

Southern California Edison

Leading the Way in Electricity™



Smart Metering Essentials at SCE

End-Use Energy Reductions through Monitoring,
Feedback, and Behavior Modification

Precourt Institute for Energy Efficiency
Stanford University

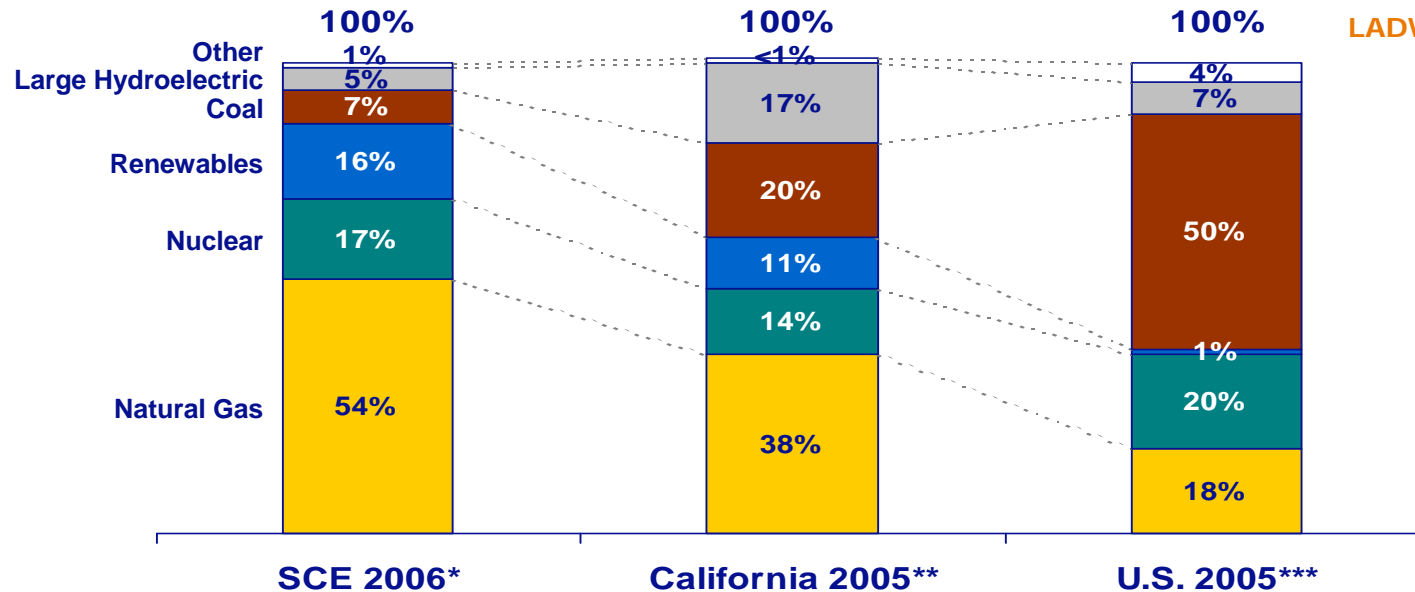
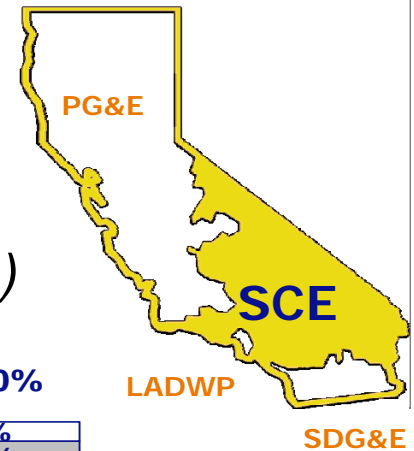
Lawrence Oliva, Director
Tariff Programs and Services
September 4, 2008

Outline

- About SCE
- Drivers for Smart Meters
- Smart Metering Essentials

About Southern California Edison

- Largest electric utility in California
 - Peak load 23,300 MW
 - 4.6 million customers
 - Serving Los Angeles metro area (50,000 sq. miles)



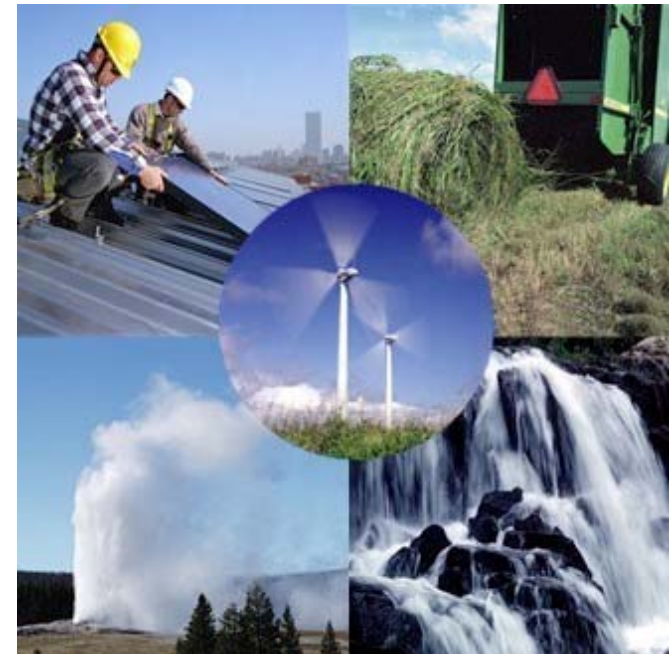
Sources: * SCE's Power Content Label - projected, March 2006

** CEC's "Net System Power: A Small Share of California's Power Mix in 2005" report, April 2006

*** Energy Information Administration's Electric Power Annual, November 2005 Table 1.1

Policy Drivers

- California's Energy Action Plan makes Energy Efficiency and Demand Response the first resources in our "loading order"
- California Global Warming Solutions Act requires GHG emissions reduction to 1990 levels by 2020
- 75% of Americans favor imposing mandatory controls on carbon dioxide emissions & other greenhouse gases
- Regulators offer Energy Efficiency earnings comparable to supply-side earnings



Energy Action Plan Loading Order

**Energy
Efficiency &
Demand
Response**

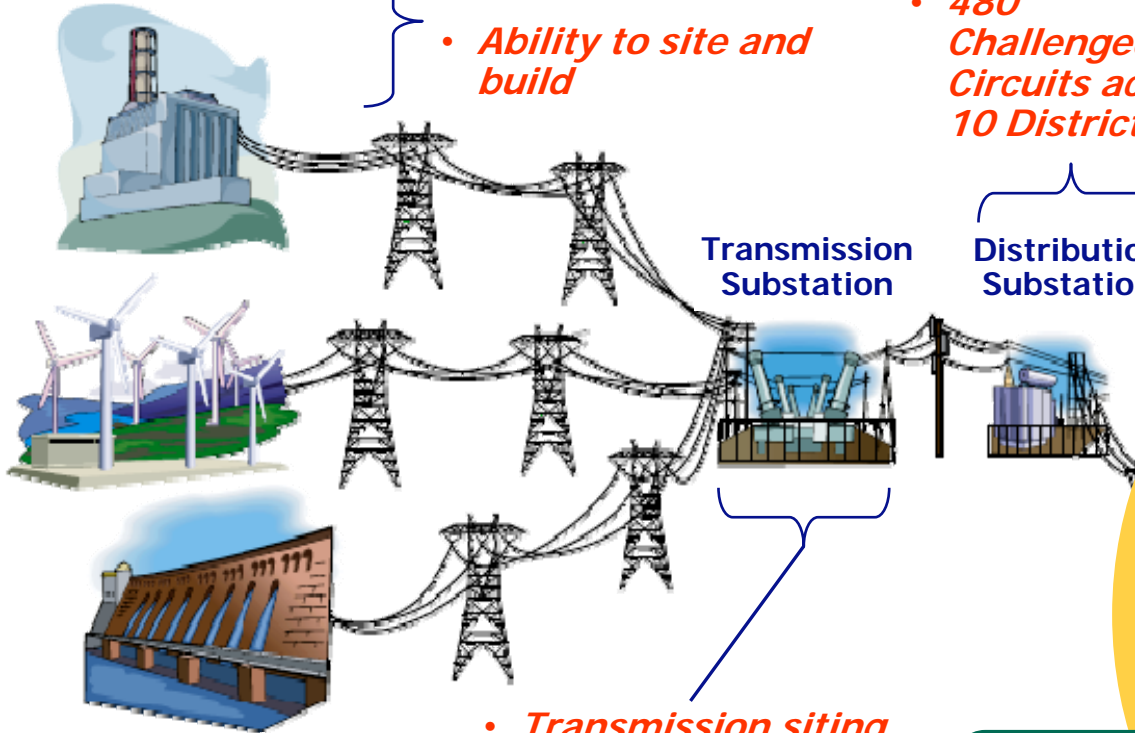
**Renewable
Energy
Resources**

**Distributed
Generation**

**Fossil-Fired
Generation**

Business Drivers

Generating Stations



- *Fuel diversity*
- *Ability to site and build*

- *Aging Infrastructure*
- *480 Challenged Circuits across 10 Districts*

- *Customers are part of the Supply Chain and deliver the Demand-Side Resources*

- *Transmission siting for renewables, reliability*
- *5-7 Year process to build new transmission*

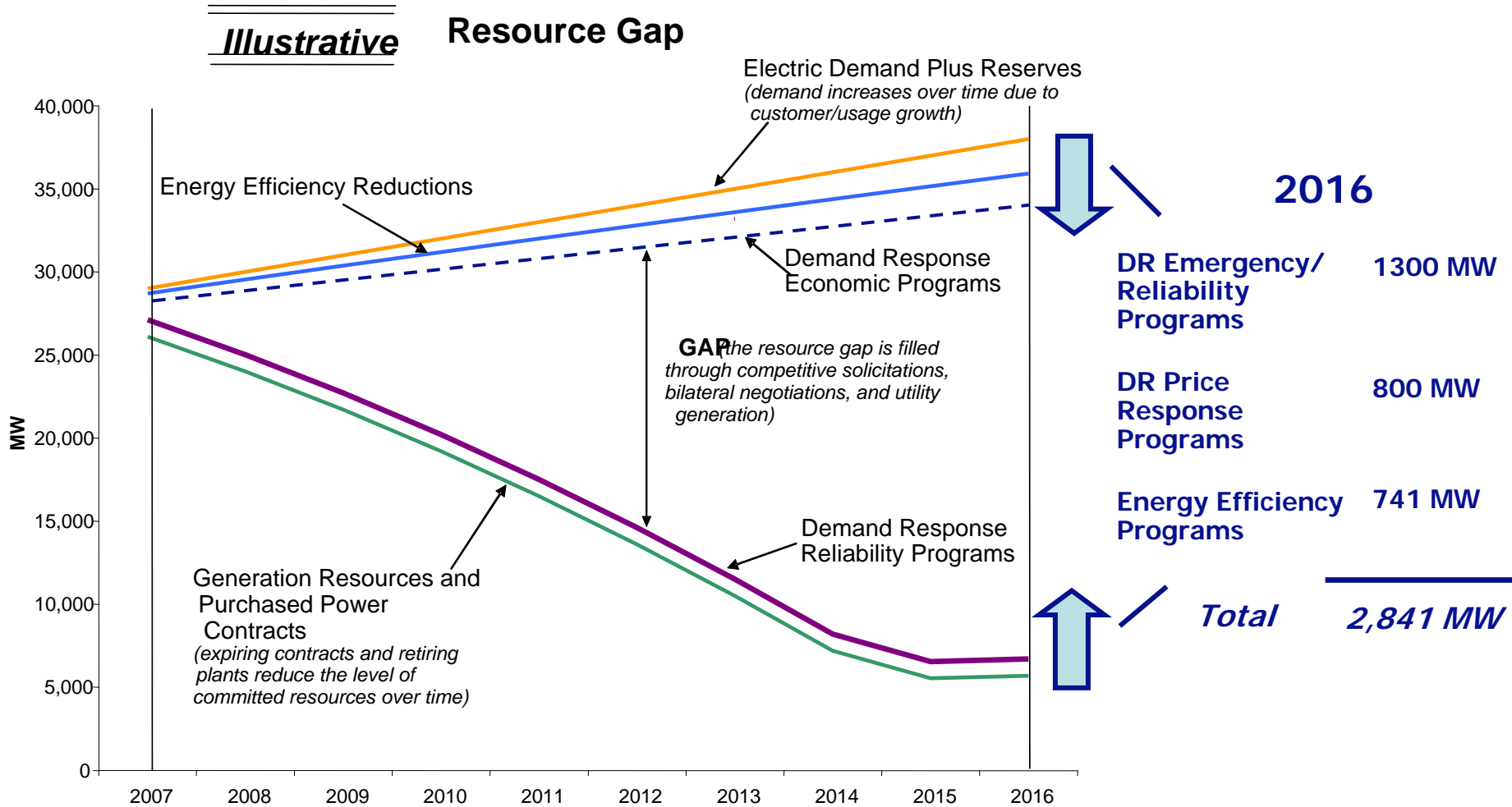
Edison SmartConnect™

Customers

Energy Efficiency

Demand Response

Energy Efficiency and Demand Response Reduces our Resource Requirements



Customers Agree that AMI is a Good Idea

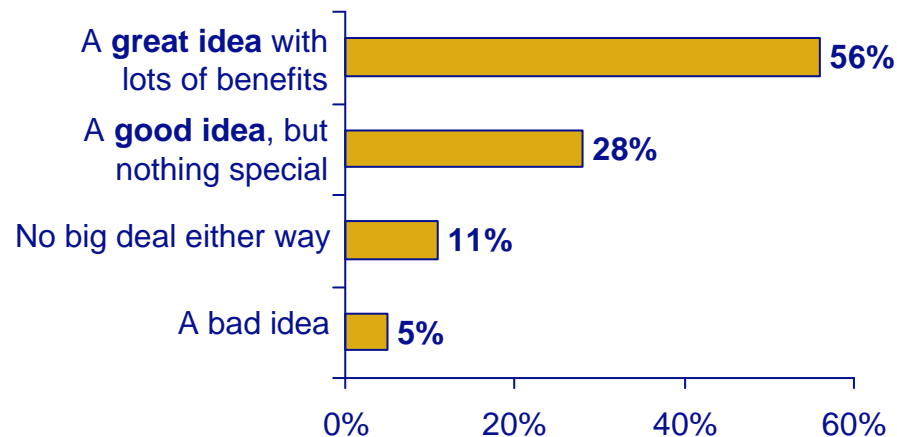
Customer surveys

- 84% like AMI
- 5% say bad idea

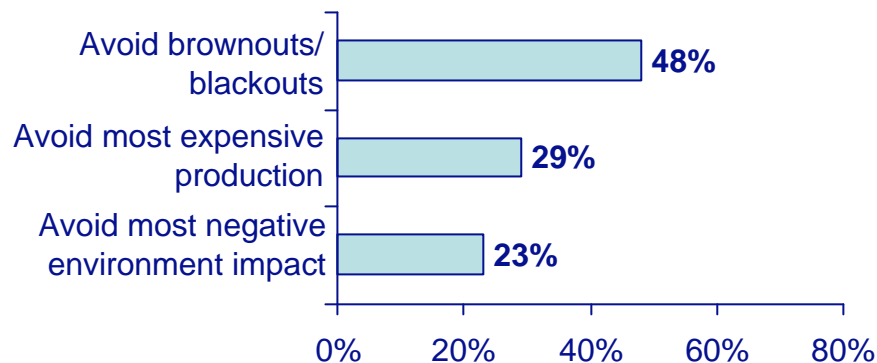
• Reasons

- Reliability
- Costs
- Environment

New Electric Meter Idea Evaluation



Primary Reason To Reduce Usage During Peaks



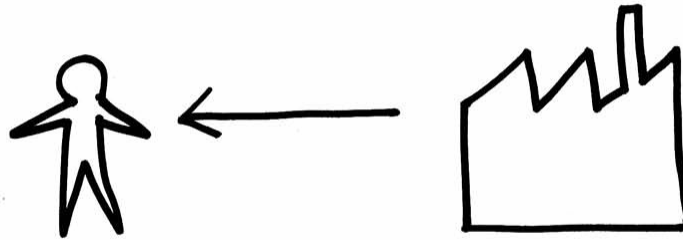
Customers Determine Our Success

- Empower an energy efficient and economic lifestyle with technology and information
- Satisfy our customers' increasingly complex interactions
- Achieve business vision of higher customer satisfaction and improved financial results

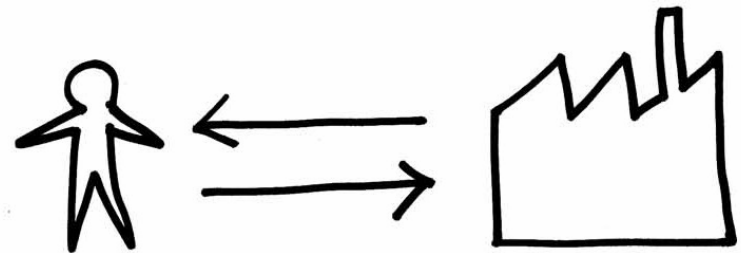
Customer Engagement Becomes More Critical

Evolving the Relationship Towards a Higher Level of Customer Engagement

Starting with this



We want to work towards this



Establish a Valued Two-Way Relationship with Customers

Empowering the Customer

- Through programs, services, and advanced communications (SmartConnect), SCE empowers customers to become key contributors to the energy solution

Demand Response



Edison
SmartConnect™

- **Lower Customer Bills**
- **Relieve Supply Constraints**
- **Help Achieve SCE Business Requirements**
- **Improve the Environment**

Energy Efficiency



Defining requirements through use cases

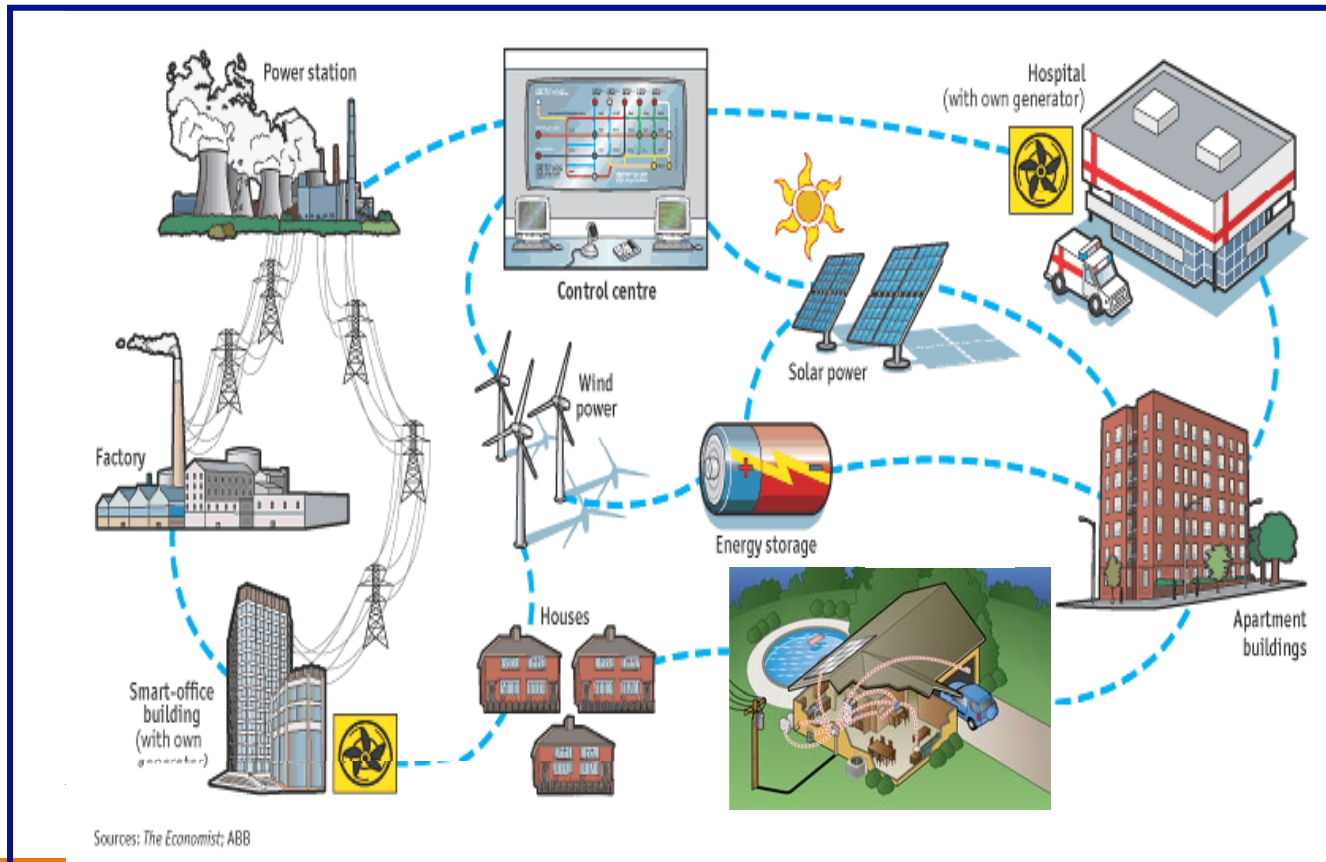


Billing & Customer Service	Customer Interface	Delivery	Energy Procurement	Field Services / System Recovery	Installation & Maintenance
Multiple clients read demand and energy data automatically from customer premises	Customer reduces demand in response to pricing event	Distribution operator curtails customer load for grid management	Real-time operations curtails (or limits) load for economic dispatch (ES&M)	AMI system recovers after power outage, communications or equipment failure	Utility installs, provision and configure the AMI system
Utility remotely limits or connects/disconnects customer	Customer reads recent energy usage and cost at site	Distribution operators optimize network based on data collected by the AMI system	Utility procures energy and settles wholesale transactions using data from the AMI system	-	Utility maintains the AMI system over its entire life cycle
Utility detects tampering or theft at customer site	Customer uses pre-payment services	Customer provides distributed generation	-	-	Utility upgrades AMI system to address future requirements
Meter reading for gas & water utilities	Multiple clients use the AMI system to read data from devices at customer site	Distribution operator locates outage using AMI data and restores service	-	-	-

Over 150 people across 18 cross-functional teams in 44 workshops representing most functional areas within SCE defined over 80 potential uses for the AMI system

AMI is Key Element of Smart Grid

Smart Grid combines energy technologies and information technology to create a resilient network that links an increasingly clean and diverse supply of generation and storage with customers who are using electricity more wisely, and in more ways.



Customer Tariffs, Programs & Services Roadmap

