

THINKING OUTSIDE THE BOX TO ACHIEVE AGGRESSIVE ENERGY SAVING TARGETS IN CALIFORNIA



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CPUC/CEC Actions

- CPUC set 10 year energy savings goals
- By 2009 savings goal will exceed current technological potential
- CEC issued white paper to increase state emerging technology programs funding.



State of California's Energy Action Plan

- Developed by:
 - California Energy commission (CEC)
 - Public Utilities commission (CPUC)
 - Consumer Power and Conservation financing Authority (CPA)
- Establishes shared goals and specific actions to ensure that adequate, reliable, and reasonable-price electrical power and natural gas supplies

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Aggressive Energy Savings Goals

- Energy efficiency effort should capture 70% of the economic potential and 90% of the maximum achievable potential for electric energy savings.
- These efforts are projected to meet 55% to 59% of the IOUs incremental electric energy need between 2004 and 2013.

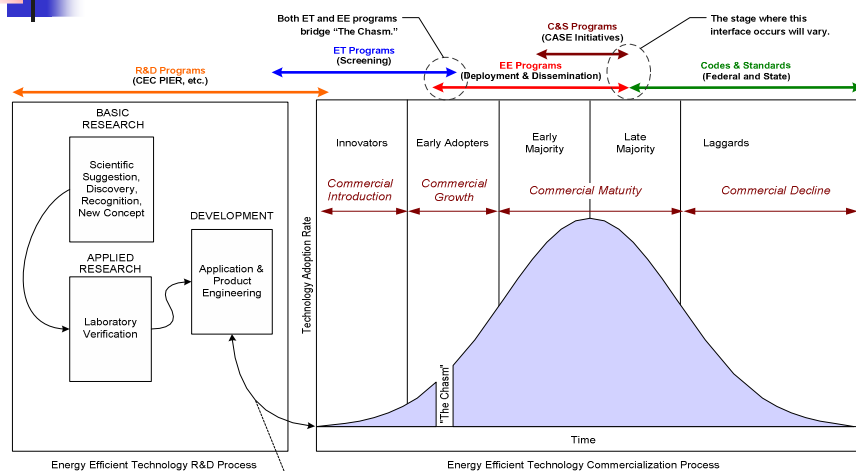
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SCE Goals

Year	Energy Savings Annual Goal (GWH/Yr)	Cumulative Energy Savings (GWH)**	Demand Reductions (MW/Yr)	Cumulative Demand Reductions (MW)**
2006	922	2575	207	541
2007	1046	3621	219	760
2008	1167	4788	246	1006
2009	1189	5977	249	1255
2010	1176	7153	247	1502
2011	1164	8317	245	1747
2012	1151	9468	241	1988
2013	1139	10607	240	2228

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Energy Efficiency Framework



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Emerging Technologies

- Early Prototypes
- Commercially Available Technologies which have not yet obtain adequate penetration or acceptance in the market
 - Hardware
 - Software
 - Design Tools
 - Process
 - Services

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Challenges



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Emerging Technologies Coordinating Council

- Represented by:
 - California Energy Commission – Ann Peterson
 - Pacific Gas & Electric – Jon Livingston
 - Southern California Edison – Henry Lau
 - Sempra Utilities - David Berokoff
 - Southern California Gas – Ed Becker
 - San Diego Gas & Electric – Ahmed Abdullah

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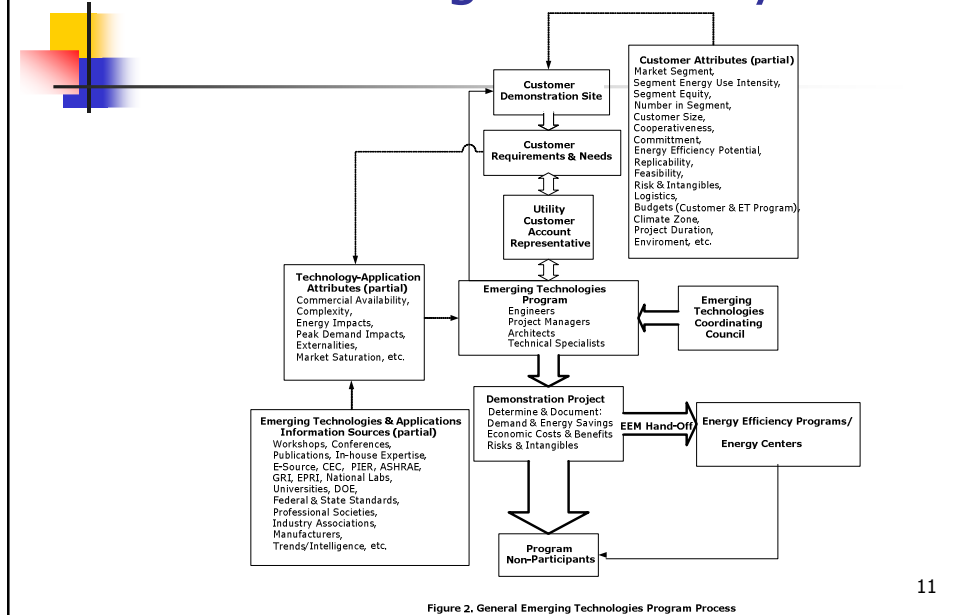


ETCC Activities

- Meet quarterly among members to facilitate and coordinate ET project
- Host ET Summit every other year to share information with researchers, manufacturers and stake holders
- ET and PIER projects posted on website for public view

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ET Program Theory



Emerging Technology 2006-2008 Program

- **Program:** Statewide information program
- **Objective:** Verify the performance of emerging technologies and transfer the information to the Energy Efficiency Programs and DR Programs
- **Funding Level:** Approximately \$33 Million statewide plus Demand Response activities
- **Coordination:** Emerging Technologies Coordinating Council, CEC PIER, SCE, PG&E, SCG, and SDG&E. www.etcc-ca.com



Technology Selection Criteria

- Must have program advocate
- kWh savings and kW demand reduction
- Market potential
- Incremental cost implications
- Market barriers
- Life expectancy
- Project cost
- Integrated portfolio

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Emerging Technology Program

- Deployment of new and improved energy efficiency products and applications can help sustain or increase current savings yields.
- Create a new generation of technologies available to tap the cost-effective potential of energy efficiency.
- Program strategies should focus on reducing both the performance uncertainties associated with new products and applications and the institutional barriers.


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SCE ET Program Strategies

- Looking for technologies not regulated under Title-20 and Title-24
- Proven technologies apply to new market segments
- New technologies with large technical and economical potentials

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Examples of Emerging Technologies

- Automatic Fume Hood Sash Control
- Variable Duct Collection System
- Electrodialysis for Ttrate Control in Wine Industry
- Solid State Lighting Systems
 - LED Street Lights
 - LED Taxiway Lights
 - LED Signs

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Technology Search

- Technology Round table
 - Lighting (2/24)
 - HVAC (5/31)
 - Water/water treatment (First Quarter 2007)
- Participants
 - Program Managers
 - Energy Center Staff
 - AM/AE
 - CPUC/CEC
 - National Laboratories/Universities
 - Manufacturers
 - Consultants

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Major Areas of Interest

- Lighting
 - Simple
 - Large market potential
 - Major progress in LED
- Residential Market
 - Cost effective attributes
- HVAC/Refrigeration
 - Large market potential
- Industrial Market
 - No standards
 - Big savings
 - Untapped

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ET Assessment Process

- Search for technologies
- Submit preliminary proposal to EE/DR program manager for acceptance
- Submit full proposal to committee
- Selection committee ranks and approves funding
- Project managers perform assessment
- Project dissemination
 - Program staff
 - Energy Centers

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Sample of Completed EE Projects

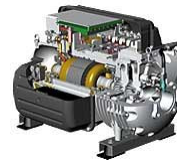
- Variable speed kitchen hood exhaust/make-up air system
- Occupancy night light for hotel/motel bathrooms
- Optical demand defrost of refrigerating cases (Albertson)
- Network management of computer power option settings (E-KPI)
- Hotel/Motel Energy Saving Systems



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Sample of New EE Projects

- Residential ductless air-conditioning units
- LED taxiway lights (March Inland Port Authority)
- LED light for refrigerated display cases
- Variable speed dust collection system (Oakwood Interiors Furniture)
- Office of the Future
- Frictionless (magnetic bearings) Compressor
- Linear LED Signage



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Sample of Completed DR Projects

- Remote controlled dimmable lighting systems
- Automated shallow demand response
- Load control strategy for pool pumps
- Under voltage technologies
- Ice thermal storage



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Sample of Completed DR Projects

- Pool pump shutdown
- Residential refrigerator shutdown
- Residential appliance shutdown
- Pre-cool cold storage facilities
- Reset of retail thermostat
- Partial shutdown of lighting in retail stores