

INSTITUTE FOR
Electric Efficiency

Introducing IEE & Taking Demand Response to New Levels

Lisa Wood
Executive Director

Presented at NARUC Winter Meetings – Taking EE and DR to New Levels
Committees on Electricity and ERE
February 17, 2009

Agenda

1. Introduce *Institute for Electric Efficiency*
2. This presentation – *Taking demand response to new levels*
3. Next presentation – *Extending Success: Achieving the next level of energy efficiency gains.*

The Institute for Electric Efficiency

- **Mission**

- To advance energy efficiency practices and demand response among electric utilities

- **Role of IEE**

- **Educate:** Provide resources/share information and best practices/clearinghouse/discussion groups
- **Communicate:** Identify key issues & barriers/enablers
- **Collaborate:** with power industry and advisory committee to advance EE and DR

- **Funding**

- IEE member electric utilities. Launched in 2008.



IEE Governance

- Management committee of 17 CEOs of investor-owned utilities
 - Chair, Jim Rogers, President & CEO, Duke Energy
- Advisory committee of leading energy efficiency advocacy organizations and policy makers
 - **ASE, ACEEE, CEE, DRAM, EPRI, NRDC, NARUC, NASUCA, RMI, Sierra Club**
 - **DOE, EPA, FERC**
- Strategy committee of VPs overseeing energy efficiency in electric utilities.

IEE Focus: Key issues surrounding significant growth in EE and DR nationwide

1. Making EE scalable and sustainable

- Regulatory framework for EE business (e.g., cost recovery, incentives, disincentives).
- Range of best practices – one size does not fit all
- Evaluation, measurement, and verification of EE savings
- Interface between EE programs and codes & standards
- Well defined roles for utilities vs. 3rd party administrators

2. Utilizing all sources for peak demand reduction

- Price response, direct load control, & interruptible programs
- AMI/dynamic pricing rollout to mass market customers

3. Effective programs for low income customers

IEE website – targeted EE and DR information resource -- www.edisonfoundation.net/IEE

IEE
website



INSTITUTE FOR
Electric Efficiency

*Advancing energy-efficiency practices and
efficient pricing among electric utilities.*

ABOUT IEE

ISSUE BRIEFS

NEWS & EVENTS

REPORTS

DATABASES

ONLINE ROUNDTABLE

What's New

- [Upcoming Events Register Now!](#)
- [Energy Efficiency Success Stories](#)

Ask IEE

Program cost recovery?
Lost margins? Decoupling?
If the resources on this site
have not answered your
questions about program
design and best practices,
please contact us.



JOIN THE COMMUNITY

EXTERNAL LINKS

ASK IEE



INSTITUTE FOR
Electric Efficiency

© 2008 The Institute for Electric Efficiency. All rights reserved. [Contact Us](#). [Privacy Policy](#).

Taking Demand Response to New Levels – Focus on Mass Market

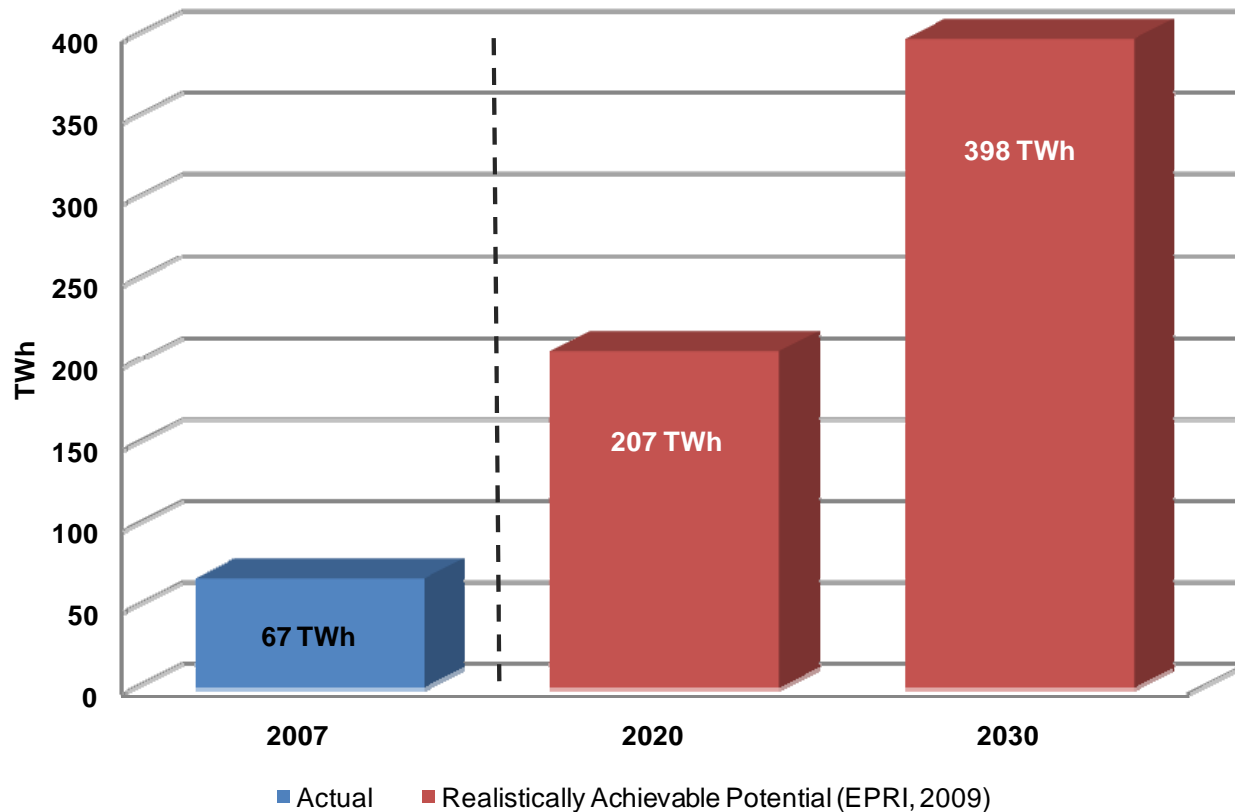
Energy efficiency is fundamental to the power business – 1st fuel!

- EE and DR are cost-effective ways to:
 - Reduce carbon emissions
 - Significantly moderate expected growth in electricity
 - EE programs can offset about 1/3 of expected growth in electricity usage, and
 - EE and DR programs can offset about 50% of expected increase in summer peak demand between 2008 and 2030.
 - Help customers be smart energy consumers.

Source: EE and DR potential estimates based on, Assessment of Achievable Potential for Energy Efficiency and Demand Response in the U.S., EPRI Report No. 1016987. January 2009.

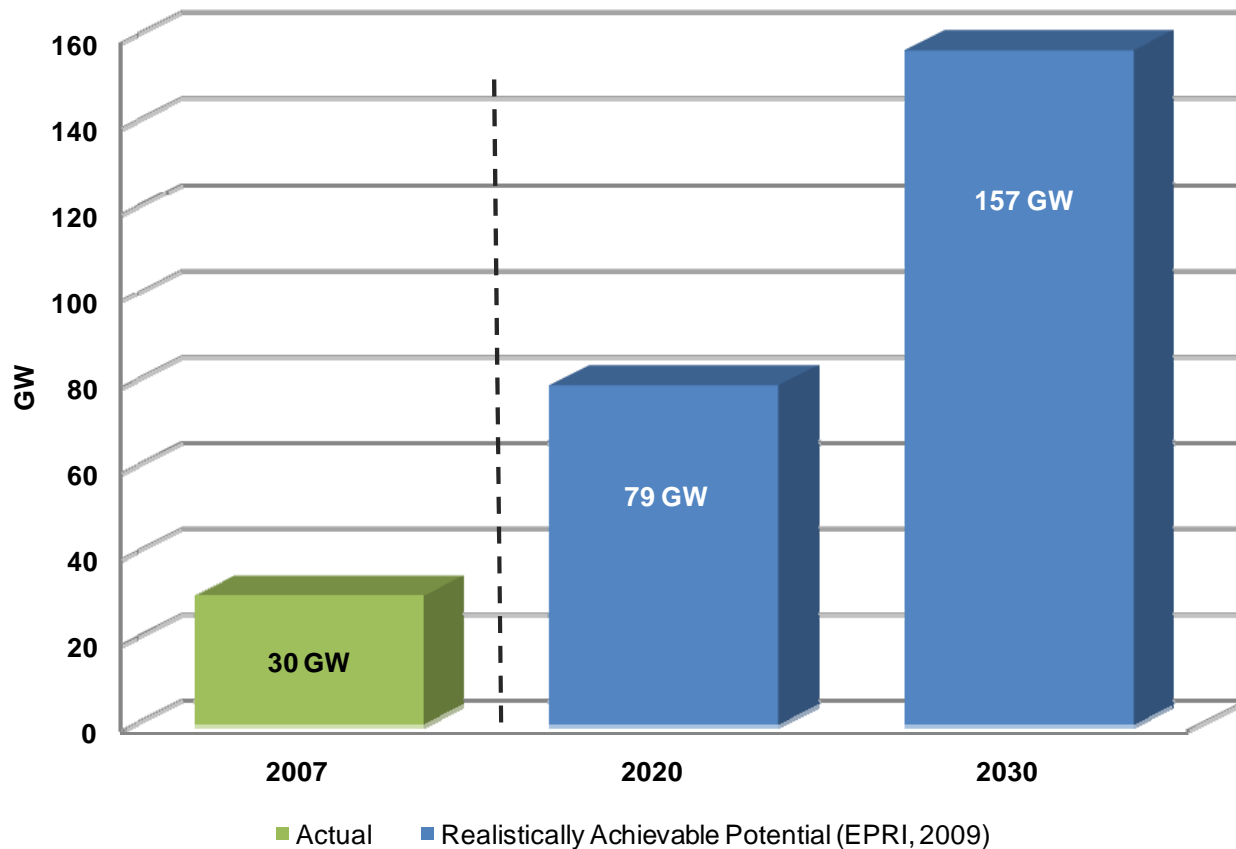
Background: Realistically achievable EE savings potential of 398 TWh in 2030 (EPRI) vs. actual 67 TWh in 2007 (EIA)

Total U.S. TWh Savings Due to Energy Efficiency

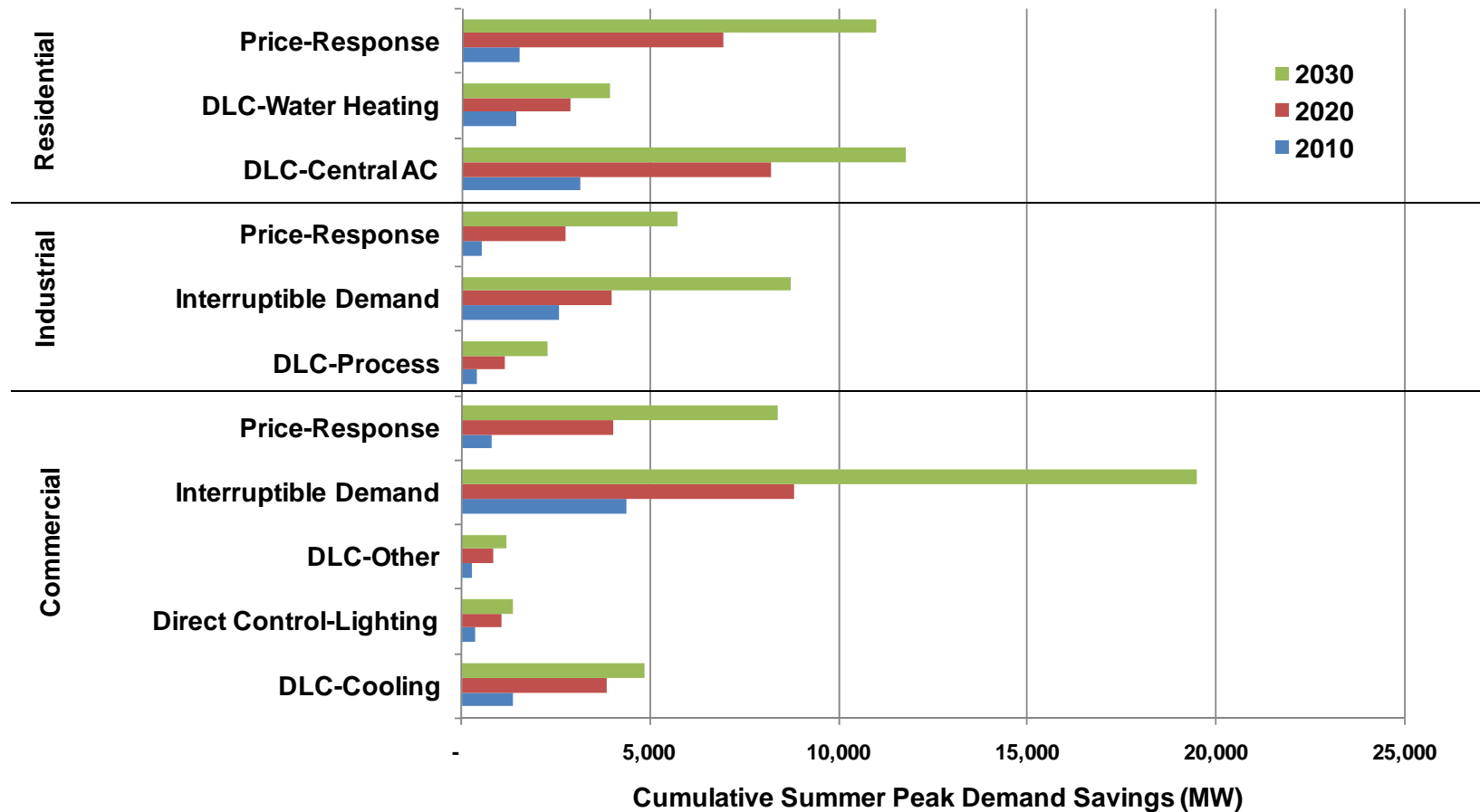


Background : Realistically achievable EE and DR savings potential of 157 GW in 2030 (EPRI) vs. actual 30 GW in 2007 (EIA) – half EE and half DR

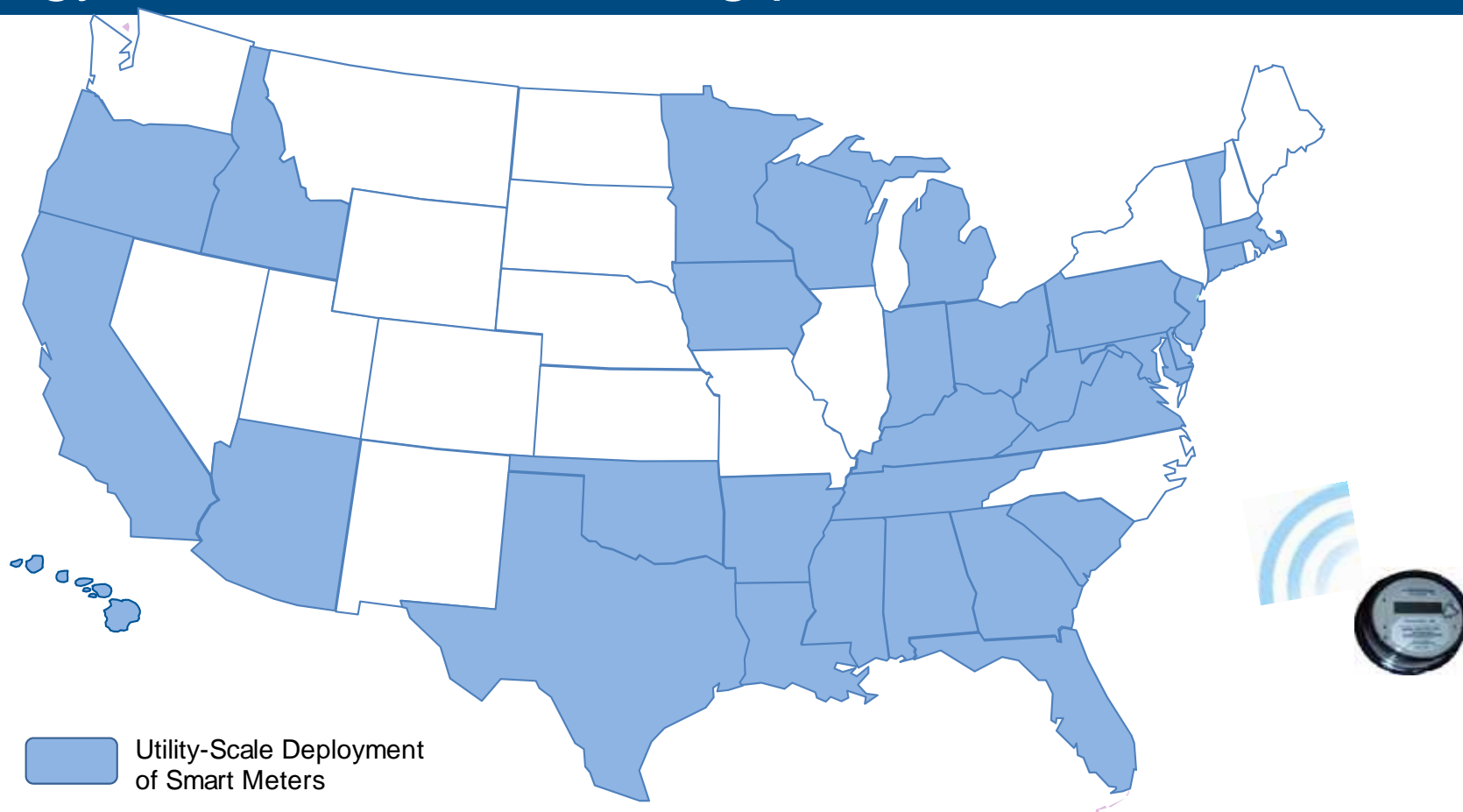
Total U.S. Summer Peak Load Reduction due to EE and DR



Sources of potential peak demand savings (EPRI) – Price responsive demand (DR) is critical component.



Over next 5 years, significant rollout of smart meters (AMI) – powerful platform for future innovation & smart energy use. But, an evolving process.



Business case for AMI – total benefits likely include significant peak load reduction sources

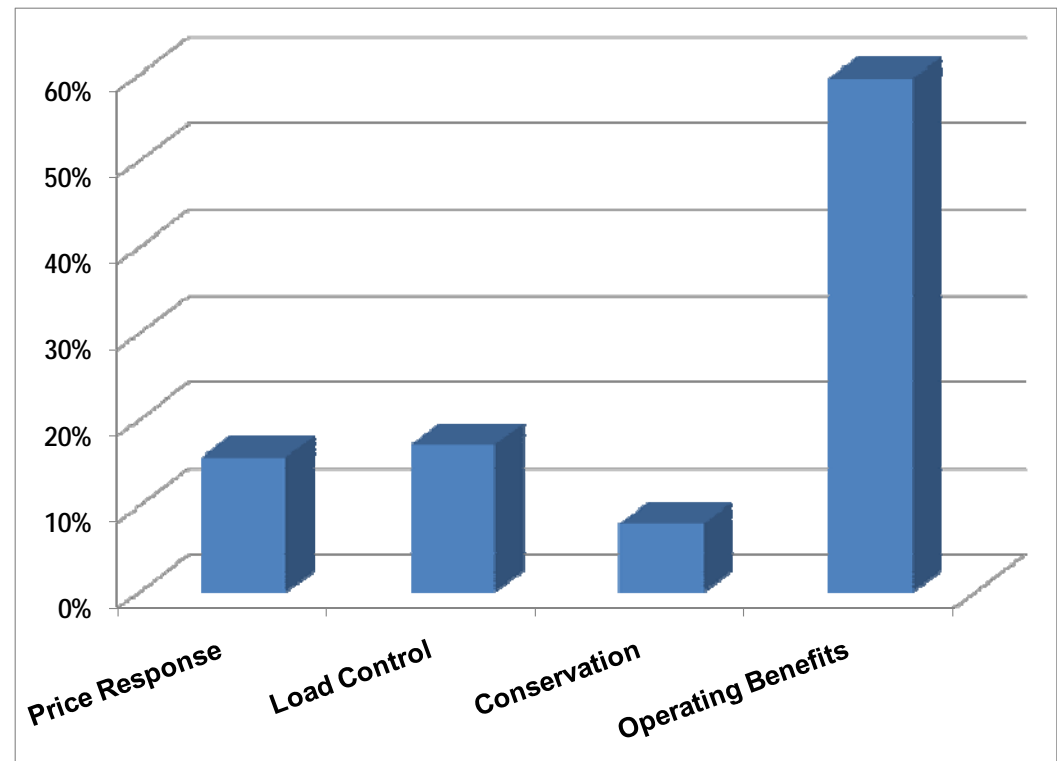
Quantifiable benefits:

- Demand response from rates
- Direct load control
- Information-induced conservation
- Operating Benefits
 - Remote meter reading
 - Outage detection
 - Remote service switch (on/off)

Other benefits:

- Building block to Smart Grid
- Meter gateway for home area networks (HAN)

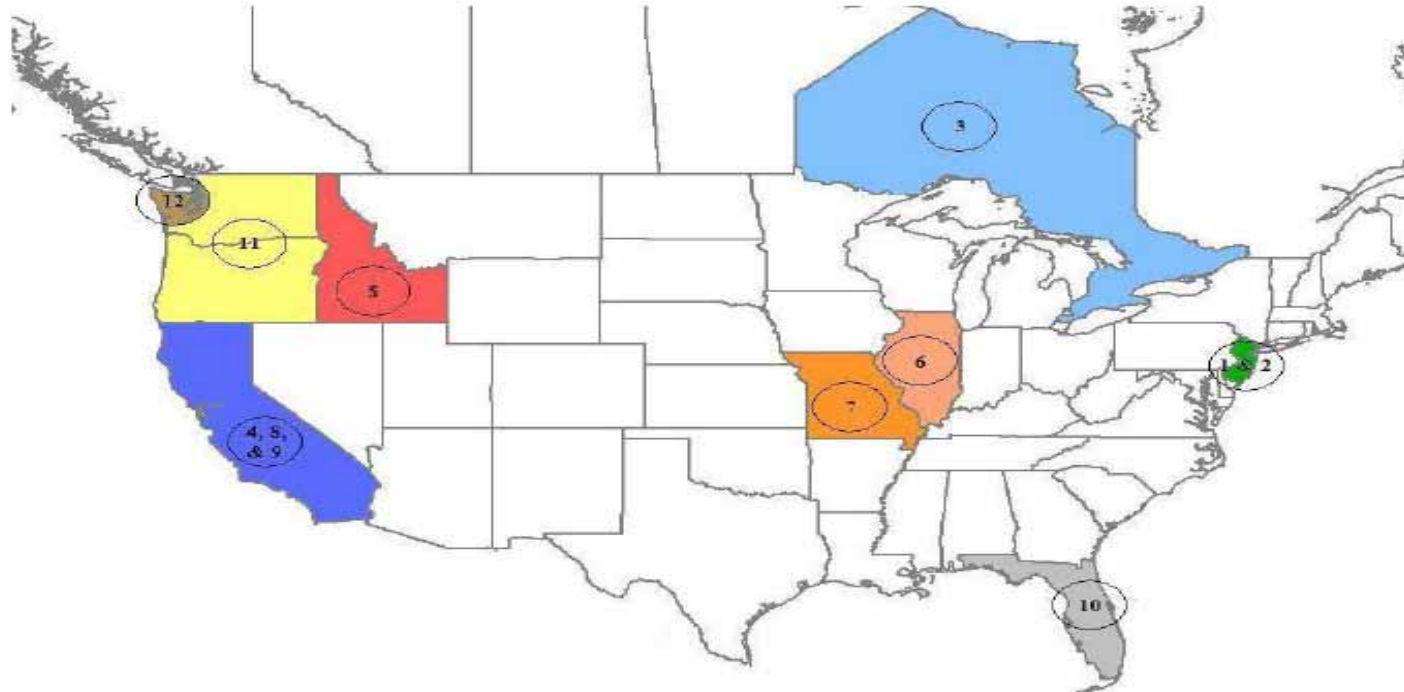
AMI Benefits



Mass market: Multiple dynamic pricing pilots completed *and more underway*

- Pilots recently completed or underway (e.g.)
 - PSE&G tested TOU and critical peak pricing (CPP) - summer 2007
 - BGE tested CPP and peak time rebates - summer 2008
 - PTR response similar to CPP
 - Northeast utilities smart pricing pilot – summer 2009
 - Plan to test CPP, peak time rebate, and TOU rates
- Bottom line –
 1. New pilot results consistent with CA SPP (2003/2004)
 2. Customers respond to price signals
 3. In-home technology-enabled customers respond more

Smart rates have proven themselves through experimentation



- 1- PSE&G Pilot Program
- 2- GPU Pilot Program
- 3- Ontario Energy Board Smart Price Pilot
- 4- Anaheim Critical Peak Pricing Experiment
- 5- Idaho Residential Pilot Program
- 6- Energy-Smart Pricing Plan

- 7- AmerenUE Residential TOU Pilot
- 8- ADRS Pilot
- 9- Statewide Pricing Pilot
- 10- The Gulf Power Select Program
- 11- Olympic Peninsula Project
- 12- PSE TOU Program



INSTITUTE FOR
Electric Efficiency

CA in process of full scale deployments – smart meters, smart rates, and home area networks.

- **PG&E SmartMeter program highlights**
 - 10 million meters, 5 year deployment underway
 - SmartRate pricing plan – mass market CPP
 - Full integration by 2012 - AMI, dynamic rates, load control, and HANs
- **SCE smart meter and smart rates deployment**
 - 5 million residential & small comm. customers (<200 kW)
 - 5 year deployment underway
 - Pricing plans – peak time rebate and CPP
 - Load control switching to incentives based on performance
- **SDG&E smart meter and rates (PTR) deployment**

Disconnect between full scale deployment of smart meters (30+ states) & full scale deployment of smart rates (CA)

- Why don't we have more mass market dynamic rates/DR?
 - We have the knowledge (one more pilot won't matter)
 - We have the technologies
 - We have mass market customers interested in saving, being green, and reducing carbon.
 - But, we still don't have *a significant rollout of time varying rates for price responsive demand*
- Yet, we need price responsive demand to realize the DR potential to cut peak demand growth

The rapidly evolving HAN technologies market offers range of in-home technologies and home area networks (HANs)

Basic -Today



- Orb - Simple high-low price indicator

Enhanced - Today



- In-home display
- Programmable Communicating Thermostat (PCT)

Today & Tomorrow



- Fully automated intelligent EMS
- In-home displays
- Programmable Communicating Thermostat (PCT)
- Google PowerMeter technology

Smart meter platform and HAN technologies will take DR to new levels if we allow it to happen!

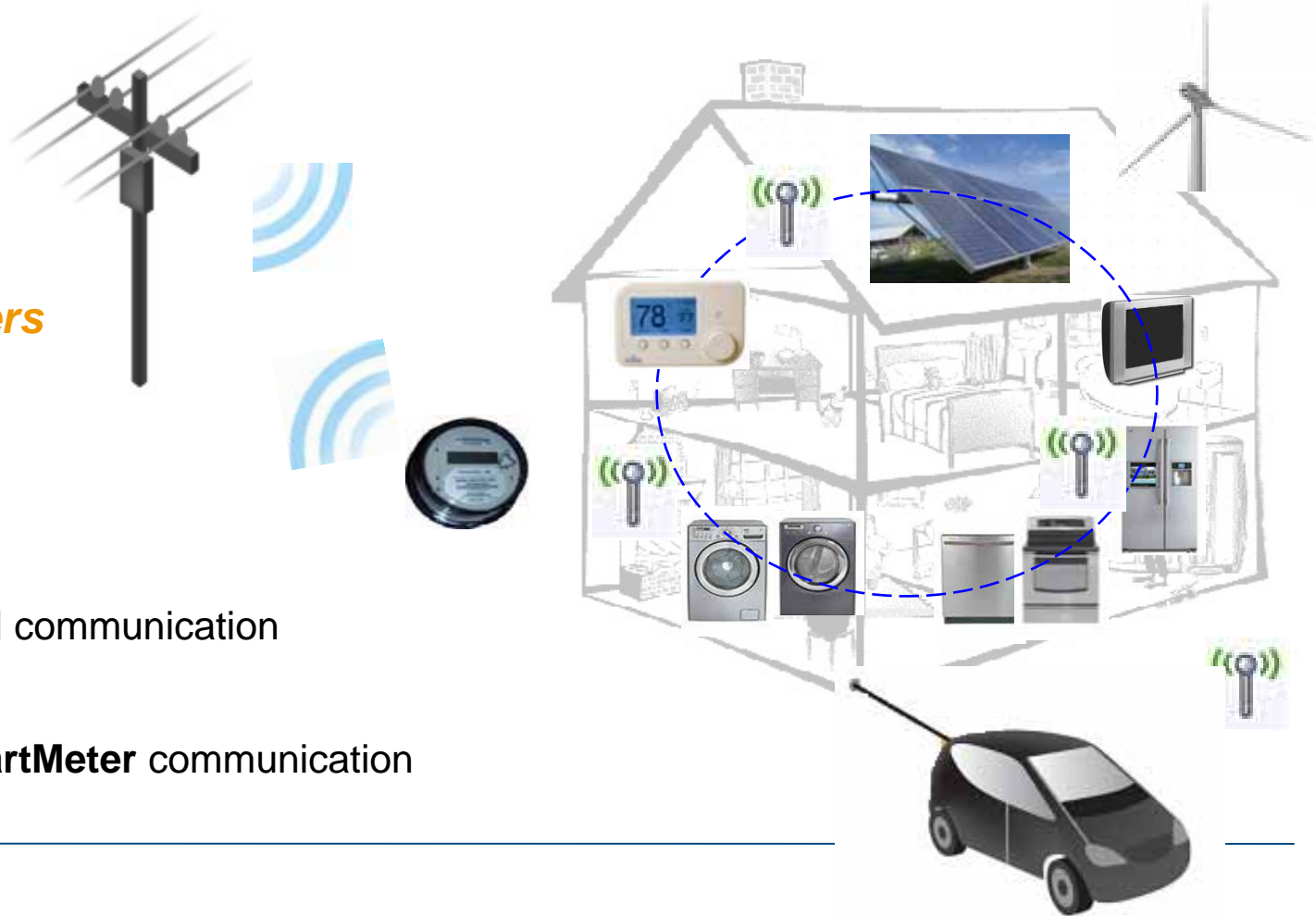
... Giving customers the tools and the know-how to be smarter energy consumers

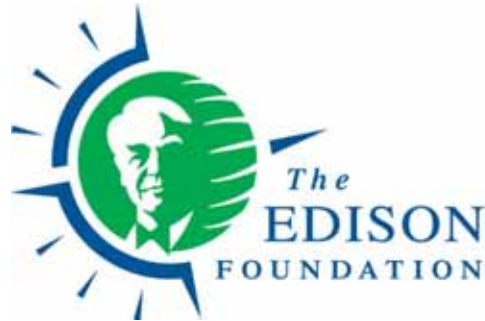


HAN communication



SmartMeter communication





INSTITUTE FOR
Electric Efficiency

For more information, contact:

Lisa Wood

Executive Director

lwood@edisonfoundation.net

202.508.5550

Institute for Electric Efficiency

701 Pennsylvania Ave., N.W.

Washington, D.C. 20004-2696

<http://www.edisonfoundation.net/IEE>