

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

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Overview

Why efficiency is the “First Fuel” for states:

- Efficiency does more for the economy than any energy resource
- Efficiency is the key to our energy straitjacket
- Efficiency is a renewable resource, and always available
- Efficiency is made of ‘silver BBs’
- States are the leaders on energy policy

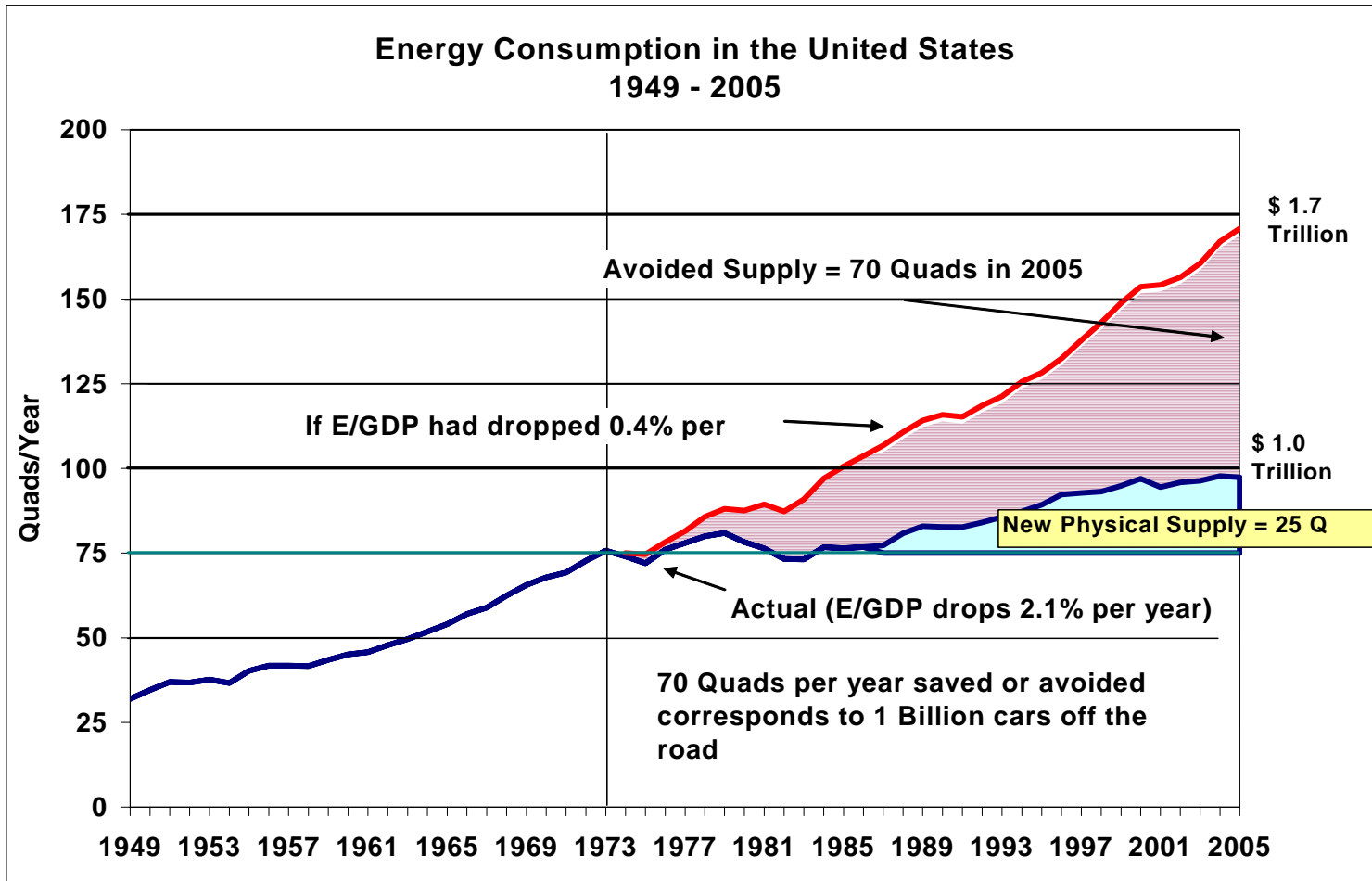
The First Fuel

- 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

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's \$700 Billion Gift

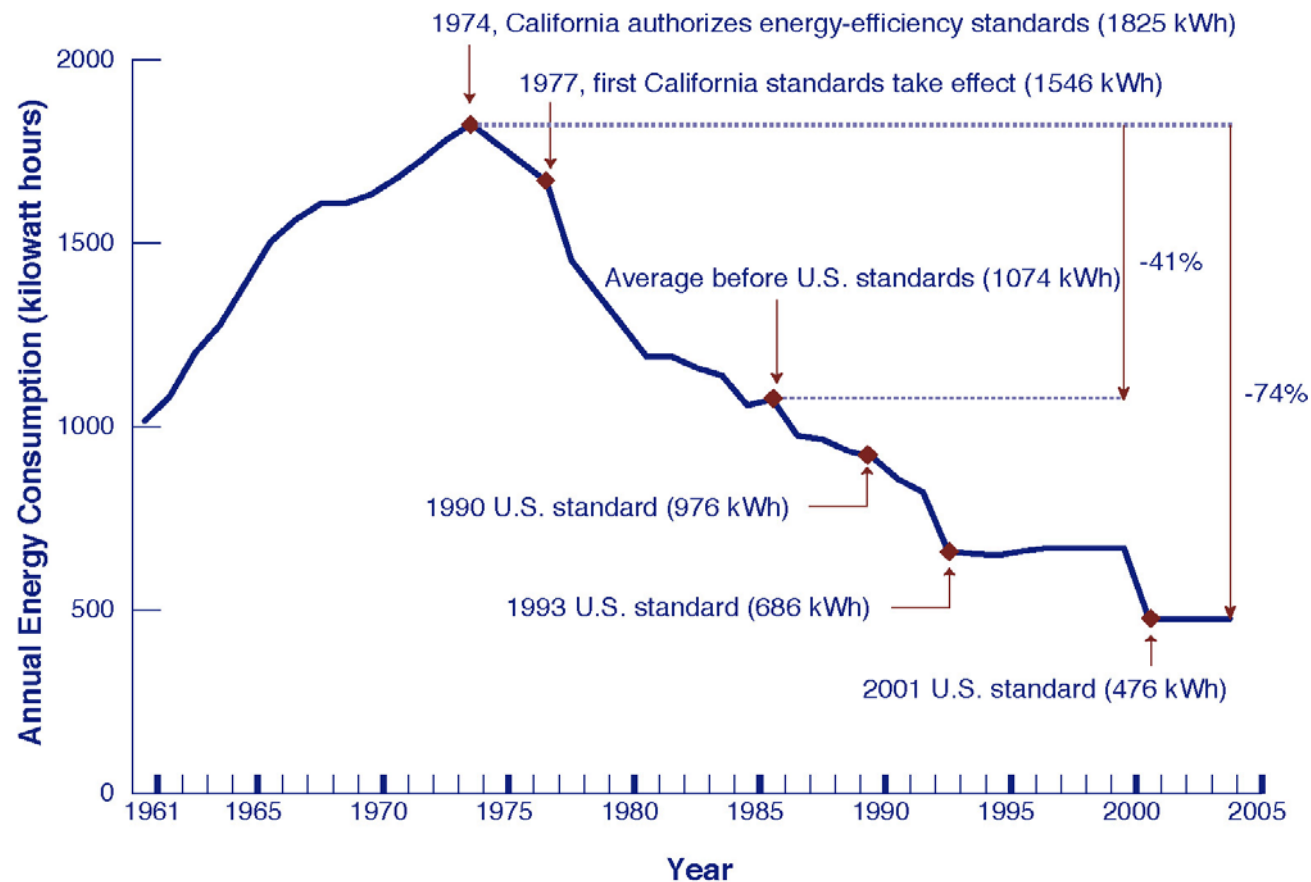


Efficiency and Past Energy Service Demands

- 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

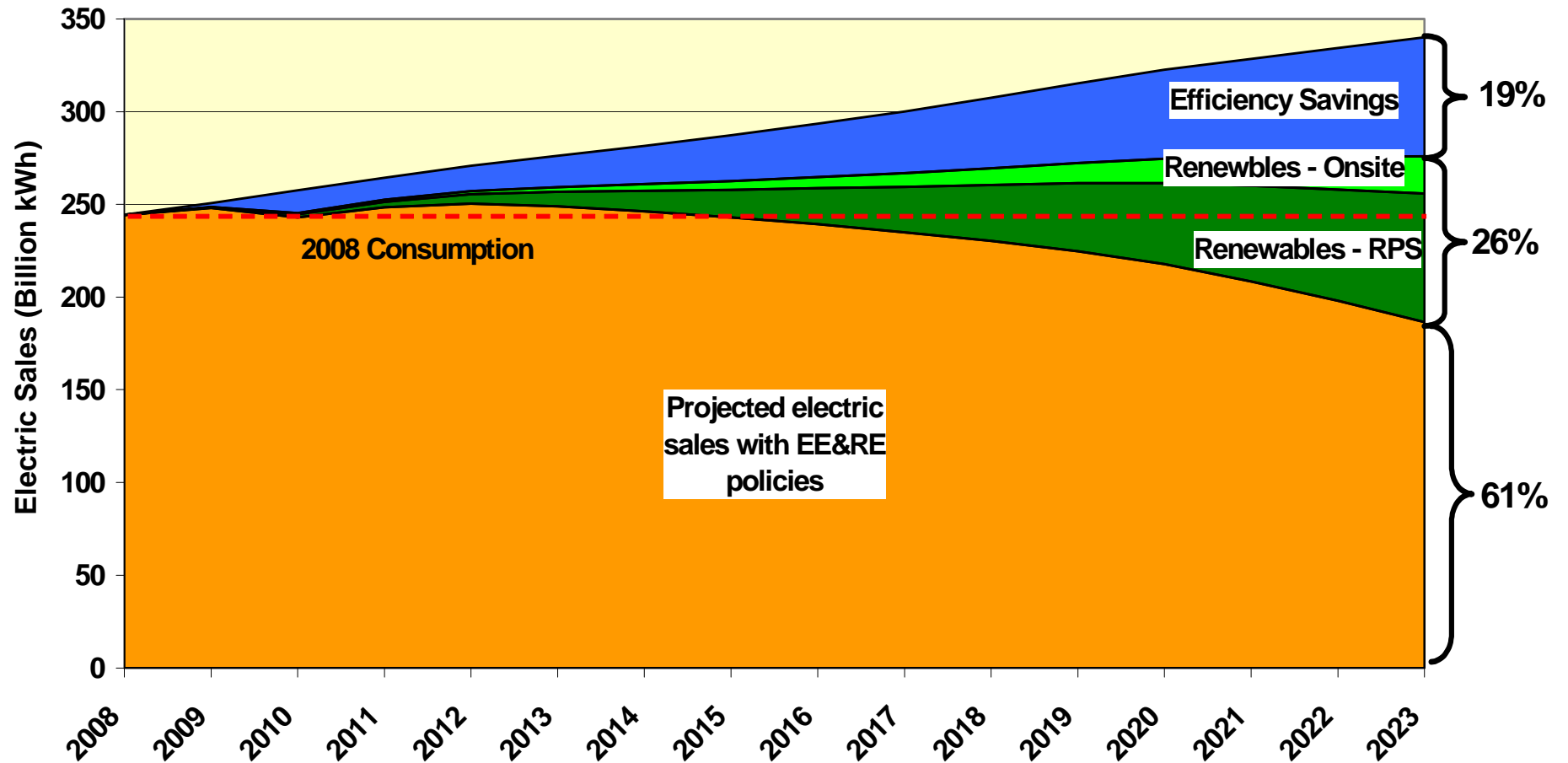
The humble refrigerator...



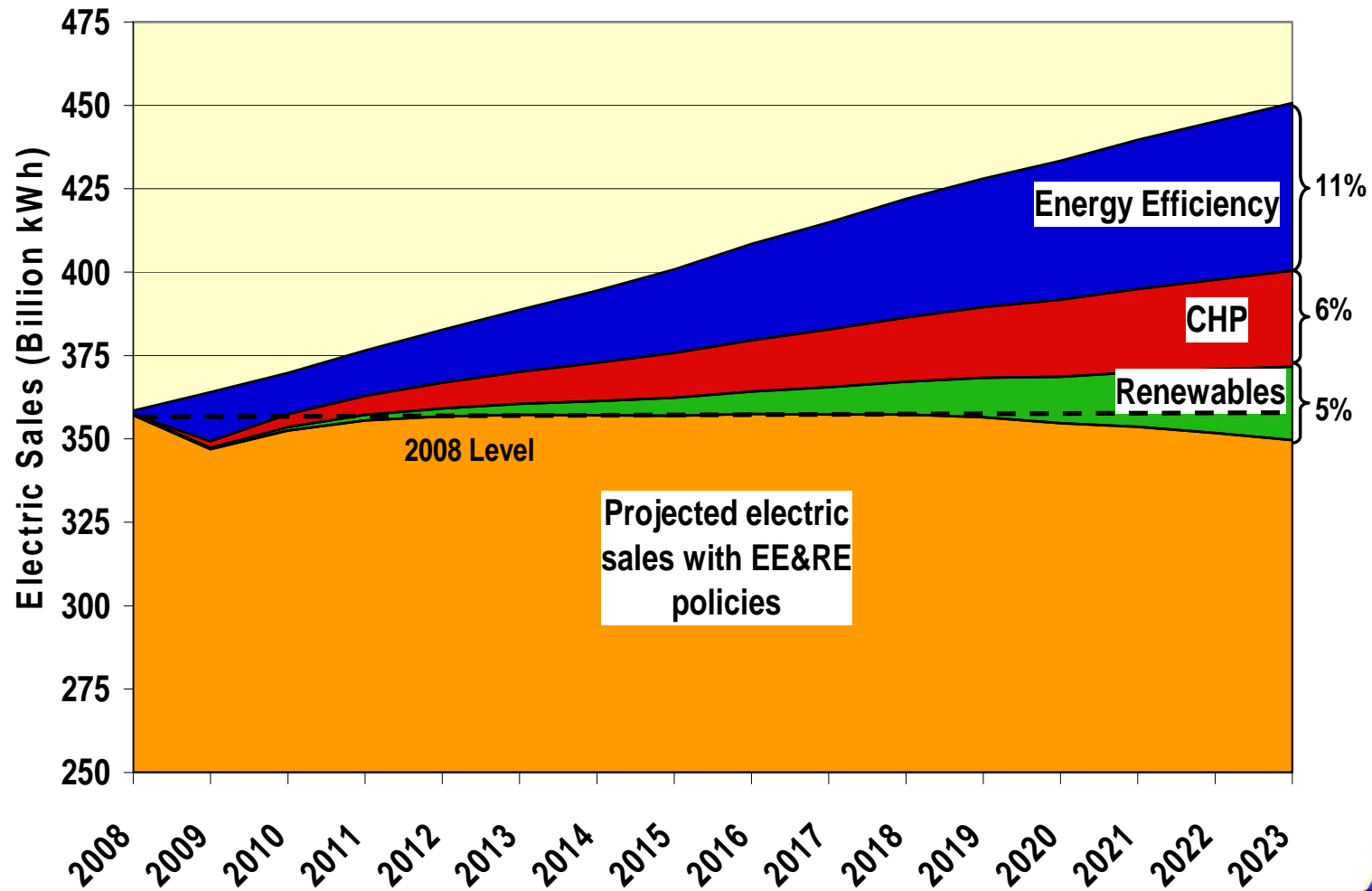
Efficiency and Future Energy Service Demands

- ACEEE efficiency potential studies show we can meet most energy service demand growth through efficiency
- Efficiency and renewables together can meet more than 100% of future demand growth

The Florida Example



The Texas Example

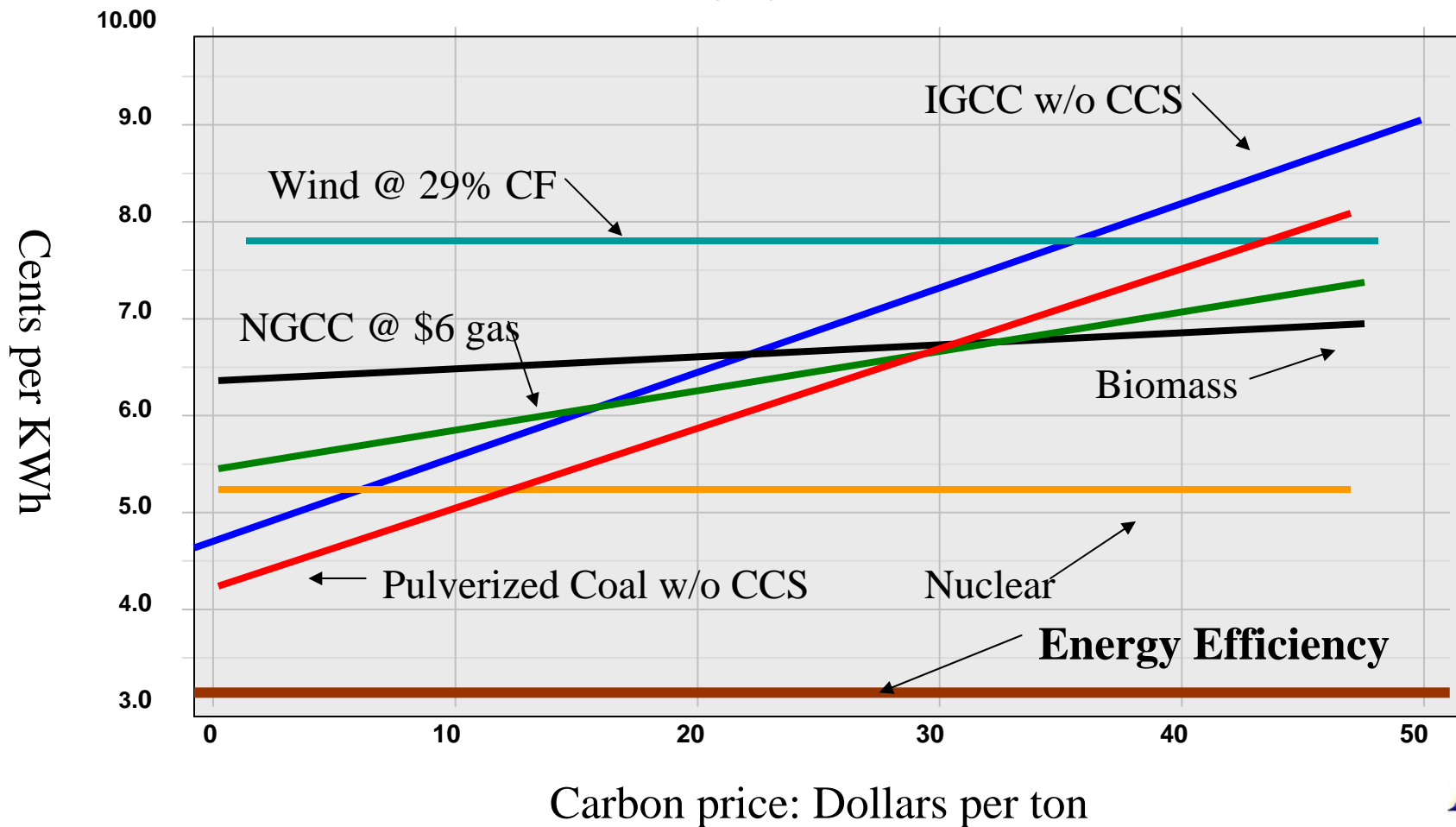


Efficiency: a Renewable Resource

- 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

Levelized Cost of Electricity by Source



Efficiency: BBs, not Bullets

- **There is no silver bullet!** But lots of *really shiny* BBs:
 - New buildings that use less than half of standard models
 - Appliances that save 2/3 of the energy used by 1970s models
 - LED lights that use a fraction of the energy of incandescents
 - Industrial technologies that change the way energy is used, and that drive higher productivity

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
- Then there is the utility regulation paradigm.....

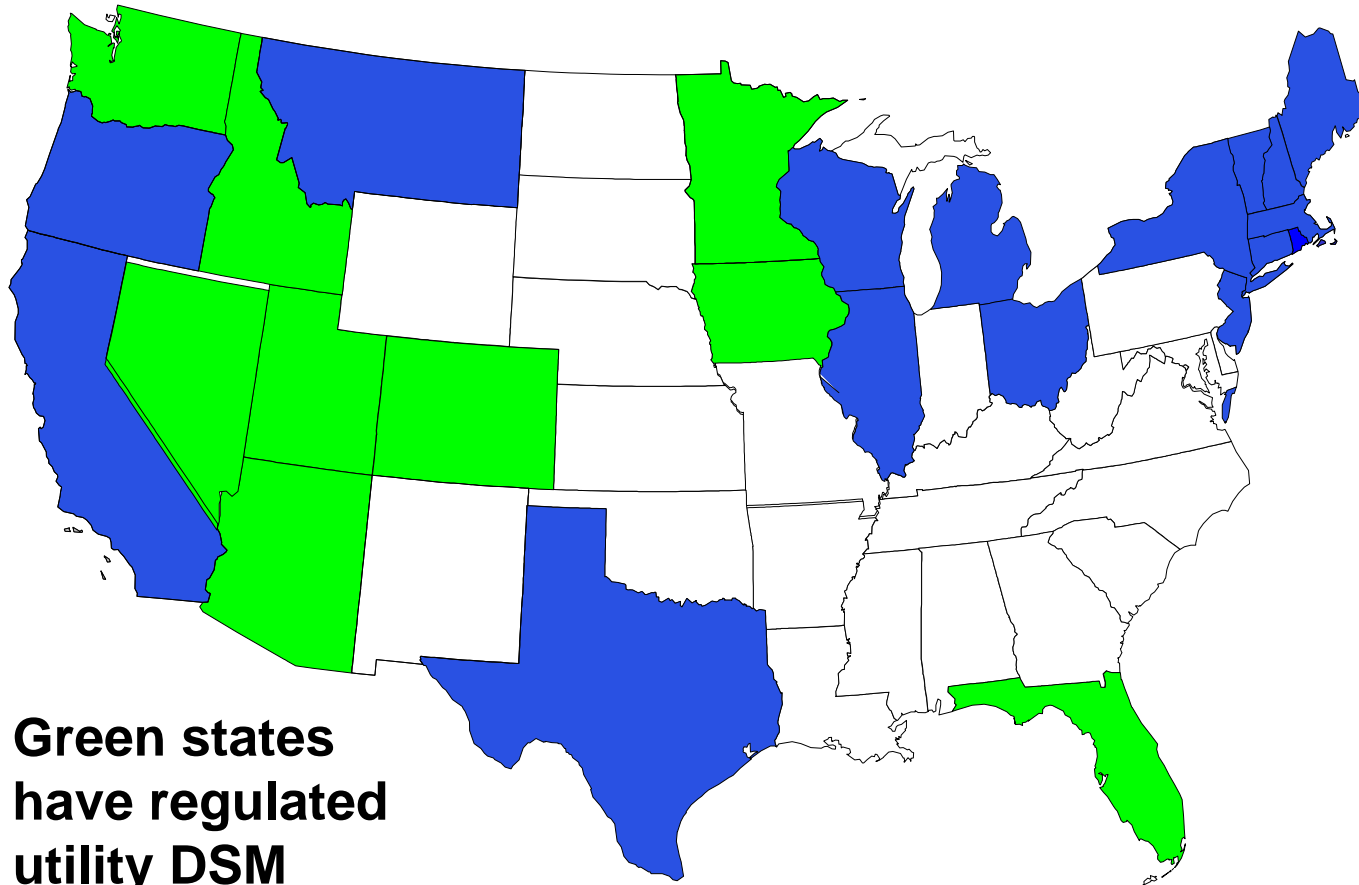
States Have Taken Leadership on Energy Policy

- 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



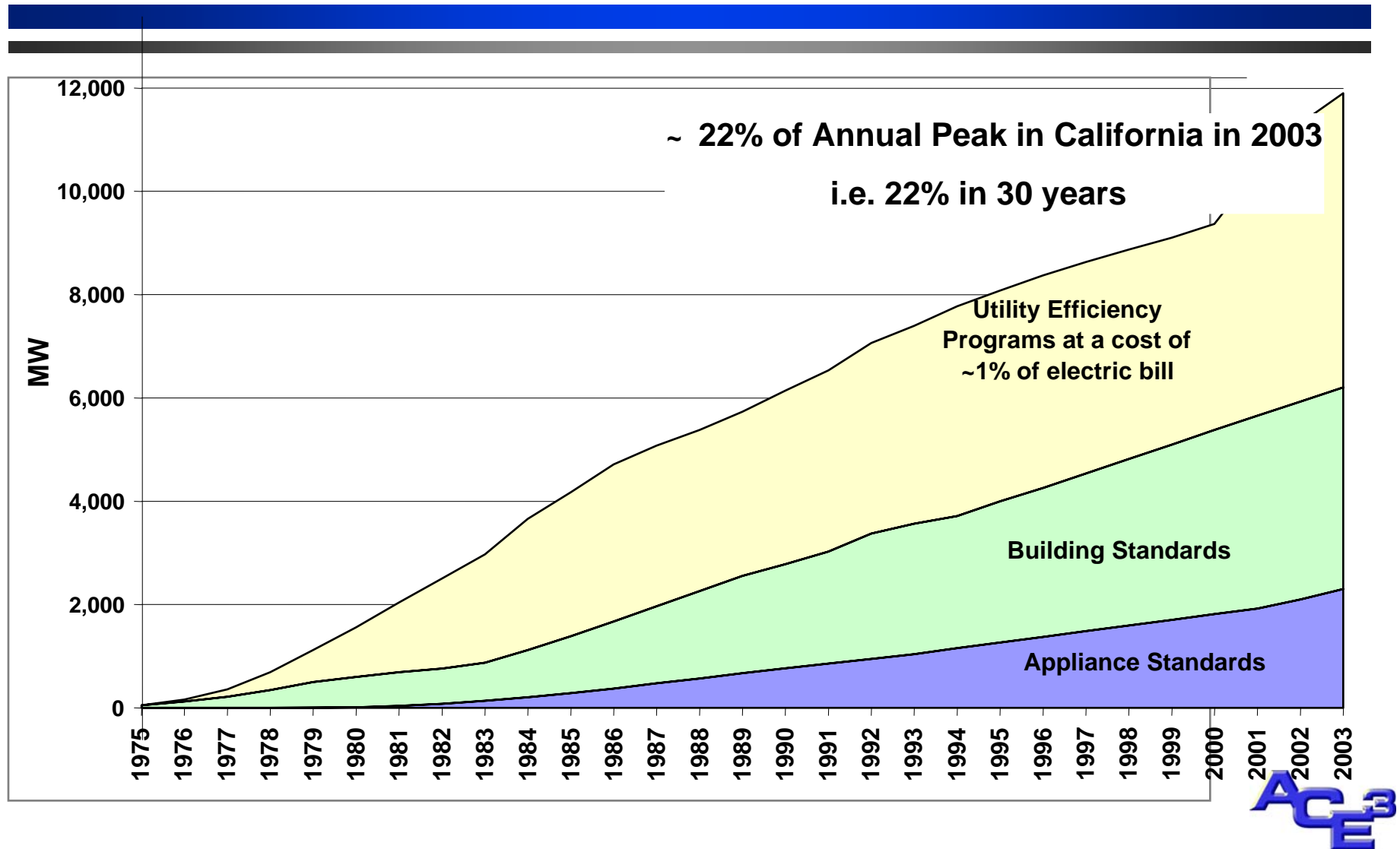
**Green states
have regulated
utility DSM**

**Blue states
have EE
public benefit
funds**

ENERGY EFFICIENCY ON A “POWER PLANT” SCALE

- Leading state examples
 - ❖ Minnesota has saved over 2,300 MW since 1990
 - ❖ The Pacific Northwest has saved over 1,600 MW over a similar timeframe
 - ❖ California has saved over 1,500 MW in the last 5 years
- Ten states have EE programs on a scale large enough to displace power plants (i.e., save 0.4% to 1.0% of load each year)
 - CA, CT, IA, MA, MN, NY, OR, RI, VT, WI

California's Big Three



THE PACIFIC NORTHWEST (ID, MT, OR, WA)

- Best electric resource planning process in the U.S.
 - 25 years of energy efficiency program experience
 - Planning to meet all new electricity resource needs through 2012, and half of needs thru 2025
-And all at a levelized cost of 2.4 cents/kWh

The Fifth Northwest Electric Power and Conservation Plan

Northwest Power and Conservation Council, May 2005.

[<http://www.nwcouncil.org/energy/powerplan/plan/>]



THE NORTHWEST POWER AND CONSERVATION PLAN

Why Energy Efficiency Reduces System Cost and Risk

- It provides a hedge against market price spikes, even when market prices are low
- It's Not Subject to Fuel Price Risk
- It's Not Subject to Carbon Control Risk
- It's Significant Enough In Size to Delay “build decisions” on generation

[<http://www.nwcouncil.org/energy/powerplan/plan/>]



Leading State Programs' Cost-effectiveness

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	
<i>Median</i>	2.1 to 2.5	2.5 to 2.6	1.6 to 1.7	0.03

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

Cost Recovery

- Essential to encourage utilities to proceed with energy efficiency programs
- Many mechanisms to accomplish this
 - Costs embedded in rates
 - Special tariff riders
 - Deferred accounts
 - Specific surcharges (including public benefits charges)

Decoupling/Lost Revenue

- Less common practice, but “decoupling” is growing
- Necessary but not sufficient
- Some means of addressing utility disincentive from lost sales is essential to aligning utility shareholder and public interests

Shareholder Incentives

- Common, but not universal
- Essential to achieving best efforts for program effectiveness
- Many mechanisms available to accomplish this
 - Cash award for meeting goals
 - Earn a rate of return on EE expenditures (tied to performance)
 - Earn a share of “net benefits” from the programs
 - Bonus rate of return for the company (tied to performance)

Summary of ACEEE Survey Results

Based on ACEEE's recent report:

- **Cost Recovery** – All 25 states operating utility EE programs have an approved cost-recovery mechanism
- **Shareholder Incentives** – 7 states have incentive mechanisms in place, 3 more are developing them
[9 of the 25 states don't have utilities administer EE programs, so such incentives aren't as key.]
- **Decoupling/lost revenues** – At least 5 states have decoupling mechanisms approved, and at least another 5 states are actively considering it. [No states still provide direct lost revenue recovery]



ACEEE Report Reference

- ***Aligning Utility Interests with Energy Efficiency Objectives: A Review of Recent Efforts at Decoupling and Performance Incentives***

--M. Kushler, D. York & P. Witte. ACEEE, October 2006

--<http://aceee.org/pubs/u061.htm>



Three Key Policies for Efficiency as a Utility System Resource

1. Establish Energy Efficiency Resource Standards (binding savings targets for utility programs)

see Energy Efficiency Resource Standards: Experience and Recommendations, S. Nadel, March 2006.

<http://www.aceee.org/pubs/e063.htm>

2. Provide funding for energy efficiency through state system benefit funds
3. Require funding for energy efficiency through electric and gas utility rate cases

Sources for Efficiency Program Designs

- ***America's Best: Profiles of America's Leading Energy Efficiency Programs***
York & Kushler, ACEEE, 2003
<http://www.aceee.org/pubs/u032.htm>
- ***Energy Efficiency and Electric System Reliability: A Look at Reliability-Focused Energy Efficiency Programs Used to Help Address the Electricity Crisis of 2001***
Kushler, Vine and York, ACEEE, 2002.
<http://aceee.org/pubs/u021full.pdf>



What's on Deck?

- NAPEE following up through these conferences, EPA Clean Energy States Partnership, and other channels
- Expiration of rate caps, capacity shortages, and climate commitments leading states taking a new look at efficiency, even in low-rate states (AR, GA, OK, KS, KY, IN)
- Efficiency Resource Standards (EERS)
 - Analogous to RPS—can be blended
 - Sets quantitative savings targets
 - 8 leading states—HI, CA, NV, CO, TX, IL, PA, CT
 - Coming states—WA, MN, NJ, NY, MA, NC

What's on Deck?

- States teaming Efficiency and Renewables: HI, NV, PA, CT—included in RPS
- Efficiency playing a lead role in climate policy
 - RGGI (8-10 NE states)
 - Western states—CA, OR, WA, NM
- White Tags markets, like Renewable Energy Credits (RECs)

Upcoming 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”



Conclusions

Efficiency is the “First Fuel” in the race for clean energy:

- Efficiency makes for a better economic strategy than any energy resource
- Efficiency is the first-responder: it can loosen our energy straitjacket
- Efficiency is abundant and renewable
- Efficiency offers a rich trove of ‘silver BBs’
- States must keep leading on energy policy

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