

The Role of Efficiency In Meeting PNW Energy Needs

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Energy Efficiency As A Resource
September 29, 2009

Today's Topics

- Energy Efficiency's Role in the PNW Power System
 - Historical Impacts
 - Projected Impacts of Future Energy Efficiency and Renewable Resource Development
- Can and Should More Be Done?
 - The Draft 6th Northwest Power & Conservation Plan's Assessment of the Remaining Energy Efficiency Potential and Regional Conservation Targets

The Evolution of Energy Policy

October 11, 2002

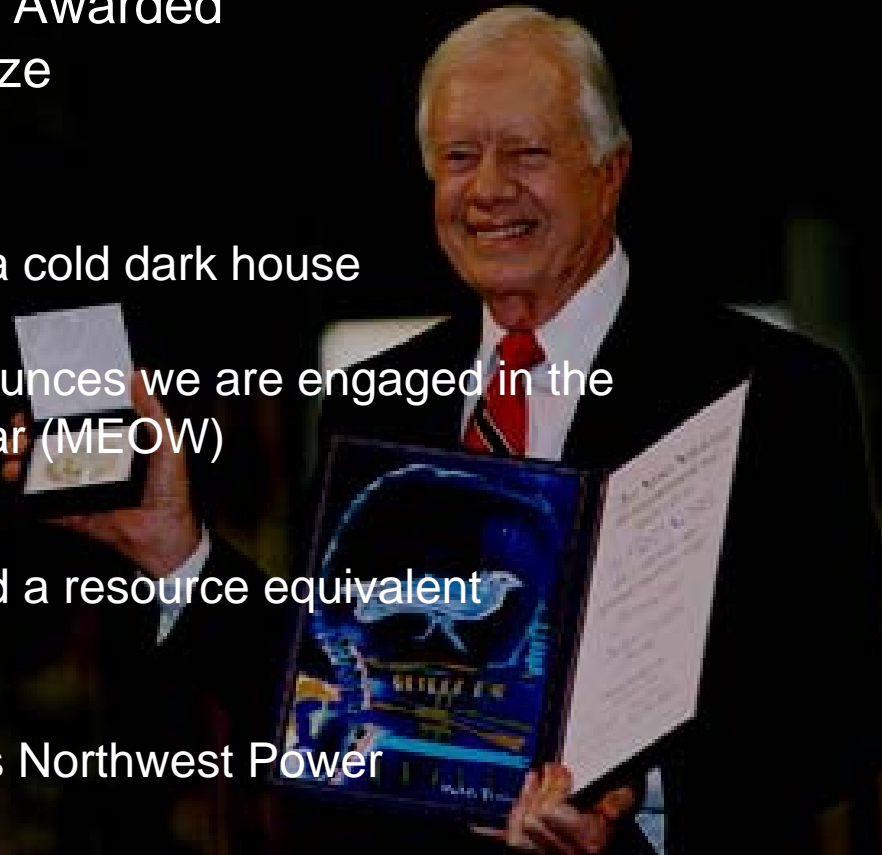
President Carter Awarded
Nobel Peace Prize

April 18, 1977 –
Conservation means a cold dark house

President Carter announces we are engaged in the
moral equivalent of war (MEOW)

December 5, 1980 -
Conservation declared a resource equivalent
to generation

President Carter signs Northwest Power
and Conservation Act



For Those of You From Illinois, One Other Event Happened in 1980



Yea See,
We're On A
Mission from
God.

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
 - “The Plan” shall call for the development of the least cost mix of resources
 - “The 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.

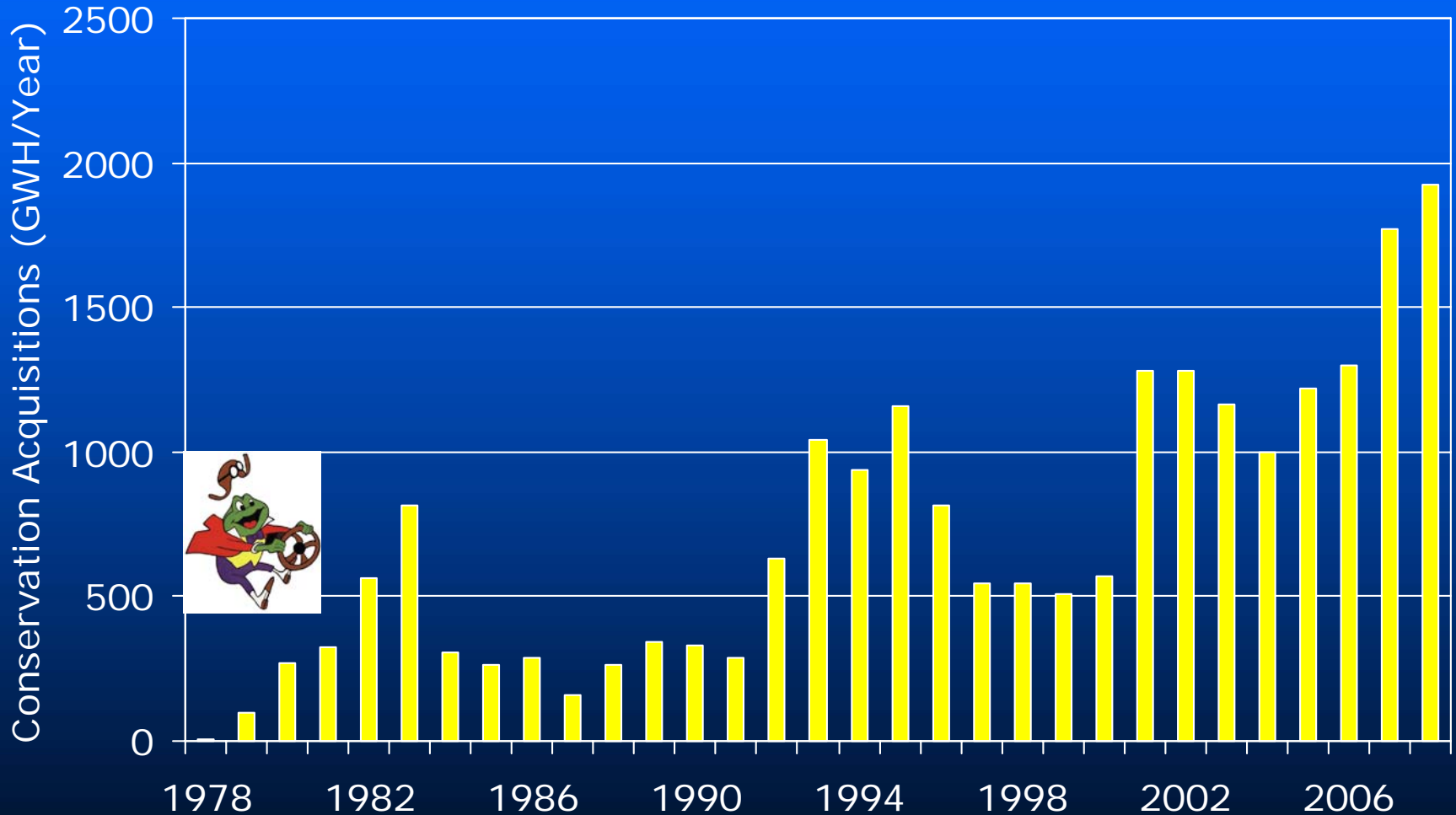
How Has It Worked?

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



Three Decades of Utility Conservation Acquisitions

(aka "Mr. Toad's Wild Ride"* for the PNW's Energy Efficiency Industry)



See: http://en.wikipedia.org/wiki/Mr._Toad's_Wild_Ride

Nevertheless Since the Late 70s

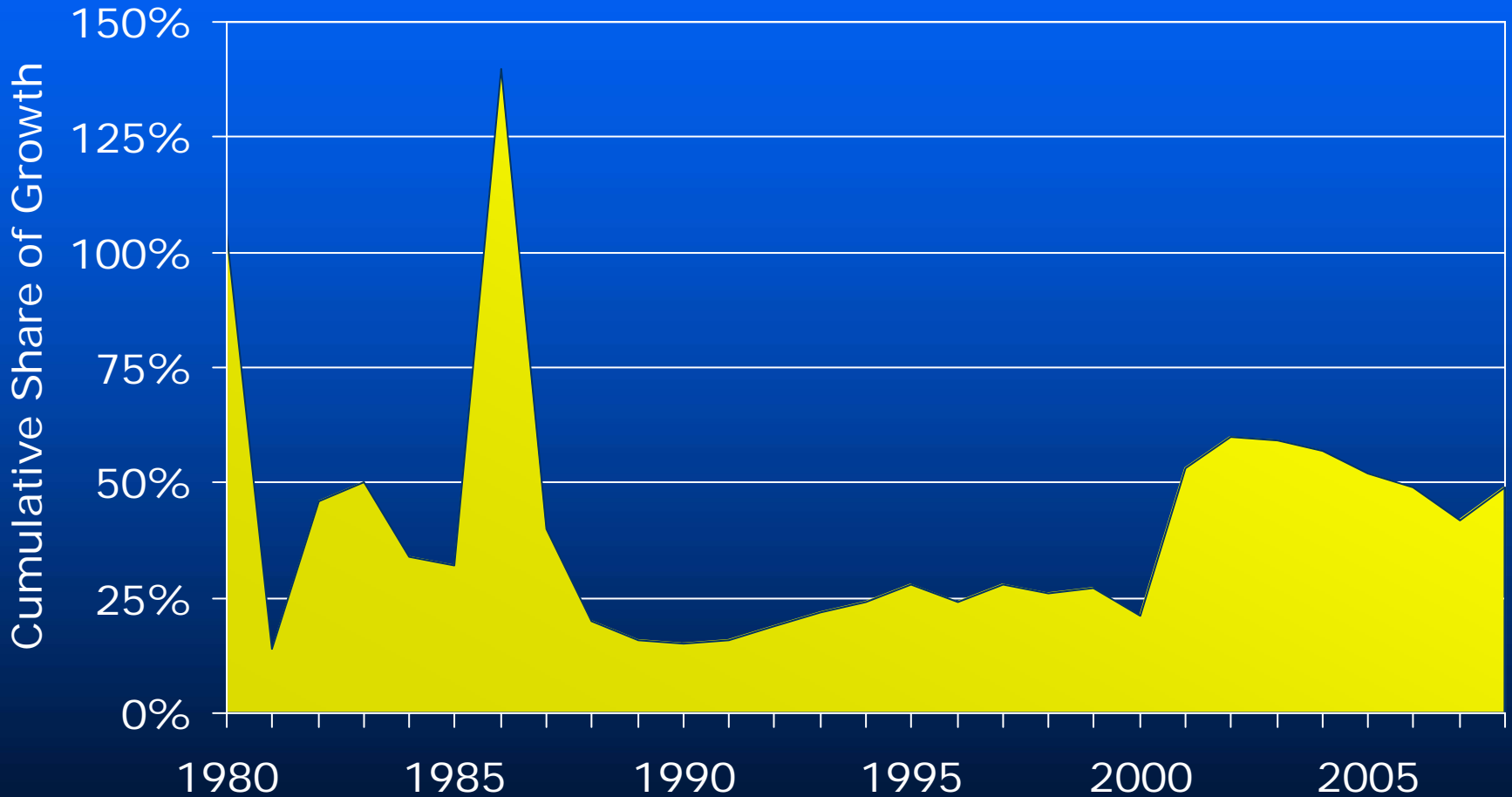


We've Accomplished "Mass Quantities"

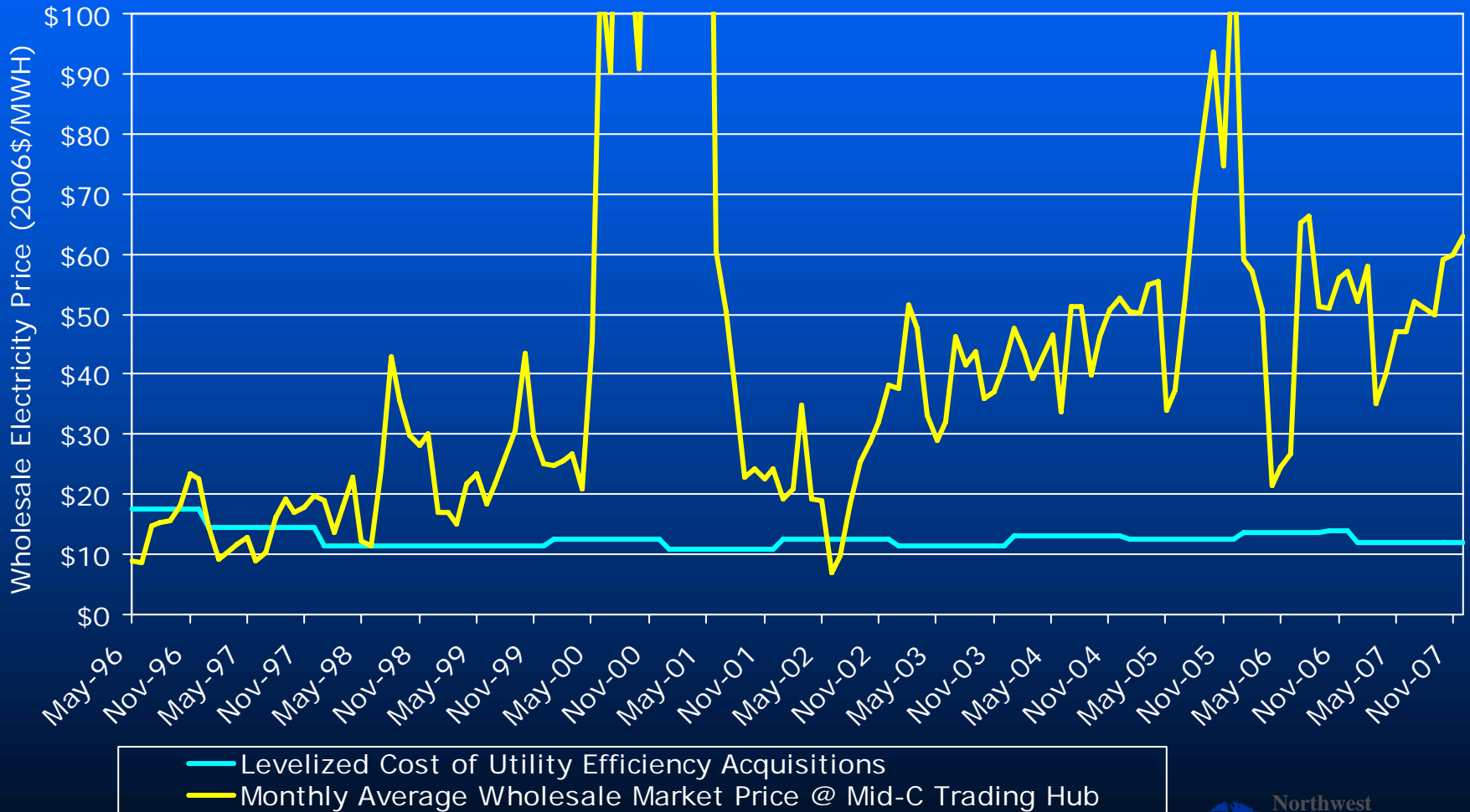
So What's 35,000 GWH/Year?

- It's enough electricity to serve more than the entire state of Idaho and all of Western Montana
- It saved the region's consumers nearly than \$1.8 billion in 2008
- It lowered 2008 PNW carbon emissions by an estimated 15 million tons.

Since 1980 Energy Efficiency Resources Met Half of Regional Load Growth



Utility Acquired Energy Efficiency Has Been A **BARGAIN!**



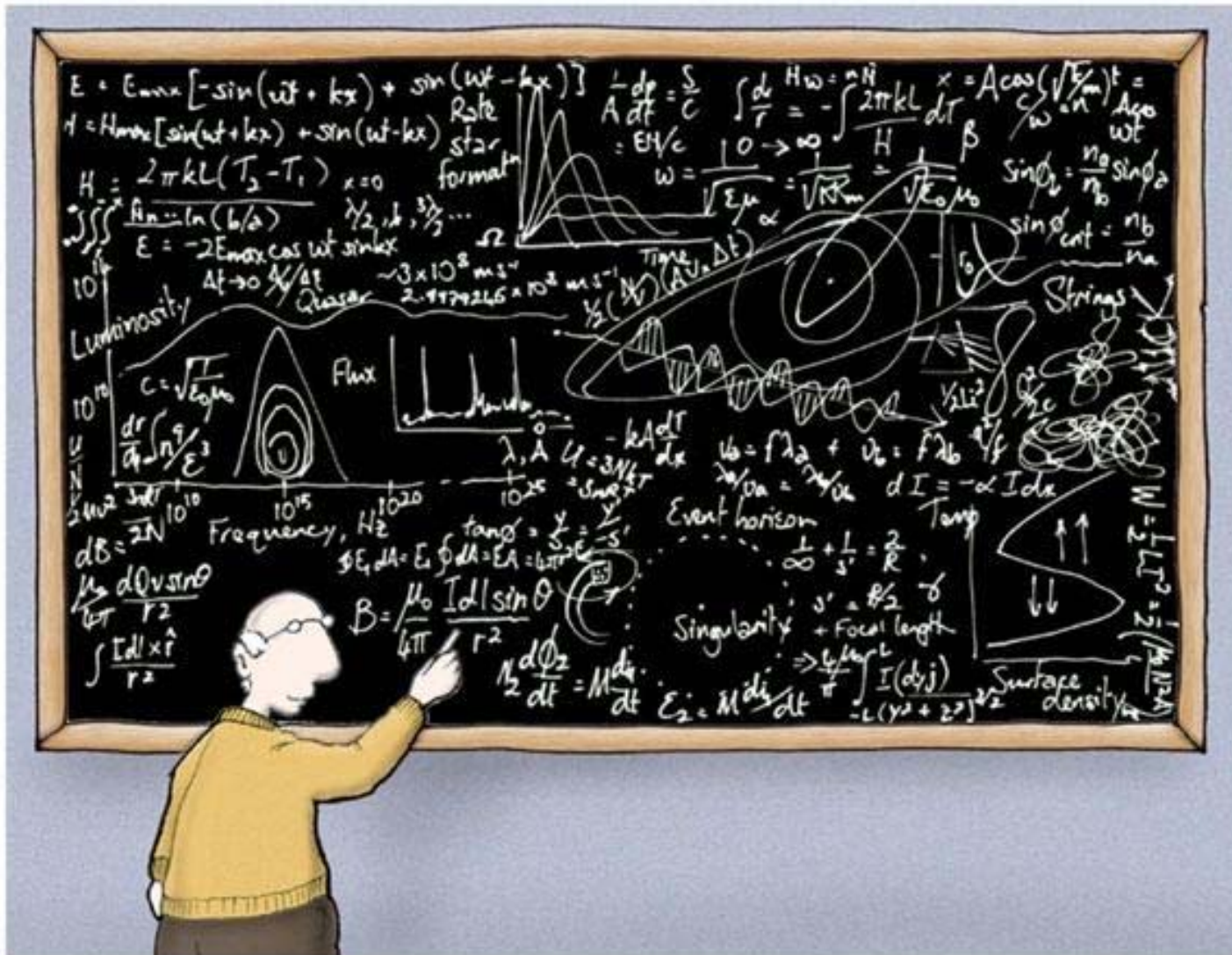
Energy Efficiency Is The Region's Third Largest Resource



We've Saved The Equivalent of Two Grand Coulee Dams



So What's Next?

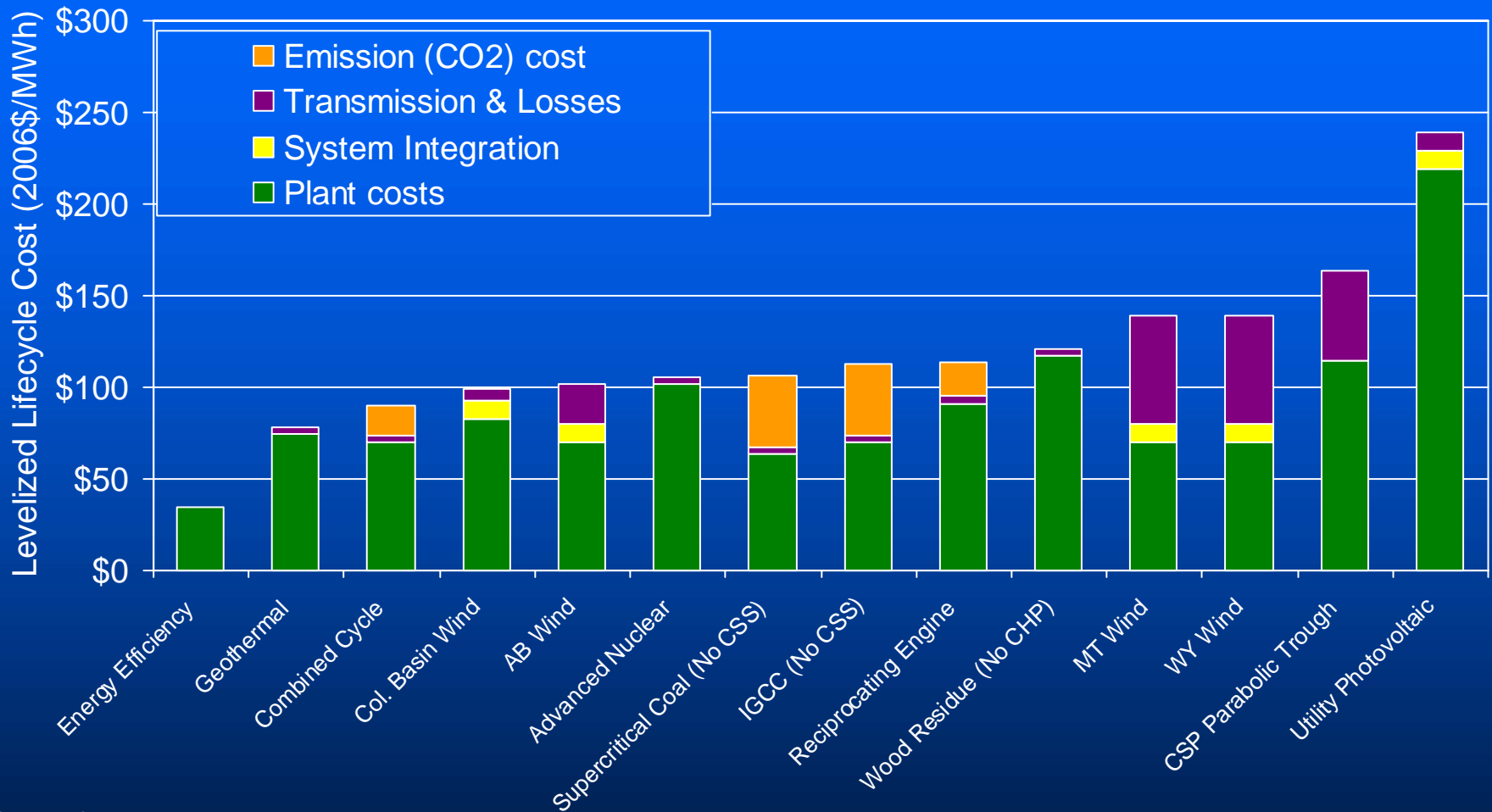


How Much Efficiency Should We Develop?

The Region Has Exceeded the 5th Plan's Targets Every Year



Energy Efficiency is Still the Cheapest Option



Assumptions :

Efficiency Cost = Average Cost of All Conservation in Draft 6th Power Plan Under \$100 MWh

Transmission cost & losses to point of LSE wholesale delivery

2020 service - no federal investment or production tax credits

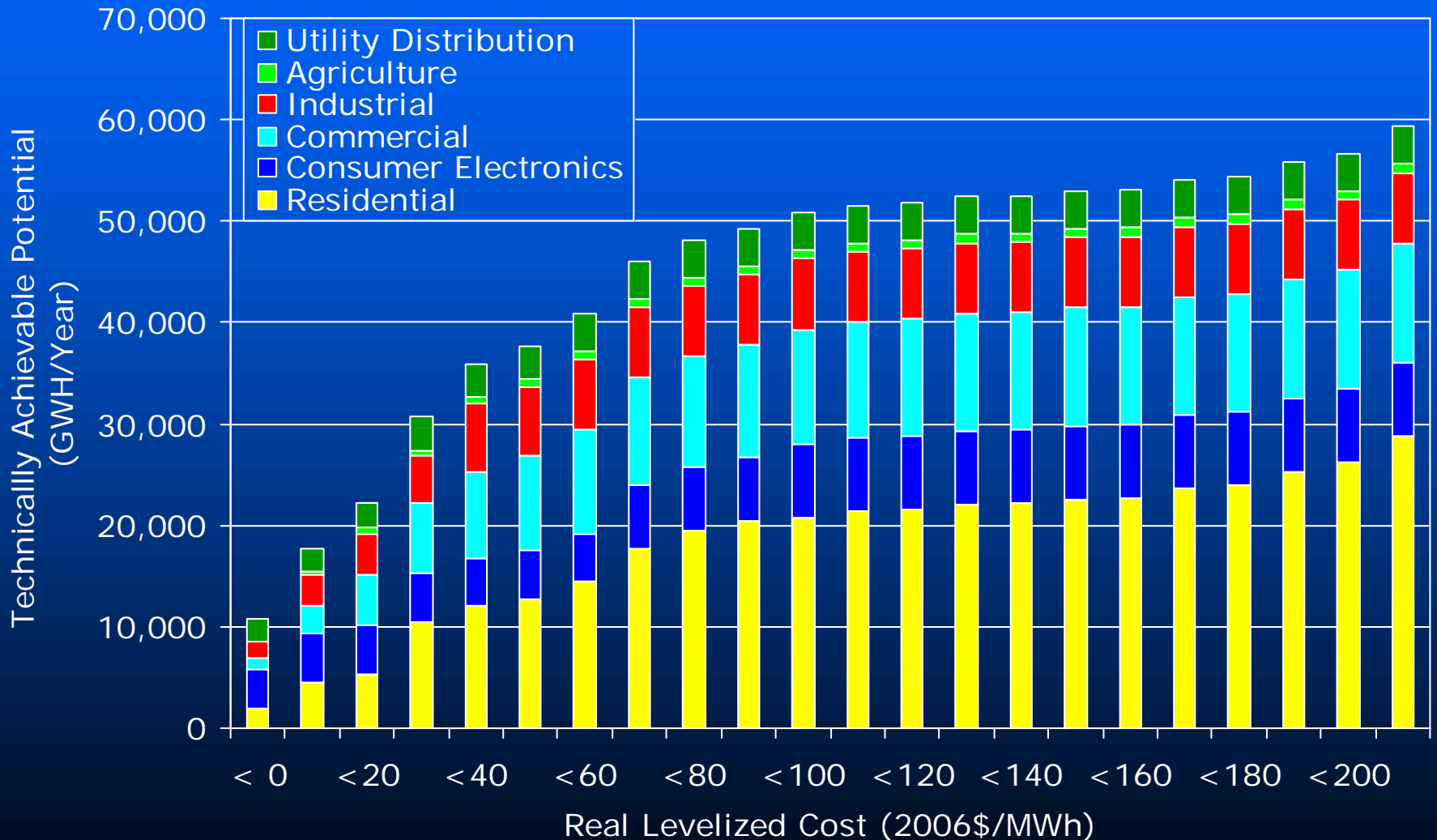
Baseload operation (CC - 85%CF, Nuclear 87.5% CF, SCPC 85%)

Medium NG and coal price forecast (6th Plan draft)

6th Plan draft mean value CO2 cost (escalating, \$8 in 2012 to \$47 in 2029).

There's Still "Mass Quantities"

6th Plan Technically Achievable Conservation Potential by Sector



Two Methods for Setting Efficiency Goals

- Integrated Resource Planning (IRP)
 - Systematic evaluation of the least cost/least risk portfolio of resource choices where energy efficiency is treated equivalent to generating resources
- Energy Efficiency Resource Portfolio Standards
 - Mandated minimum share of energy efficiency resources

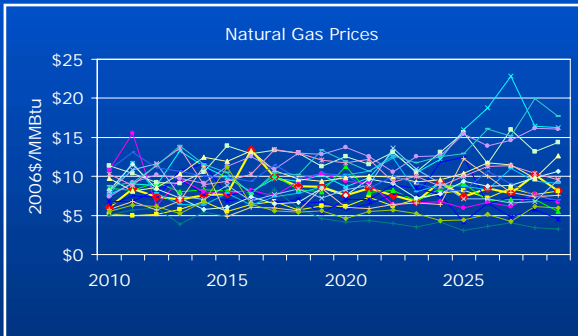
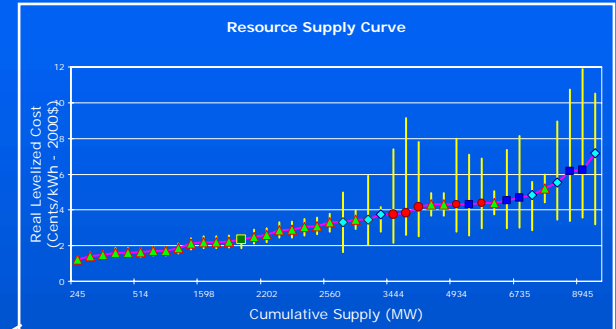
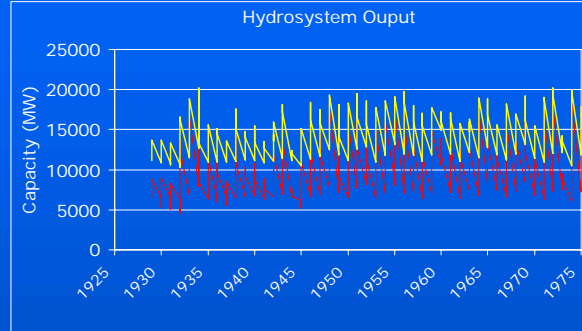
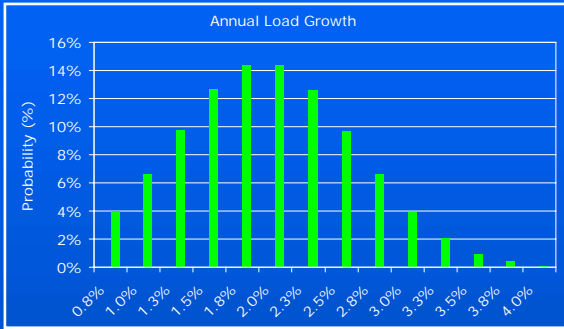
Council Uses "Gump" IRP Model



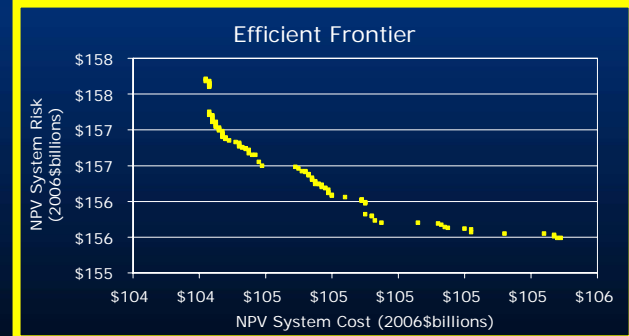
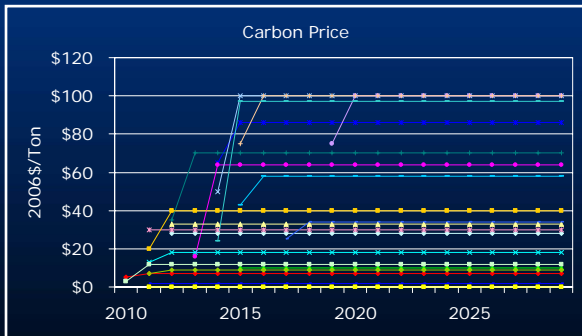
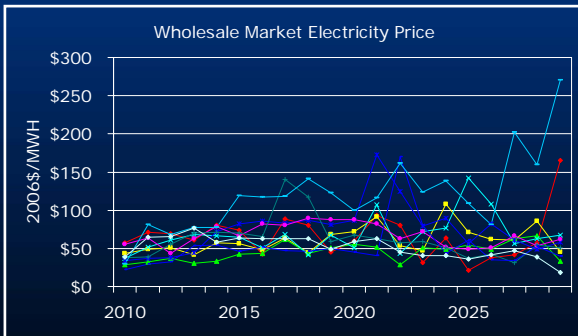
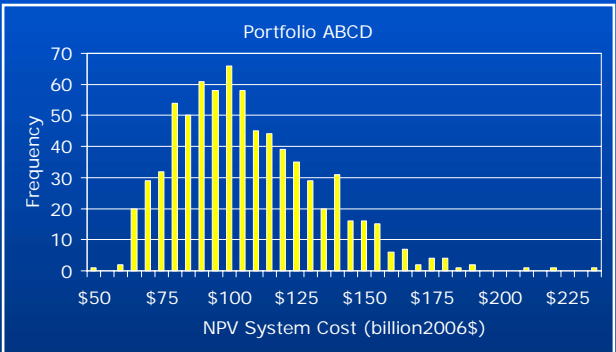
The Future's Like A Box of Chocolates.

You Never Know What You're Gonna Get.

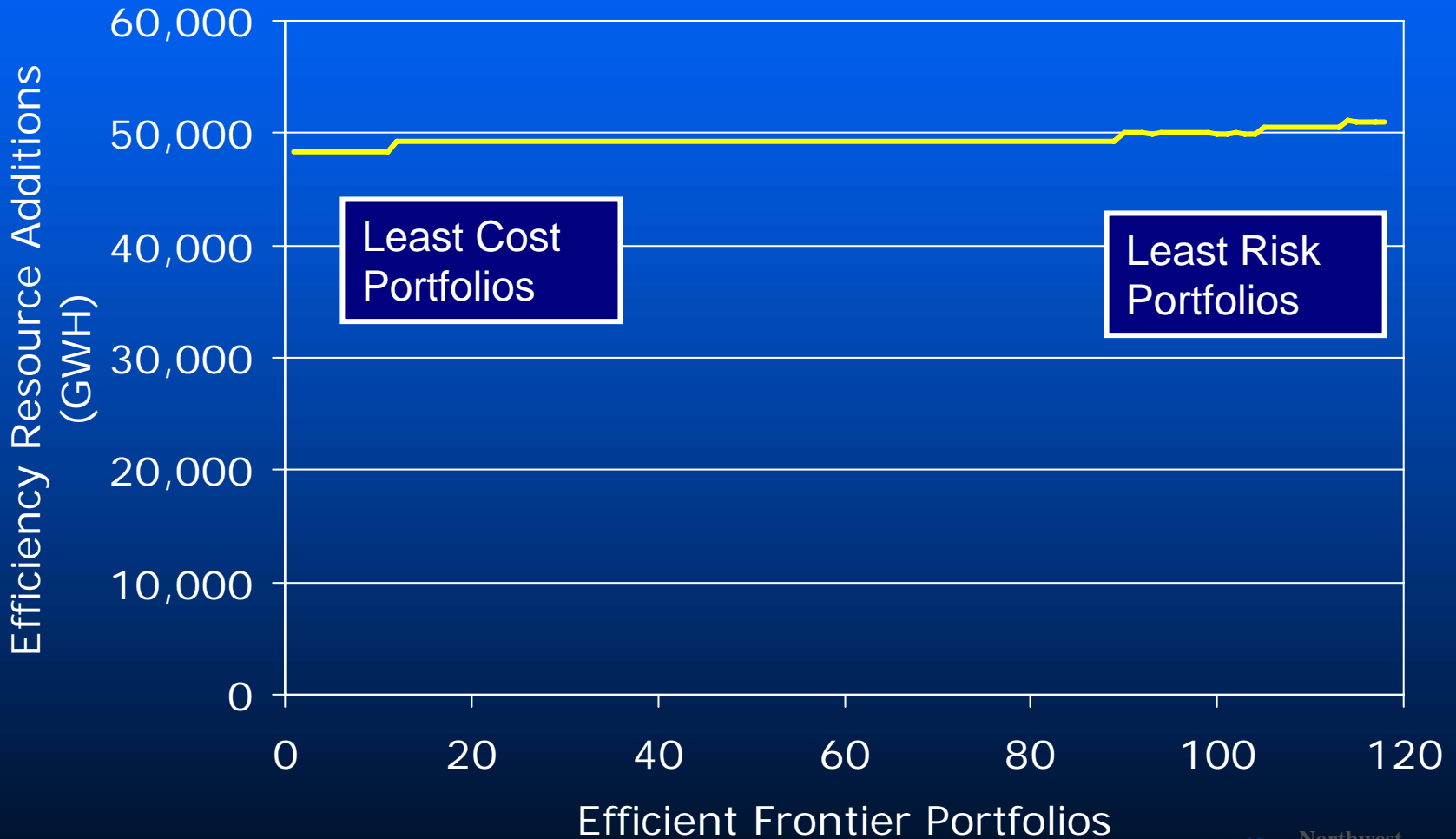
Council IRP Analysis => Test Lots of Chocolates



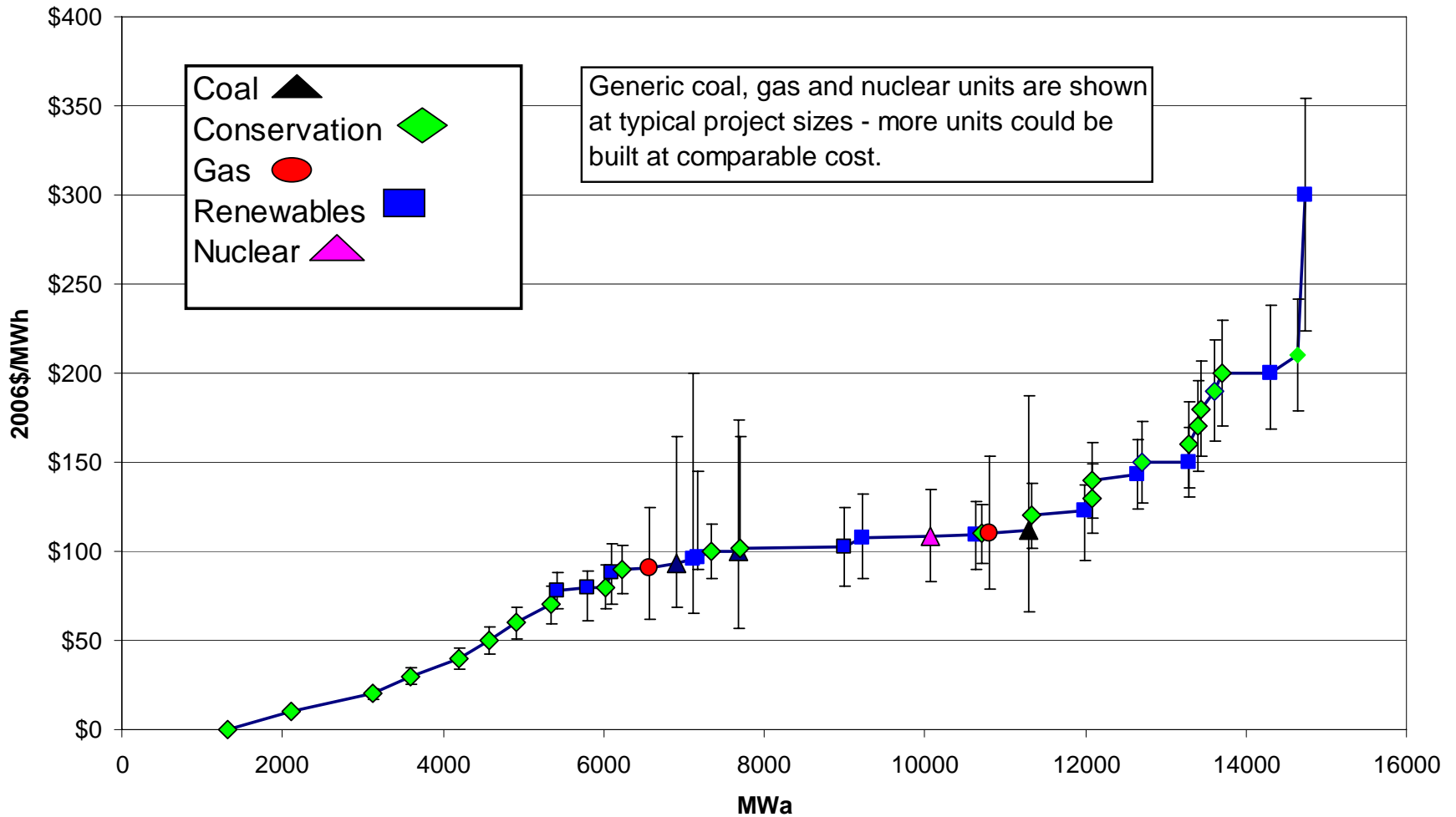
Portfolio Analysis Model



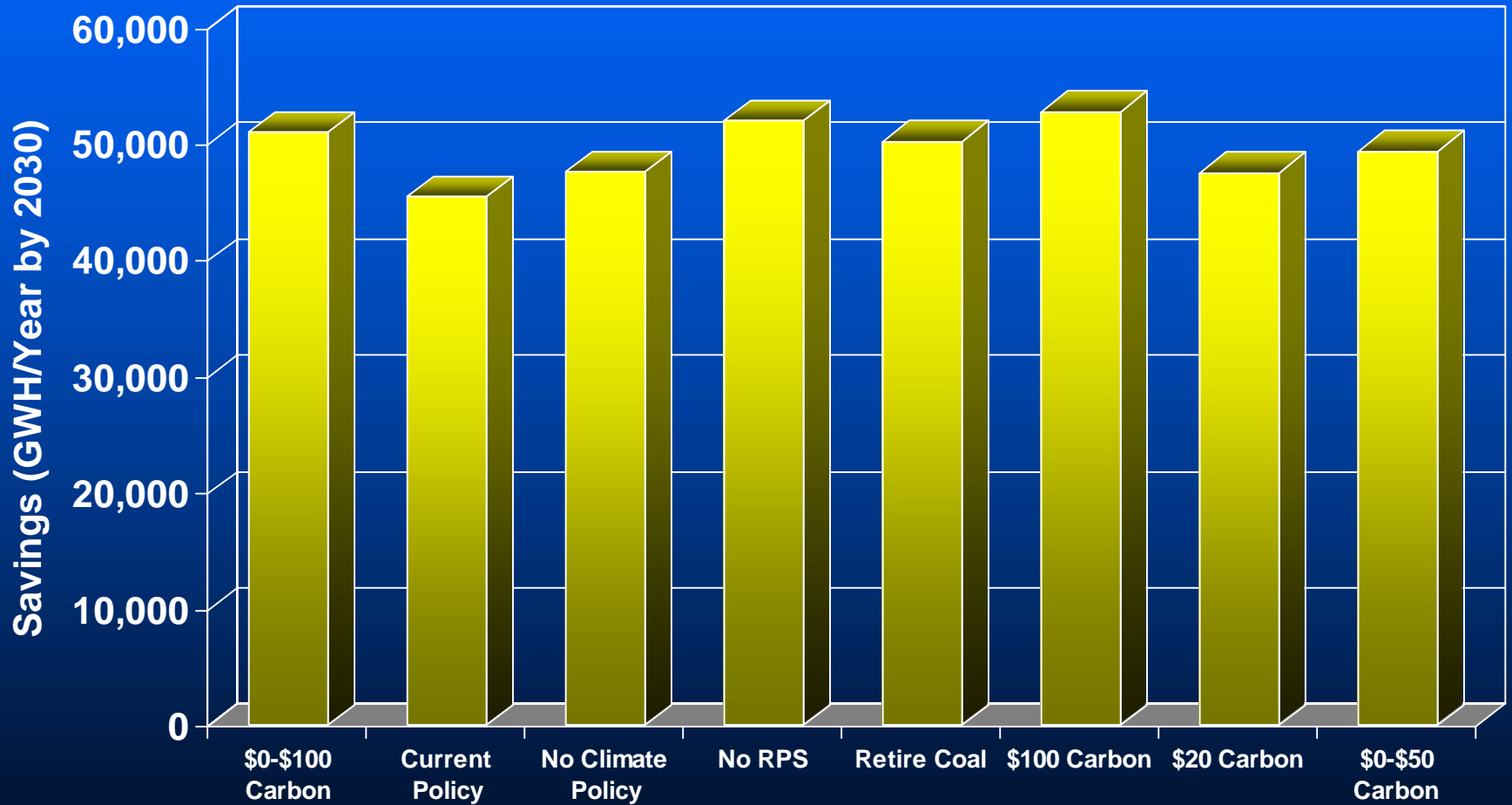
All Plans Along the "Efficient Frontier" Acquire Virtually the Same Amount of Energy Efficiency



Portfolio Analysis on One Slide



Energy Efficiency's Role Does Not Depend on Climate Policy Assumptions



Draft 6th Plan Calls for A Doubling of Annual Energy Efficiency Savings Over Next Decade

The Sunday Oregonian

SUNRISE EDITION ★★★ ++H

\$2.00

BREAKING NEWS AT OREGONLIVE.COM

WINNER OF SEVEN PULITZER PRIZES

SEPTEMBER 13, 2009

Embassy contractor has record of troubles

Afghanistan | Drunken parties bring attention to ArmorGroup, but U.S. officials knew of wider problems

By **GINGER THOMPSON** and **MARK LANDLER**
NEW YORK TIMES NEWS SERVICE

WASHINGTON — When a security guard at the U.S. Embassy in Kabul was leaving

With a goal of doubling the region's energy saving in the next 20 years, Northwest businesses and homeowners are urged to find ...

The power in CONSERVATION

Energy efficiency is cheapest source of energy

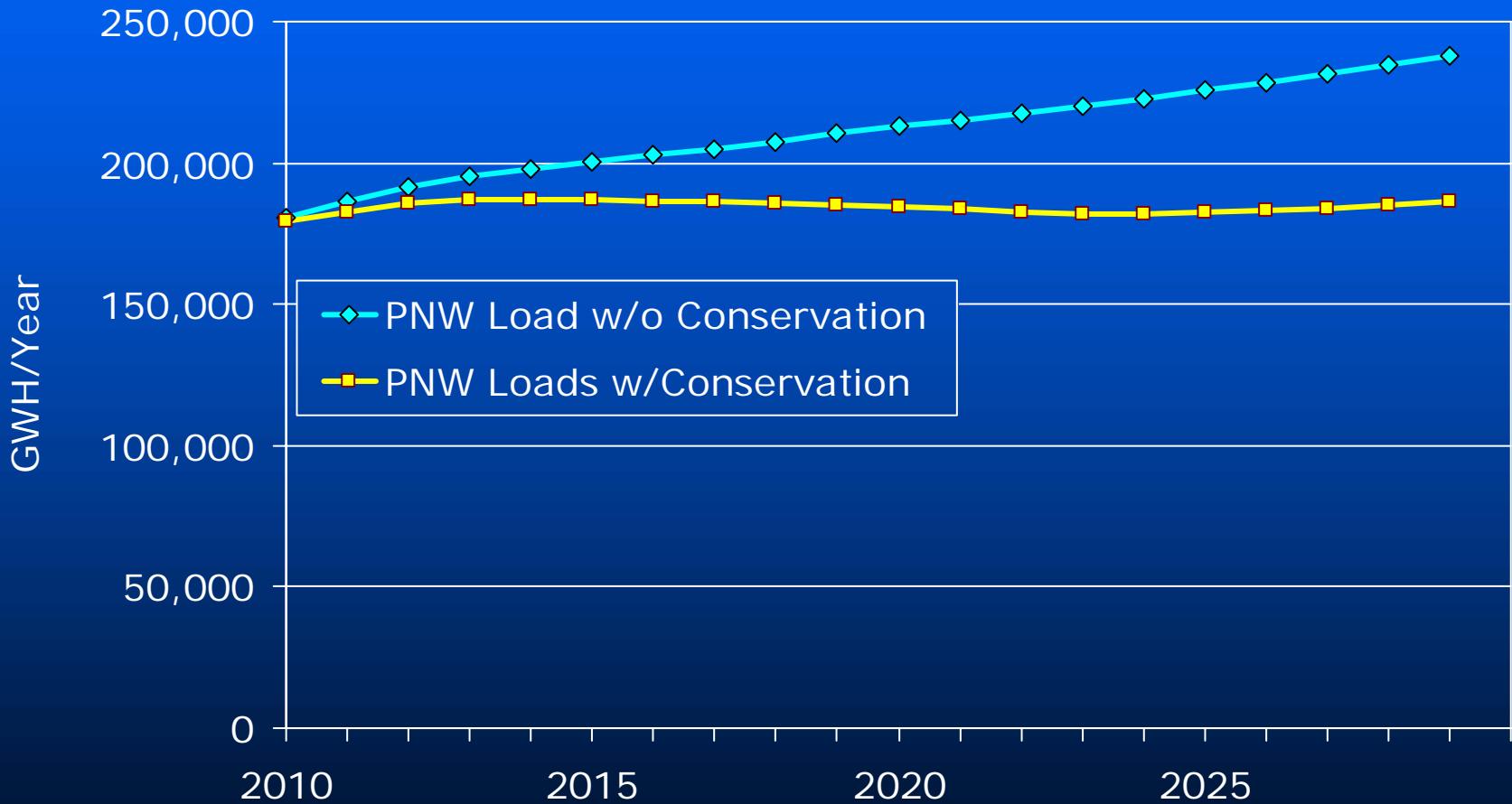
New energy sources	Monthly investment cost on the average homeowner's utility bill
Energy efficiency*	\$32
Natural gas plant w/o carbon charge	66
Advanced coal w/o carbon charge	66
Geothermal	69
Columbia Basin wind	89

By **TED SICKINGER** and **SCOTT LEARN**
THE OREGONIAN

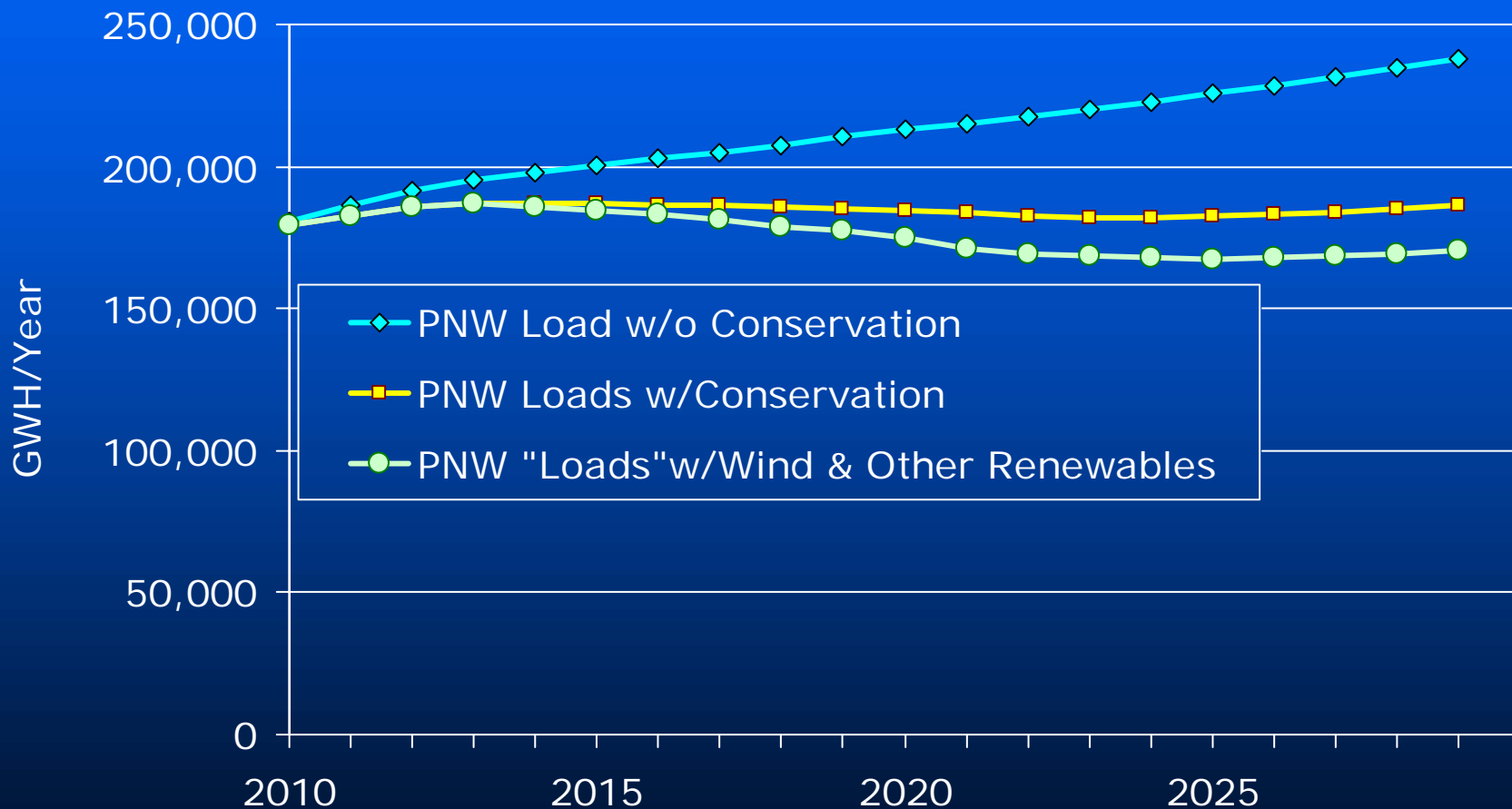
The big white house near Reed College was screaming for an energy upgrade: almost 100 years old, scanty insulation, nearly triple the drafts of a modern home.

Last month, it got one — with the help of two energy audits, federal

Draft 6th Plan Goal 1: Meet 90% of Load Growth with Conservation



Draft 6th Plan Goal 2: Meet 28% of Load Growth with Wind & Other Renewable Resources



What?



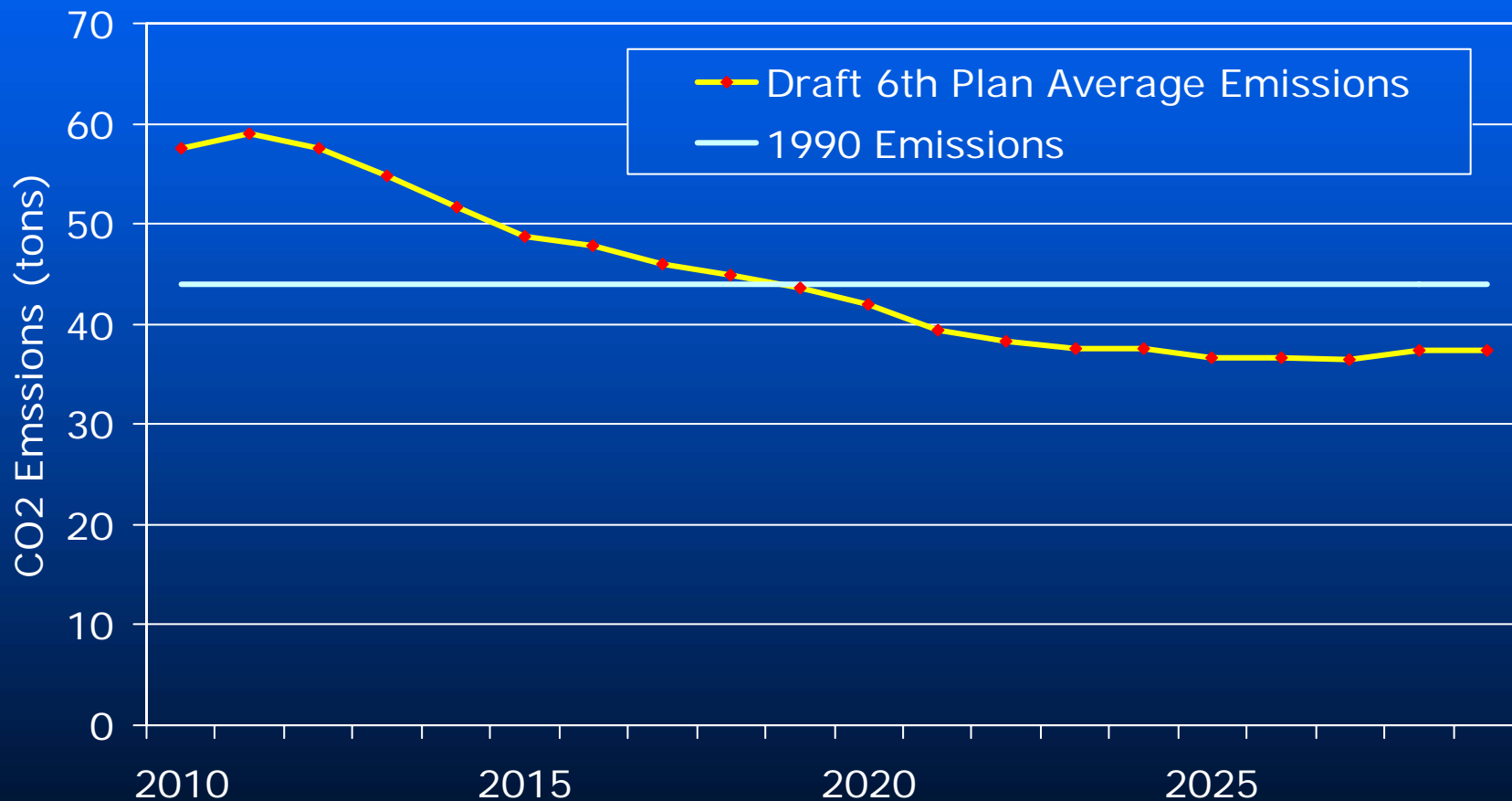
*You Can't Meet More Than 100%
of Load Growth!*



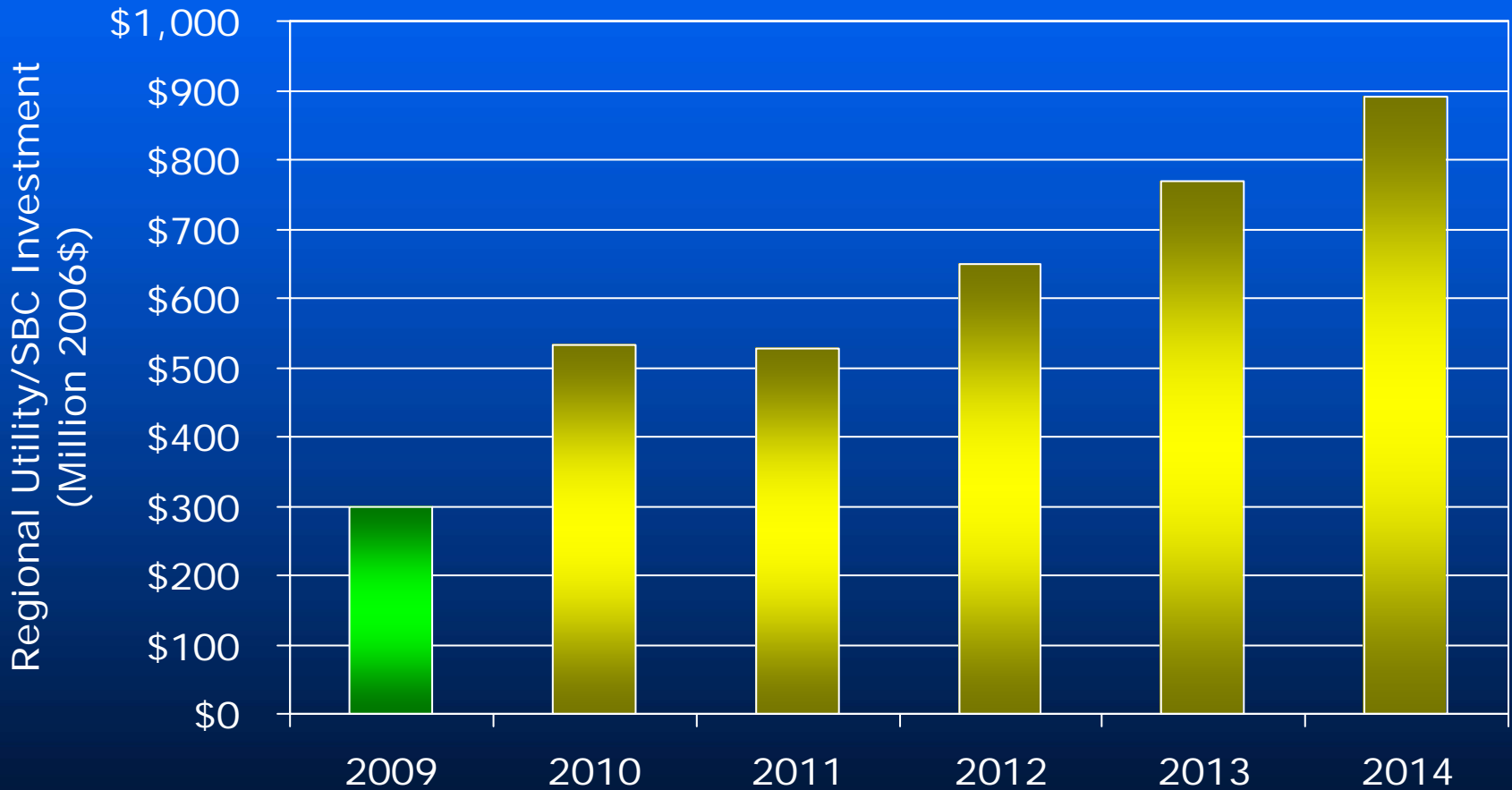
Why We Must

Meeting more than 100% of load growth with energy efficiency and renewable resources displaces existing carbon-based generation

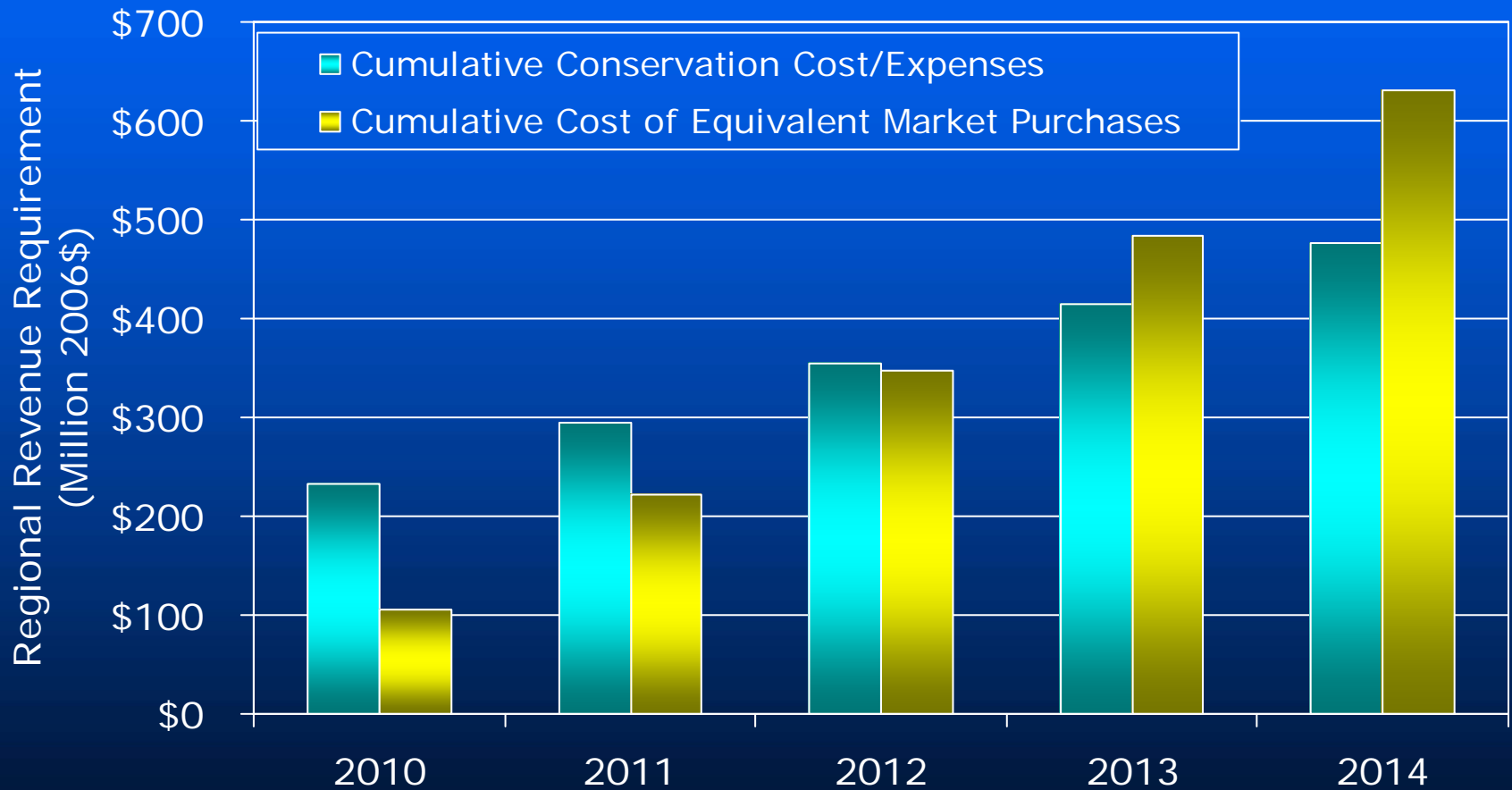
Meeting Our Goals Drops Carbon Emissions 15% Below 1990 Levels by 2020



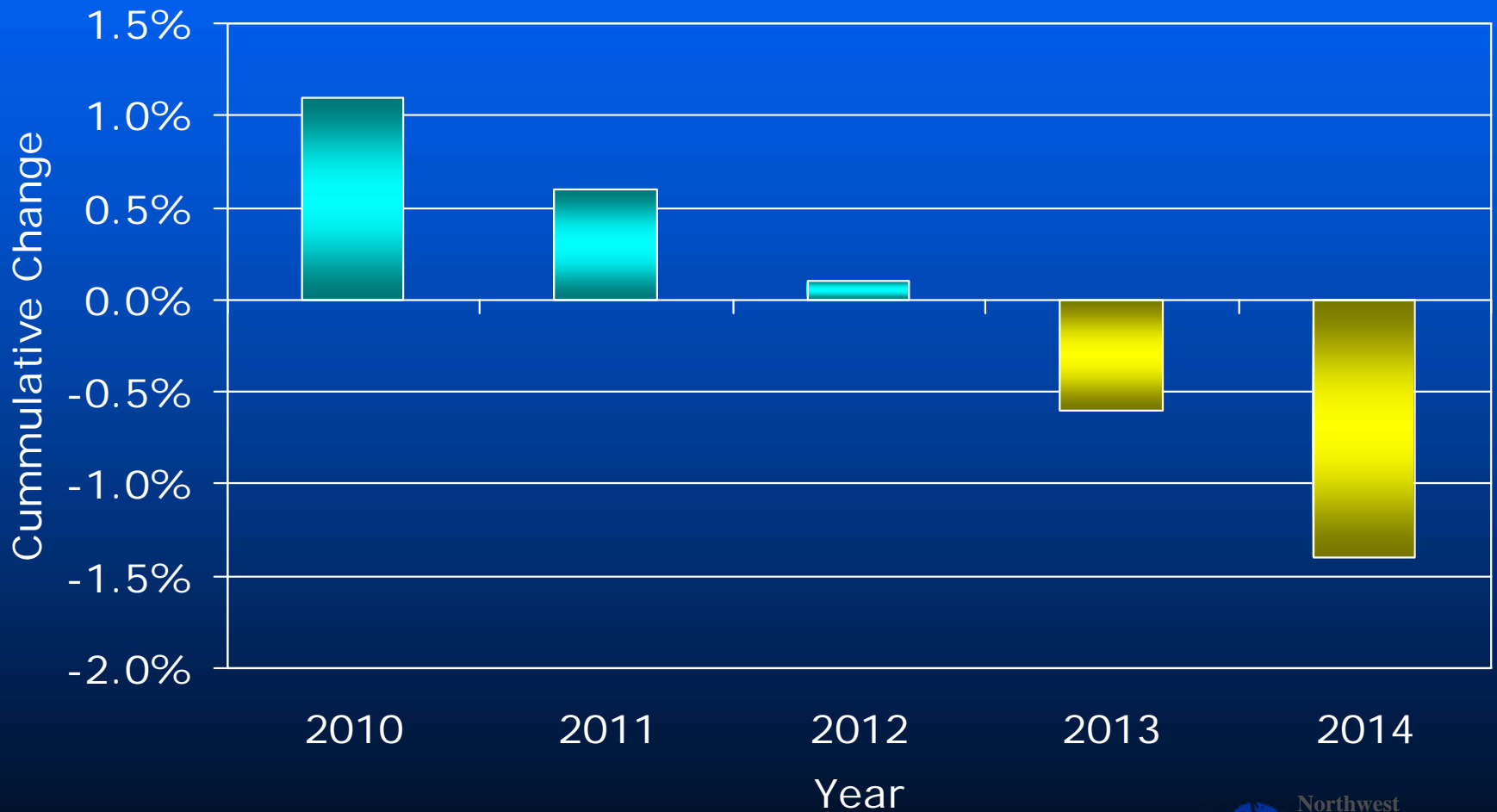
Meeting Our Goals Will Require 2X – 3x Our Current Investments in Energy Efficiency



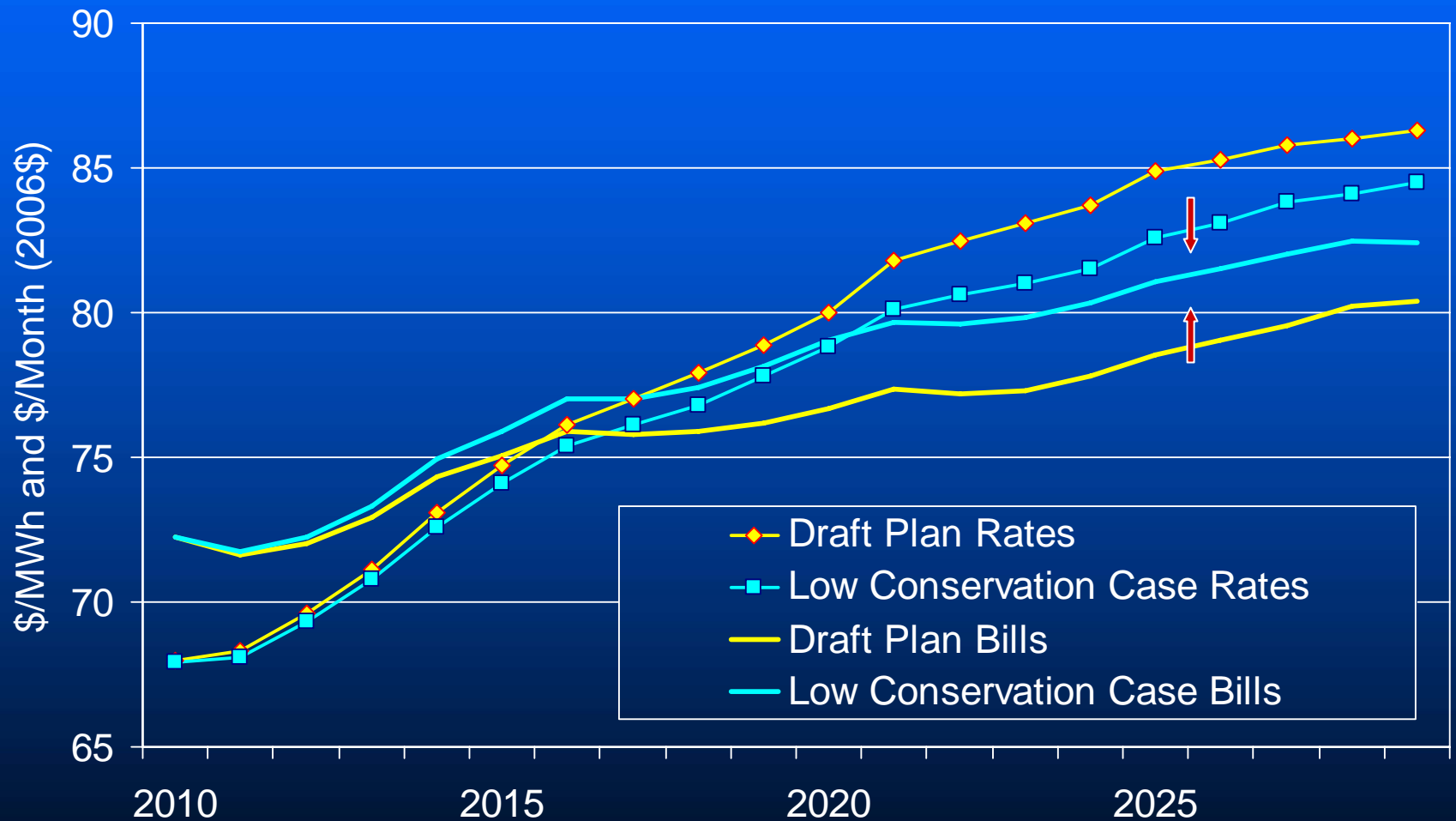
Meeting Our Goals Will Reduce Reliance on More Expensive Resources



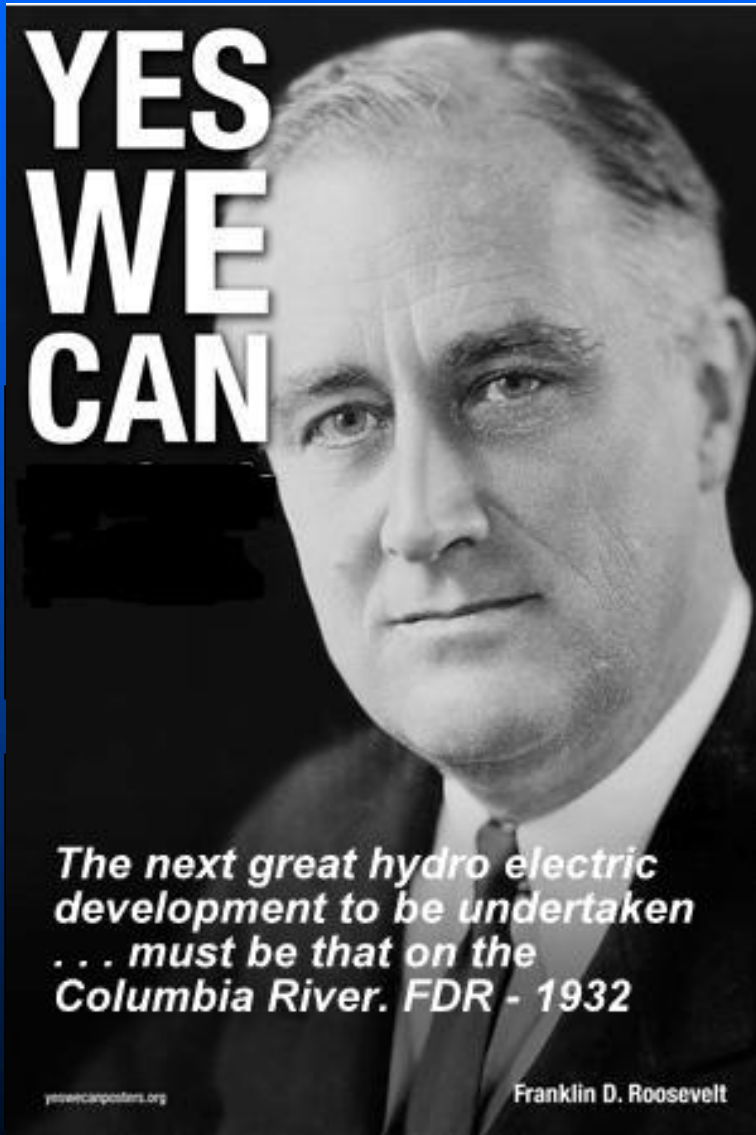
In Fact, Meeting Our Goals Will Reduce Regional Revenue Requirements Below Today's Within Four Years



Accelerating Energy Efficiency Increases Rates But Decreases Consumers' Bills



Accomplishing the 6th Plan's Conservation Goals Will "Stretch" the Columbia River



. . .and reduced the power systems carbon-footprint 15% below 1990 levels

Conservation – Cheap, But Worth It?

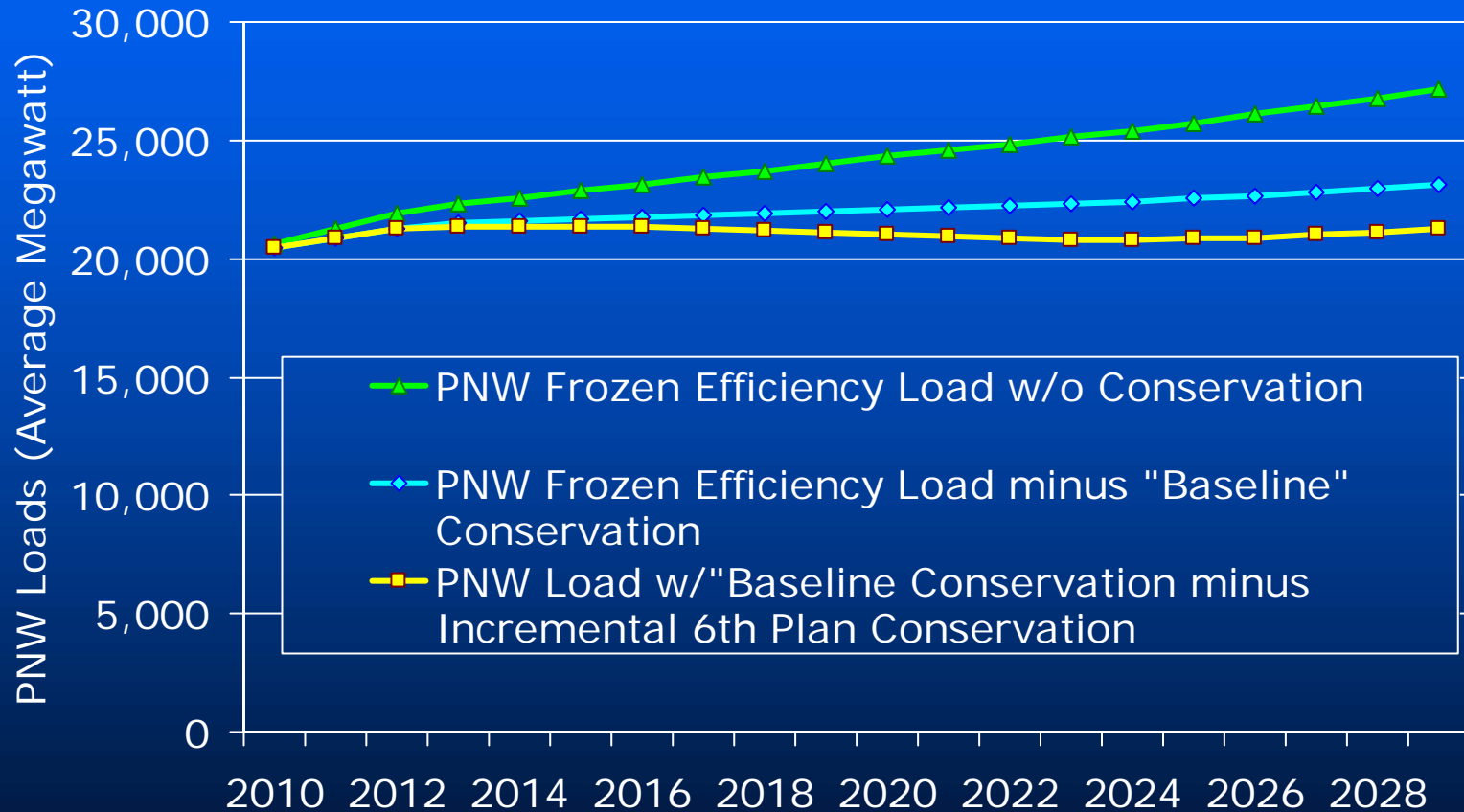


Any
Questions?



Thanks for
Listening

Impact of Conservation on Regional Load Growth



Conservation's Cumulative Impact on Load Growth

