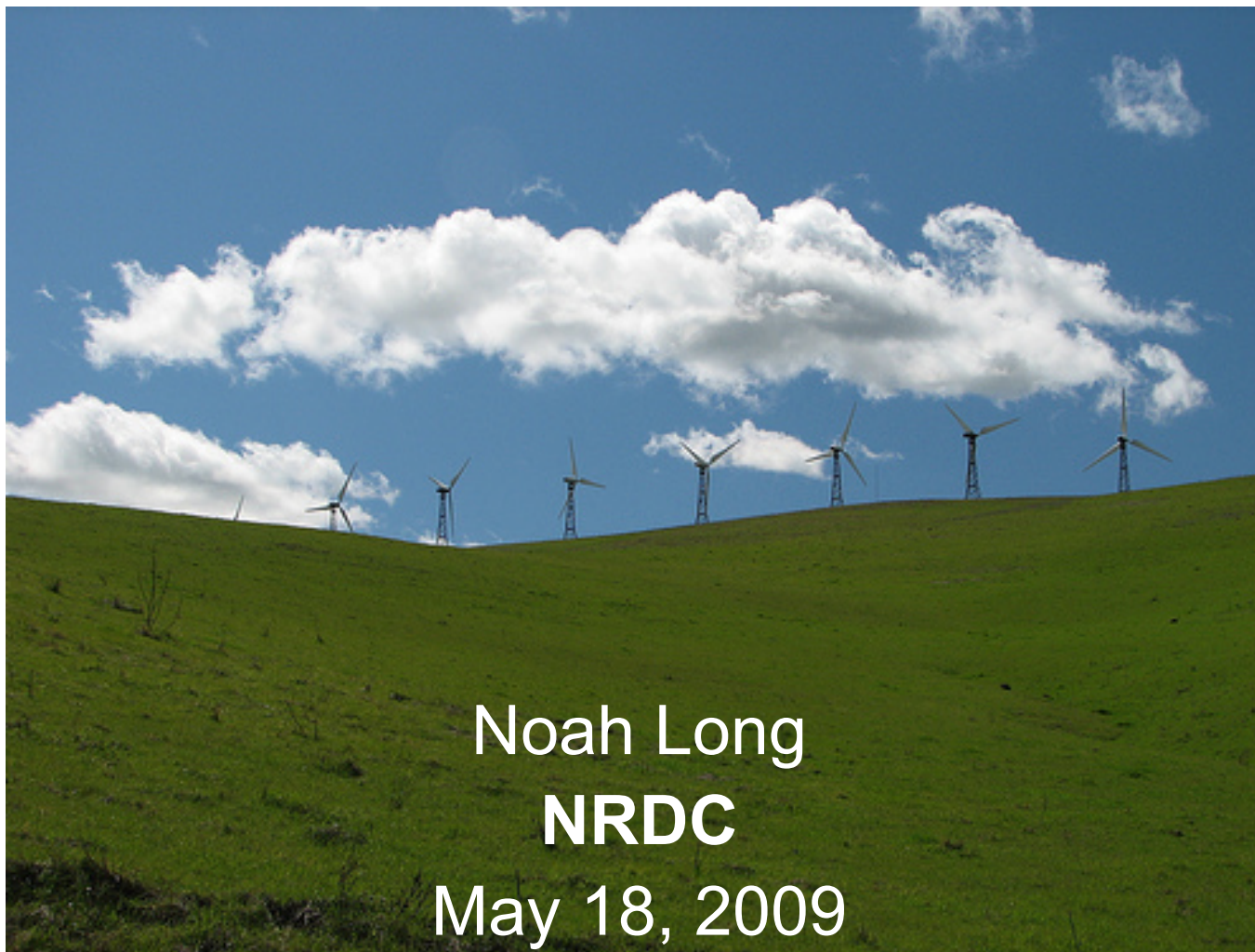


California State Energy Policy on the Horizon



Noah Long

NRDC

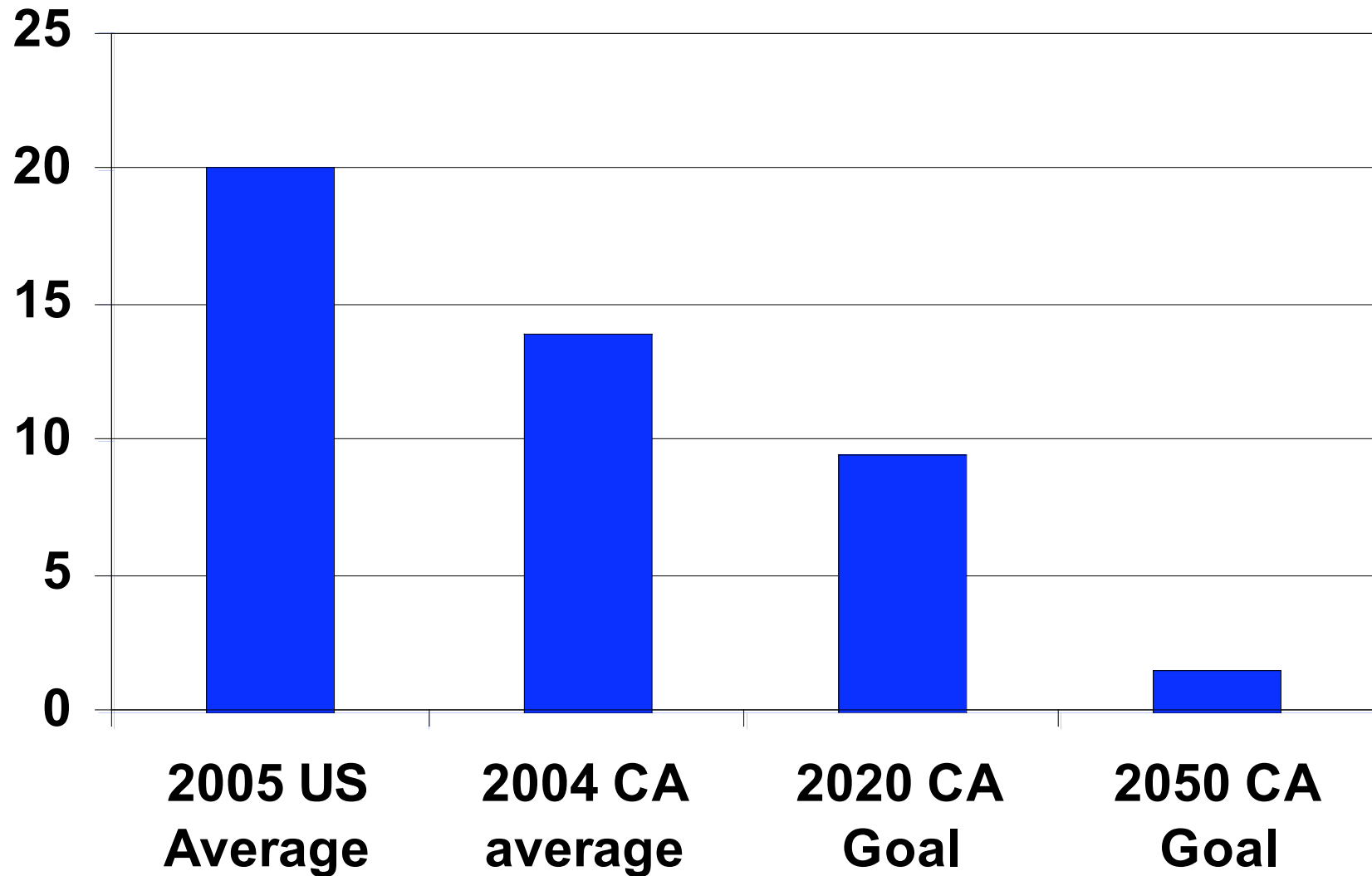
May 18, 2009



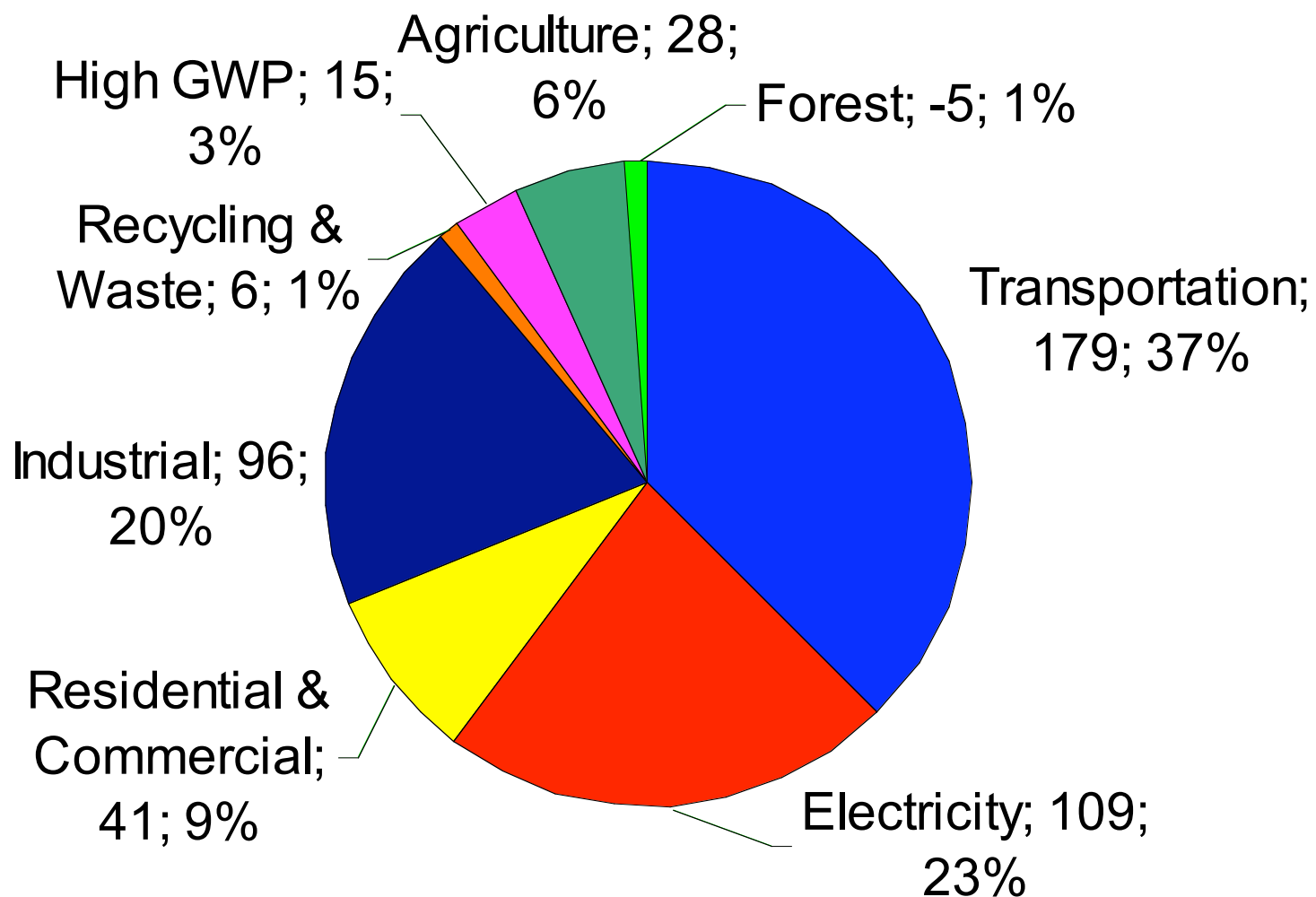
Outline

- The Climate Challenge
- California's Leadership on Energy Efficiency
- Structure of Utility Energy Efficiency Policy
- Renewable Energy Policy
- Federal Stimulus (For you too!)

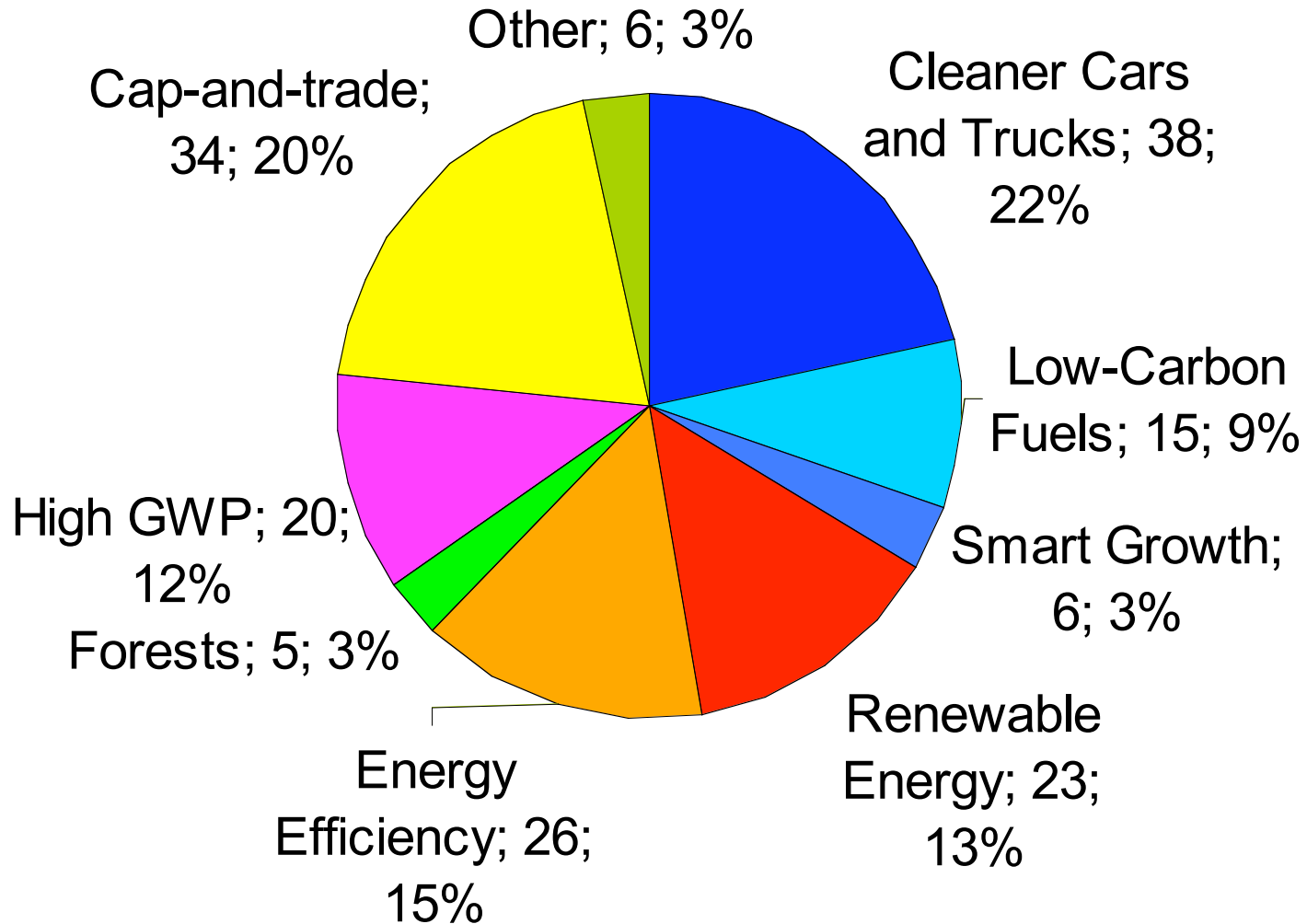
The Challenge: Reduce metric tons CO₂E emissions per person



CA GHG Emissions, 2004

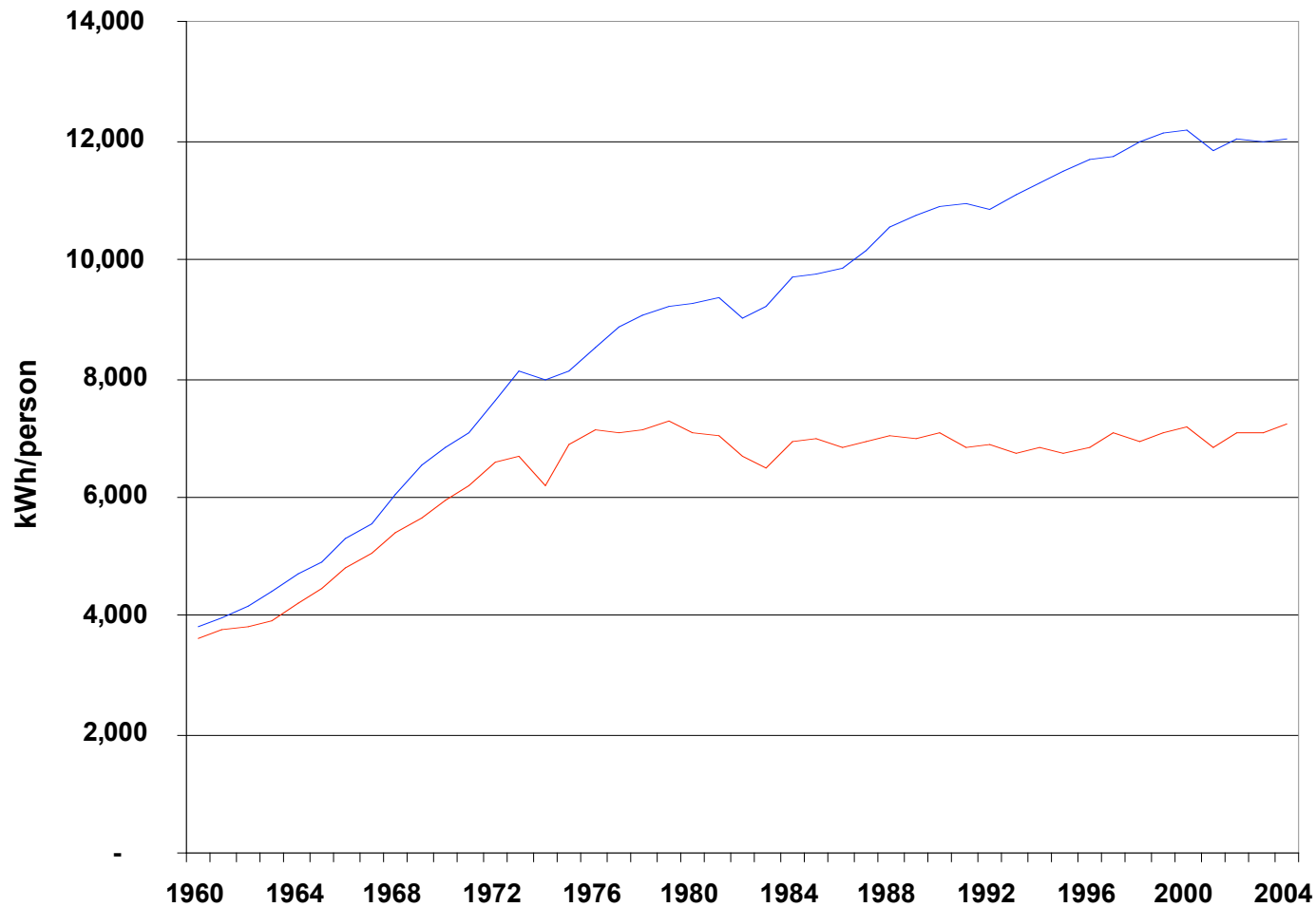


CA GHG Reductions, per AB 32 Scoping Plan, Dec 2008



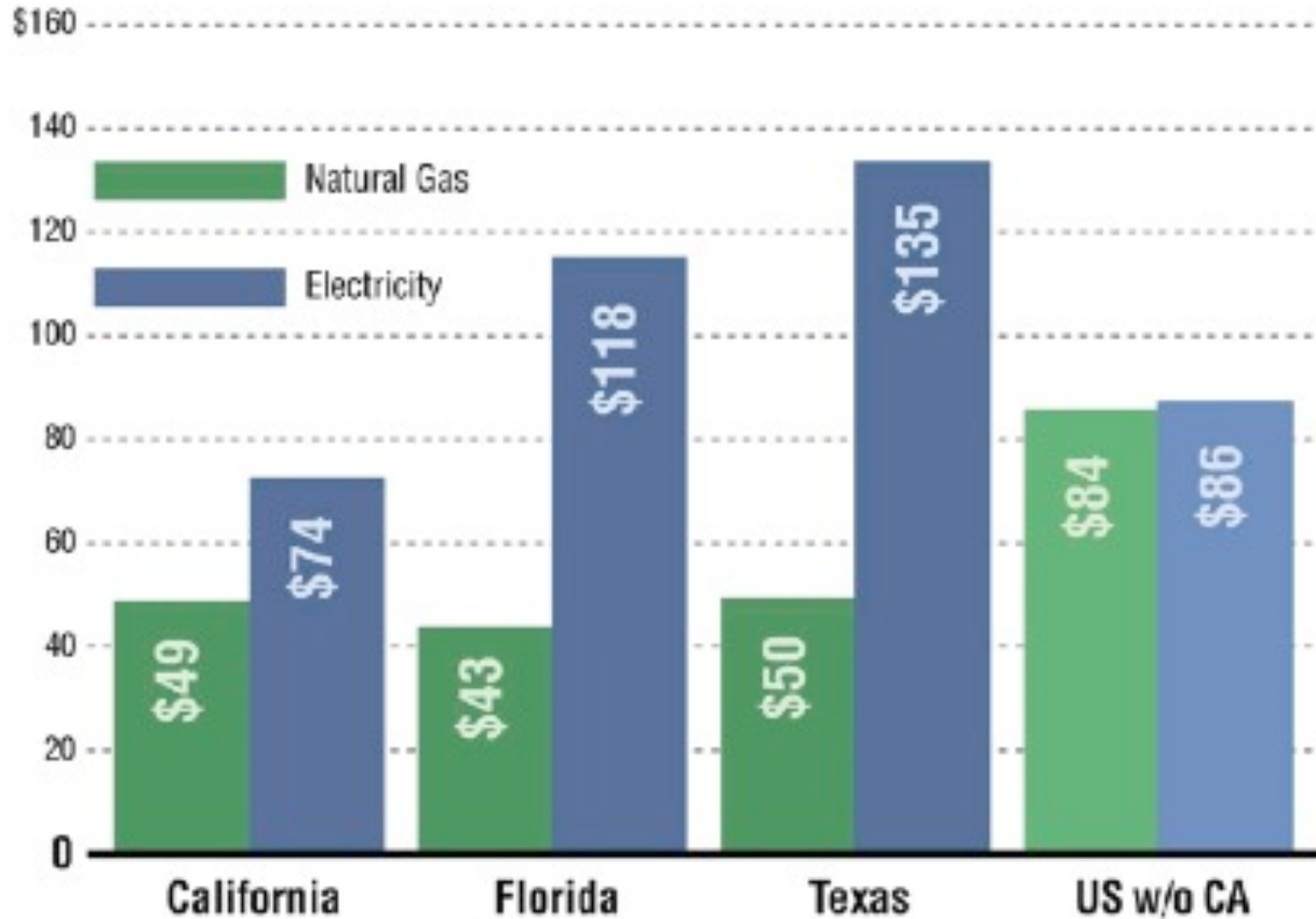
Electricity: CA EE policies

Per Capita Electricity Consumption



Average Monthly Gas and Electric Bills

2005

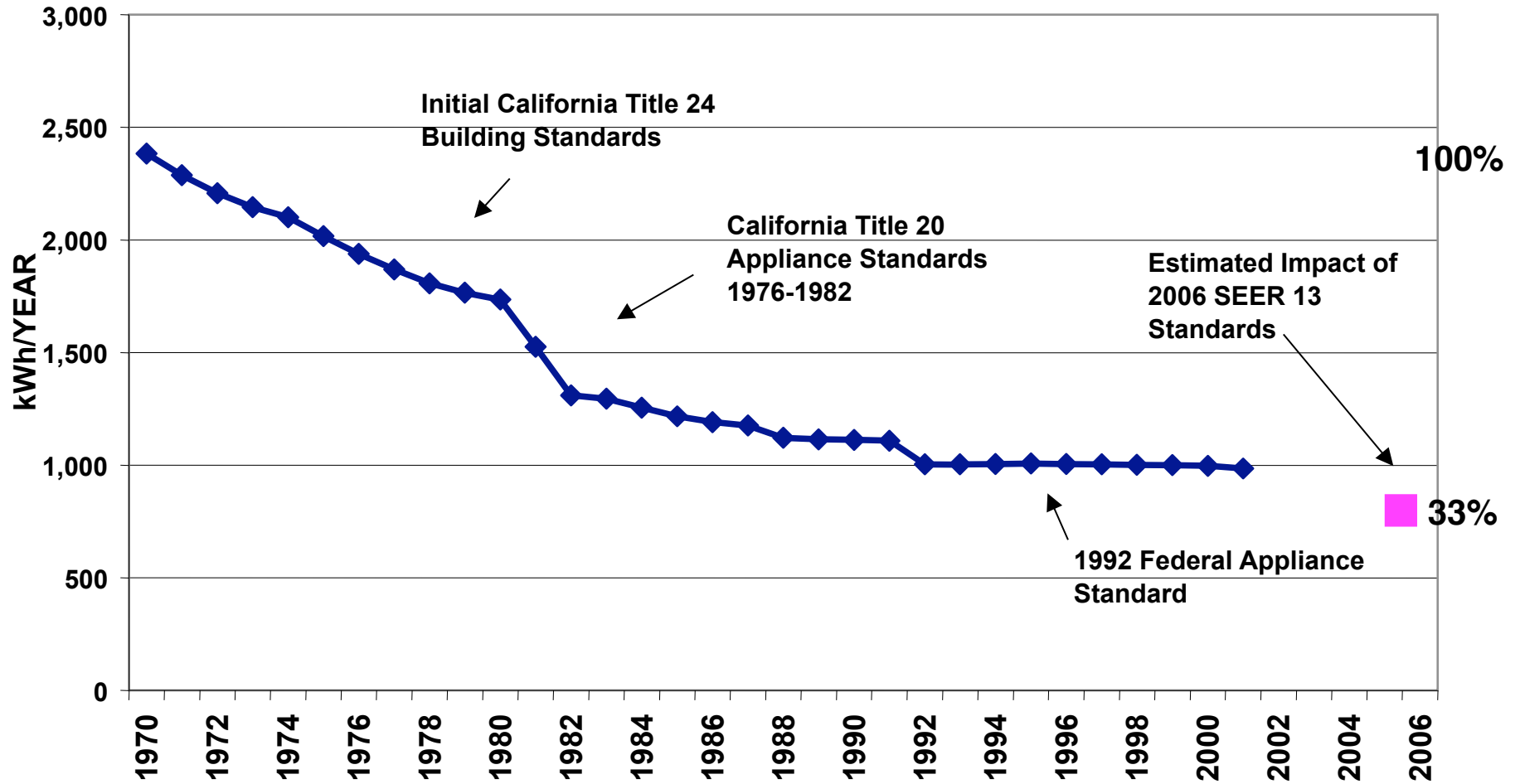


Source: Energy Information Agency, U.S. Department of Energy



Annual Usage of Air Conditioning in New Homes in California

Annual drop averages 4% per year

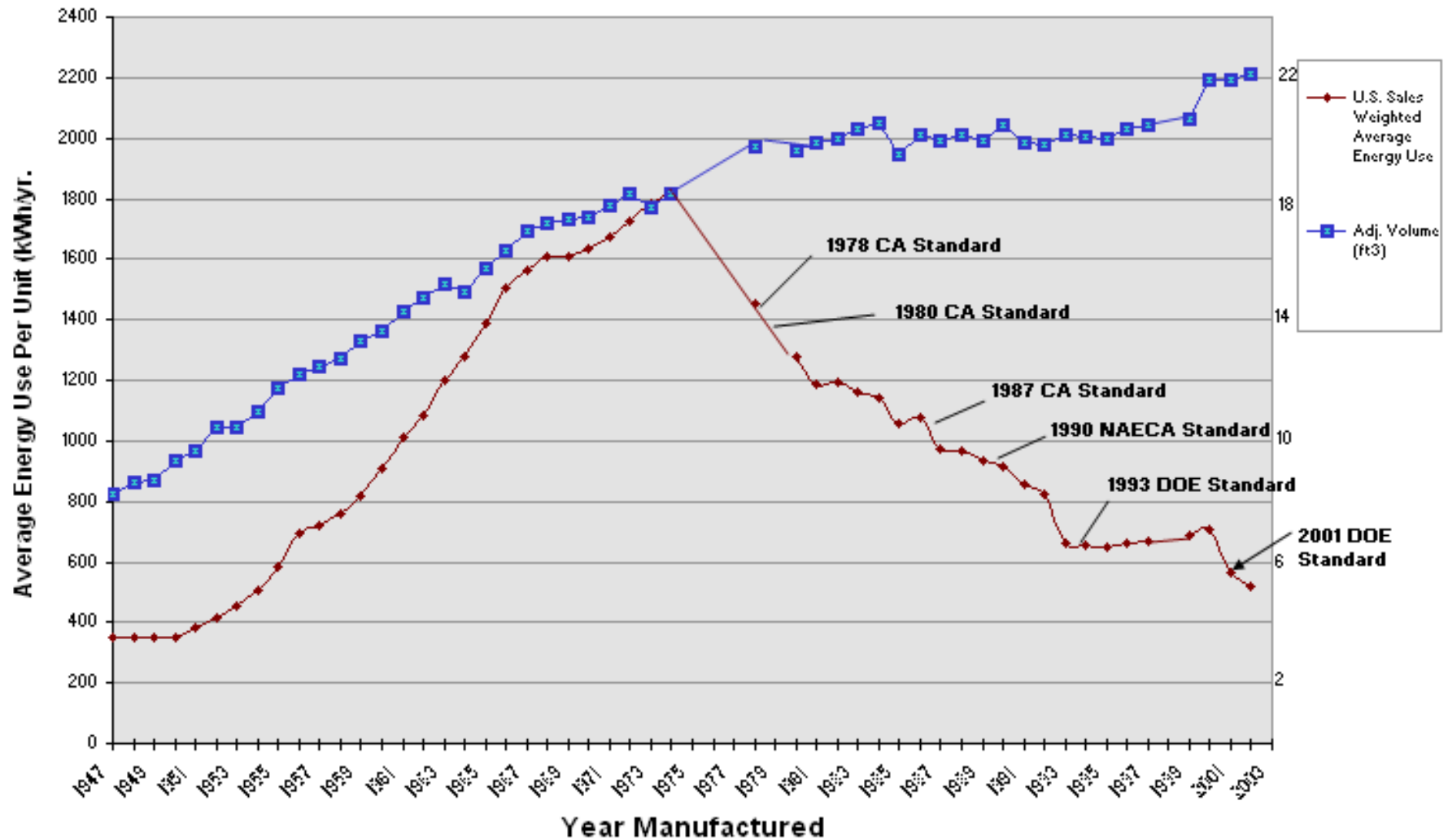


Source: CEC Demand Analysis Office



U.S. Refrigerator Energy Use v. Time

Adj. Volume, ft³



Investor Owned Utility Program Framework

1. Make energy efficiency the first priority
2. Remove financial disincentives (decoupling)
3. Create Funding Mechanisms
4. Integrate efficiency into utilities' resource procurement
5. Set aggressive targets
6. Use a multi-year cycle with well-designed programs
7. Ensure independent evaluation of savings
8. Implement performance-based incentives

1. Make Energy Efficiency the First Priority Resource

- Energy Resource Loading Order (Energy Action Plan 2003):
 1. Energy Efficiency (EE)
 2. Renewable Energy
 3. Clean Distributed Generation
 4. Efficient Fossil Fuel Generation
- EE codified as a priority (SB 1037, 2005)
- Statewide goal of 100% cost-effective Energy Efficiency (2007 IEPR)

2. Remove Financial Disincentives

- Modest, regular true-ups in rates ensure that fixed costs are recovered in kilowatt-hour charges are not held hostage to sales volume.
- If sales are higher than expected, return over-collected revenues to customers, and vice versa.
- Volumetric prices still provide customers with a conservation incentive.

How Decoupling Works

Traditional Regulation:

Utility rates = $\frac{\text{Authorized revenue requirement (both fixed and variable costs)}}{\text{Electricity sales forecast}}$

Example

- Sales forecast = 100 kWh
- Variable cost = 4¢ per kWh
- Fixed cost = \$6.00
- Authorized revenue requirement = \$4.00 + \$6.00 = \$10.00
- Rate per kWh = 10¢ per kWh (\$10.00 / 100kWh)

The Problem with Traditional Regulation

If the utility sells more or less electricity than forecasted, it will either under- or over-recover the fixed-cost element of its revenue requirement.

Example of Sales Below Forecast

- Actual sales = 95 kWh
- Variable cost = 4¢ per kWh x 95 kWh = \$3.80
- Fixed cost = \$6.00
- Actual total costs = \$3.80 + \$6.00 = \$9.80
- Actual revenues = 95 kWh x 10¢ per kWh = \$9.50

Utility has under-collected its fixed costs.

RESULT: Utility has an incentive to sell as much electricity as possible, and A DISINCENTIVE TO PROMOTE EFFICIENCY



Example of a True-Up: \$.30 over collection

The utility's rate is adjusted to return the \$0.30 that was over-collected the past year to customers.

Sales forecast for the following year = 100 kWh

- Variable cost = 4¢ per kWh
- Fixed cost = \$6.00
- Revenue requirement = \$4.00 variable cost + \$6.00 fixed cost – \$0.30 over-collection = \$9.70
- Rate per kWh = 9.7¢ per kWh (\$9.70 / 100 kWh)

3. Create Funding Mechanisms
4. Integrate Efficiency into Procurement

Table 1 - Projected Program Impacts By Year Aggregated Savings Across Utilities' Mandated Scenarios

	2009		2010		2011		3-Year Cumulative	
	Total	% of 2009 Goal	Total	% of 2010 Goal	Total	% of 2011 Goal	Total	% of 2011 Goal
Energy Savings – Electricity - Gross								
Annual Net Electricity Savings (GWh/yr)	3,292	111%	4,327	163%	4,455	168%	12,074	146%
<i>CPUC Electricity Target (GWh/yr)</i>	2,974		2,657		2,657		8,288	
Annual Net Peak Demand Savings (MW)	649	104%	861	156%	891	159%	2,401	138%
<i>CPUC Peak Demand Target (MW)</i>	622		552		562		1,736	
Annual Net Therm Savings (MTh/yr)	57	80%	66	71%	72	76%	195	75%
<i>CPUC Therm Target (MTh/yr)</i>	71		93		95		259	

Table 2 - Portfolio Cost Effectiveness - Aggregated Utilities' Mandated Scenarios

Cost-Effectiveness	2009-2011 GROSS	2009-2011 - NET
Total Costs (TRC)	\$ 5,748,543,975	\$ 5,075,523,831
Total Savings (TRC)	\$ 9,263,698,313	\$ 6,343,141,085
Total Net Benefits (TRC)	\$ 3,515,154,339	\$ 1,267,617,254
Benefit/Cost Ratio (TRC)	1.63	1.22
Benefit/Cost Ratio (PAC)	2.14	1.51
Levelized Cost per kWh Saved (cents/kWh) - PAC	\$ 0.057	\$ 0.081
Levelized Cost per therm Saved (\$/therm) - PAC	\$ 0.439	\$ 0.624

*note: both the cents/kWh and \$/therm are simple averages

5. Set Aggressive Targets

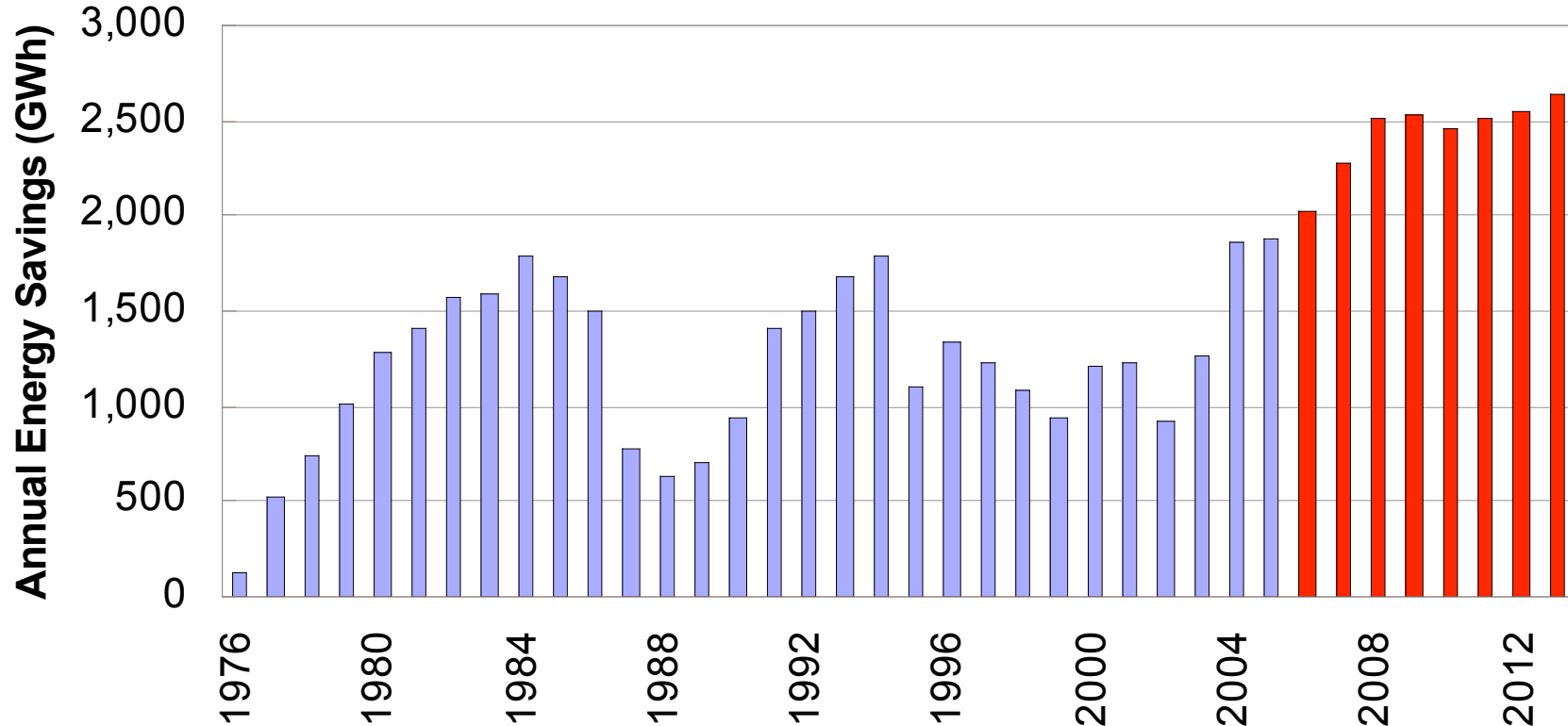
6. Use Multi-Year Programs

- California Public Utilities Commission sets ten-year energy saving targets.
- CPUC approves 3-year programs (we think 5 years might be even better)
- Long-term stability is key to:
 - Capture long-term savings (e.g. new construction)
 - Create a sustainable infrastructure of contractors and implementers
 - Influence manufacturers and national businesses

Investor Owned Utility Goals

By 2013, the IOU goals will:

- Avoid 10 giant power plants & save consumers \$10 billion
- Cut pollution equal to emissions from 2 million cars



Sources: California Energy Commission; IOU Annual Reports; California Public Utilities Commission



The Goals Dilemma

- High goals motivate investment in efficiency, but may not motivate experimentation, especially when earnings depend on success
- Low “conservative” goals cause excessive investment in traditional energy sources
- How can we motivate large-scale investments in EE and also allow for technology and behavioral experimentation?

7. Independent Evaluation of Savings

- Evaluations help ensure that efficiency is a reliable procurement resource.
- California Public Utilities Commission oversees independent evaluation of the programs' savings based on rigorous protocols.
- Savings evaluated using statistical billing analyses and/or engineering analyses using verified field data.
- Process evaluations, market assessments, surveys of existing practice, etc.

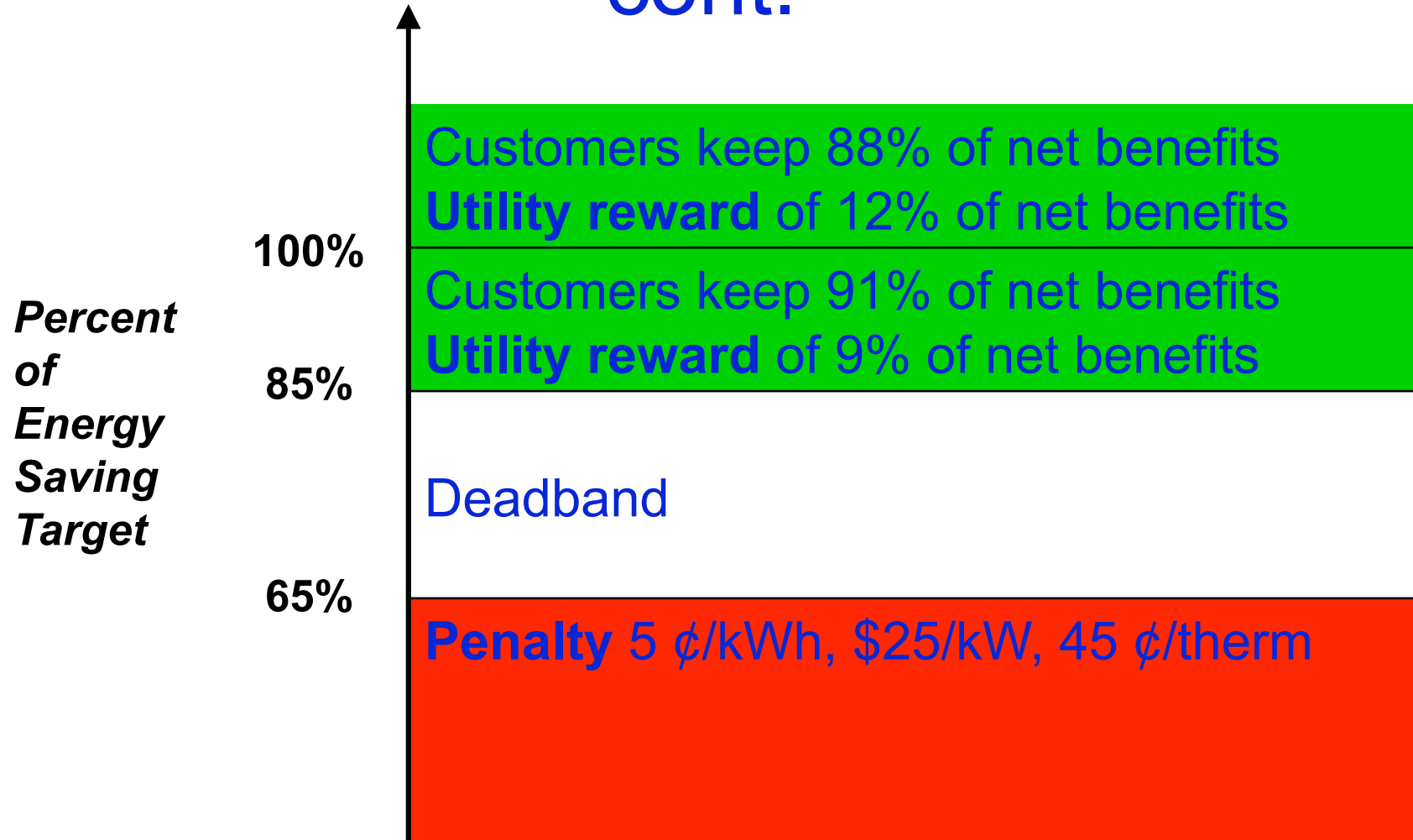


8. Implement Performance-Based Incentives

- CPUC adopted a performance-based incentive mechanism for IOUs to invest in EE (Sept 20, 2007)
- Aligns the IOUs' incentives with customer interests by making EE as attractive as building new power plants
- Balanced reward/penalties (both a “carrot” and a “stick”)
- Performance defined by:
 - Ability to meet energy savings goals
 - Creation of net benefits for customers



8. Performance-Based Incentive, cont.



CA EE Strategic Planning

- Long term planning through 2020
- Aggressive goals
- Linkage to AB 32 Scoping Plan
- Big Bold Initiatives
 - Net zero energy new residential by 2020
 - Net zero energy new commercial by 2030
 - Reshape the HVAC industry

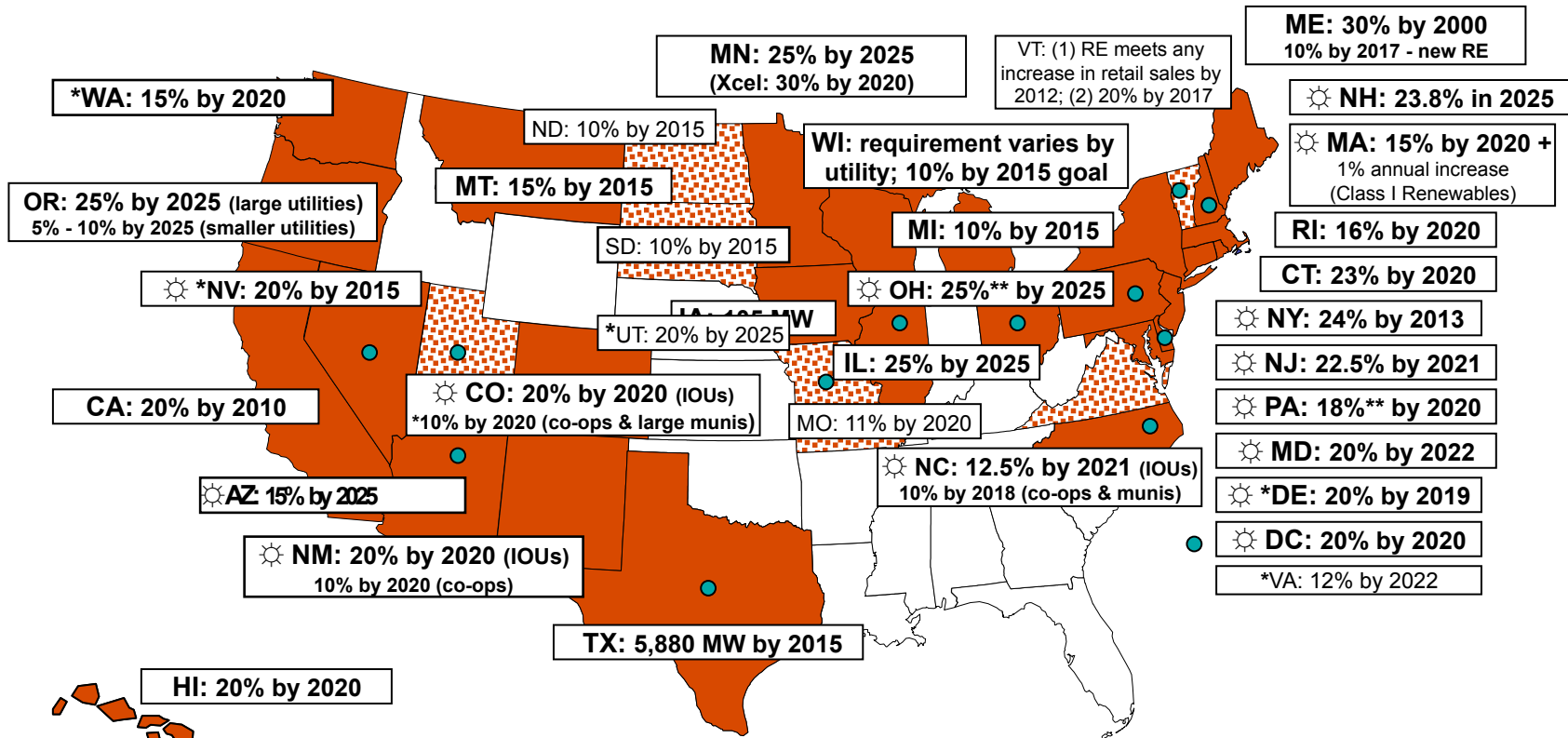


Looking Forward...

- All Cost Effective EE
- Continue to Ramp up POU efficiency programs
- Link between water efficiency and energy
- Existing housing stock transformation
- Build state-wide programmatic consistency
- Promote an Energy Efficiency Innovation Revolution



Renewable Portfolio Standards



☀ Minimum solar or customer-sited RE requirement

* Increased credit for solar or customer-sited RE

**Includes separate tier of non-renewable “alternative” energy resources

For your efforts, I can give you:

- Climate Protection
- More Comfortable Homes
- Lower Energy Bills
- Long Term Price Stability
- Oh, and did I mention the **\$29,000,000** bonus?



What does ARRA Section 410 Require?

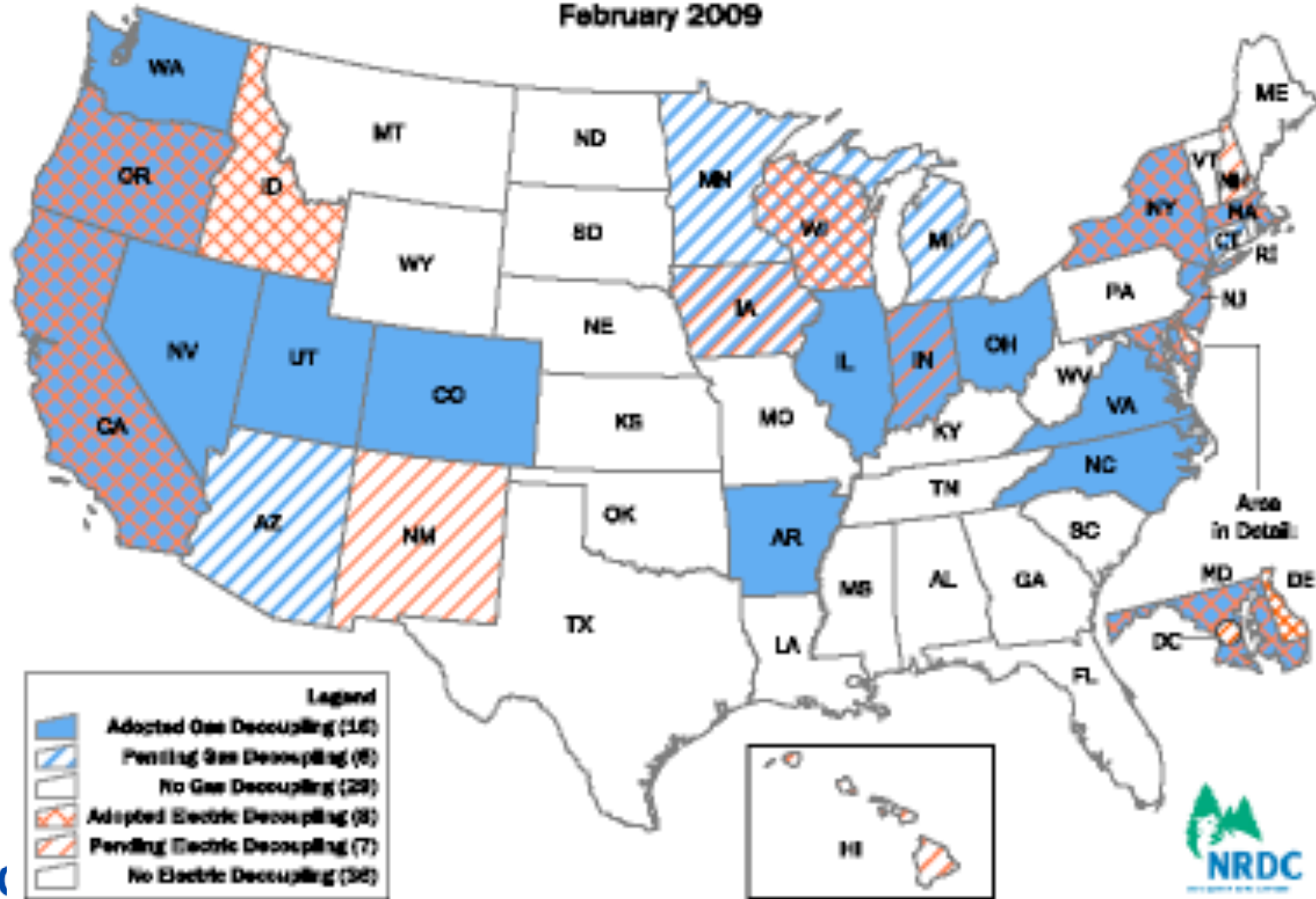
- 1) Align utility financial incentives with helping customers use energy more efficiently
- 2) A building energy code
- 3) That SEP funding will be used, to the extent practical, to extend existing energy efficiency and renewable energy programs in the state.



ARRA Section 410: \$3.1 Billion, For The Right Policies

Gas and Electric Decoupling In the US

February 2009



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