

In the PNW We Do More Than Plan!

Tom Eckman

Manager, Conservation Resources
Northwest Power and Conservation Council

ACEEE Energy Efficiency as A Resource

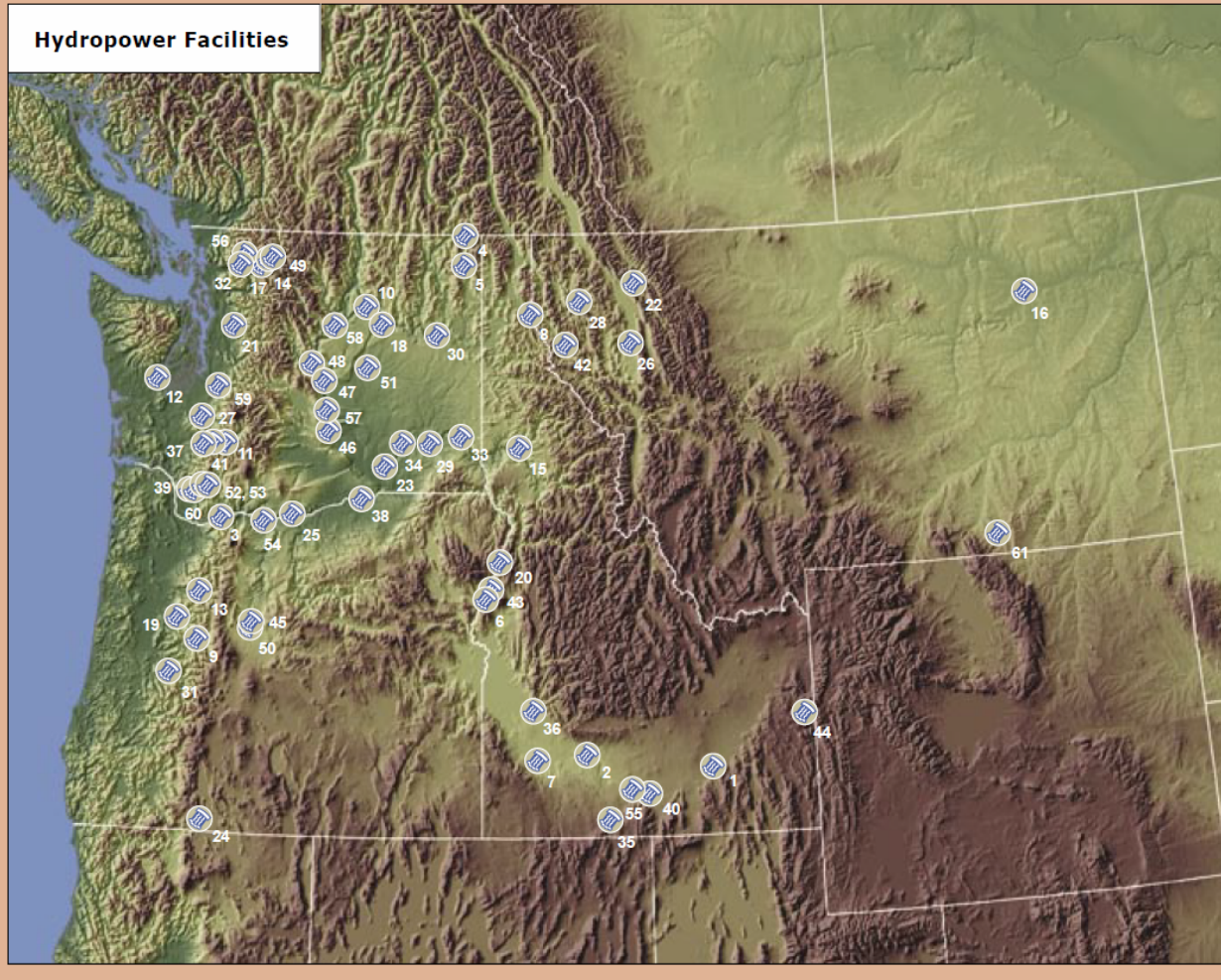
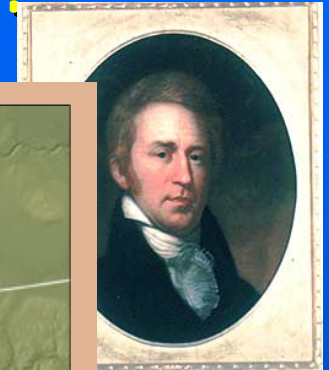
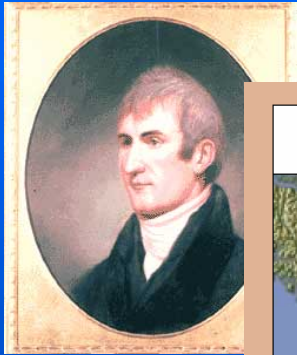
September 27, 2011





Skeletons in the Closet

What Happened After Lewis and Clark Left?



The First Three “Eras” of Power Planning in the PNW

- “New Deal” Mysticism (1930-1950)
 - Politicians plan using “chicken entrails and crystal balls” legislate what’s needed and when
- Engineering Determinism (1950-1970)
 - Engineers, using graph paper and rulers schedule the next power plants
- Economic Determinism (1970 to April 27, 1983)
 - Economist, using price elasticity slow the engineer’s construction schedules

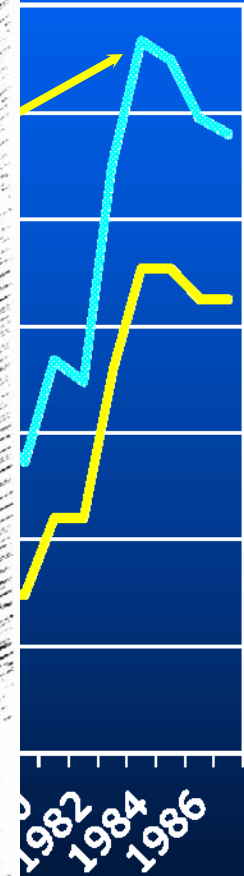
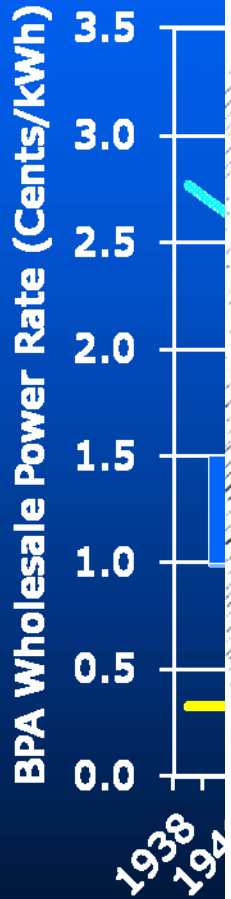
Actions Taken in Response to “Engineering and Economic Determinist’s” Forecasts

- Utilities planned and/or started construction on 28 coal and nuclear power plants to be completed over a 20-year period.
- Native American tribes sued the state and federal government over loss of salmon
- Environmental groups sued Bonneville Power Administration over plans to turn the Columbia River into “Wave World”

Imp

De

Response
nic
Plans



Reaction to Impact of Actions Taken in Response to “Engineering and Economic Determinist’s Forecasts and Plans

- Terminate or mothball 9 nuclear and 5 coal plants at a cost to the region’s consumers of more than *\$7 billion.*
- Motivated the region’s politicians, utilities, larger industries and public interest groups to accept the “deals” embodied in the *Northwest Power and Conservation Planning Act of 1980*

The Fourth Era - Northwest Power and Conservation Planning Act of 1980 (PL96-501)*

- Authorized States of ID, OR, MT and WA to form an “interstate compact” (aka, the “Council”)
- Directed the Council to develop 20-year load forecast and resource plan (“The Plan”) and update it every 5 – years
 - Plan shall call for the development of the least cost mix of resources
 - Plan shall consider conservation (energy efficiency) its highest priority resource equivalent to generation with a 10% cost advantage over power generating resources
- Mandated public involvement in Council’s planning process.

Power Act Priorities Served As Precedent for California's "Loading Order"

Northwest Power Act
Enacted - December 1980

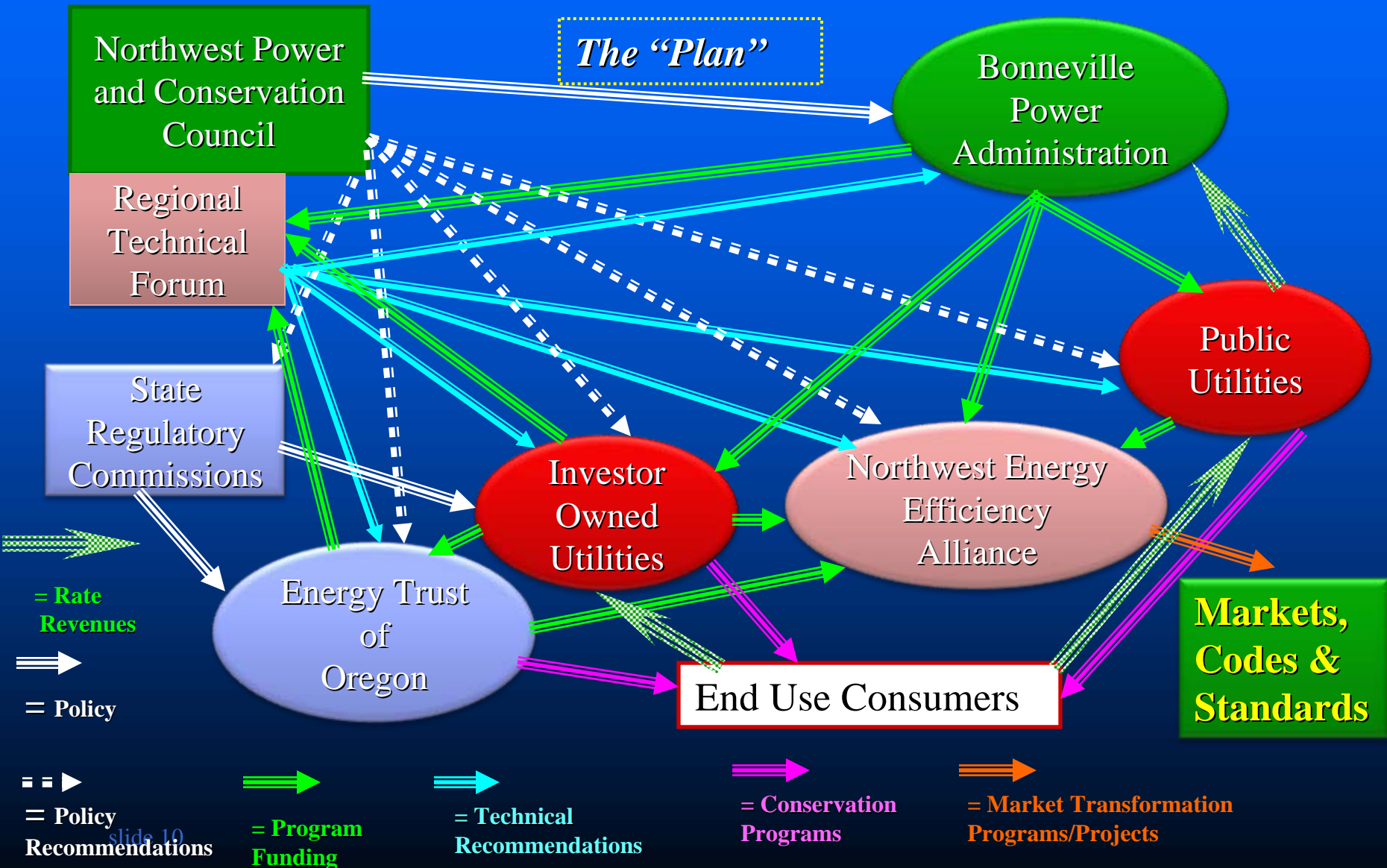
California Energy Action Plan
Adopted - April/May 2003



- Priority shall be given:
 - First, to conservation;
 - Second, to renewable resources;
 - Third, to generating resources utilizing waste heat or generating resources of high fuel conversion efficiency; and
 - Fourth, to all other resources.

- The Action Plan envisions a "loading order" of energy resources
 - First, conservation and energy efficiency;
 - Second, renewable energy resources and distributed generation; and
 - Third, clean fossil fuel, central-station generation.

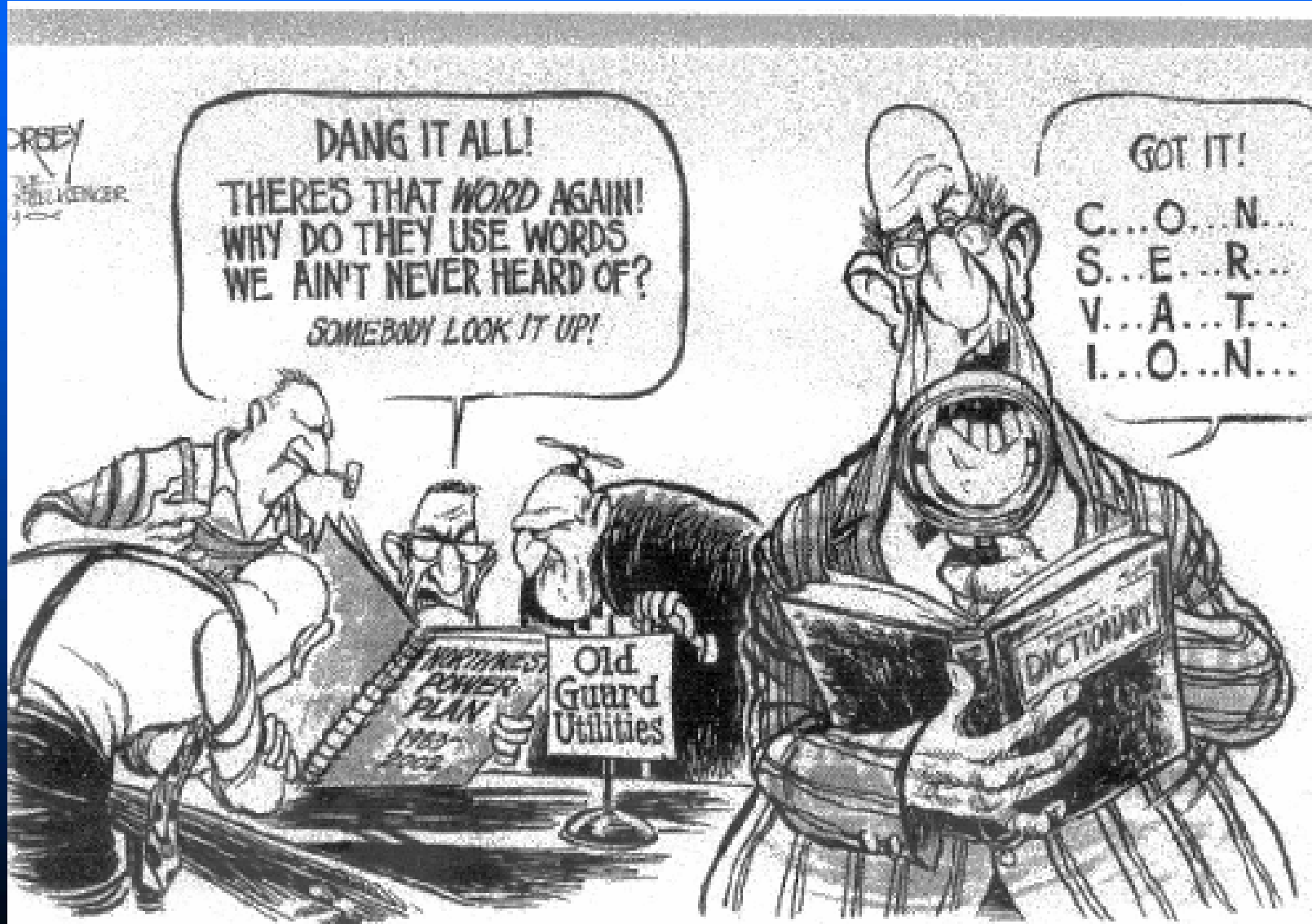
How A Kilowatt-Hour Is Saved in the PNW



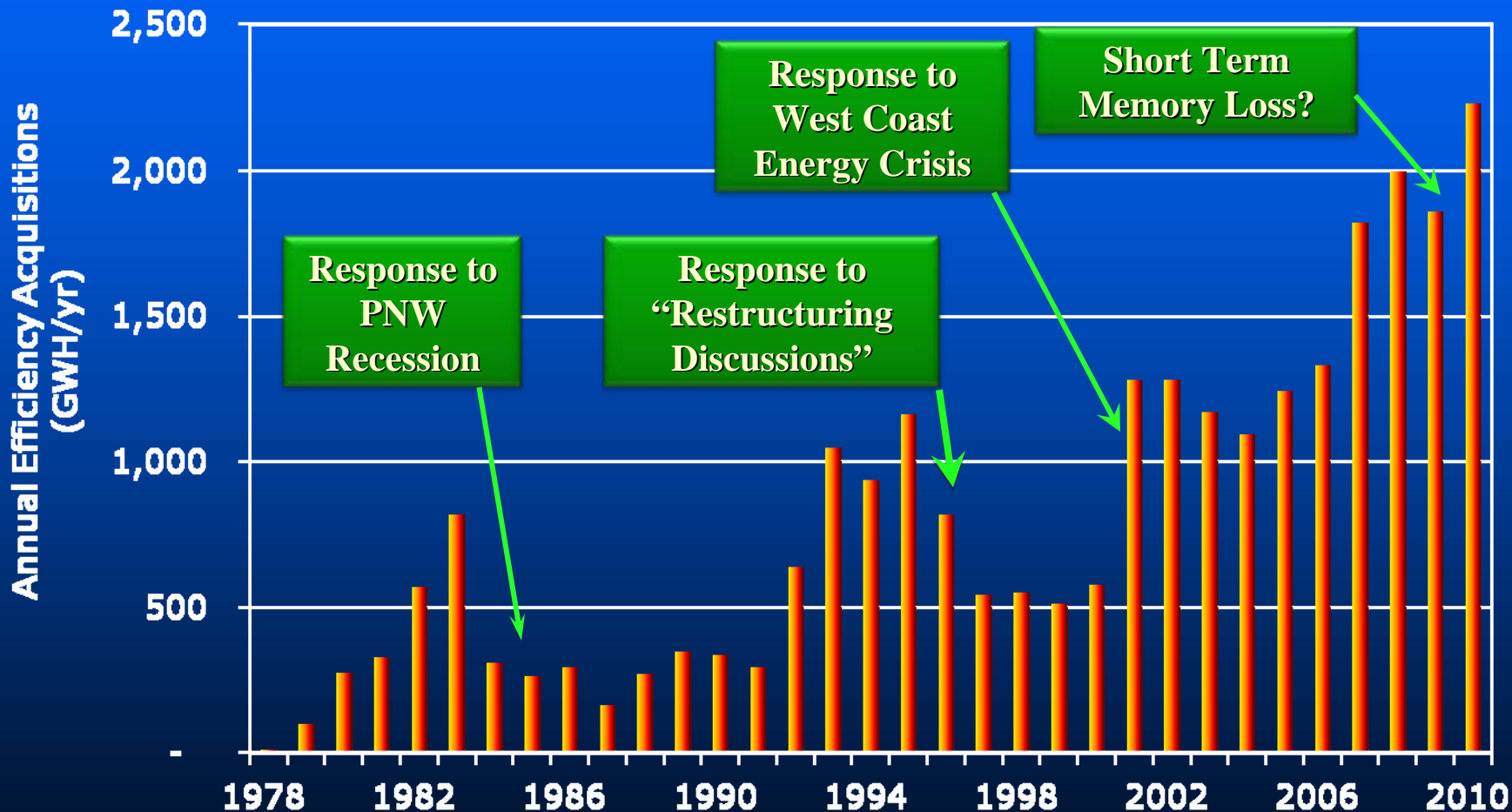
Has The Region Followed "The Plans"?



Utility Reaction to Council's First Plan Was "Mixed"



Nevertheless – Over Three Decades We Made Significant (If Uneven) Progress



Hood River

Proof of Achievable Potential

- Hood River Conservation Project
 - Research Objective: Test the maximum market penetration of “deep” (as of 1983) residential efficiency retrofits
 - Program Design: Direct installation of residential weatherization measure in all electrically heated dwellings in Hood River County, OR
 - Result: Achieved over 90% participation rate and 92% of recommended measures installed within two years

Northwest Energy Efficiency Alliance (NEEA)



- Formed in 1996 to carry out regional market transformation initiatives
- Voluntarily funded by BPA, utilities and Energy Trust of Oregon ~ \$40 million/yr
- Achieved 4,380 GWH/yr savings since formation

Ductless Heat Pump
Contractor Training

slide 15

Enhanced Building Codes



Power Act Required Council to Promulgate **Model Conservation Standards**

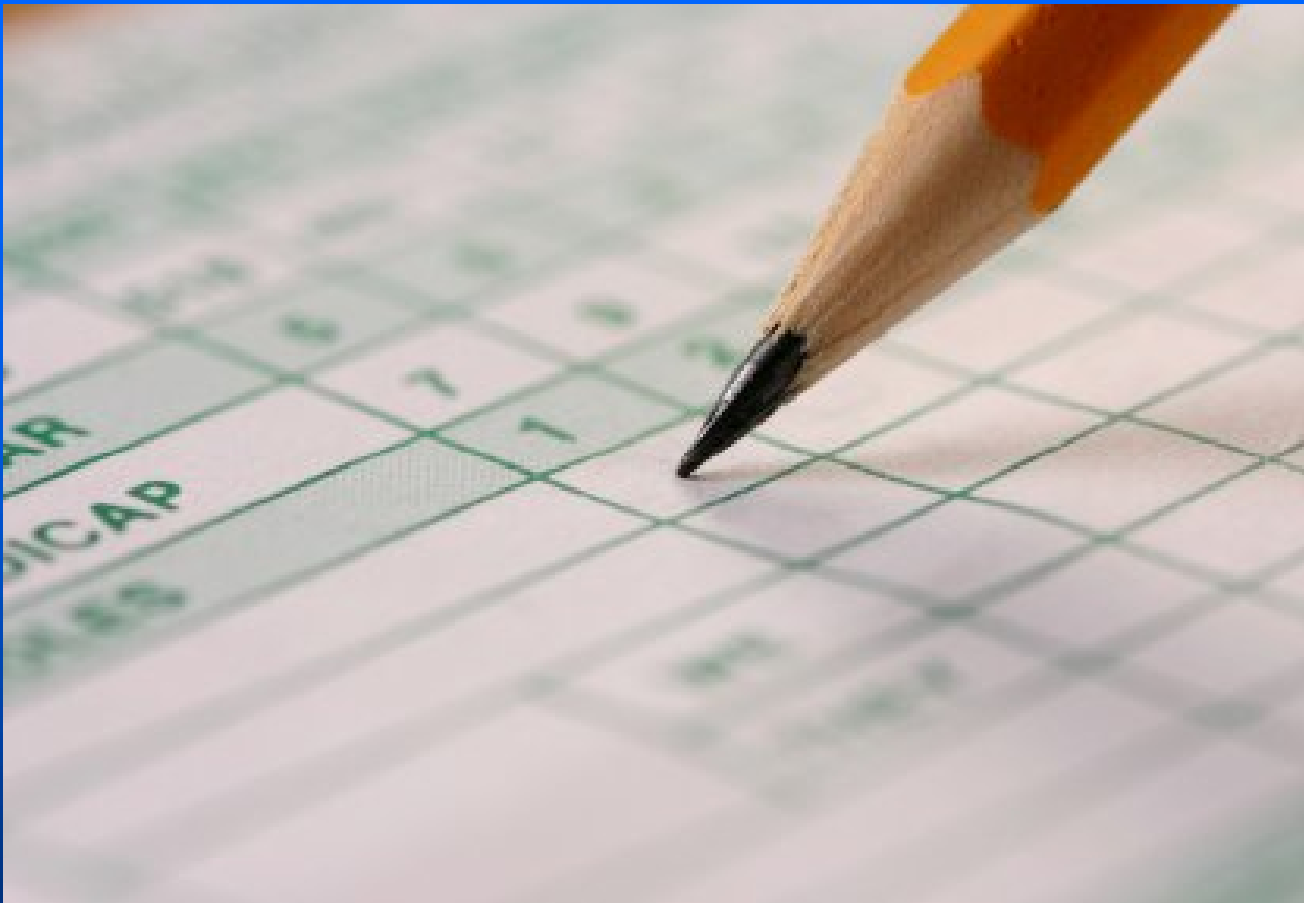
- First Plan's MCS (1983) were equivalent to 2006 IECC
- Achieved 40% improvement in building code for new residential construction by 1992
- Accomplished through a strategic combination of *utility funded* research & demonstration (600 homes), a new construction program (Super Good Cents) and energy code support



- Formed at the request of Congress in 1999
- Create and maintain standardized methods for quantifying energy savings
- Established and maintains a regional data base of *peer reviewed* “deemed” savings estimates and protocols
- Voluntarily funded by regions utilities, BPA and Energy Trust of Over ~ \$1.5 million/yr

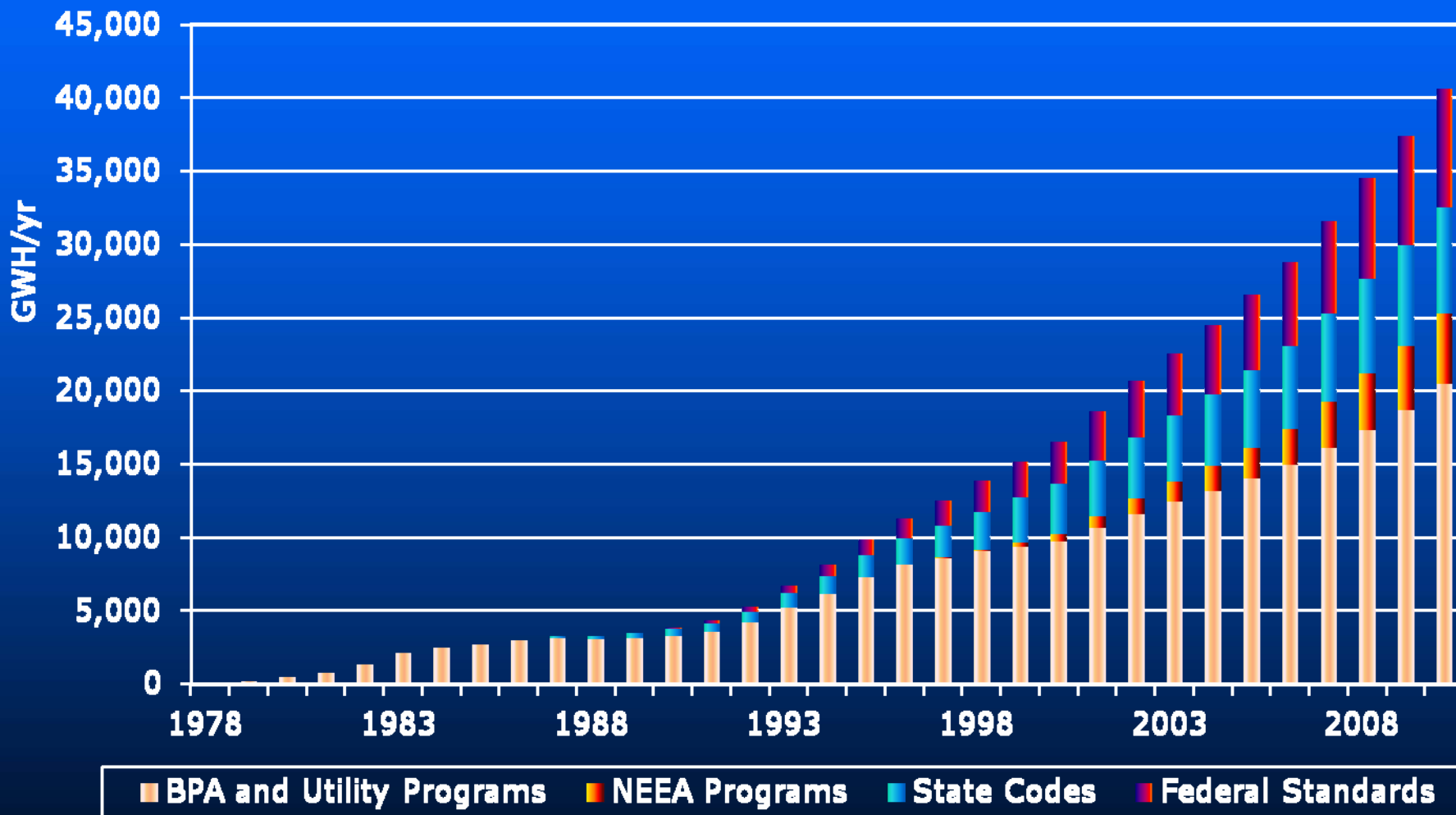
Other Highlights from the Past Three Decades of Accomplishments

- End Use Load and Conservation/Consumer Assessment Program (ELCAP)
 - First (and still only) large scale short-interval end-use load research project
- Manufactured Housing Acquisition Program (MAP)
 - Region wide “resource acquisition program”
 - BPA acted as central purchasing agent (this was pre-NEEA)
 - *All PNW Utilities agreed* to contract with *all* 18 manufactured housing plants in the PNW to produce 100% of the electrically heated homes at efficiency levels equivalent to the Model Conservation Standards
 - Over 50,000 homes built under the program



Now to the "Score Card"

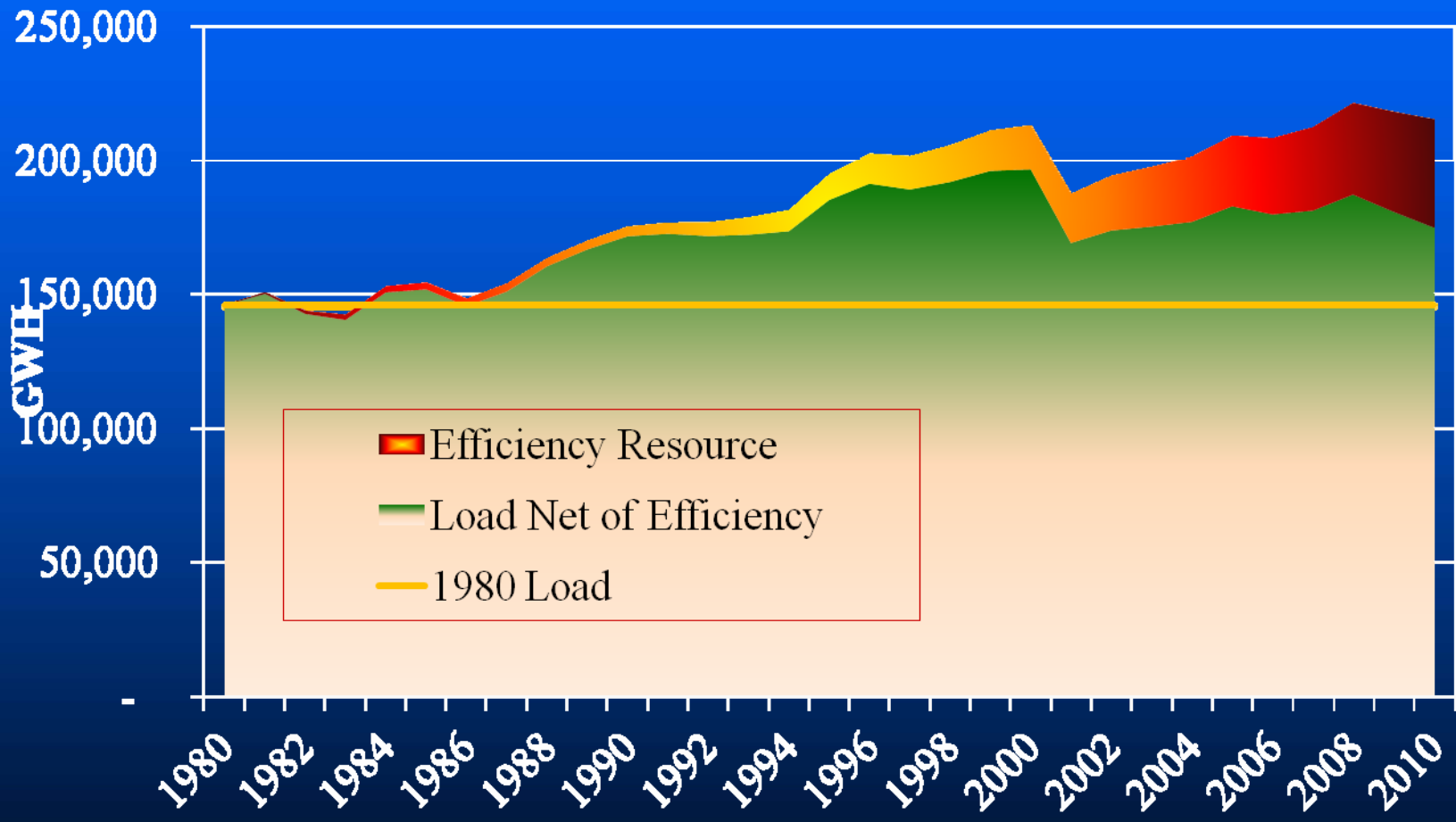
Since 1978 Utility & BPA Programs, Energy Codes & Federal Efficiency Standards Have Produced Over 40,000 GWH/yr of Savings*



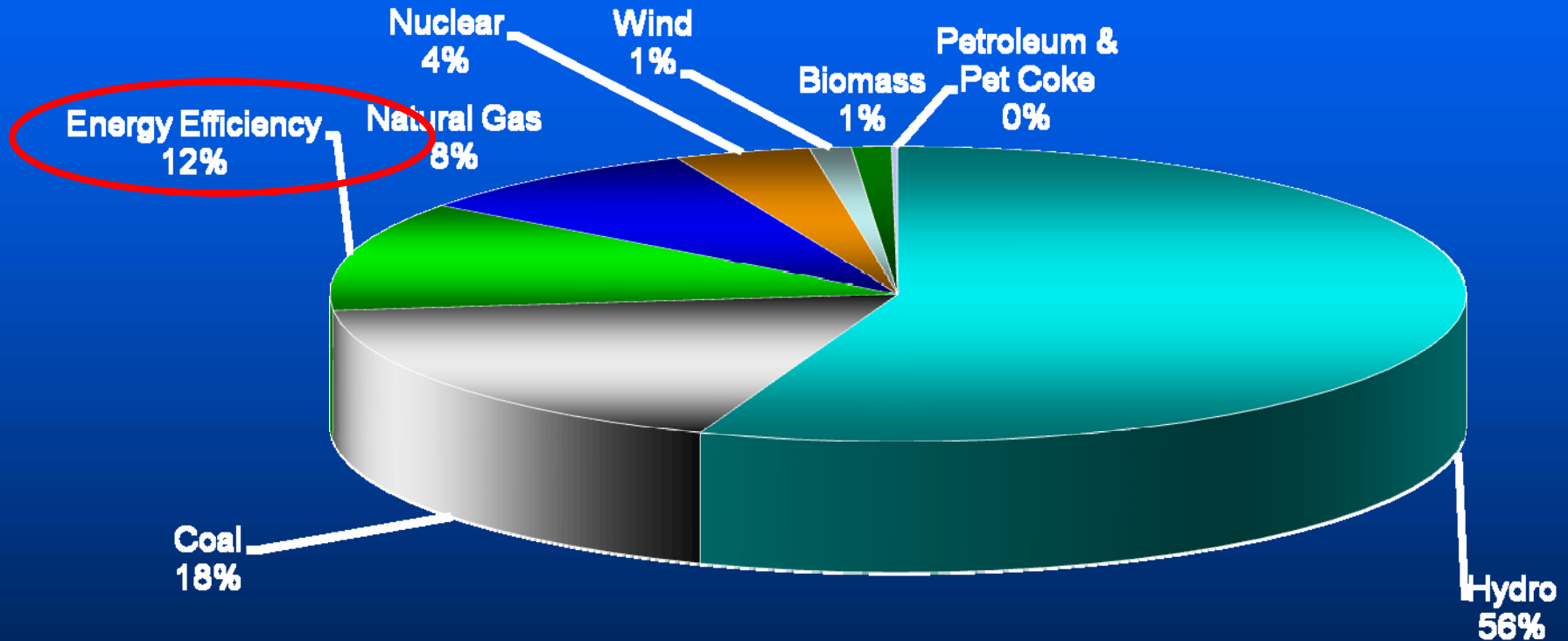
So What's 40,000 GHW/yr?

- It's enough electricity to serve the entire states of Idaho and Montana
– (or all of Kansas)
- It saved the region's consumers nearly than \$2.5 billion in 2010
- It lowered 2010 PNW carbon emissions by an estimated 18.2 million MTE.

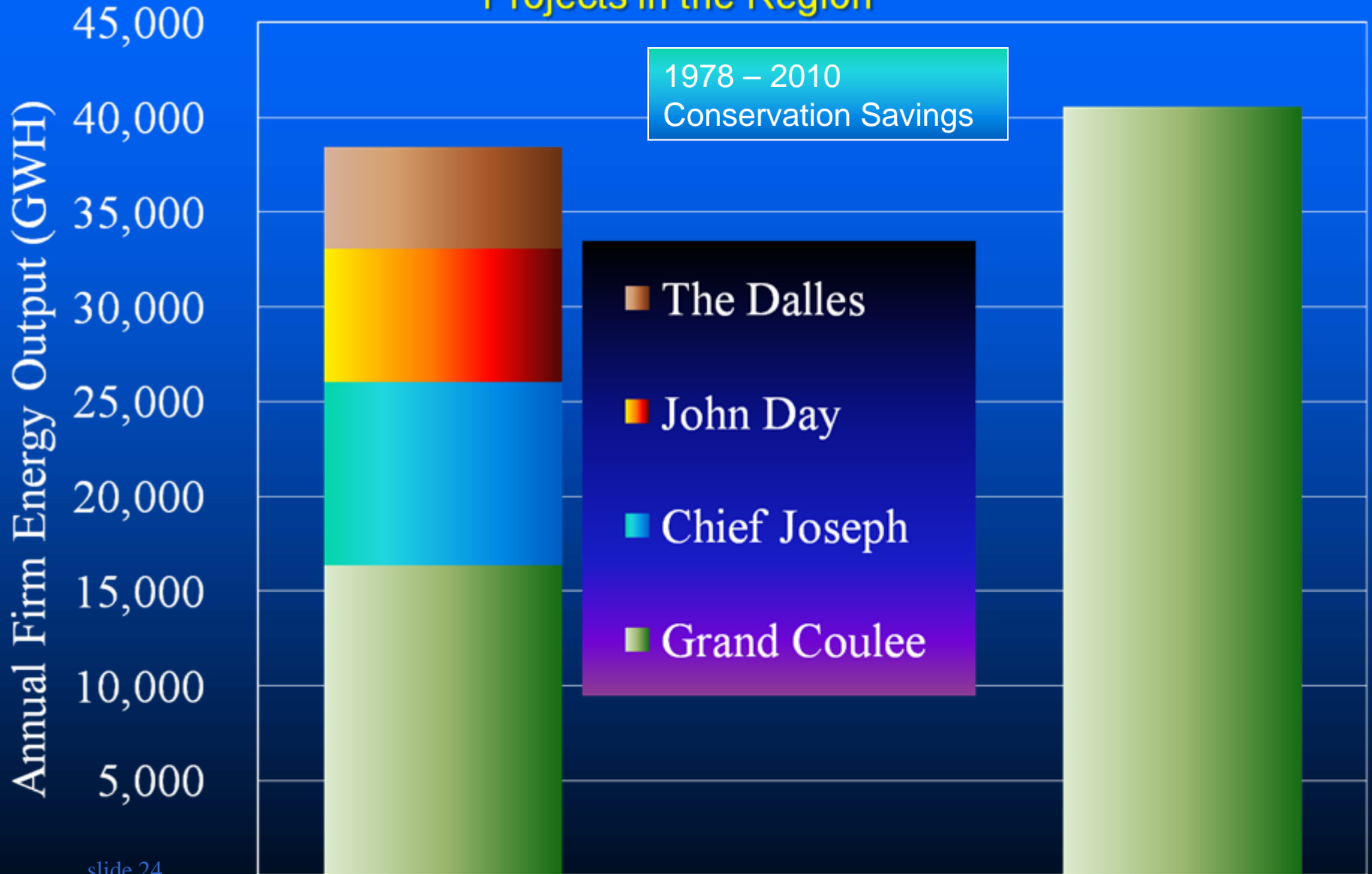
Efficiency Met Over 50% of PNW Load Growth Since 1980



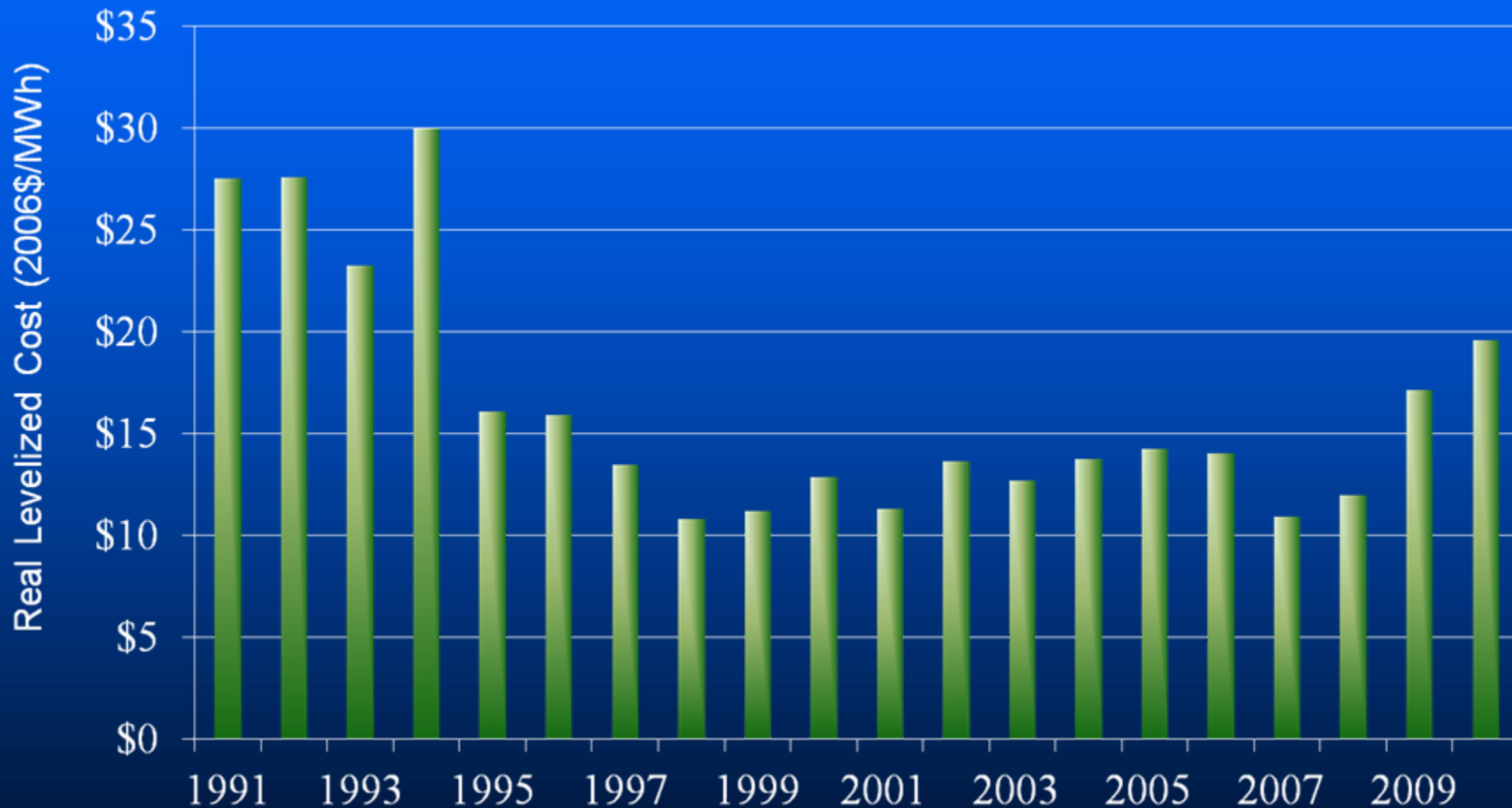
Energy Efficiency Is The PNW Region's Third Largest Resource



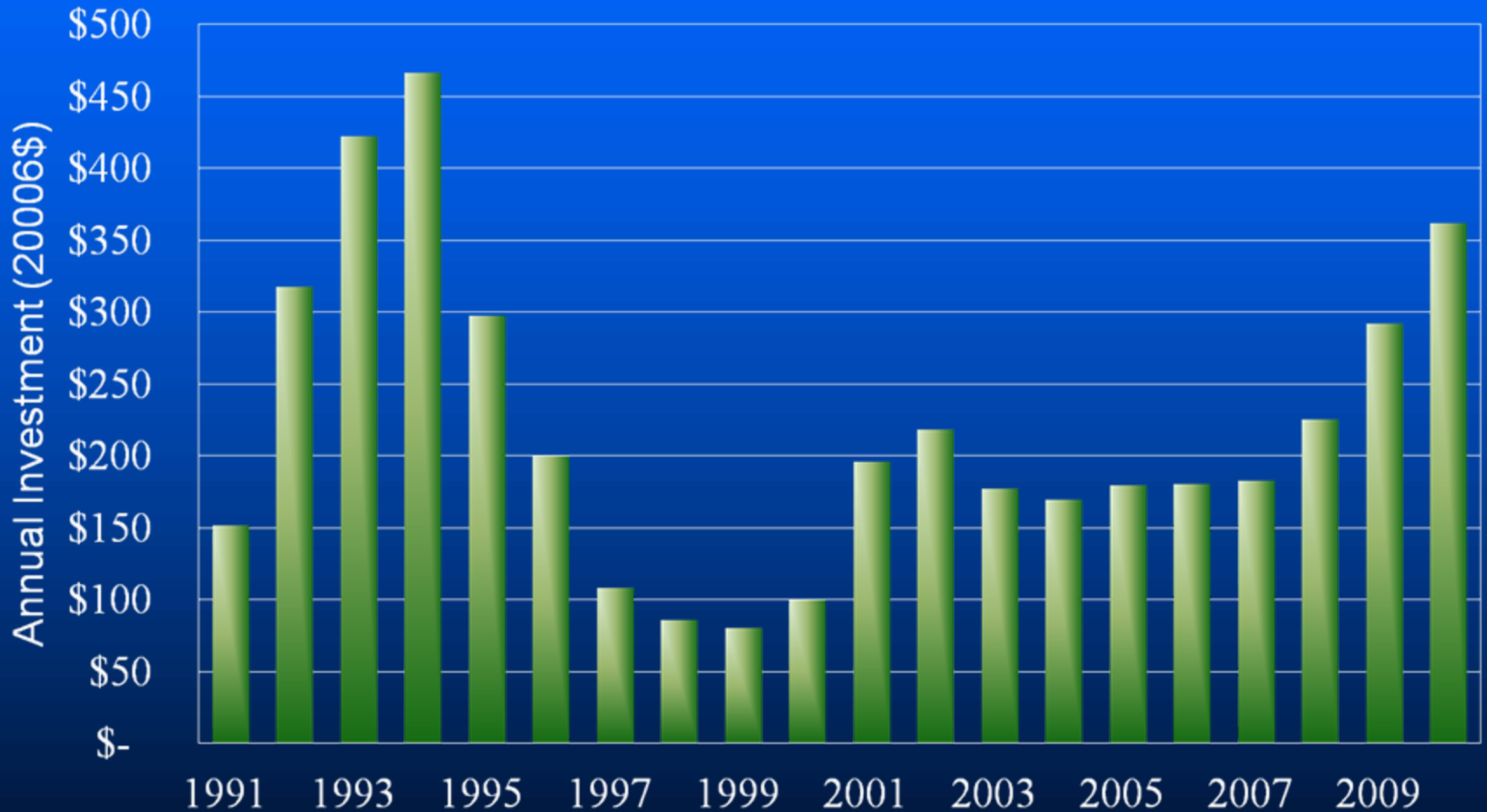
Energy Efficiency Savings from 1978 – 2010 Exceeds the Annual Firm Energy Output of the Four Largest Hydroelectric Projects in the Region



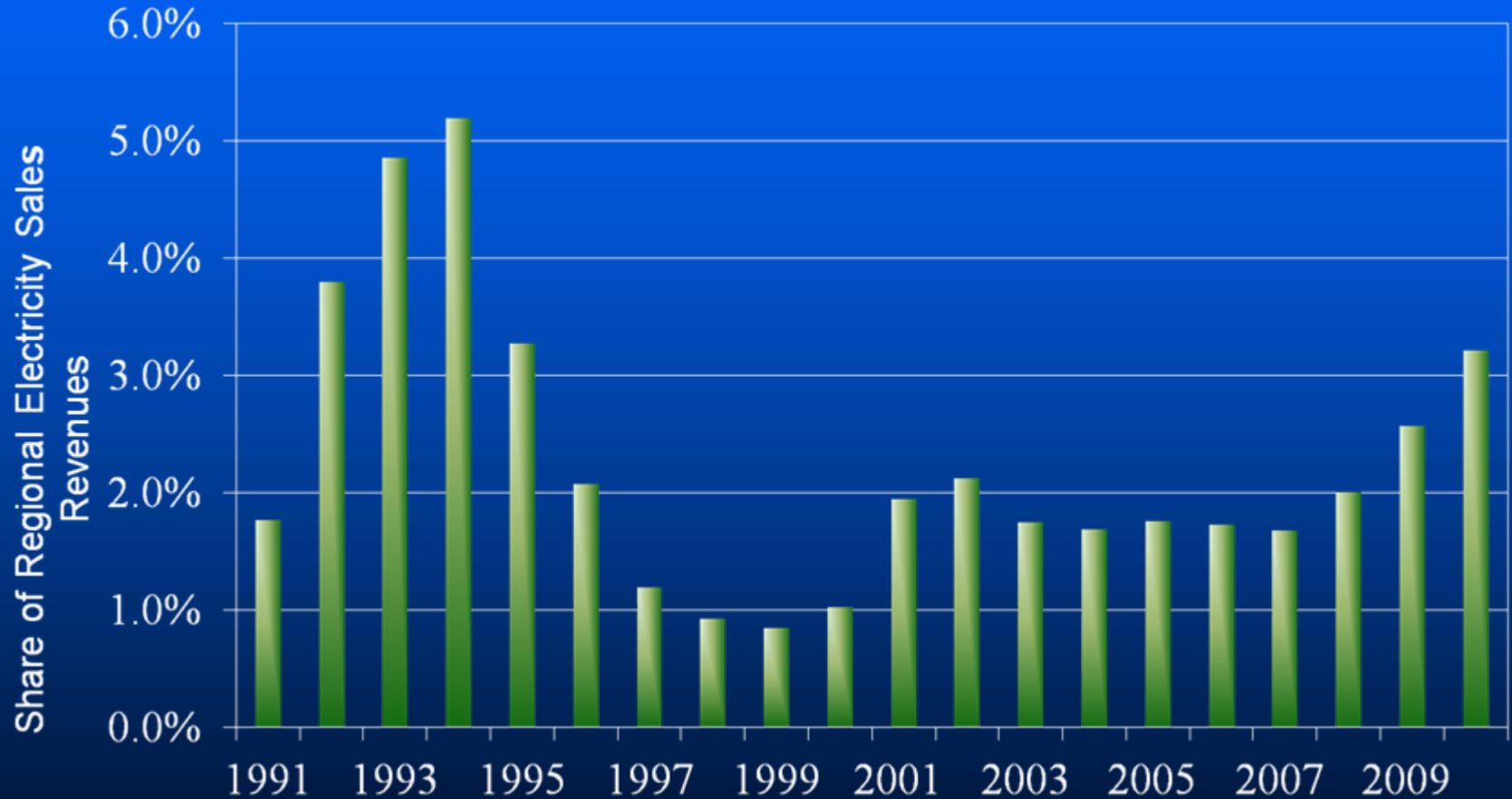
PNW Utility System Levelized Acquisition Cost of Energy Efficiency Savings 1991-2010



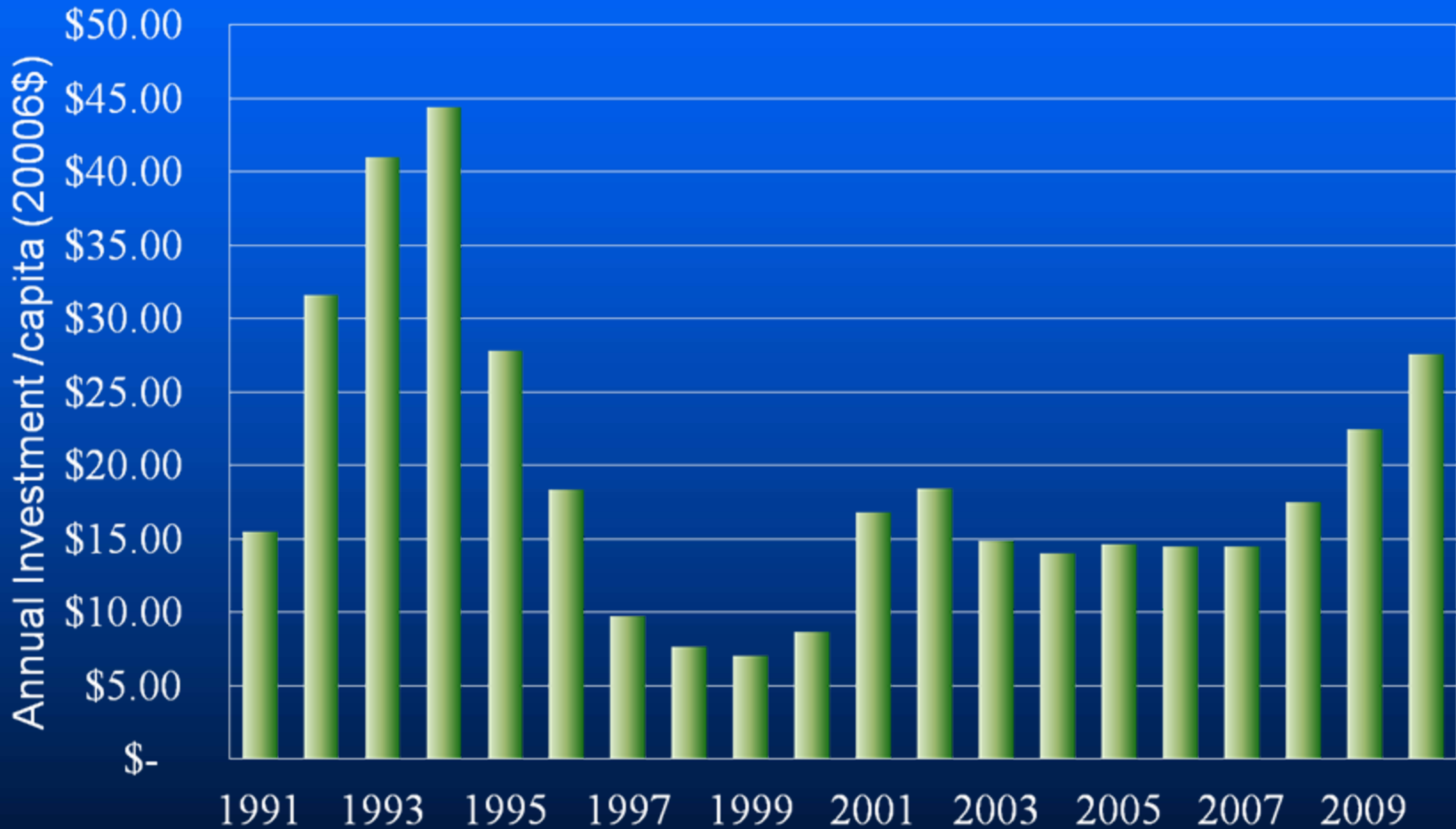
Annual PNW Utility Energy Efficiency Investments 1991 - 2010



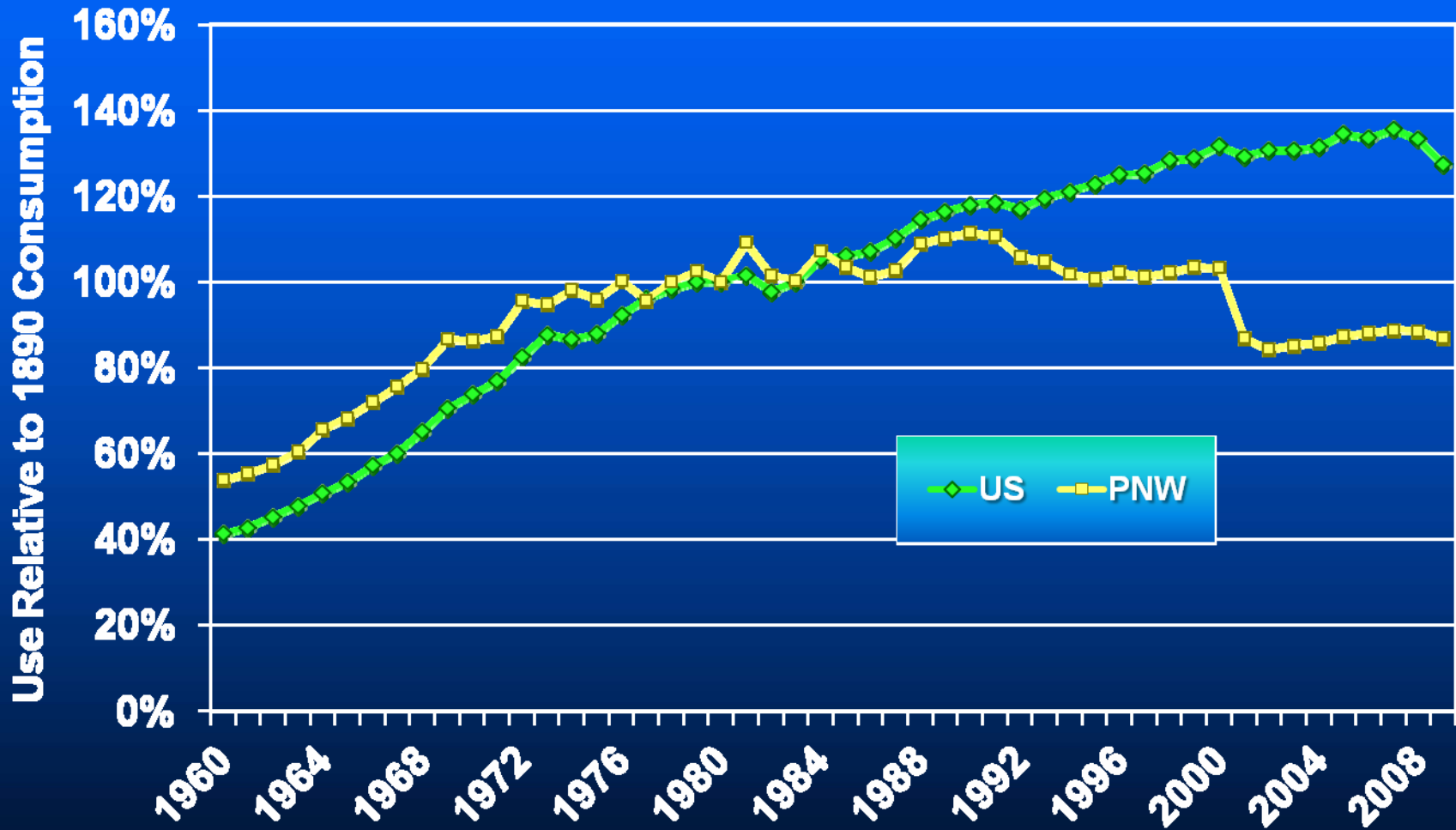
Historical PNW Utility Energy Efficiency Investments as a Share of Regional Revenues □ 1991 - 2010



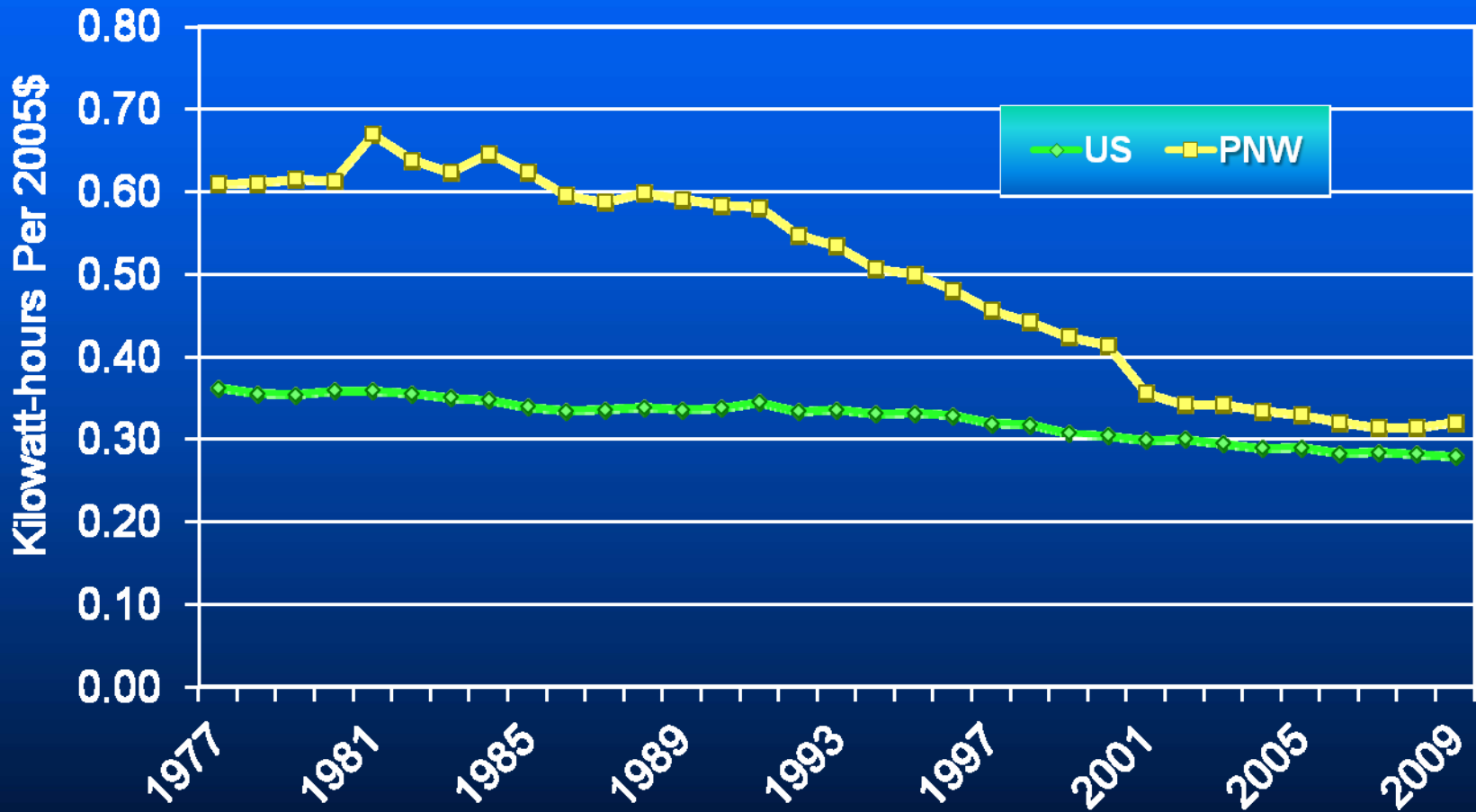
Annual PNW Utility Energy Efficiency Investments Per Capita 1991 - 2010



Electricity Use Per Capita



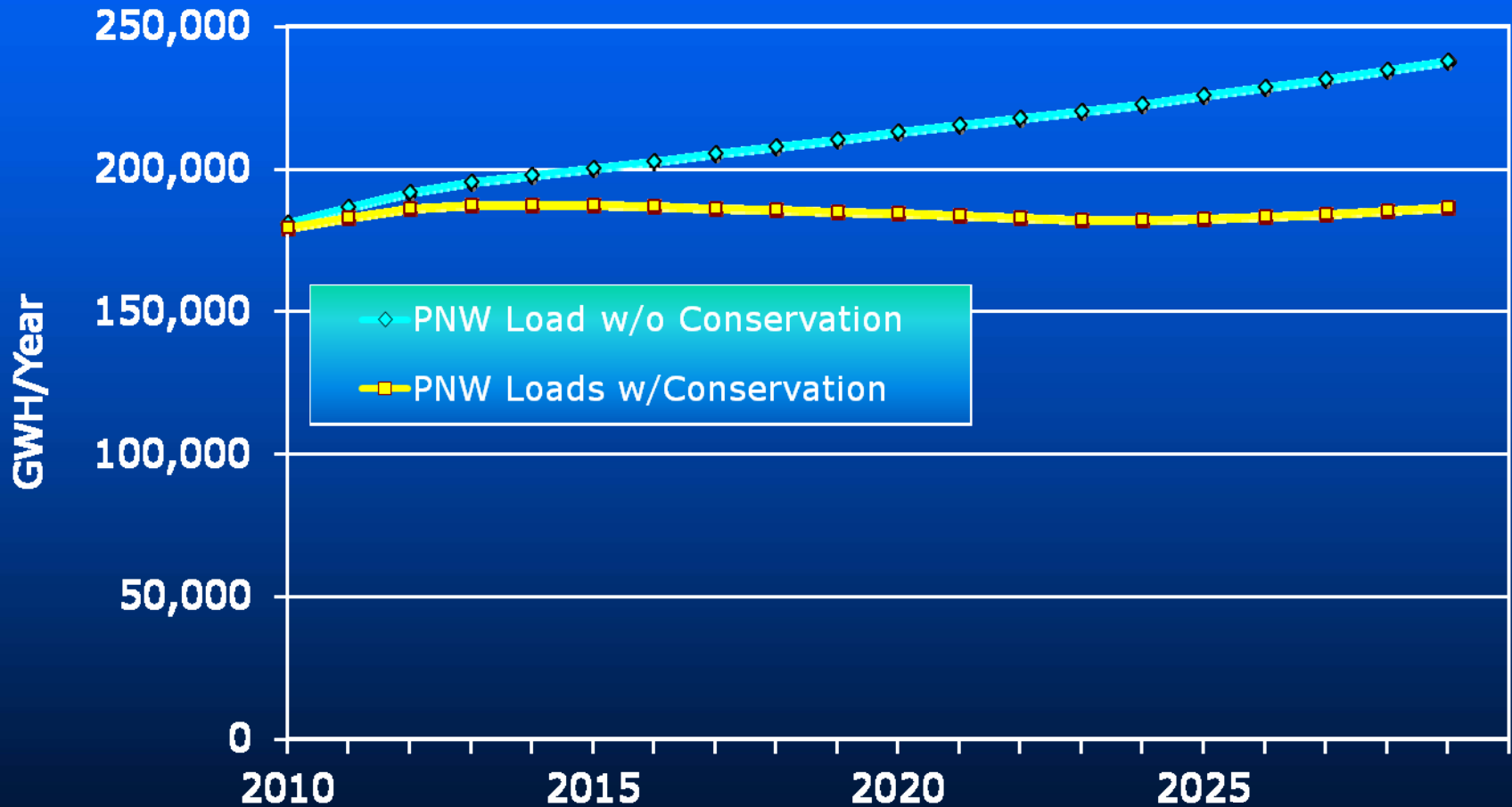
Electricity Use Per Dollar GDP



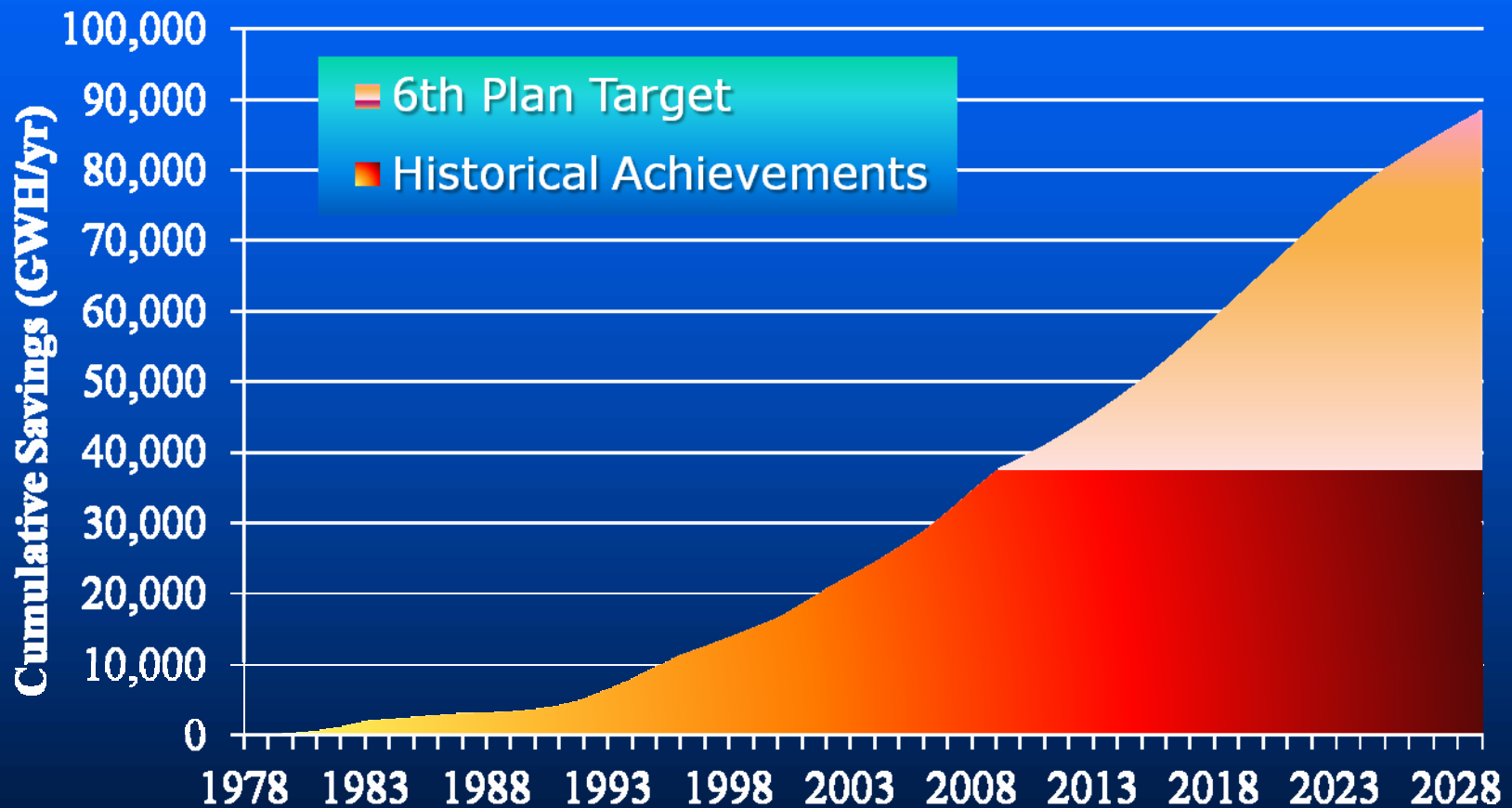
6TH POWER PLAN



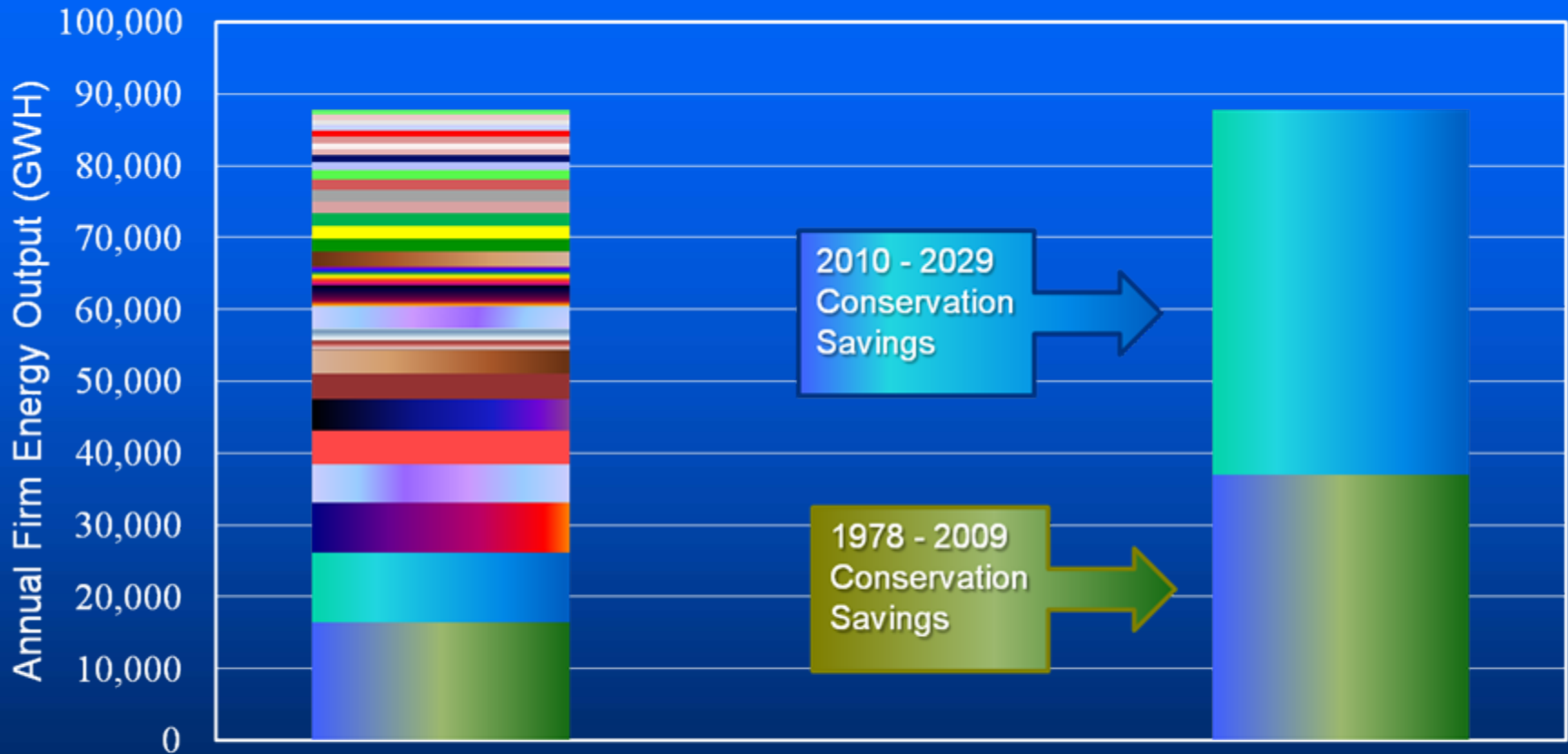
6th Plan Meet's 90% of Load Growth with Energy Efficiency



PNW Regional Energy Efficiency Achievements and Goals



Energy Efficiency Savings from 1978 - 2029 Could Equal the Annual Firm Energy Output of the 30 Largest Hydroelectric Projects in the Region



- | | | | | |
|--------------------|----------------|-----------------|----------------|-----------------|
| ■ Grand Coulee | ■ Chief Joseph | ■ John Day | ■ The Dalles | ■ Rocky Reach |
| ■ McNary | ■ Bonneville | ■ Priest Rapids | ■ Wanapum | ■ Wells |
| ■ Boundary | ■ Rock Island | ■ Brownlee | ■ Little Goose | ■ Lower Granite |
| ■ Lower Monumental | ■ Hells Canyon | ■ Libby | ■ Ice Harbor | ■ Dworshak |
| ■ Noxon | ■ Kerr | ■ Gorge | ■ Mossyrock | ■ Oxbow |
| ■ Round Butte | ■ North Umpqua | ■ Cabinet Gorge | ■ Diablo | ■ Hungry Horse |

So Our Job

Is Making the *Inefficient* Use of
Energy in the PNW . . .

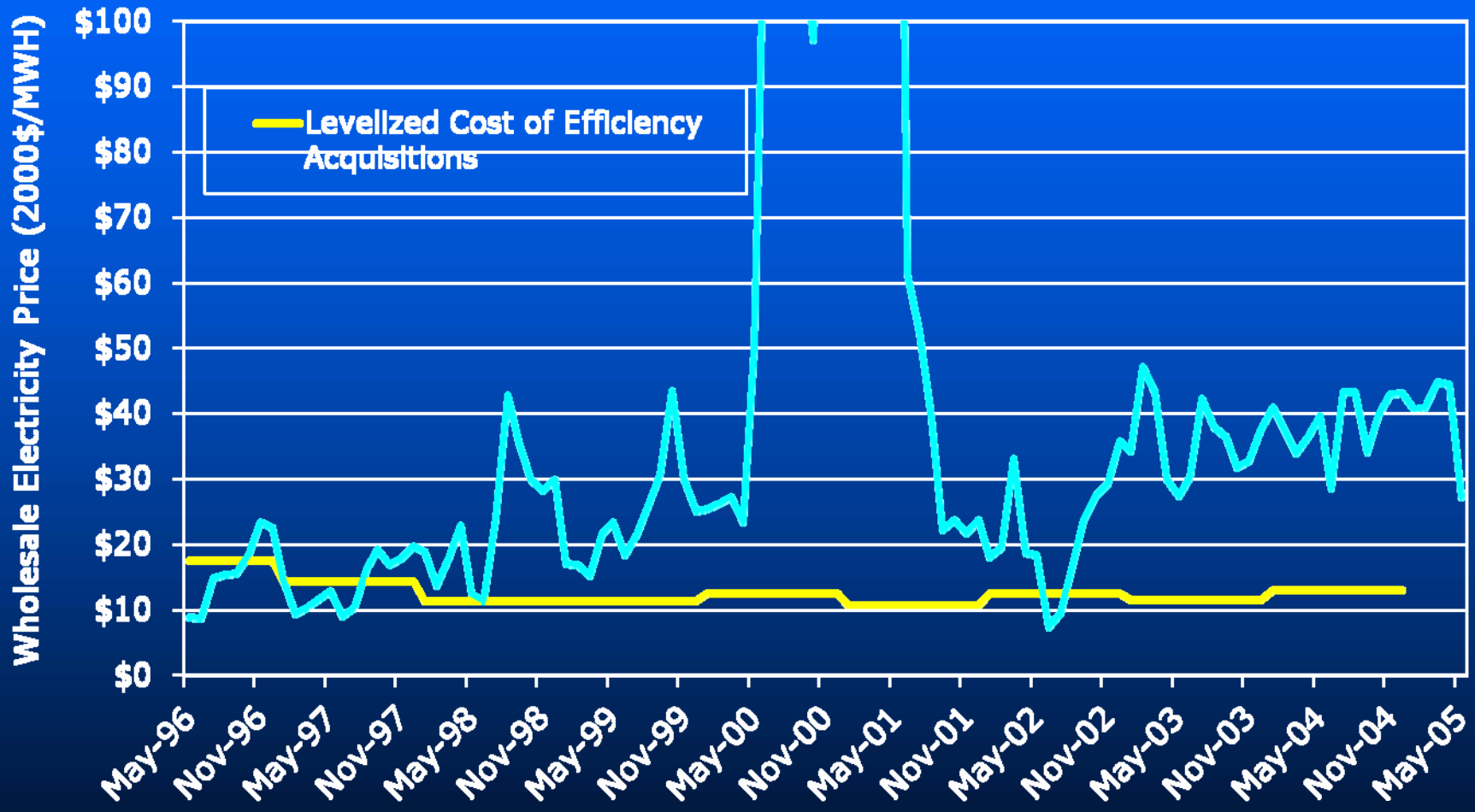
Immoral

Illegal

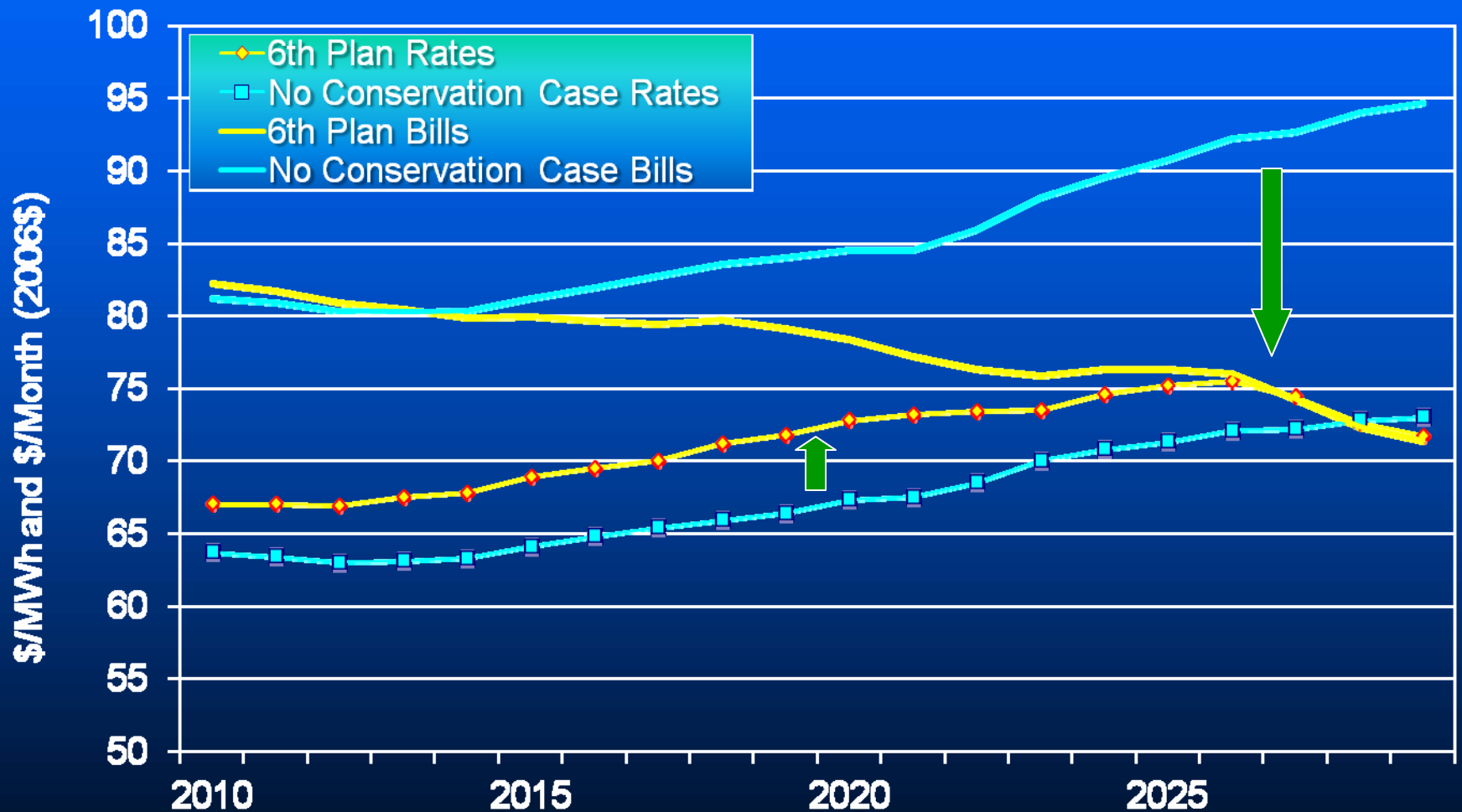
Unprofitable

Background Slides

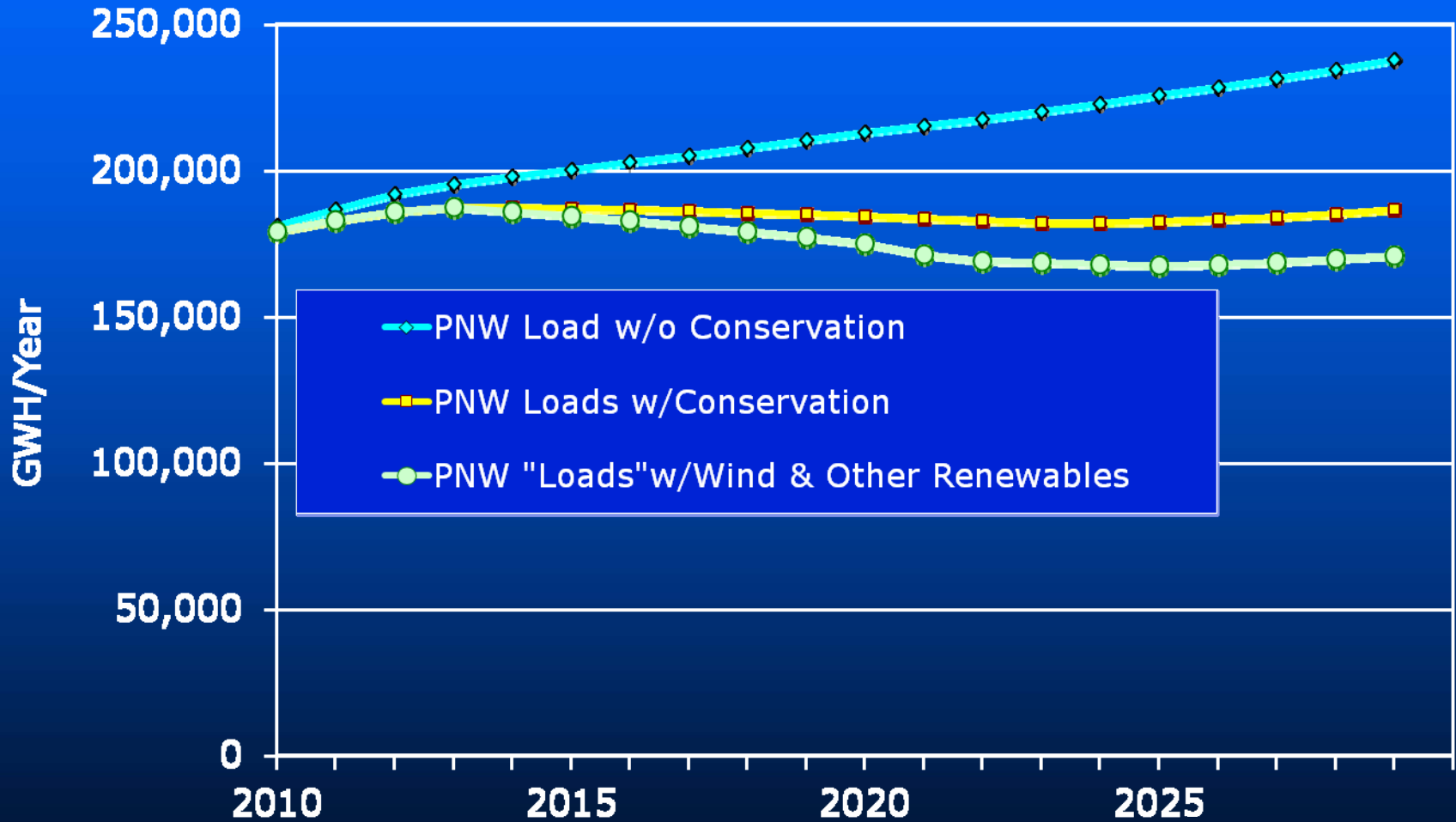
Let's Be Clear:
Utility Acquired Energy Efficiency Have Been
A % * &?! BARGAIN!



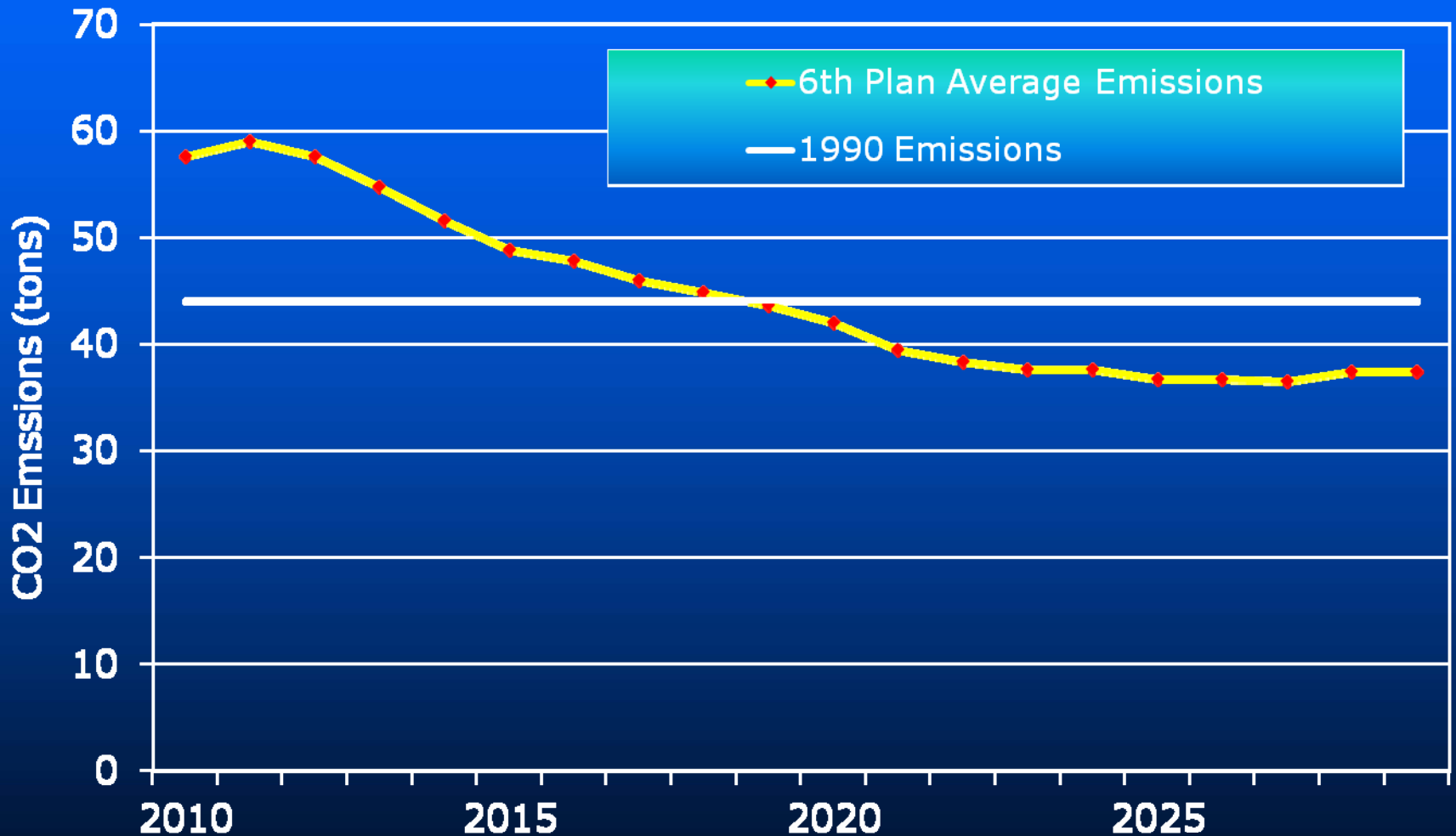
Meeting the 6th Plan's Efficiency Goals Decreases Consumers' Bills



6th Plan Meet's 28% of Load Growth with Wind & Other Renewable Resources



Meeting These Goals Drops Carbon Emissions 15% Below 1990 Levels by 2020



Initial Response of 6th Plan's Efficiency Assessment & Targets

