Energy Efficiency: the First Fuel in the Race for Clean and Secure Energy

Bill Prindle
Deputy Director
American Council for an Energy-Efficient Economy

Iowa Legislature
November, 2007

Overview

Why efficiency is the "First Fuel" for states:

- Efficiency does more for the economy than any energy resource
- Efficiency is the first response to high energy prices, capacity shortages, and carbon emissions challenges
- Efficiency is a renewable resource, and always available
- Efficiency requires policy action
- States are the leaders on energy policy
- New trends could drive efficiency to an even larger role in state energy policy

The First Fuel

- Why a “race for clean energy”?
  - Conventional fuels depleting, and prices rising
  - Geopolitical costs of conventional energy growing
  - Environmental cost of continued expansion of conventional fuels unacceptable (and will eventually drive up prices)
- Why is efficiency the “first fuel”?
  - “Fastest, cheapest, cleanest”
    - **Fastest** to deploy
    - **Cheapest--**lowest cost per unit
    - **Cleanest--**lowest environmental impact

…..Without efficiency, demand will grow too fast for *ANY* supply resource to keep up

The First Fuel for Climate Stability

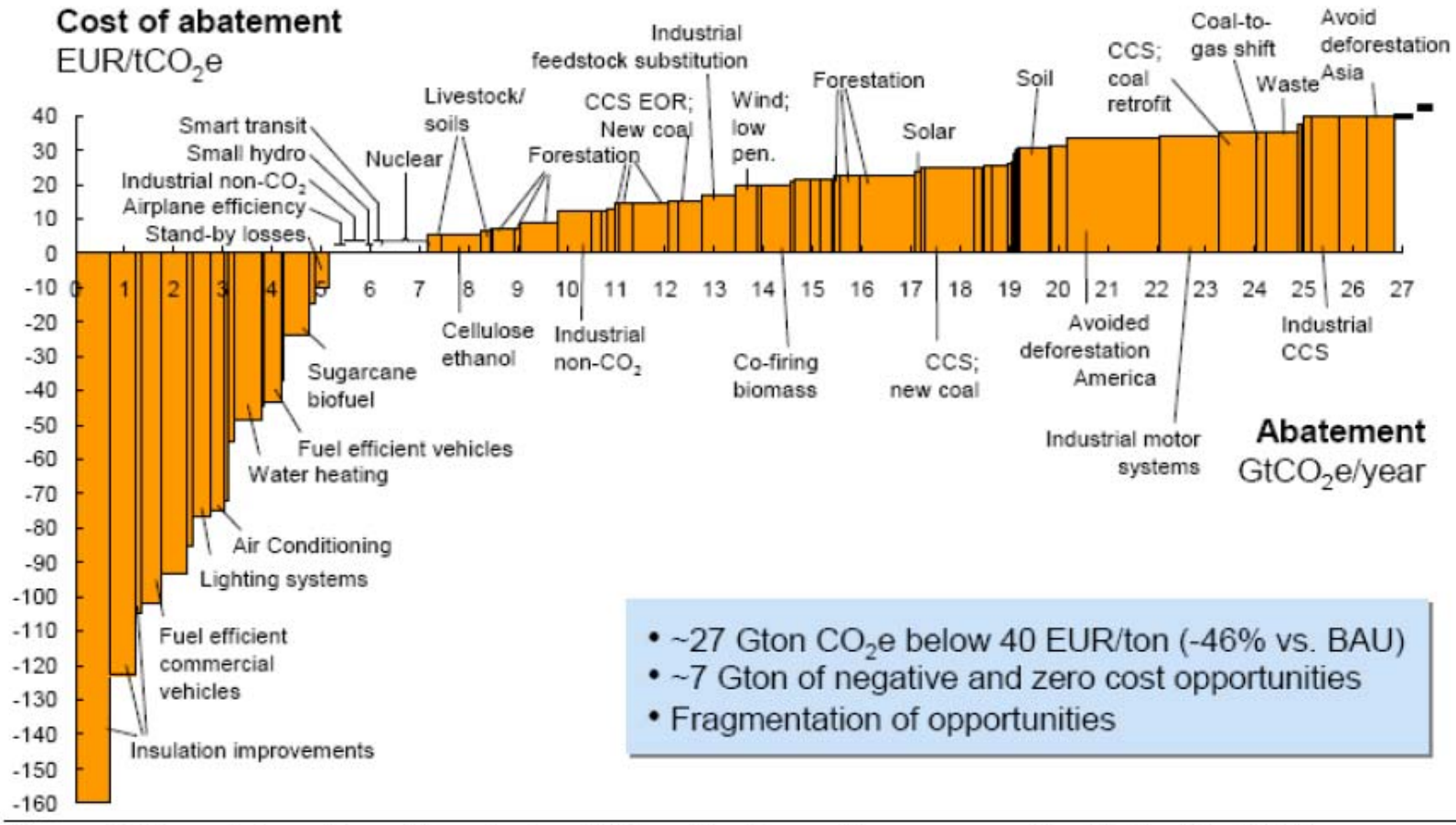
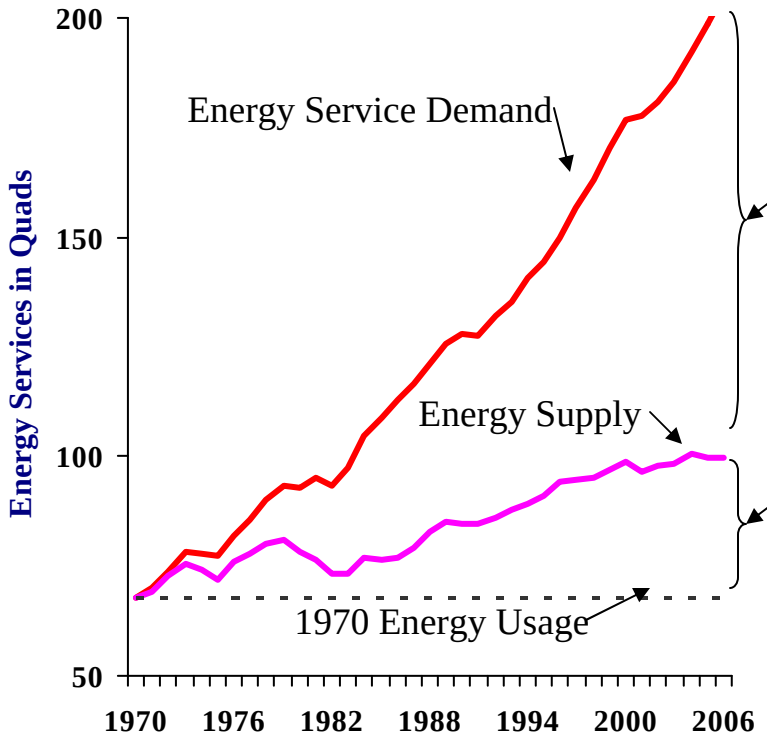


Figure 5. Financial cost-benefit analysis of CO_2 mitigation options prepared by Vattenfall, 2007.

Efficiency Drives the Economy

- Energy services create more jobs and investment than all the supply industries combined
- $1 billion invested in efficiency creates more jobs than $1 billion invested in supply
- Efficiency has saved more energy than any fuel produced since 1973

Efficiency: Driving the Economy



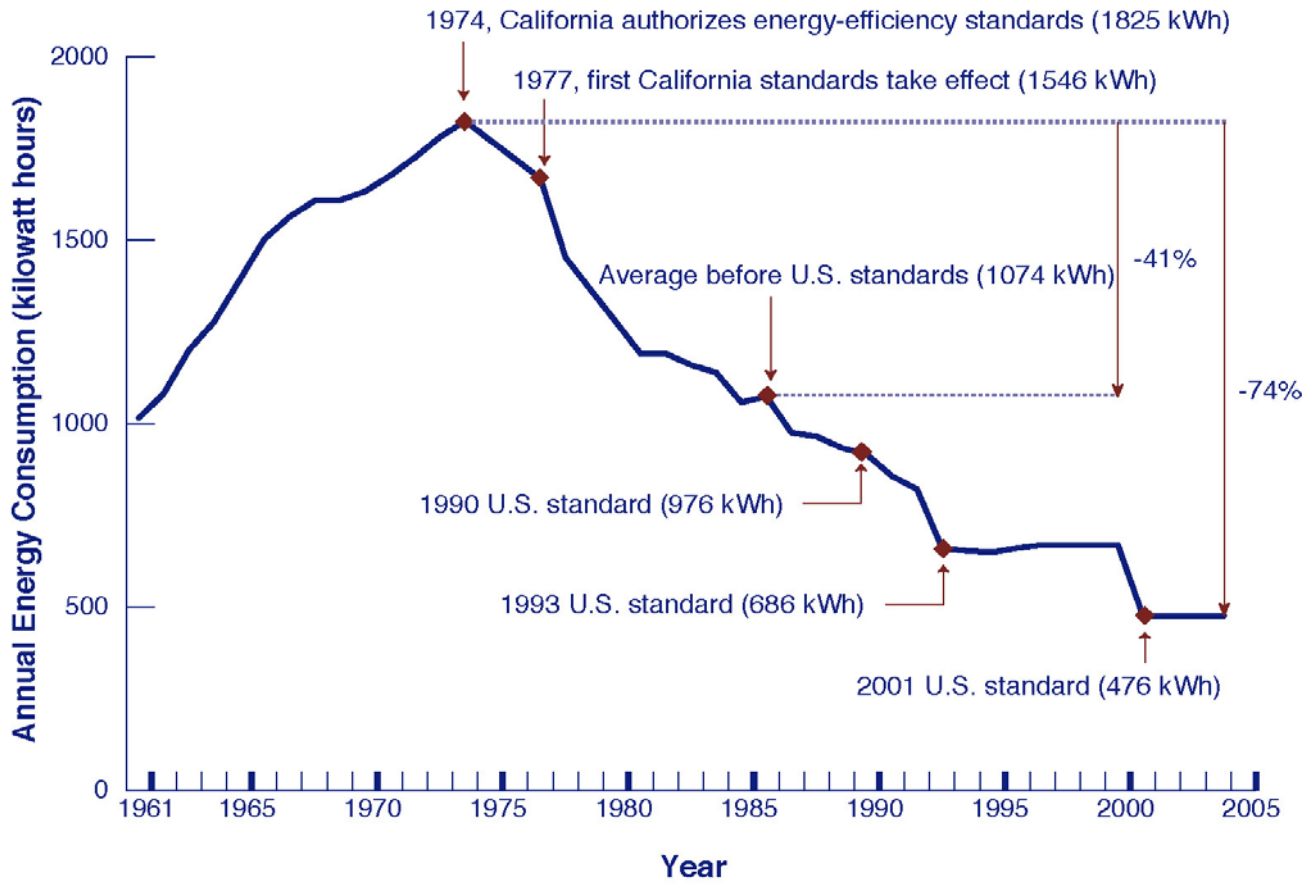
- Since 1970, ***energy efficiency*** has met 77% of new energy service demands in the U.S, while ***new energy supplies*** have contributed only 23% of new energy service demands.

Efficiency and Past Energy Service Demands

- Efficiency has saved more energy than any fuel produced since 1973
  - Serving 75% of growth in energy service demand
  - Providing some 70 Quads worth of energy services, vs. about 25 Quads of new physical energy supply

How Efficiency Meets New Service Demand

The humble refrigerator…



U.S. Energy Infrastructure Investment in 2004

- Total annual investment in energy-efficient technologies and services = $300+ billion
  - Energy Star Product sales = $88 billion
  - Efficiency value added is not 100% of all investments
- Total annual U.S. investment in *energy supply* infrastructure = $100 billion
- **Inference**: U.S. energy services infrastructure investment exceeds energy supply infrastructure investment

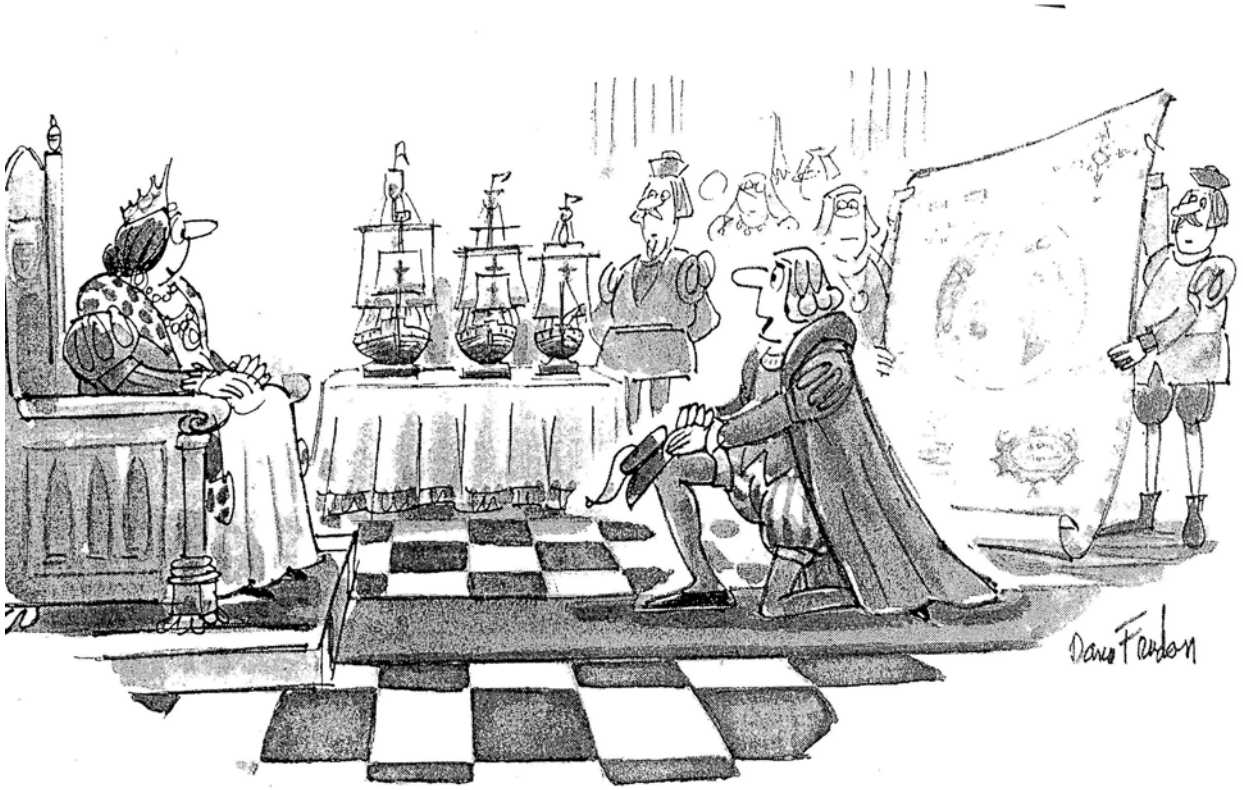
Examples of EE Investment

- $29 billion on Energy Star Homes
  - *Iowa: ~5000/yr*
- $88 billion on Energy Star Products
  - *Iowa: Maytag, Lennox*
- $12 billion on Energy Star windows
  - *Iowa: Pella, Cardinal IG*
- $5 billion on ESCO project investment
- $5 billion on insulation
- $32 billion on vehicles

Efficiency Investment and Job Creation

- 2004 energy efficiency investment supports 1.6 million U.S. jobs
  - 230,000 directly attributable to efficiency value added—this number could grow!
  - Distributed among manufacturing, services, construction
  - Jobs created in more labor-intensive sectors than those stimulated by energy supply investments
  - Direct jobs multiplier averages > 6 jobs per $ million invested, vs. ~ 2 jobs/$ million for typical supply investments

Efficiency and Job Creation

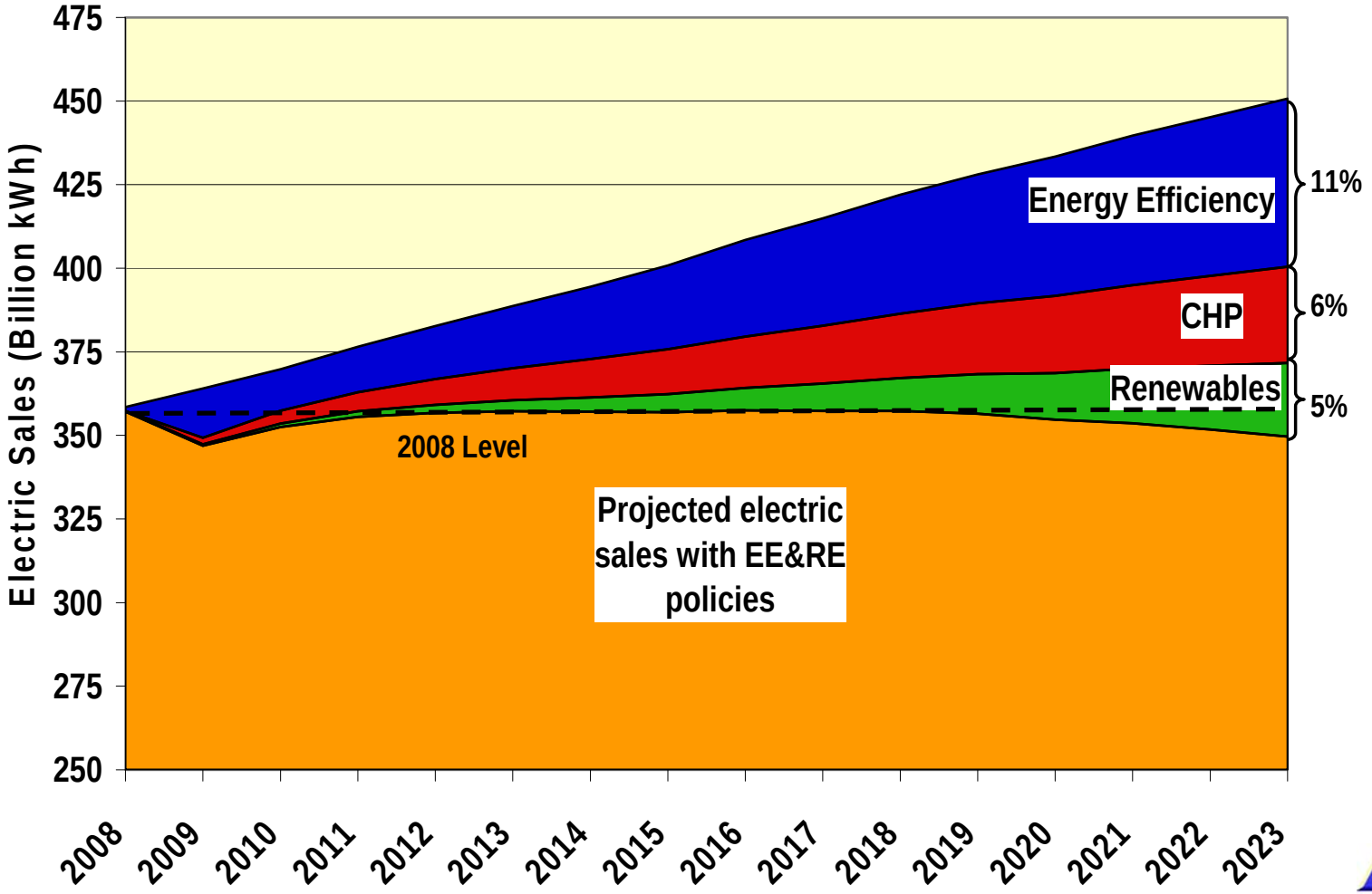


"Your Majesty, my voyage will not only forge a new route to the spices of the East, but it will also create over 3,000 jobs."

Efficiency and Future Energy Service Demands

- ACEEE efficiency potential studies show we can meet most energy service demand growth through efficiency
- Efficiency and renewables together can meet most future demand growth
- EE and RE provide price hedge and other value to resource portfolios

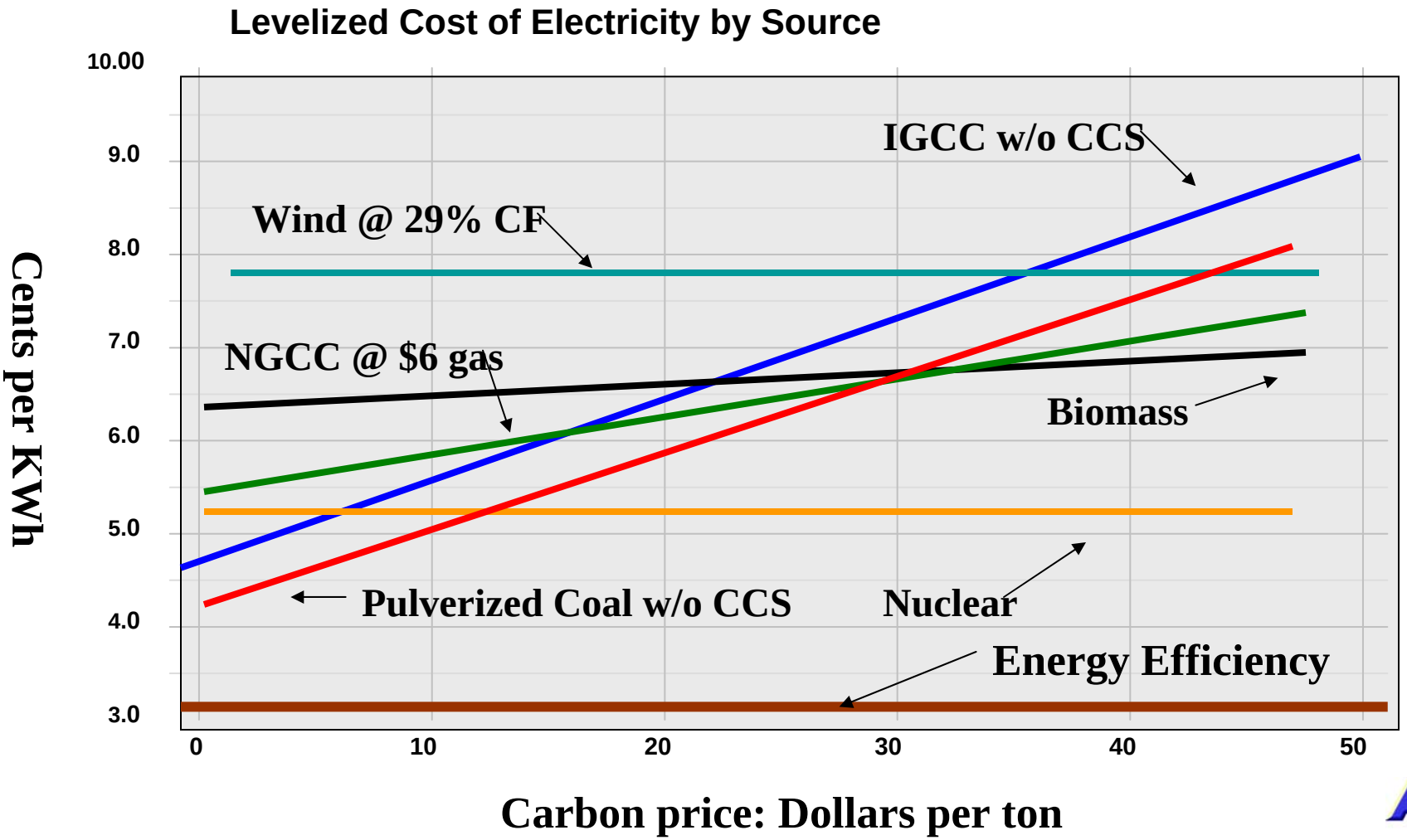
The Texas Example



Efficiency: a Renewable Resource

- In the beginning, there was…not much
- Today, we have efficient technologies in all end-use sectors
- Efficiency potential studies show we can cut demand growth by more than half
- Efficiency potentials stay high; new technologies and cost drops keep "refilling the well"

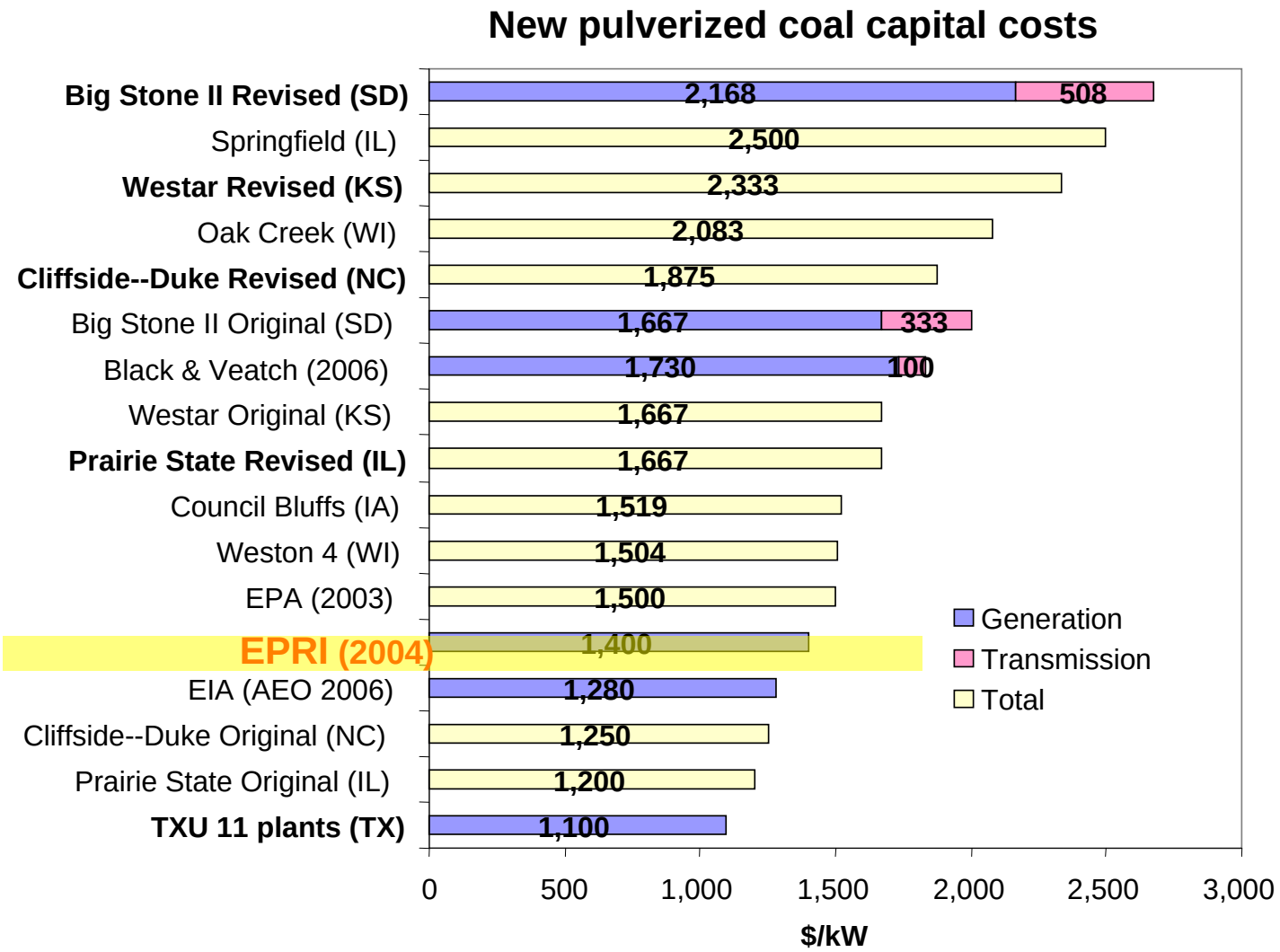
The Cheapest kWh



Leading State EE Economics

State	Benefit/Cost All programs	C/I programs B/C	Res. Programs B/C	Cost of saved kWh($)
California	2.0 – 2.4			0.03
Connecticut	NA	2.4 to 2.6	1.5 to 1.7	0.023
Maine	1.3 – 7.0			
Mass.	2.1	2.4 to 2.7	1.3 to 2.1	0.04
New Jersey				0.03
New York				0.044
Rhode Island	2.5	3.3	1.5	
Vermont	2.5	2.9	1.8	0.03
Wisconsin	3.0	2.0	4.3	
Median	**2.1 to 2.5**	**2.5 to 2.6**	**1.6 to 1.7**	**0.03**

Rising Powerplant Costs



But: Efficiency is Hard to Harvest

- Markets alone won't reap enough
  - Income elasticity and cross-elasticity block price elasticity
  - Principal-agent barriers—builder-buyer, landlord-tenant
  - Information-cost barriers—consumers don't have time/$ to study each purchase
- IEA study: over half of building energy usage is affected by barriers
- Utility regulation must be further reformed
- ***Bottom line:*** policy action is need to make markets work for a clean energy future

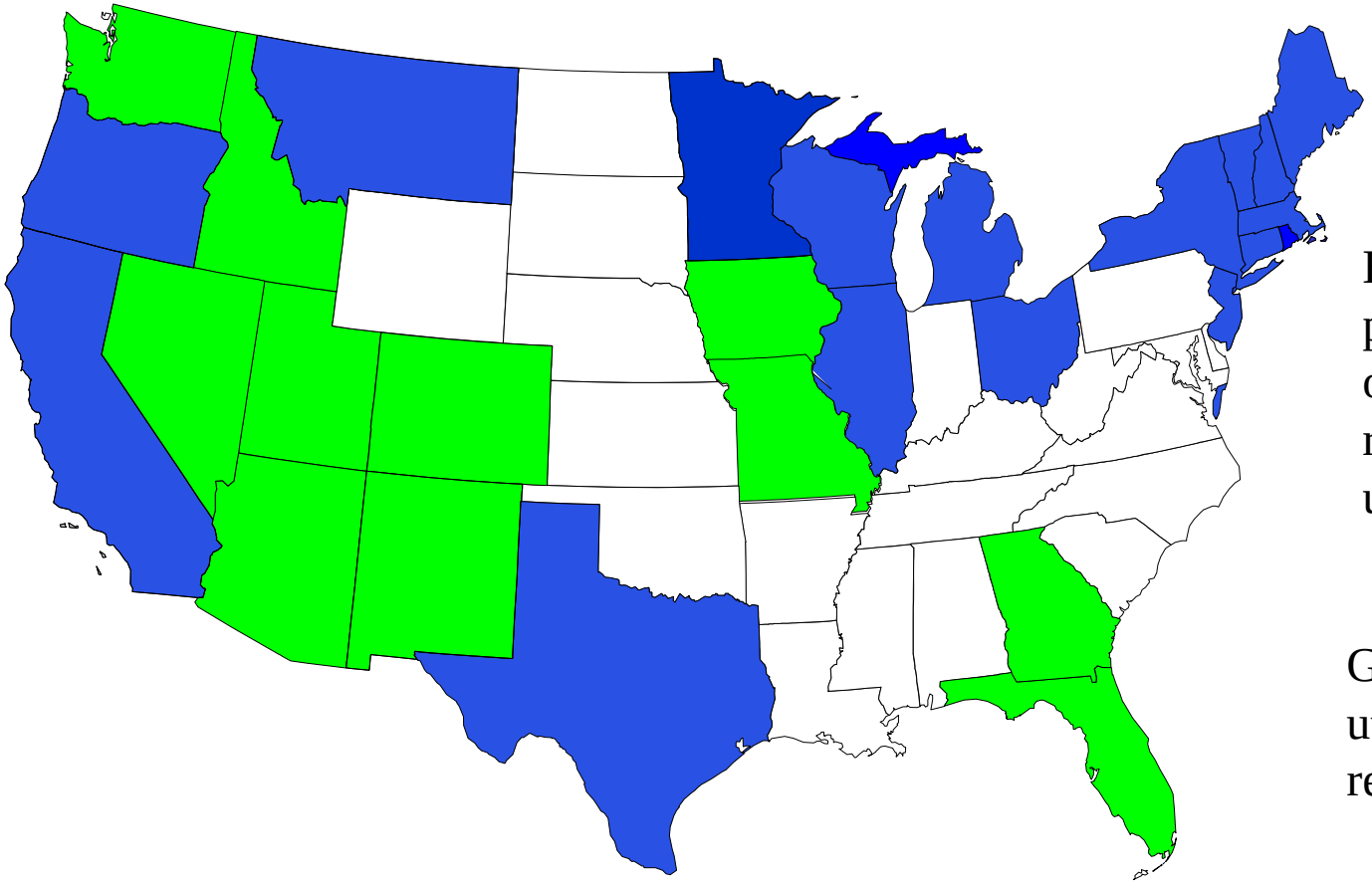
States Have Become the Leaders on Energy Policy

- Congress unable to move transformational energy policies
- States more and more the laboratories of innovation and effectiveness
- States now outspending the federal government by 3:1
- State leadership more important than ever

Why are States Leading with Efficiency?

- It's the only resource available in *EVERY STATE*
- Most conventional energy dollars go out of state—more of the efficiency dollar STAYS HOME
- It's something you can do *NOW*
- It makes state leaders good **"portfolio managers"** (even in coal states)

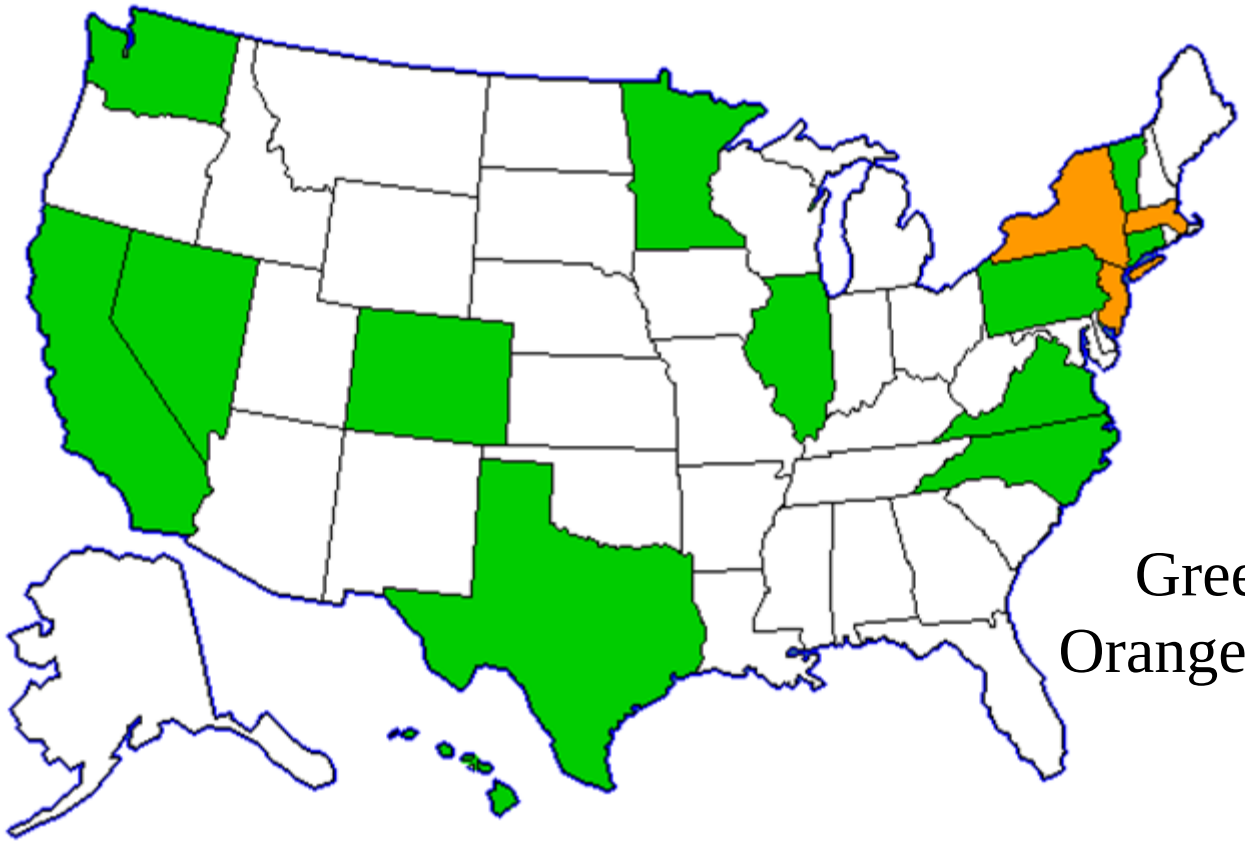
States with Utility Sector Energy Efficiency Programs



Blue states have public benefit funds or other statewide requirements for utility sector EE

Green states have utility DSM through regulatory casework

States with EERS-Like Policies

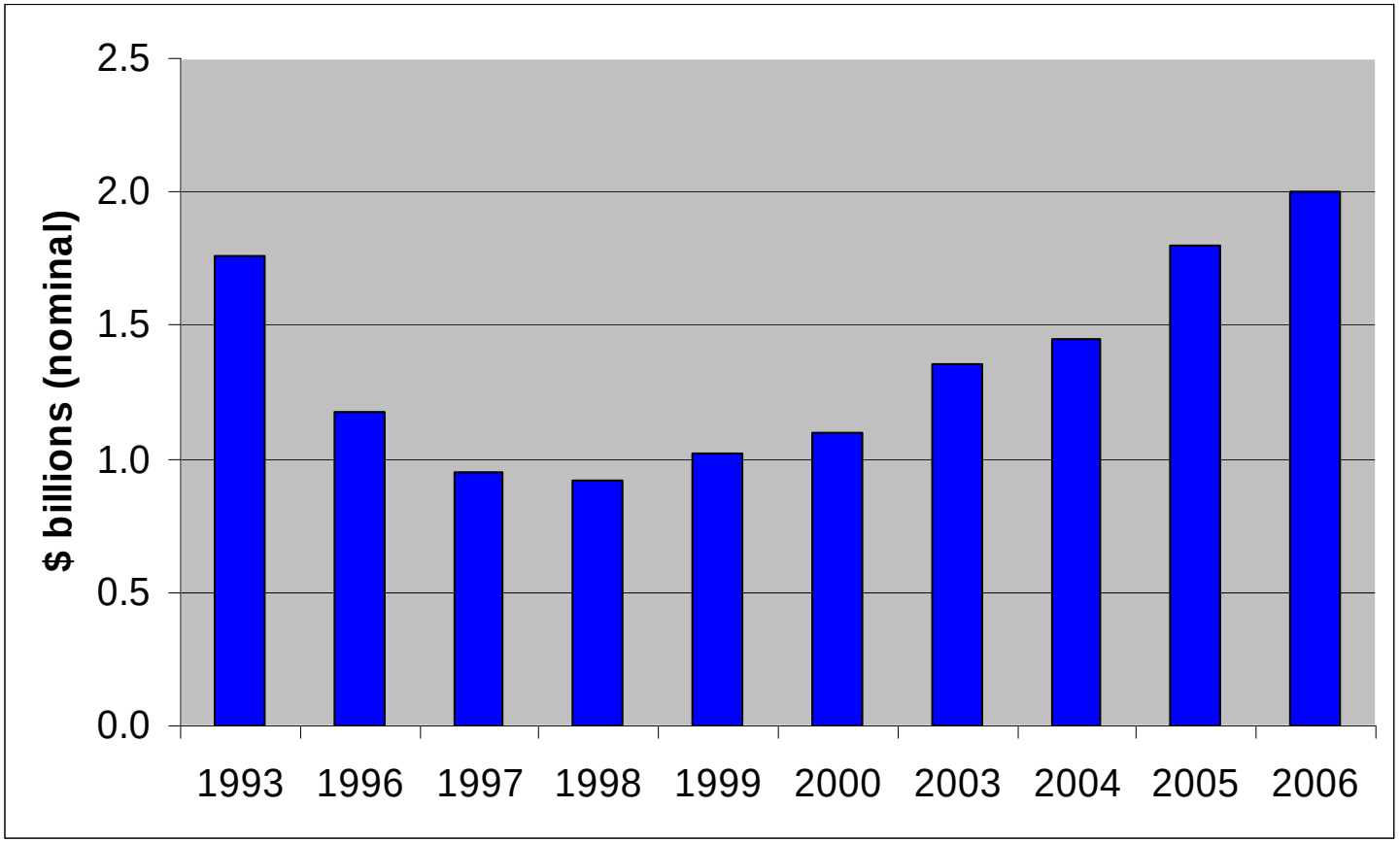


Green= has EERS
Orange= EERS pending

EERS Could Significantly Reduce Load Growth

- 15 states' EERS could cut national average load growth forecasts by half or more
- Rising prices from fuels and capital costs could add price elasticity effects
- Significant implications for longer term electricity business strategies

Spending on Utility Sector Efficiency Programs



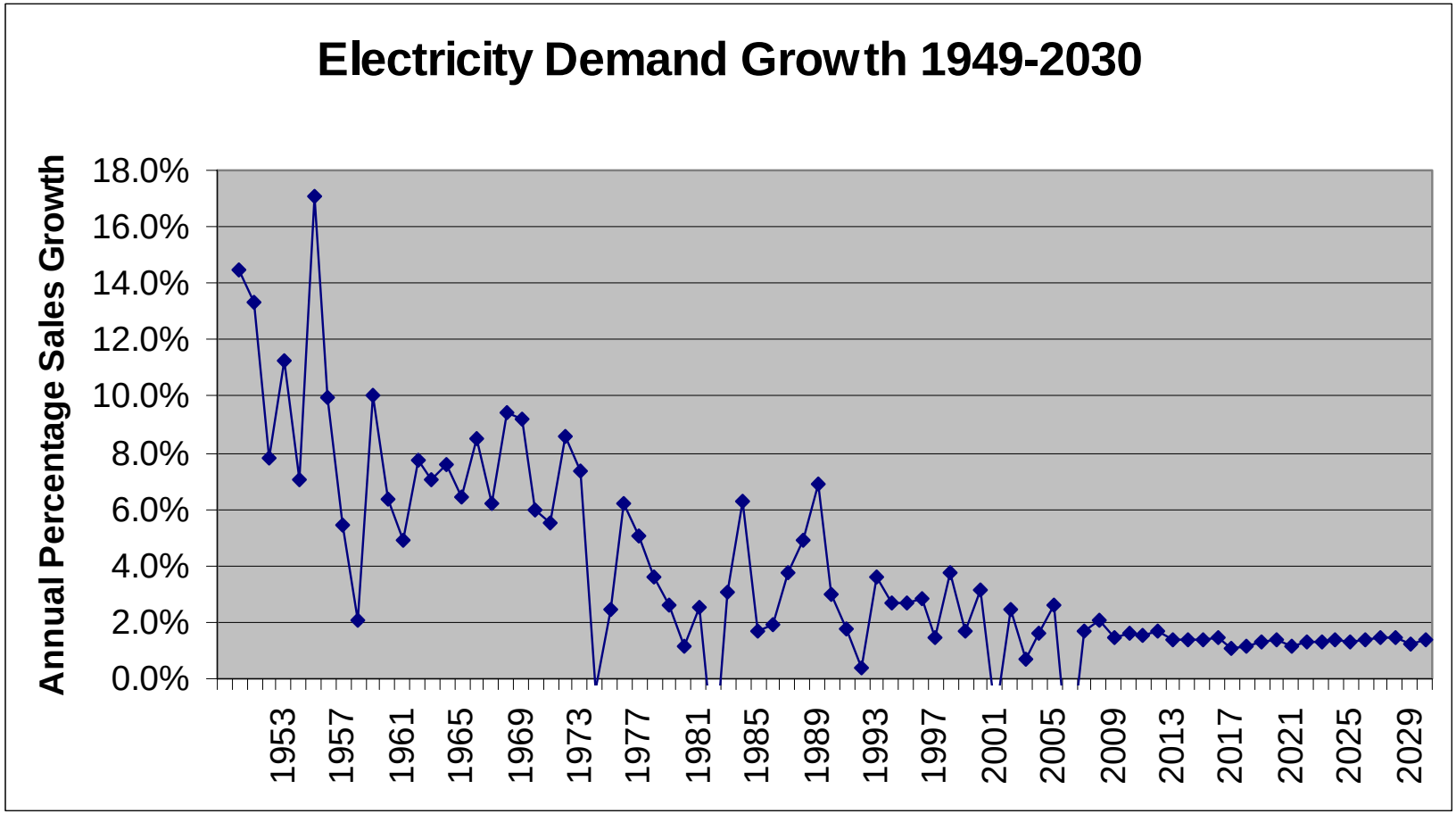
Three Key Regulatory Issues

- **Allowing cost recovery** for direct costs of EE programs
- **Removing the disincentives** of “lost revenues” resulting from energy efficiency programs
- **Creating earnings potential** from energy efficiency program investments

Key National Trends

- A shift in electricity industry strategy
  - Slowing load growth
  - Rising prices
  - Capacity shortages
  - Carbon risk
  - Growing understanding of demand side investment potential
  - Consideration of new business models (eg. Duke Energy Save-a-Watt in NC, SC, IN)

Key National Trends



Key National Trends

- Proliferating state EERS encouraging federal action
- House-passed RPS bill in August allows EE to meet up to 27% of requirements
- Resembles MN and IL EE-RE policies
- States may see a federal requirement driving EE and well as RE resource acquisition

ACEEE State Scorecard

- Rates states on efficiency policies:
  - Appliance efficiency standards
  - Combined Heat & Power (CHP) policies
  - Building energy codes
  - Transportation—fuel economy and smart growth
  - Spending on utility and public benefits energy efficiency programs
  - Tax incentives
  - State facilities – “Leading by Example”

ACEEE State Scorecard

- Iowa ranked 13th overall
- Good scores on utility programs, building codes, state facilities
- Tied with WI on utility program spending at $9.76 per capita, about $1 behind MN, way ahead of IL, MO, NE

What's Next for Iowa?

- Focusing on the power sector:
  - Build on success of utility EE programs
  - Set long-term resource targets like IL and MN
  - Create resource priority policy—EE first, then RE, then conventional energy

What's Next for Iowa?

- Specific Policy Options
  - Energy Efficiency Resource Standard (IL or MN as models)
  - Resource Loading Order—CA PUC
  - Utility Regulatory Reform—ID PUC
  - Develop CHP and other DG—interconnection and tariff policies
  - Better building codes—including training and enforcement

Conclusions

Efficiency is the "First Fuel" in the race for clean energy:

- Efficiency is the cornerstone of a sustainable and prosperous economy
- Efficiency is the first-responder to challenges of energy prices, capacity shortages, carbon emissions
- Efficiency is abundant and renewable
- Efficiency requires policy action
- States must continue to lead on energy policy
- Iowa has opportunities to build a cleaner future AND a stronger economy

Contact Information

Bill Prindle

Deputy Director

ACEEE

1001 Conn. Ave, NW, Suite 801

Washington, DC 20036

202-429-8873

bprindle@aceee.org

http://www.aceee.org/energy