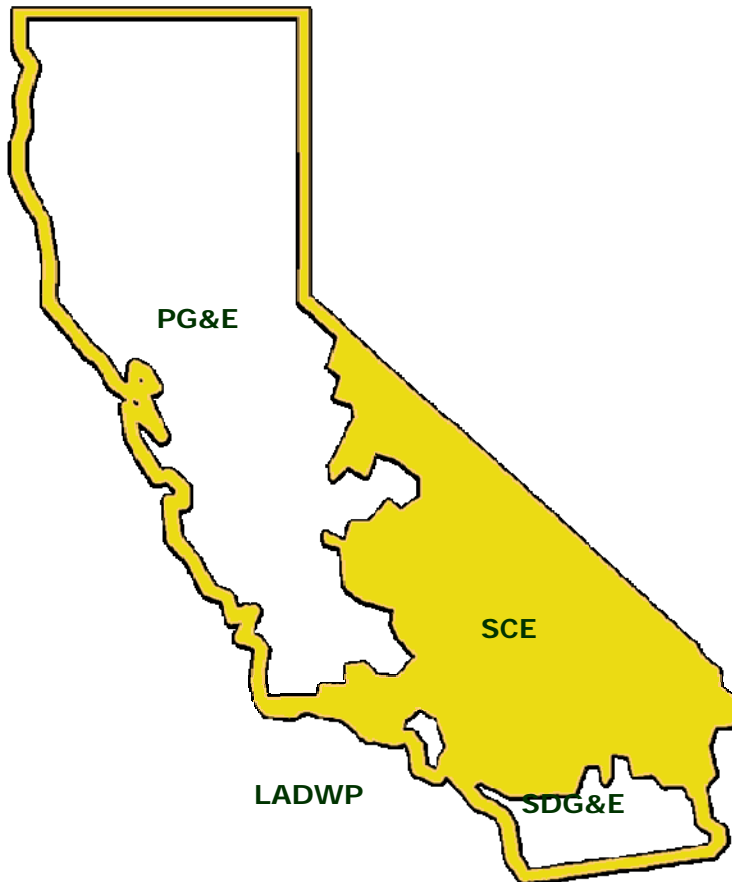


Moving Towards the Smart Grid

Southern California Edison's Advanced Metering Infrastructure (AMI) Program

Select SCE Projects using “Smart Grid” Technologies



- One of the largest automated metering systems in the US
 - Nearly 600,000 residential meters and real-time interval meters on all commercial and industrial customers above 200kW
- Active technology trials of advanced metering systems involving narrowband power line carrier and broadband over power line (BPL)
- On-going T&D automation including “Circuit of the Future” project
- Advanced Metering Infrastructure (AMI) program

Intelligently Connecting Edison to our Customers

- **Enable Energy Smart Customers**

- Integrated information from utility
- Payment options (e.g., pre-payment)
- Outage & service condition information
- Support rate option innovations

- **Manage Distributed Resources**

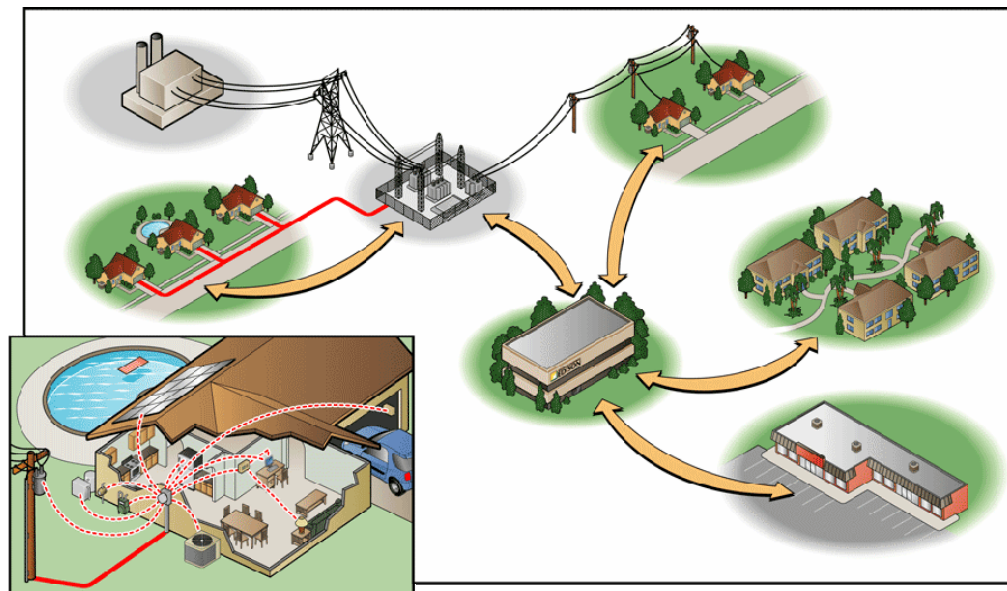
- Economic dispatch of load resources
- Dispatch of load for grid management
- Intelligent net metering
- Management of distributed energy resources

- **Operational Efficiencies**

- Field communication links to distribution
- Revenue cycle improvements
- Situational data in near real-time
- Wholesale - retail markets integration

- **Built with the future in mind**

- Upgradeable WAN/HAN communications
- Leverage open architecture principles in system design
- Future customer service offerings



SCE seeks to leverage a 2-way communications infrastructure with 5 million intelligent metering devices on our distribution network to create lasting value for our customers and our operations

Use Cases for the Smart Grid Technologies



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	-	-	-

- Understanding the pace of product and capability advancement
- Balancing focused technical capabilities against value, schedule and risk in the context of the entire solution
- Too many standards and too few standards
- Balancing solution complexity with reliability over a 15 year service life
- Selecting a solution that stimulates a robust eco-system of consumer products

Addressing Smart Grid Technology Challenges

- Think of the entire AMI solution, not just one system, but a System of Systems that will serve as a strategic platform to creates value
- Continue to work with EPRI, GridWise, OpenAMI, UtilityAMI and most importantly the vendor community to understand Smart Grid technology availability and appropriate standards
- Use a structured Systems Engineering approach to understand capability maturity and conduct trade-off analysis
- Encourage communications & innovation in the marketplace by specifying how we want the technology to perform and behave in the overall AMI solution
- Clearly articulate our key design tenets of Availability, Reliability, Interoperability, Serviceability and Security to vendors and other utilities