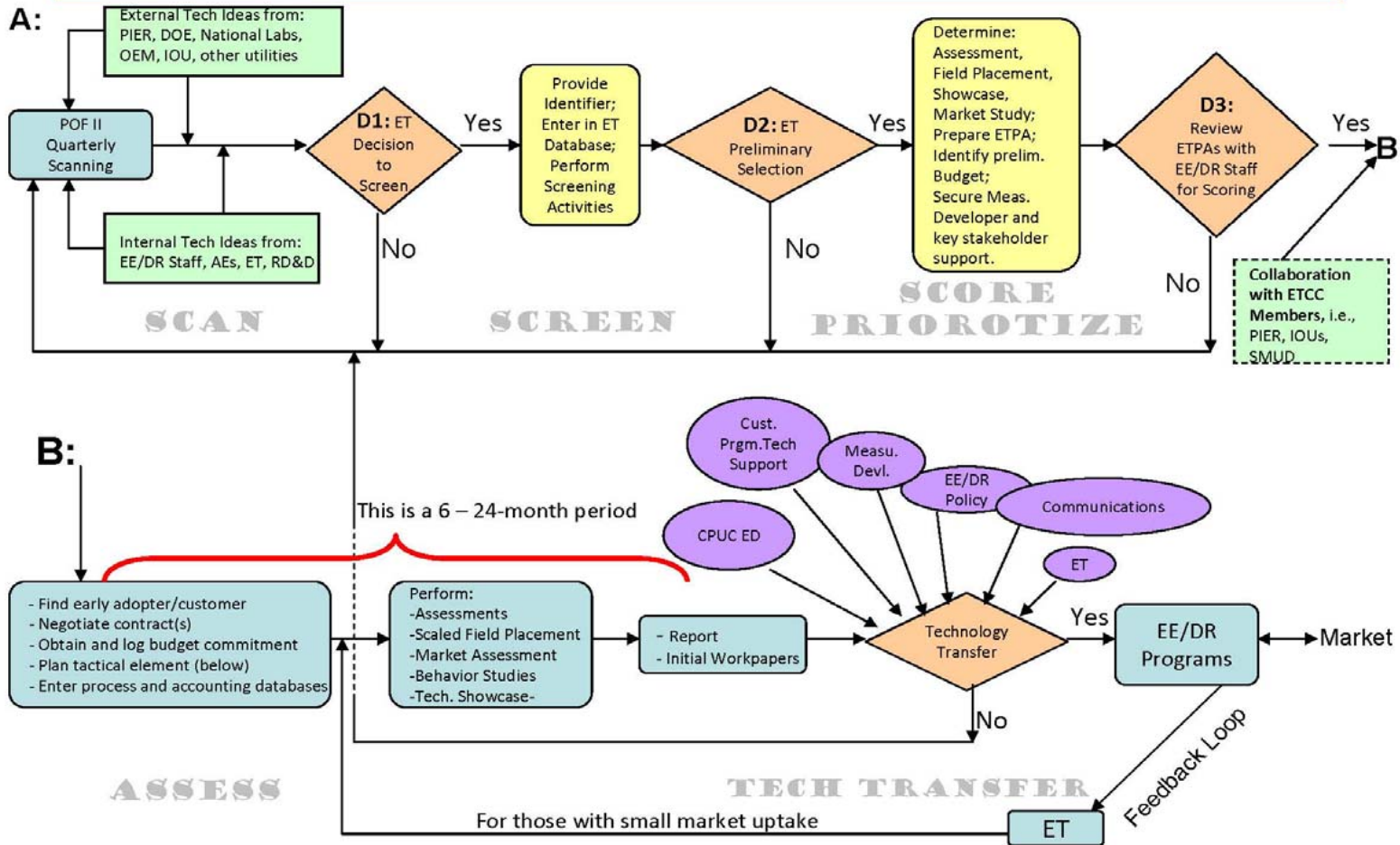
- Technology scanning and screening
- Aligns with company strategy and technology priorities
- Aligns with Customer Program goals
- Addresses the California Long Term Strategic EE Plan (CLSEEP)
- Collaboration with other IOUs, CEC PIER, DOE

## **Approval Process:**

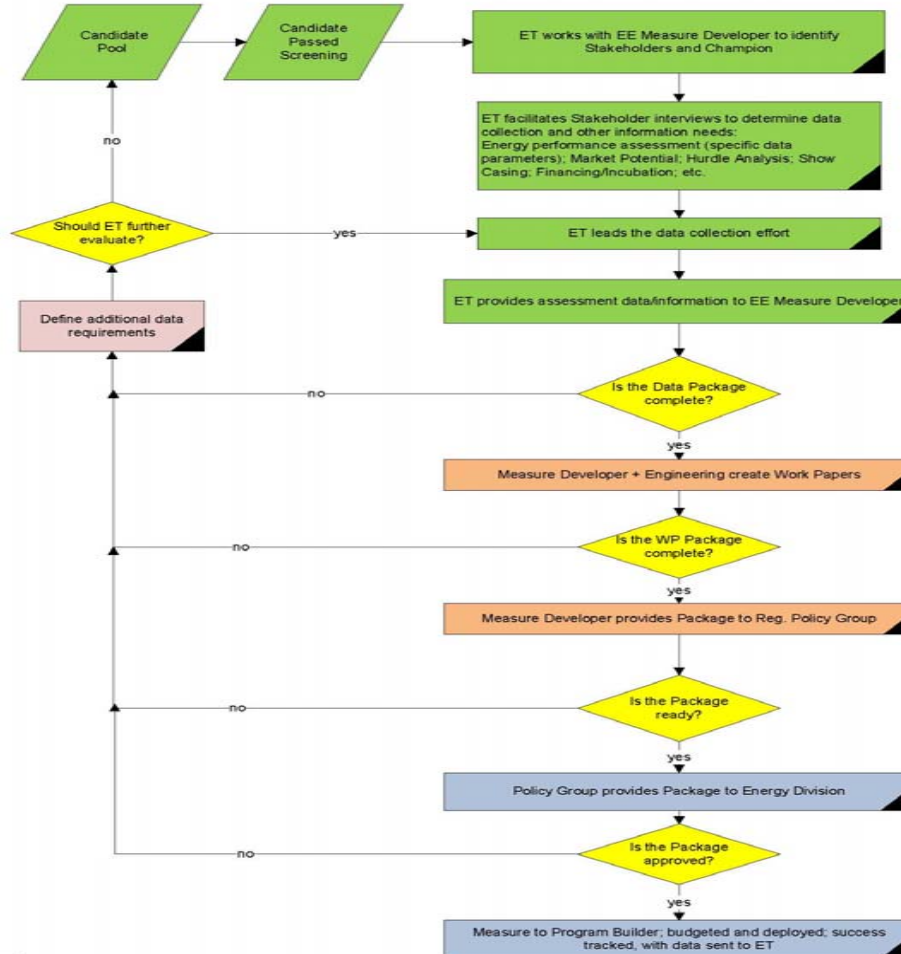
- Developed Program Theory and Logic Model as per CPUC evaluator guidance
- Internal project approval process with scoring system and decision by key stakeholder
- A Technology Transfer process in collaboration with EE Customer Programs

# ETP Project Selection Criteria and Process Diagram

## 09-11 ET Project Selection Process Diagram



## TECHNOLOGY TRANSFER PROCESS



Legend:





# *SCG and SDG&E EMERGING TECHNOLOGIES PROGRAMS (ETP)*

---

## **PROGRAM ACHIEVEMENT**



## **TECH TRANSFER TO CUSTOMER PROGRAMS (2009):**

- ✧ Jewelry case LED Lighting Systems
- ✧ Refrigerator/Freezer LED Case Lighting
- ✧ Refrigerated Warehouse High Bay LED Lighting Systems
- ✧ Hotel Guest Room Controls
- ✧ Wet Cleaning for Professional Garment Care (“Dry Cleaners”)
- ✧ Data Center Cooling System Air Distribution Optimization

## **COMPLETED PROJECTS (ready for transfer 2010)**

- ✧ LED Street lighting evaluation and demonstration
- ✧ Induction street lighting evaluation and demonstration
- ✧ LED covered garage and parking lot lighting
- ✧ LED Downlights Commercial Application
- ✧ MF Residential Entryway LED Lighting
- ✧ Cold Cathode & LED menu board lighting



## *SDGE Demand Response (DR-ETP) Program Achievement*

---

### **TECH TRANSFER TO CUSTOMER PROGRAMS:**

- ❑ Automated Demand Response
- ❑ Demand Response Business Network (DR Biz Net)
- ❑ Proof-of-concept demonstration of HAN technologies



➤ **TECH TRANSFER TO CUSTOMER PROGRAMS (2009):**

- ✧ Tankless gas water heaters
- ✧ Cold water enzymatic detergent (residential w/P&G)
- ✧ Multi-family hydronic loop controls w/monitoring
- ✧ Eneron “turbopot” (stock pot for restaurant or institutional cooking)
- ✧ Advanced Restaurant Ware-washers
- ✧ Laundry System water recycling
- ✧ Warm water detergent option
- ✧ Advanced Tunnel Washer
- ✧ Water pumping Engine advanced controls
  - ✧ Continental Controls
  - ✧ Omnitek Controls



# *SCG and SDG&E EMERGING TECHNOLOGIES PROGRAMS (ETP)*

---

## **CURRENT TECHNOLOGY EVALUATIONS**



**PLANNED ACTIVITIES  
(2009-2012):**

- ✧ Advanced LED lighting system assessments (office & retail)
- ✧ OPower social/behavioral marketing study
- ✧ Advanced Integrated office lighting system evaluation
- ✧ Solar thermal water heating
- ✧ Near Zero Energy homes
- ✧ ZERO Energy Small Commercial Office
- ✧ Office of the Future pilot
- ✧ Adaptive street lighting technologies
- ✧ Near Zero Energy retail buildings
- ✧ Truveon residential system evaluation
- ✧ Centralized Hotel guest room controls
- ✧ High Efficiency air conditioners
- ✧ Evaporative Cooling technologies
- ✧ Evaluation of electric black box technologies
- ✧ Advanced Fault Detection Diagnostic & Optimization (FDDO)
- ✧ Plasma Lighting
- ✧ HID Addressable Ballasts
- ✧ Cold Cathode Displays for Retail and Bus Stops
- ✧ Gas Station Canopy Lighting
- ✧ Outdoor Billboard Lighting
- ✧ Laboratory of the Future
- ✧ Retail Store Daylighting Demonstration



## *SDGE Demand Response (DR-ETP) Program Activities*

### **ONGOING & PLANNED ACTIVITIES (2009-2011 cycle):**

- ✧ Multi-vendor HAN devices evaluation
- ✧ Single-Vendor End-to-End HAN Solution
- ✧ Residential Energy Management and Awareness (REMA) technologies market study
- ✧ Advanced Lighting Controls
- ✧ Hotel and Hospital Demand control and Demand Limiting system DR strategy development for Data Centers
- ✧ DR Strategies with electric storage systems (collaboration w/ vendor) DR strategy development for water treatment plants
- ✧ Office of the Future
- ✧ Zero energy homes
- ✧ EPRI projects:
  - ✧ End use Energy Efficiency & Demand Response (Program 170)
  - ✧ Testing Protocols of Customer Feedback Technologies



➤ **PLANNED ACTIVITIES  
(2009-2012):**

- ✧ Spyrocor Burner Insert (Heat Treatment)
- ✧ Heat Savr Pool Treatment System
- ✧ Automated Steam Trap Monitoring System
- ✧ Ultra-low flow Restaurant Spray Rinse Nozzles
- ✧ Ozone Laundry Systems for Commercial Laundries
- ✧ Single Family home water heater recirculation system
- ✧ Multi Family Water Heater controller studies

- ✧ Raytronics system controller study
- ✧ M2G Space Heating boiler controller study
- ✧ Advanced flue controller for gas equipment
- ✧ SunCache Solar water heating system evaluation
- ✧ Solar thermal swimming pool heating
- ✧ Advanced water heaters for high energy use residential homes
- ✧ Whole House retrofit study
- ✧ Water heating distribution system study
- ✧ Tankless water heating study enhancements



---

## *SDG&E, SCG ETP's*

# *Questions*

The SEU Emerging Technologies Programs are funded by California utility customers and administered by San Diego Gas & Electric and Southern California Gas Company under the auspices of the California Public Utilities Commission.