

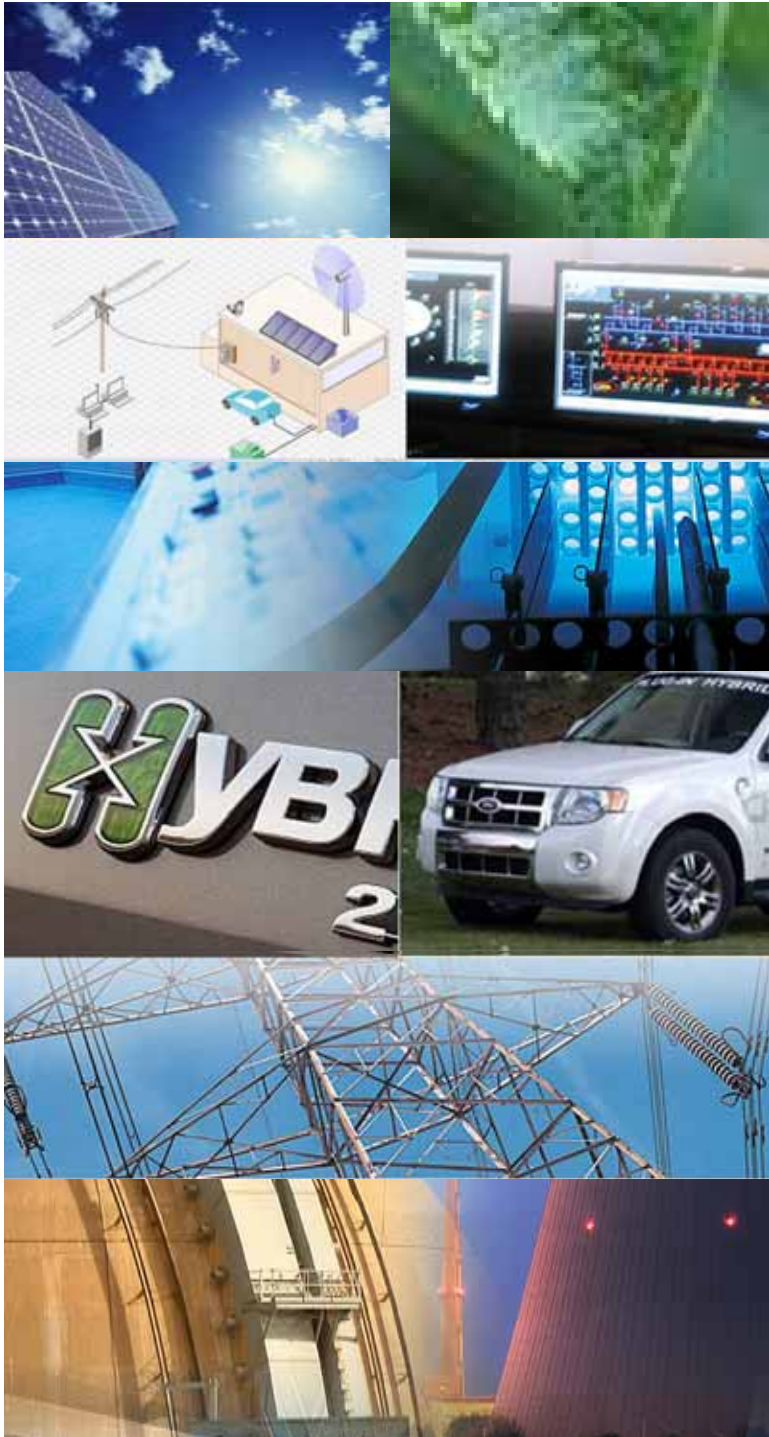


# Energy Efficiency and Demand Reduction Potential

*Capturing the Potential...  
Creating New Opportunities*

**NARUC Energy Resources and Environment Committee - February 17, 2009**

**Hank Courtright**  
Senior Vice President

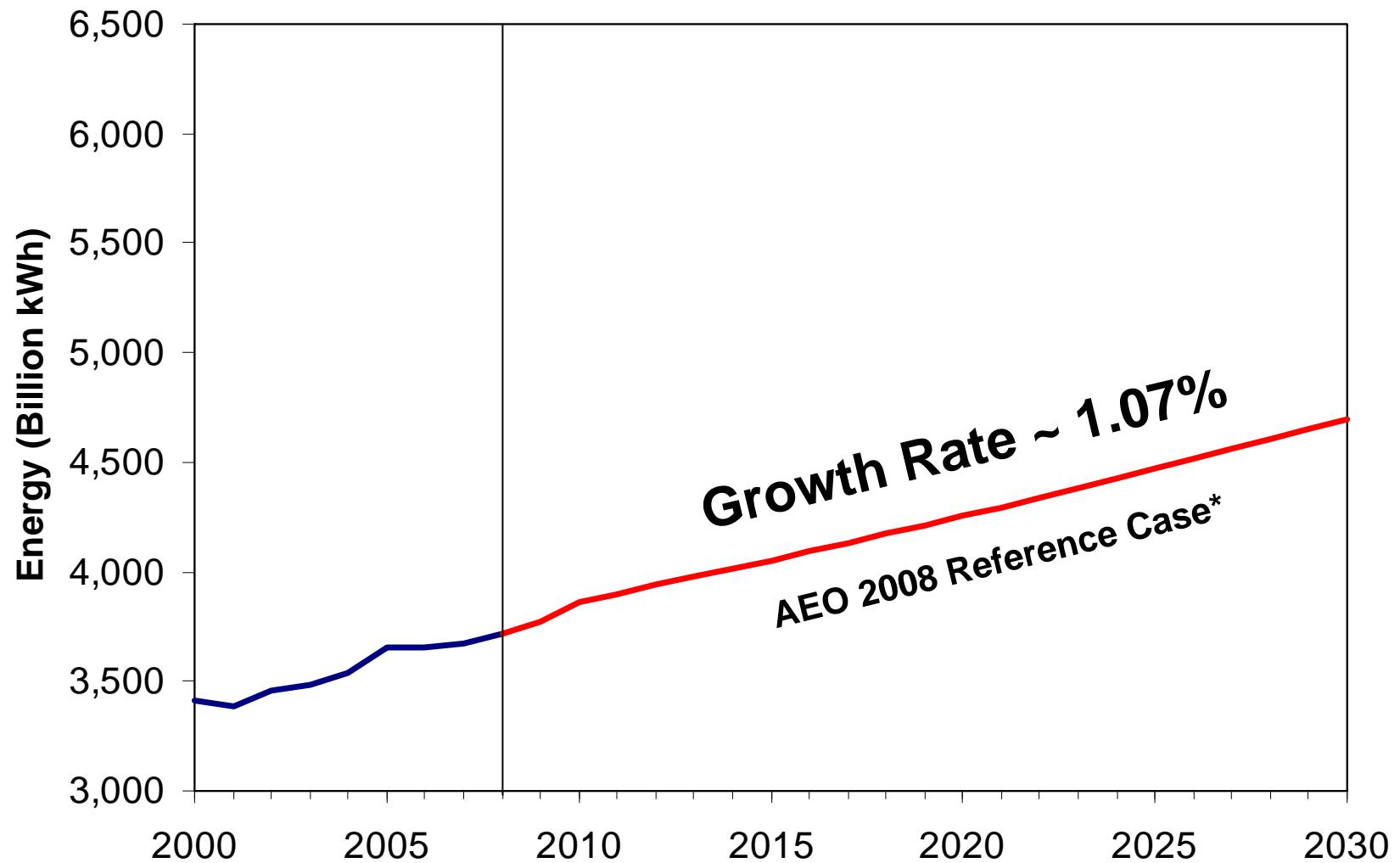


# Energy Efficiency Potential Study

- Technology-based, micro-economic model to 2030
- Calibrated with input from 50+ EE experts
- Research results from EPRI's EE Laboratory in Knoxville...recently featured in **TIME**
- Developed to inform decisions of utilities and policy-makers



# Electricity Use Growth Rate

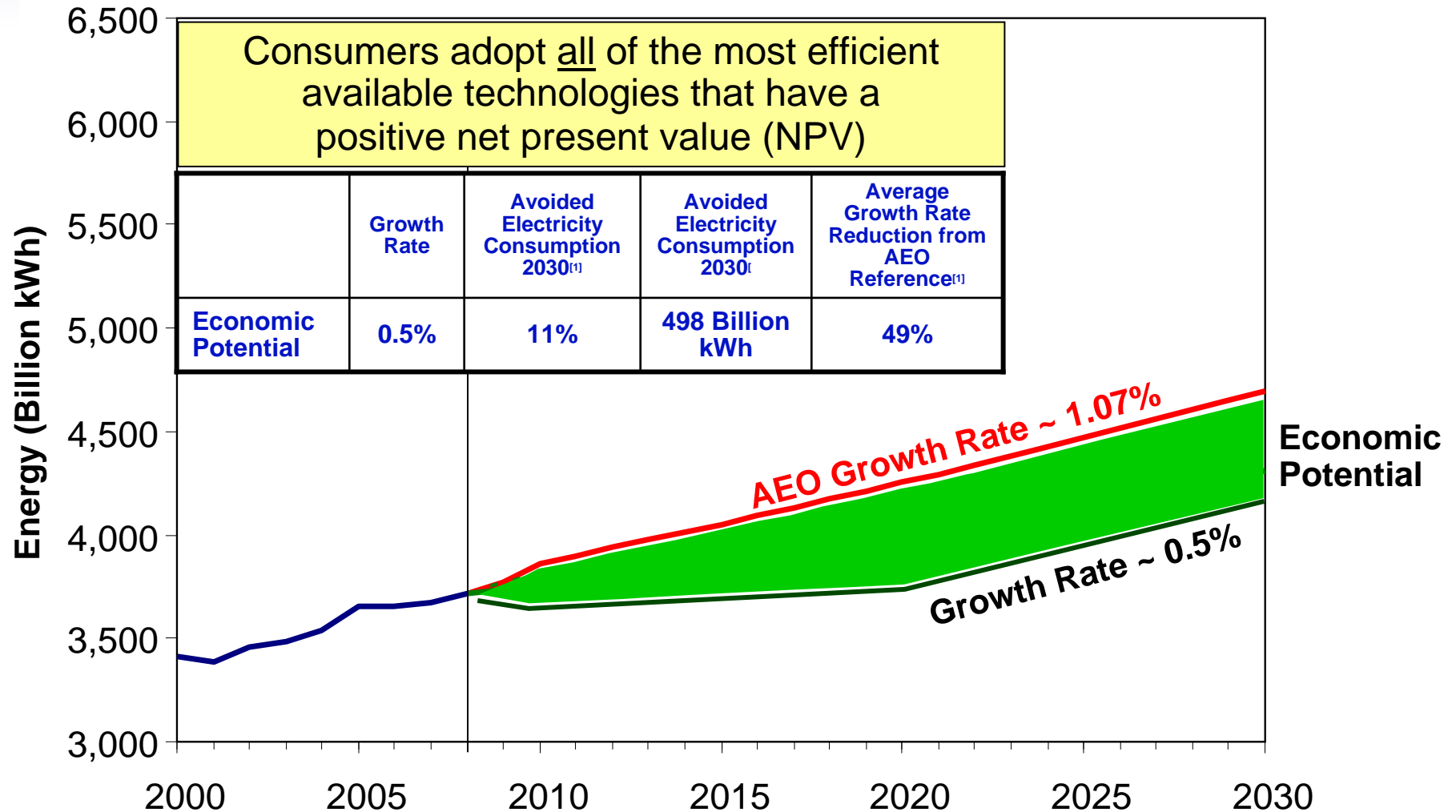


\* EIA Annual Energy Outlook 2008, Final Edition (Residential, Commercial, and Industrial sectors)

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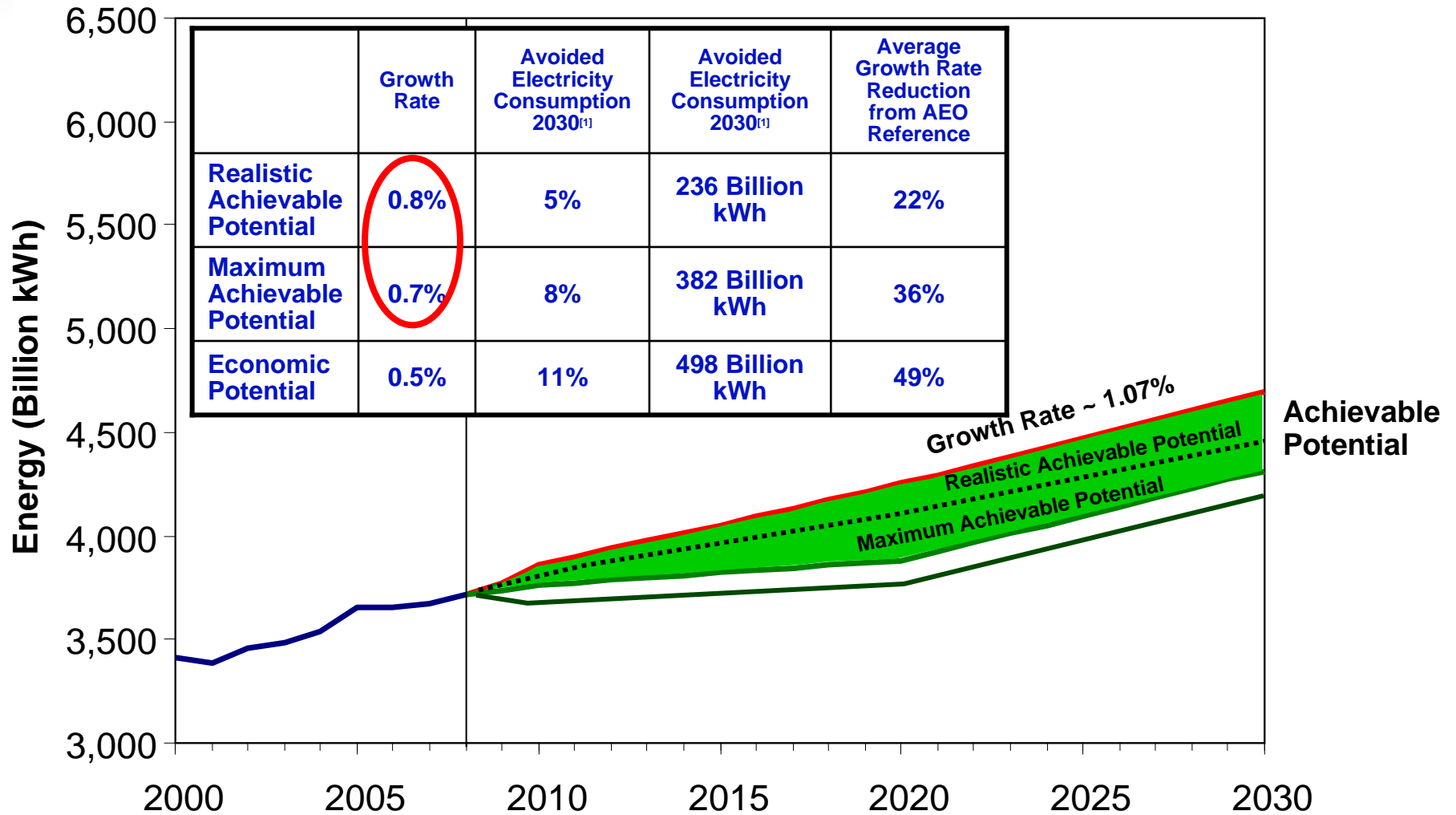


# Electricity Use Reduction - Economic Potential



[1] Relative to AEO 2008 Reference Case

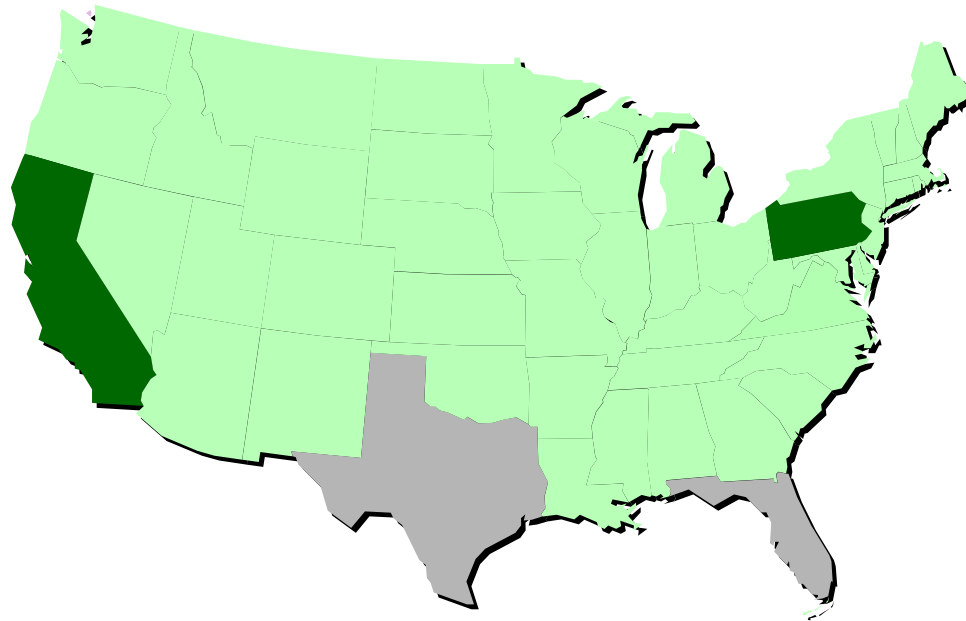
# Electricity Use - Impact of Expanded Programs



[1] Relative to AEO 2008 Reference Case

# 2030 Energy Efficiency Savings

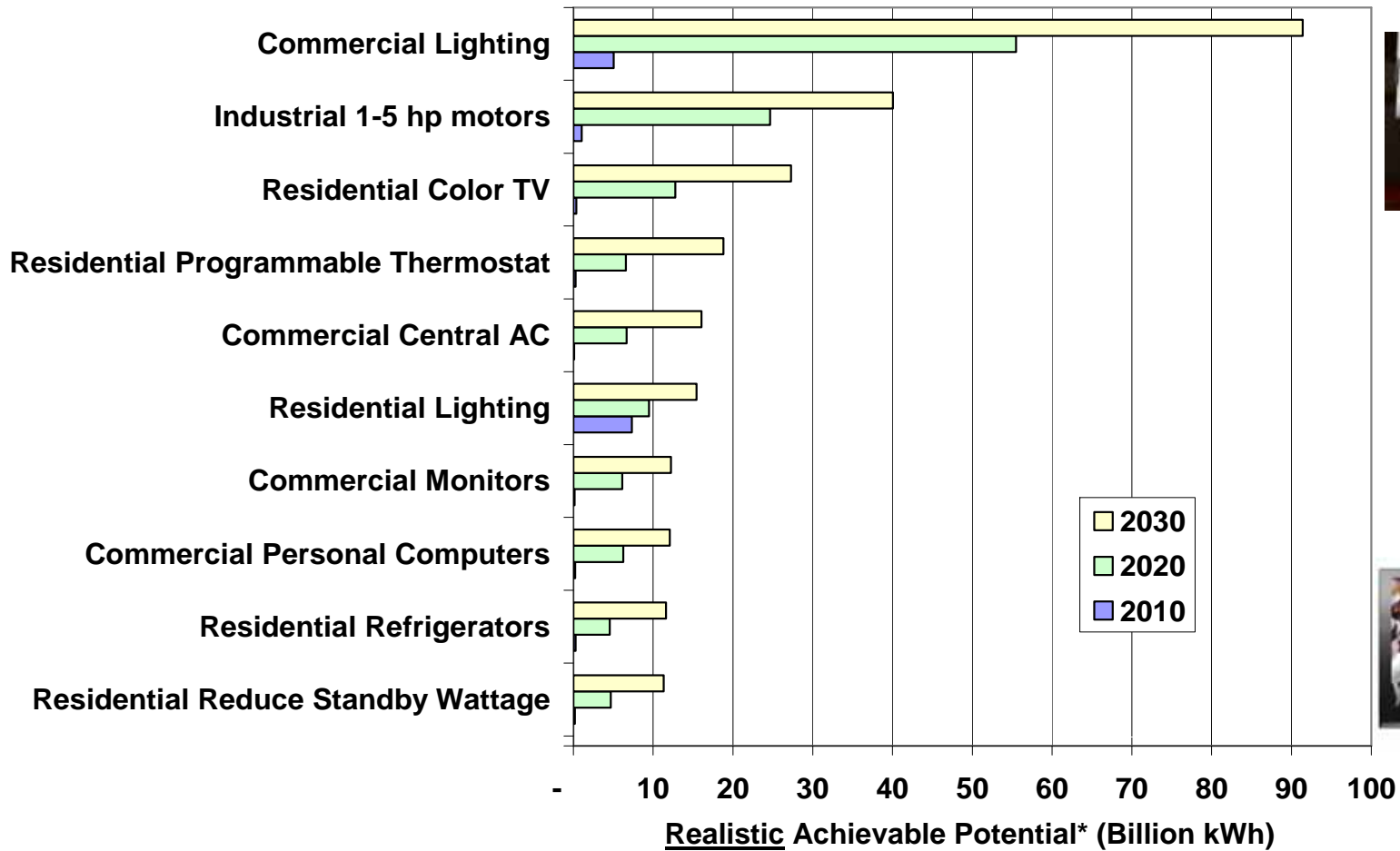
**236 - 382 Billion kWh ... saving the annual electricity use<sup>1</sup> in California and Pennsylvania!**



<sup>1</sup> EIA 2007 data

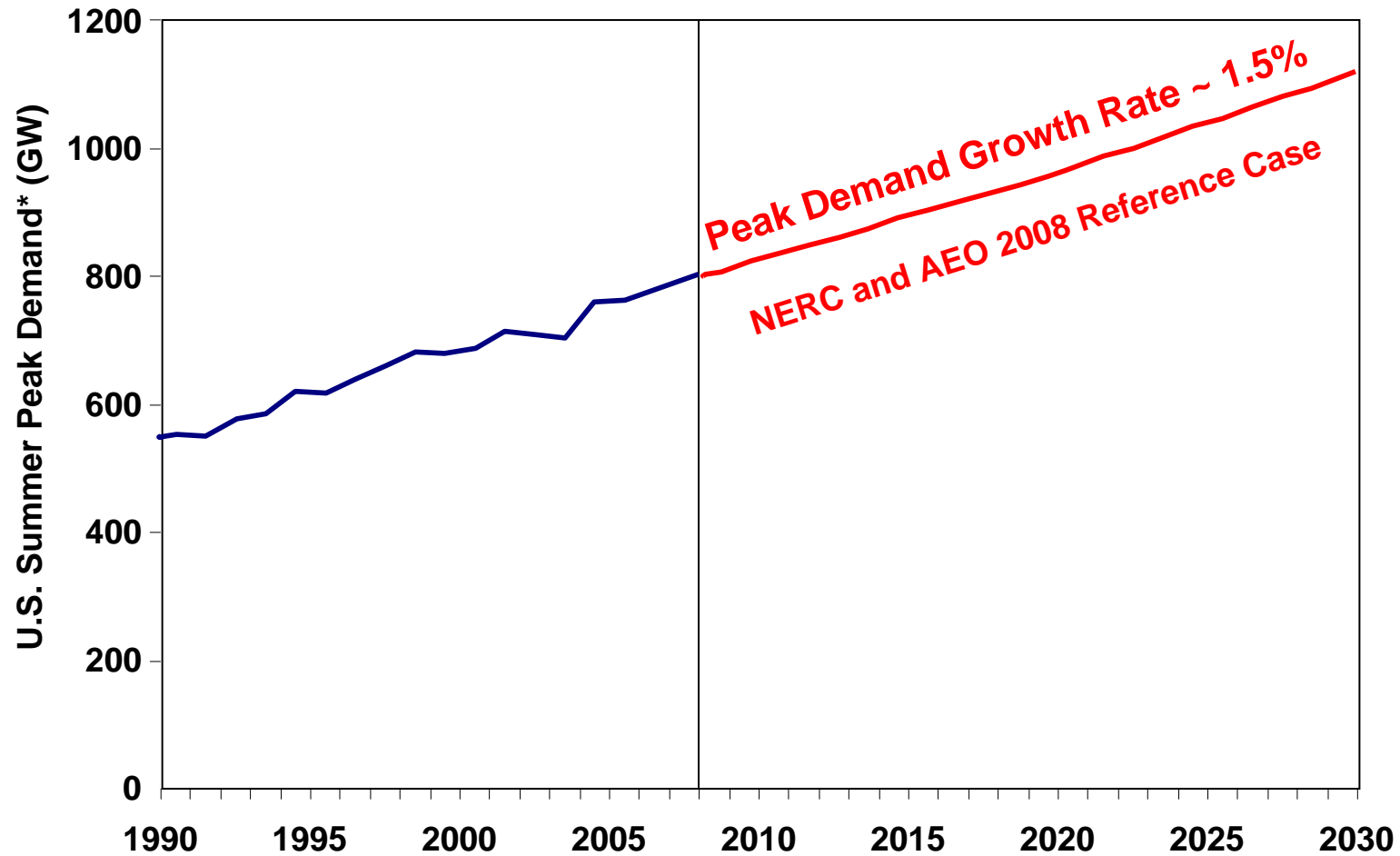
# Opportunities for Energy Efficiency Savings

## Top 10 Energy Efficiency Achievable Potentials Includes . . .



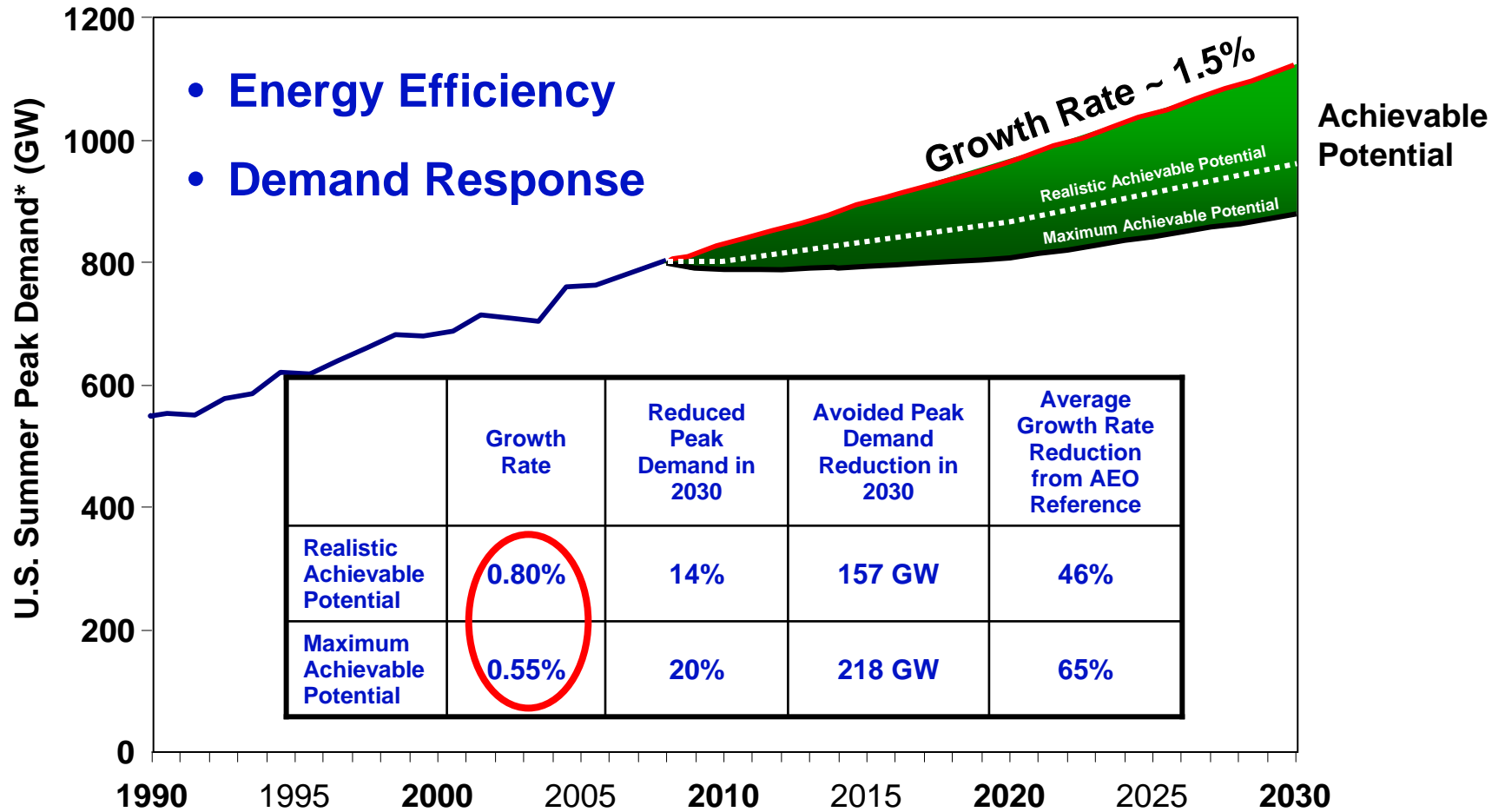
\* Savings reflect total EE program savings potential, inclusive of savings implicit in AEO 2008

# U.S. Peak Demand



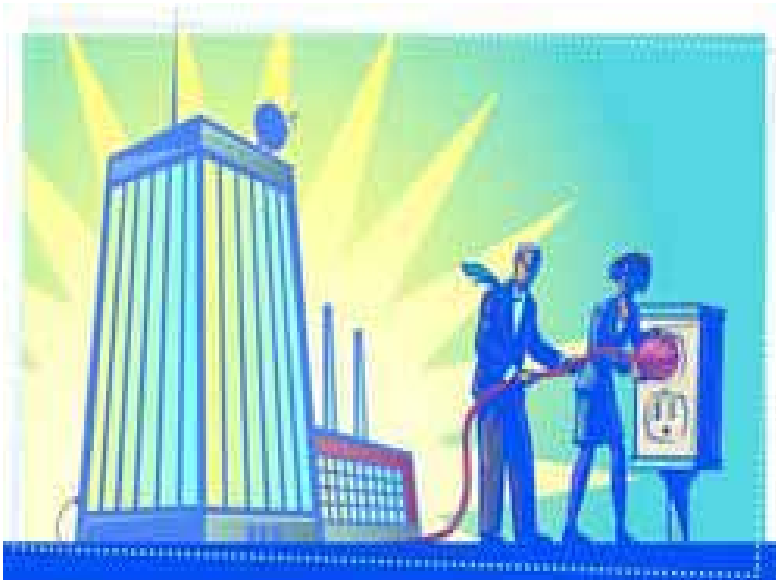
\* Aggregation of regional summer peak demands; non-coincident

# U.S. Peak Demand Reduction



\* Aggregation of regional summer peak demands; non-coincident

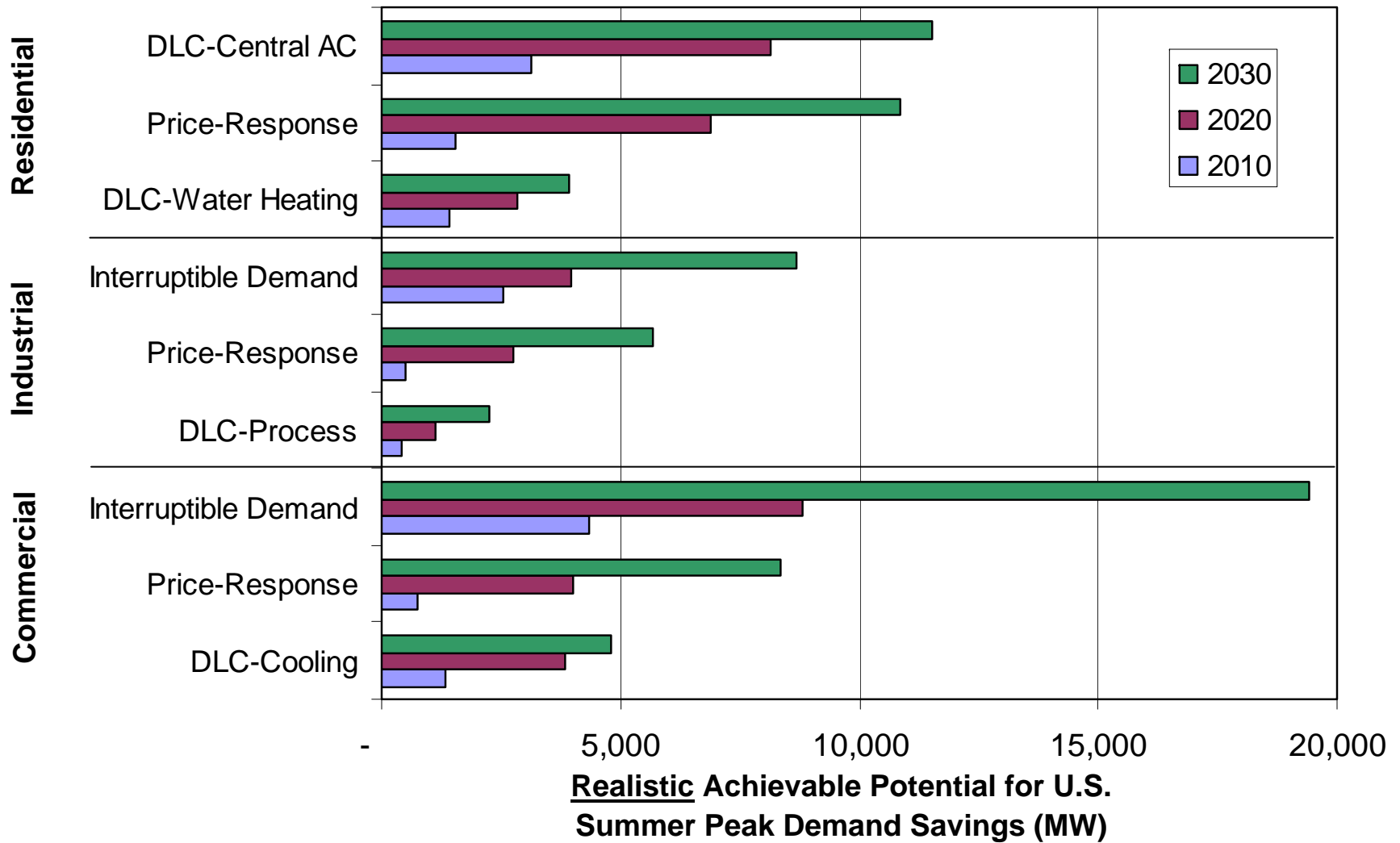
# 2030 Peak Demand Savings



**157- 218 GW equals...**

**314 - 436  
500 MW Electric  
Power Plants**

# U.S. Peak Demand Reduction

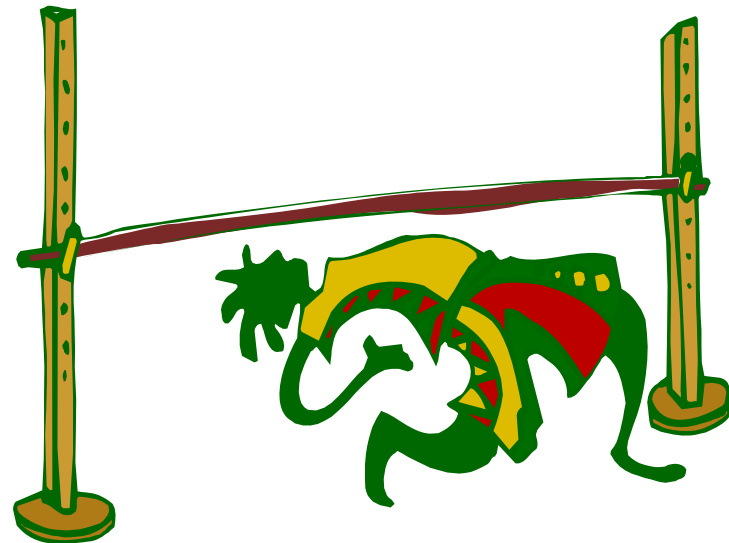


DLC = Direct Load Control

# How to reduce even more?

Pursue all opportunities to use electricity more efficiently . . .

- Progressive codes and standards
- Hyper-efficient end-use technologies
- SmartGrid technologies
- End-to-end efficiency

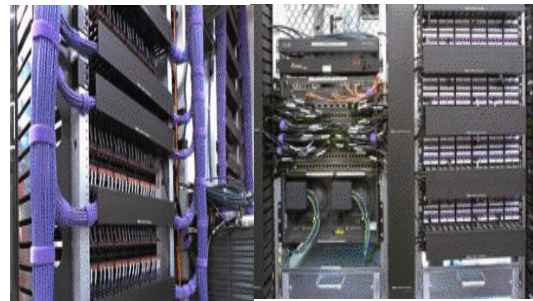


# Hyper-Efficiency Technology Demonstration

6-pack of “Hyper-Efficient” Technologies for high profile field demonstrations designed to fundamentally change how energy is used



**Variable Refrigerant Flow  
Air Conditioning**



**Efficient Data Centers**



**LED Street and  
Area Lighting**



**Heat Pump Water Heaters**



**Ductless Residential Heat  
Pumps and Air Conditioners**



**Hyper-Efficient  
Residential Appliances**

# Smart Grid Technology Demonstration

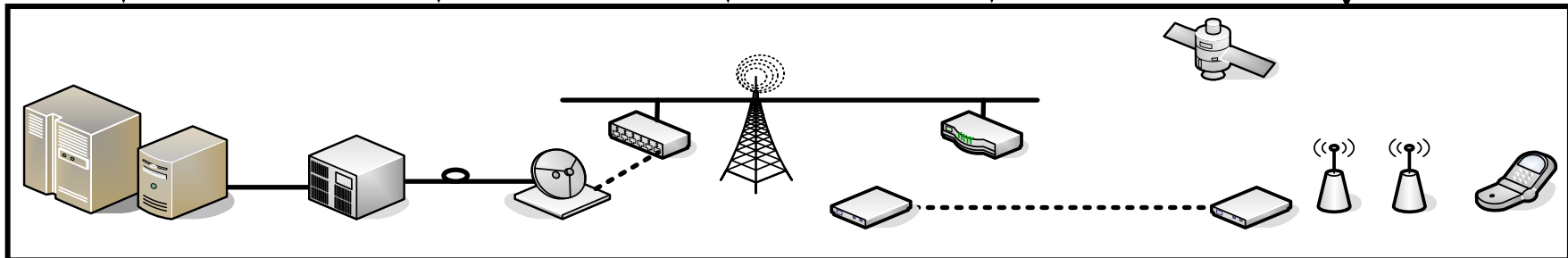
Markets

Transmission

Substation

Distribution

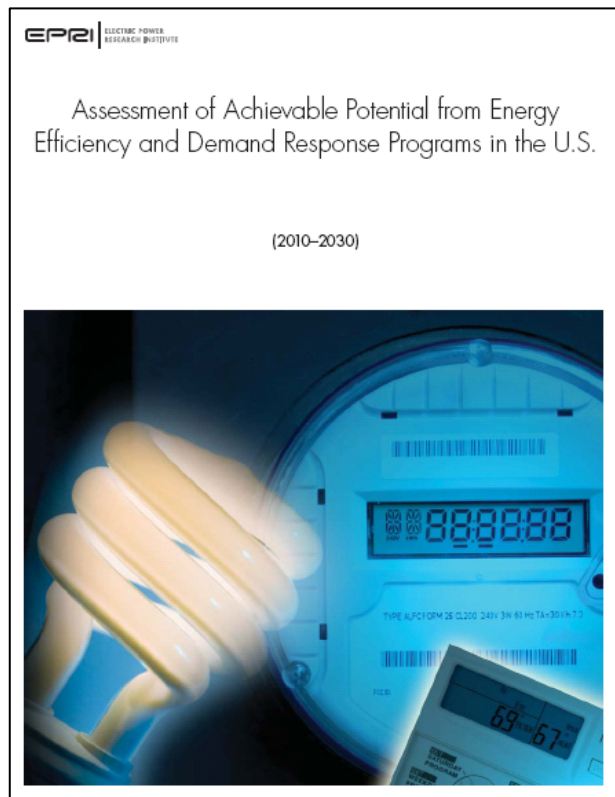
Consumer



**Interactive...Two-Way Communications  
providing "Prices to Devices"**

# Energy Efficiency and Demand Response Study

## Technical Report



**Released  
Jan 14, 2009**

**Available at  
EPRI.com**

## Executive Summary

