Factors That Made Energy Efficiency the Northwest's Second Largest Resource

Tom Eckman
Director, Power Division
Northwest Power and Conservation Council
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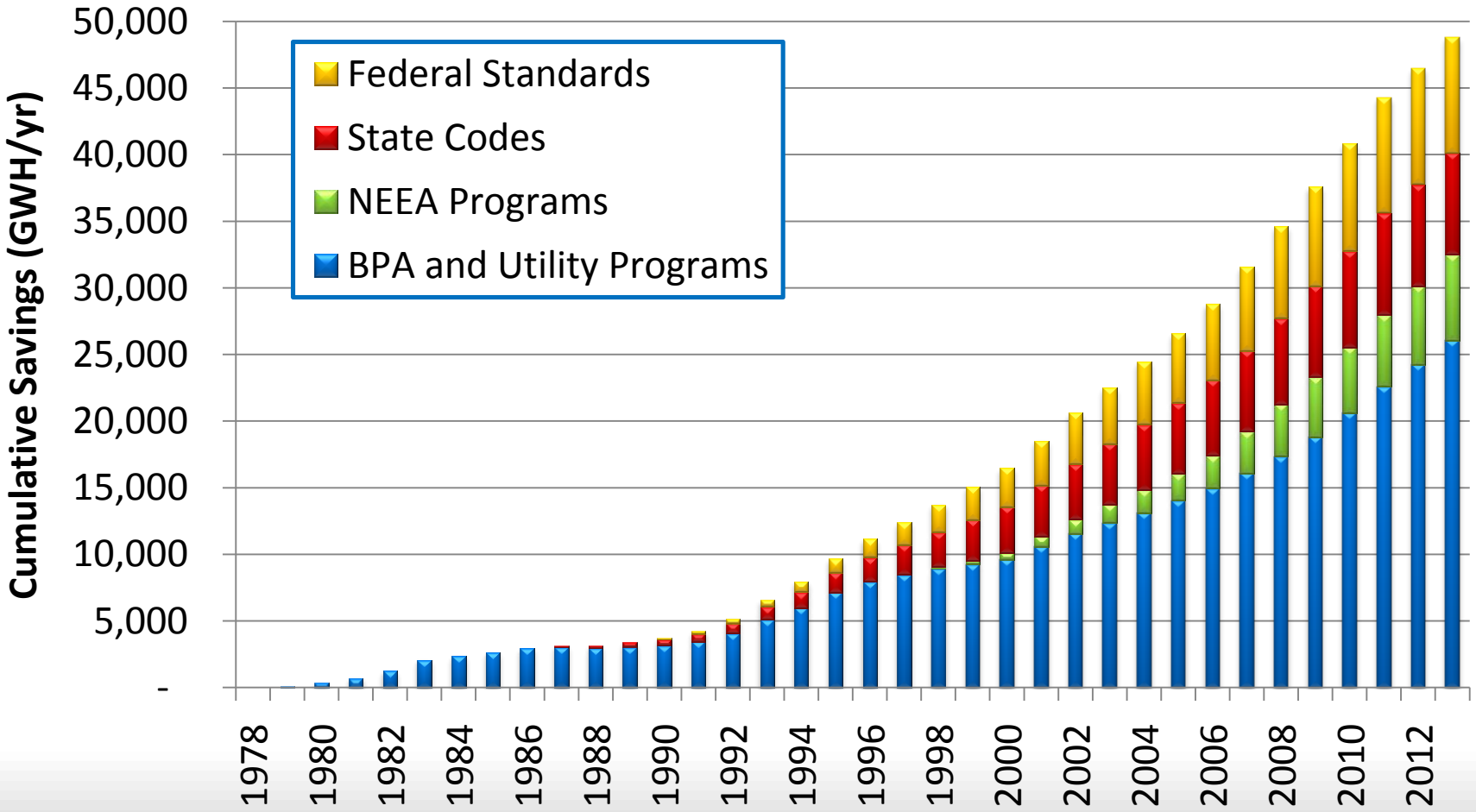
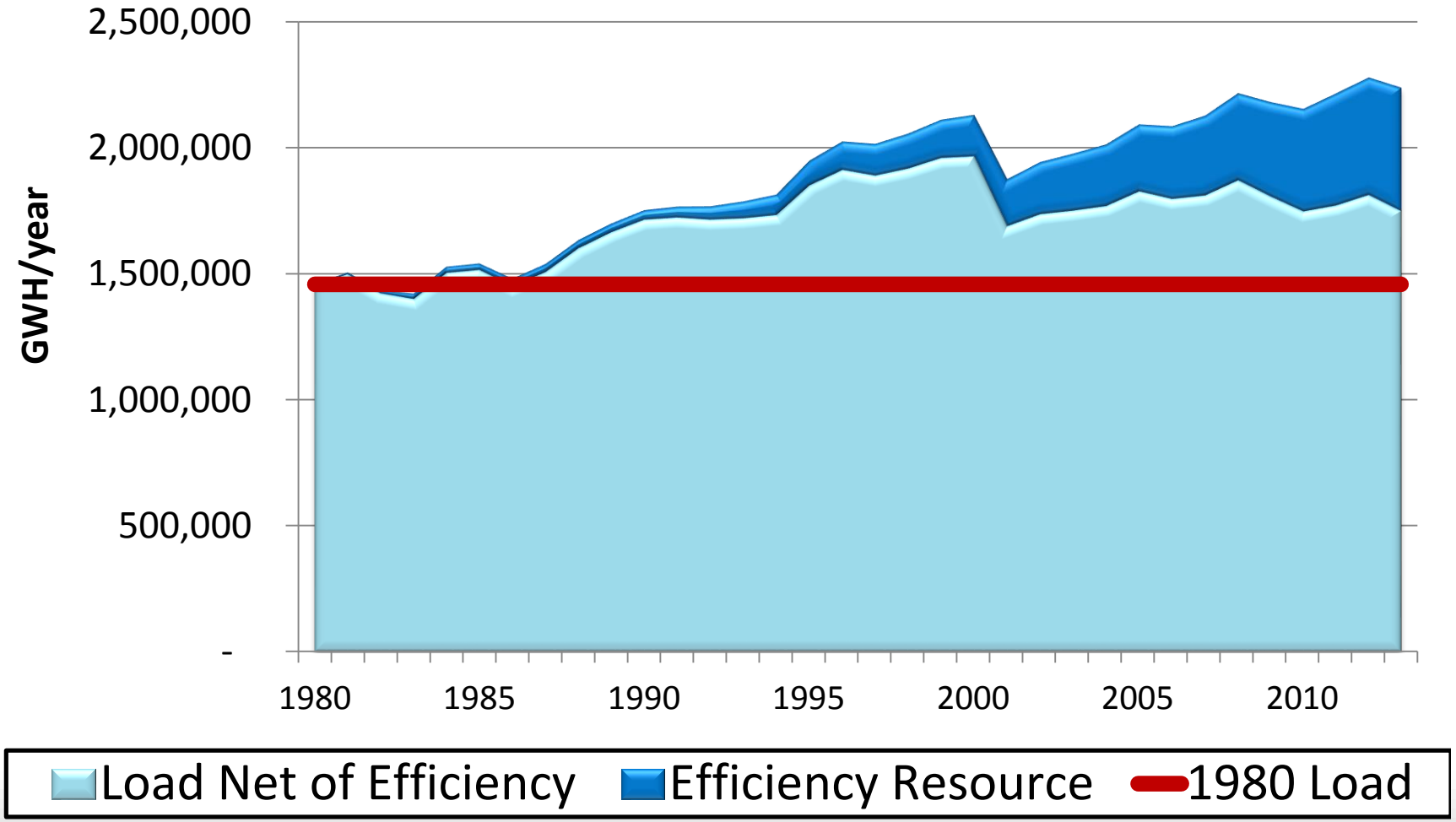
Let's Start With A Review of the Facts

Just the facts, mam

Utility and BPA Programs, Energy Codes and Federal Efficiency Standards Are Now Producing Almost 50,000 GWH/year in Savings

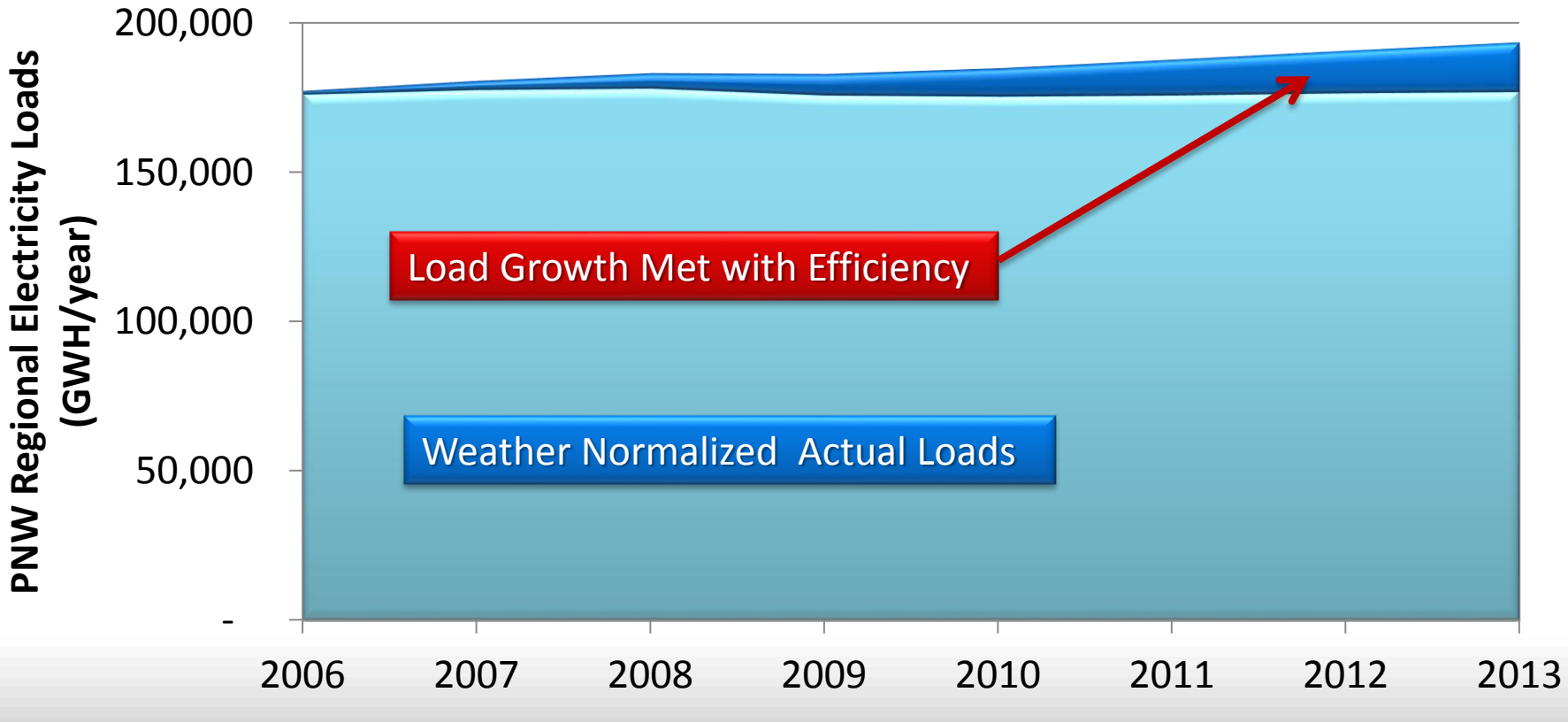


Efficiency Has Met Nearly 62% of PNW Load Growth Since 1980

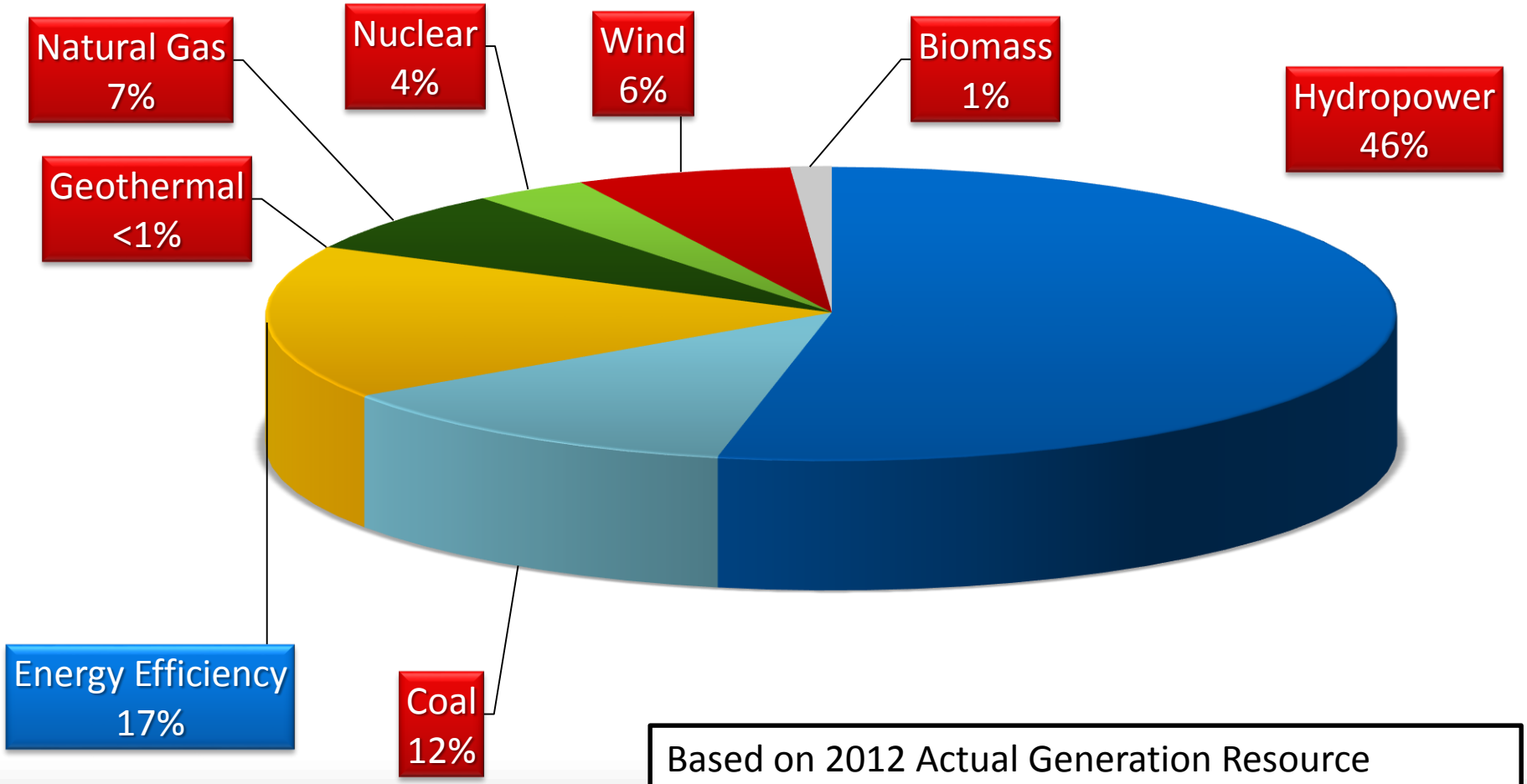


Northwest Electric Loads Haven't Grown for a Decade

Because Energy Efficiency Savings Have Offset the Equivalent of 1.1% Annual Load Growth Since 2006!



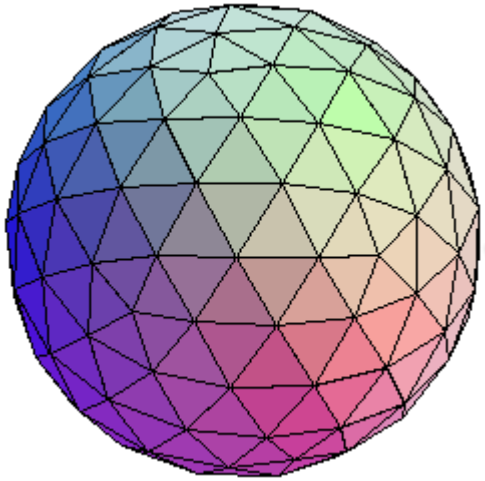
As A Result, Energy Efficiency Has Been The Northwest's Second Largest Resource Since 2012



Based on 2012 Actual Generation Resource Dispatch and Cumulative Efficiency Savings

It Started with a Triangle: Nature's Most Basic and Stable Building Block

Build Capacity



Maintain Momentum

Start Simple

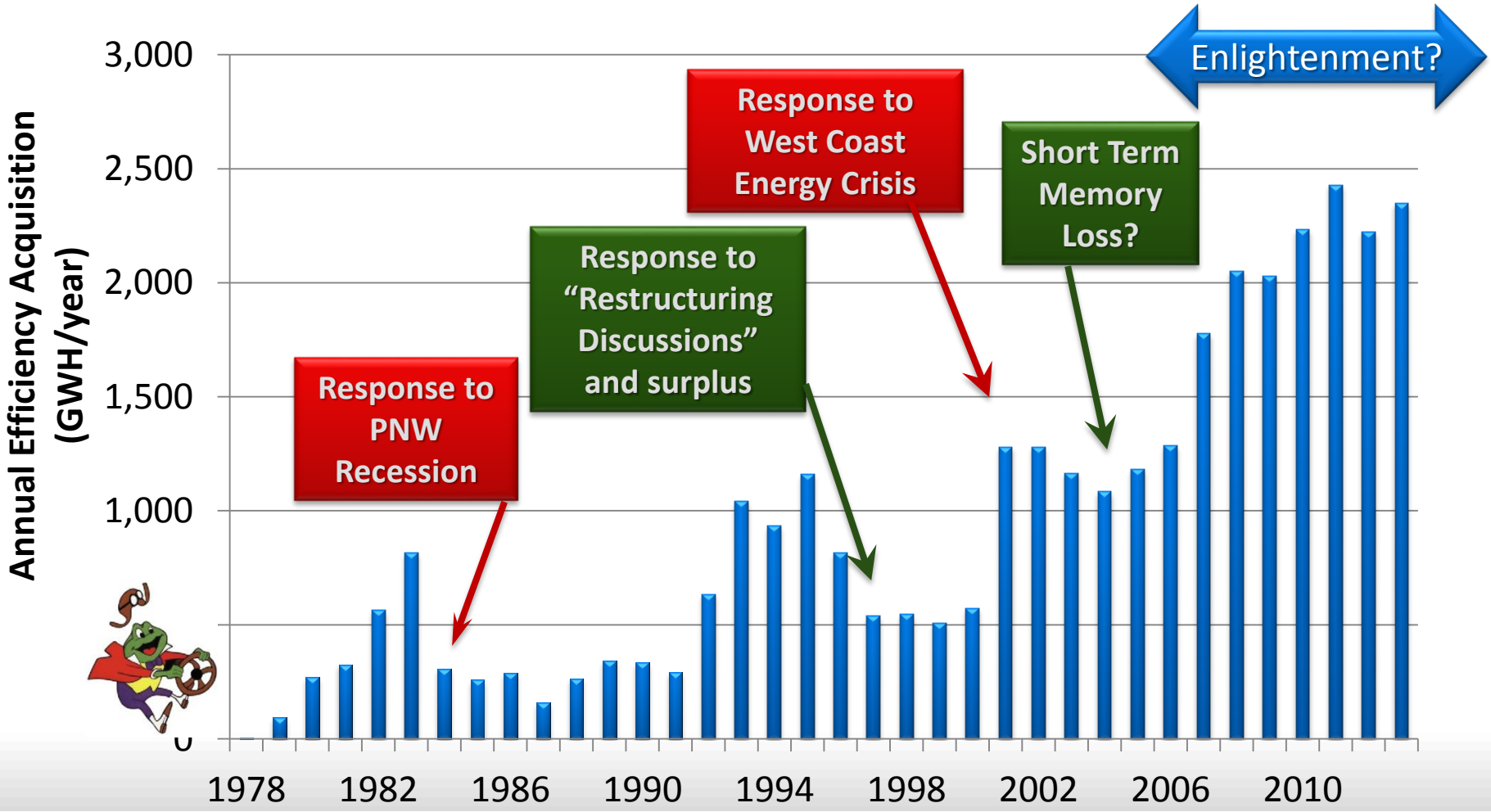
However, What Was Planned Did Not Always Happen

Expected Utility Response to Council's Initial Plan's

Actual Utility Response to Council's Initial Plan's

As A Result Northwest Efficiency Development Has Passed Through Many Phases

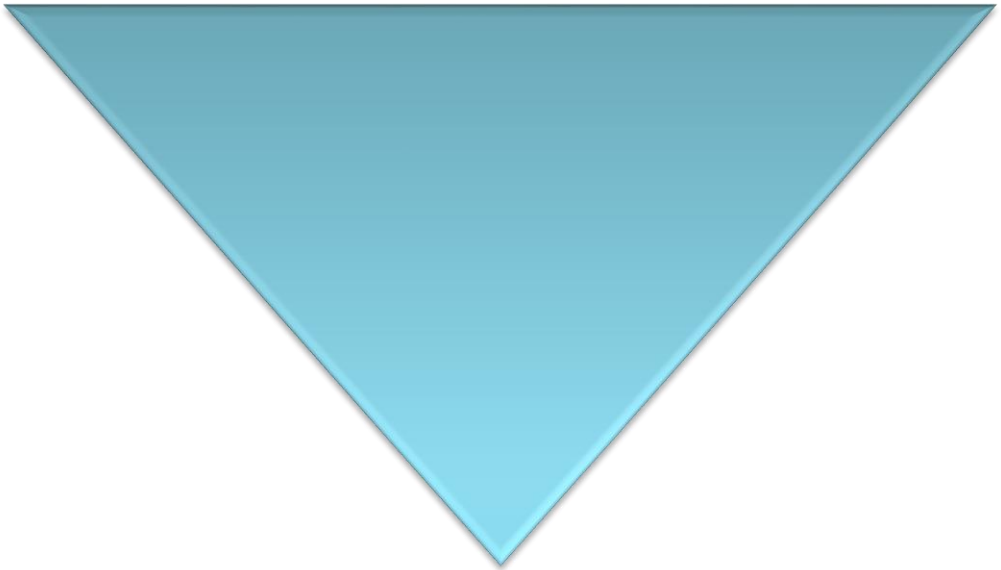
The Result Has Been Mr. Toad's Wild Ride!



Despite This "Storied" History We Succeeded by Treating Energy Efficiency As A Resource by Following Three Principles

Equality in Cost-Effectiveness Analysis

Symmetry in Resource Acquisition



Parity in Resource Planning

Things You Shouldn't Hear From Your Resource Planners

"We examined three market penetration scenarios for energy efficiency measures (20%, 50%, 80%). Incentives for energy efficiency ranged from 20% of measure incremental cost in the low case, 35% in the medium case, and 50% in the high case"*

One might reasonably ask: "How many combustion turbines or coal plants should we plan on if we are only willing to pay *half* their cost?"

*Direct quote from consultant report for large rural cooperative in the Southeast.

Parity in Planning: Three Requirements

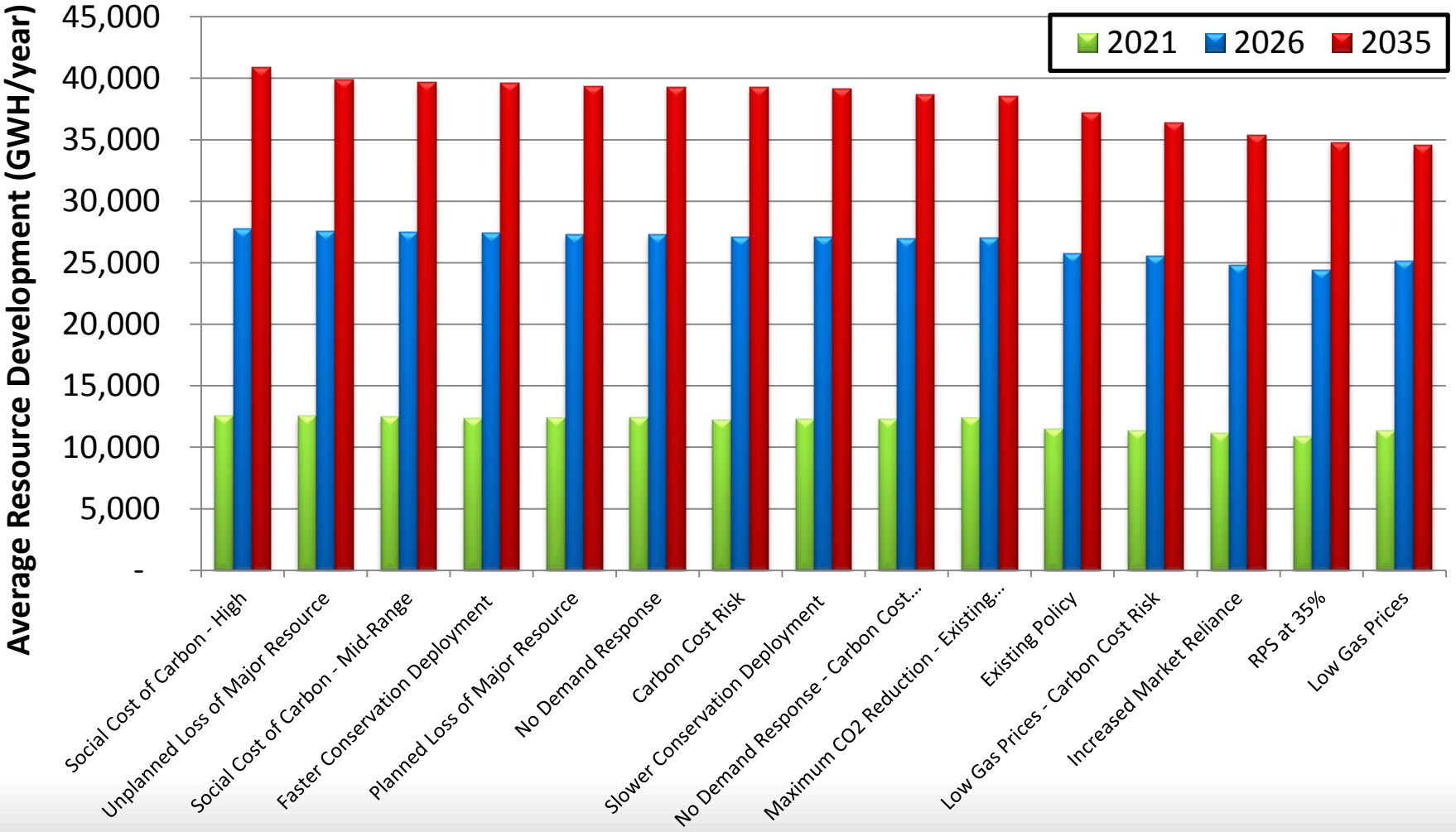
1. *Assessments* of cost and availability of energy efficiency resources are developed with the *same rigor* as cost and performance estimates for new generation

2. *Forecasts* of the "realistically achievable potential" for energy efficiency resources are not limited by utilities' "willingness-to-pay"

3. *Acquisition targets* for energy efficiency are based on cost-effectiveness (TRC) and are not "budget constrained" (e.g., limited by "public benefits charges" or "rate impacts"), or "quota" driven (e.g., minimum/maximum share of resource portfolio)

Following these Principles Efficiency Development Varies Little Across All Scenarios Analyzed for the Council's 7th Plan

Even Under Sustained Low Gas Prices or Increased RPS, Development is Reduced by Under 15 Percent

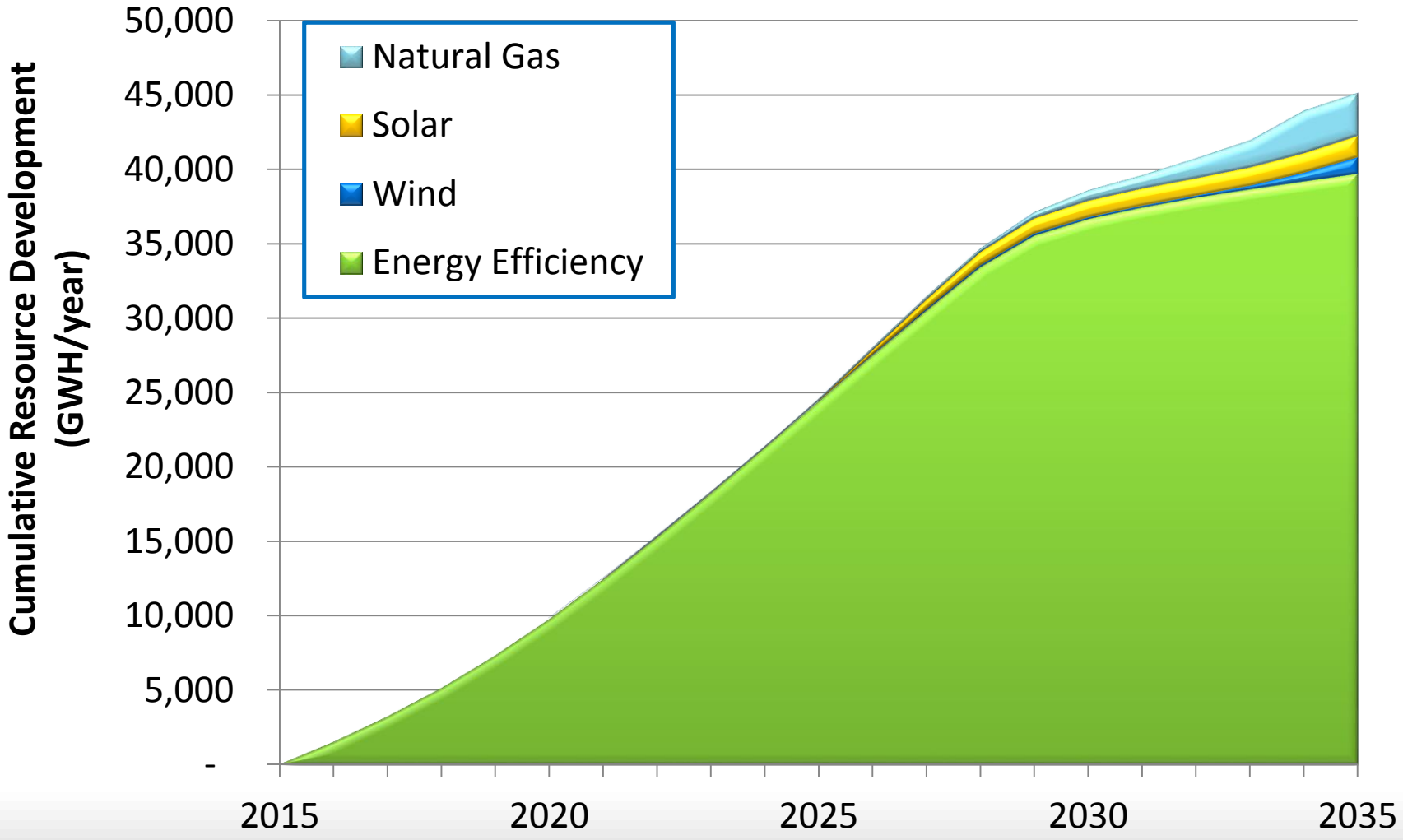


Regardless of how one looks at a question, the answer is the same

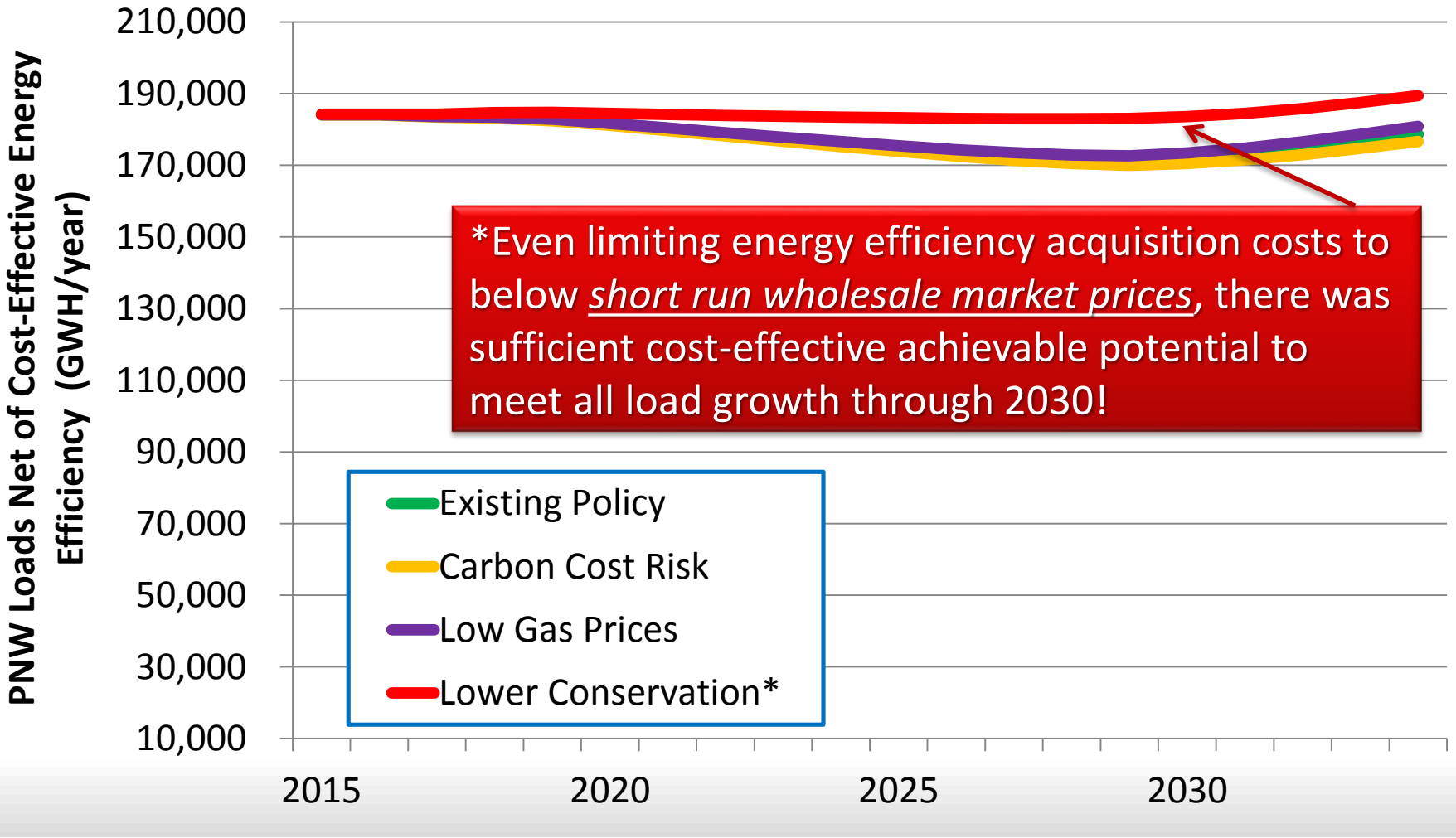
Spherically Logical

Finding - In all scenarios tested, the *least cost resource strategies rely heavily on energy efficiency* to meet both winter *capacity* and annual *energy* needs

(Almost) Draft 7th Plan Resource Portfolio



Council's Draft 7th Plan Found It Was *Realistically Achievable* and *Cost-Effective* to Meet 100% of Load Growth with Energy Efficiency in Over 90 % of the Futures Tested



Things You Shouldn't Hear From Your Resource Planners

"The cost-effectiveness screen applied in this study (to energy efficiency) is a variation of the *Participant Test*, *which compares the incremental cost to a consumer of an efficient technology relative to its baseline option, and the bill savings expected from that technology over its useful life."**

OK, this is just wrong!

Does any utility determine generating resource cost-effectiveness based on customer economics?

*Direct quote from report done by an electric utility research institute.

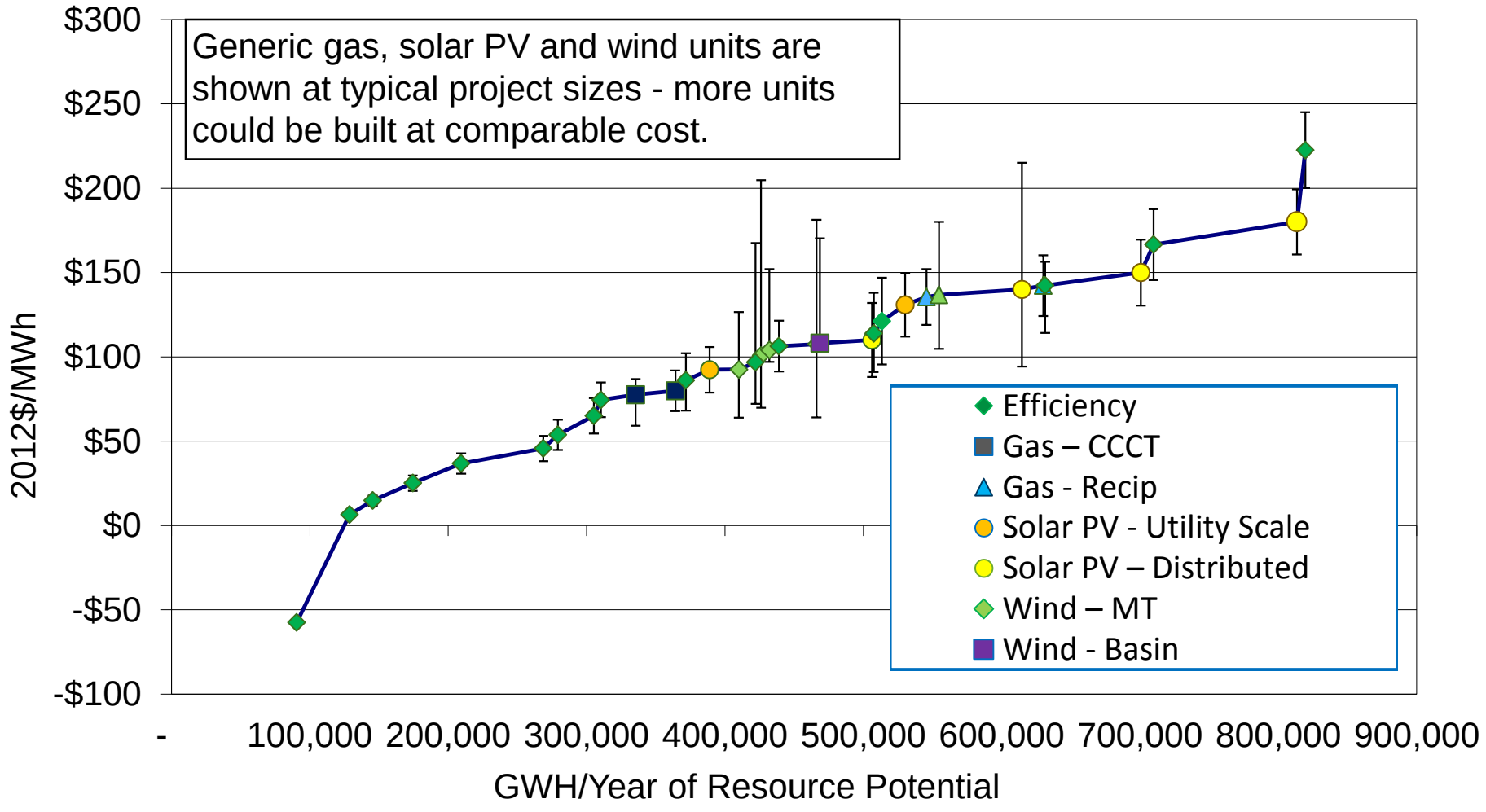
Equality in Cost-Effectiveness Analysis: Three Requirements

1. Consider all *costs* and *benefits* for all resources, including their *non-energy costs* and *risks*

2. *Equity tests,* while important, should not be substituted for measures of *economic efficiency* or *risk*

3. *Just because its energy efficient, doesn't make it cost-effective*

Equality in Cost-Effectiveness Analysis Compares Energy Efficiency Directly With Generation Options

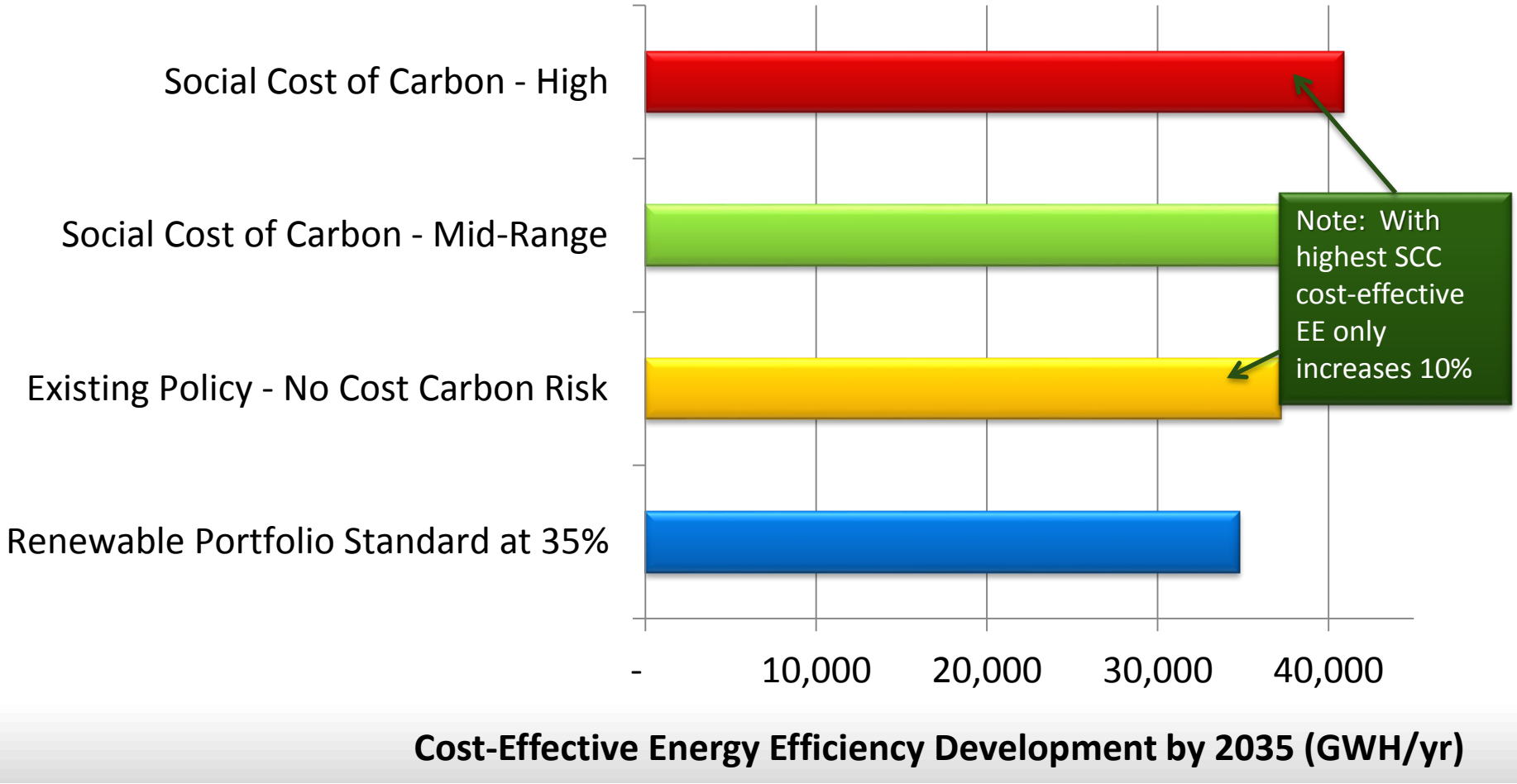


Equality in Cost-Effectiveness Analysis:
Compares <u>all</u> resources based on their <u>*total*</u> costs and benefits

Yes (Marty) – This can a burden, but to do less discriminates against efficiency by ignoring its full value.

It Must Also Include Risks and Non-Energy Benefits

Example:
Consideration on Future CO2 Costs & Risks Increases the Amount Energy Efficiency Found "Cost-Effective"



Things You Shouldn't Hear From Your Resource Planners

"Total Resource Cost Test was calculated by taking the ratio of net benefits over net costs, including both participant and utility costs"*

Total means "all", it cannot be "net" of anything, unless it's a subtotal.

not the same as "program cost-efficiency"

Power system loads (i.e., need for new generation) and CO2 emissions are both reduced by free-rider savings, hence they provide equal benefits.

*Direct quote from consultant report for large gas utility in the Southwest

"Free Ridership" assumes that the energy efficiency action taken by "free riders" would have been equally available and equivalently priced in that "parallel universe" that is identical to ours in every way except for the billions of ratepayer dollars invested in energy efficiency over the past 30 years

Is this girl another Free-Rider?

Equality in Cost-Effectiveness Analysis Ignores Equity Impacts

1. We do not judge the cost-effectiveness of new generating resources by gauging their cost impacts on one segment of consumers compared to another

2. *Equity* is important, but it is not a measure of *economic efficiency* or *risk*

3. *Cost-Effectiveness* metrics are used to determine the lowest cost resources to acquire
   - *Equity* considerations can then determine how the costs of those resource acquisitions are distributed

Equality in Cost-Effectiveness Analysis: Also Means Avoiding Reverse Resource Discrimination

Embedding savings from existing programs without testing cost-effectiveness unfairly favors energy efficiency.

Just because we're already doing it, doesn't automatically make it a cost-effective resource going forward.

Symmetry in Resource Acquisition : Three Requirements

1. Utilities don't ask generating resource developers to "cost-share", so we should not require "EE developers" to cost share

2. Consumer payments for cost-effective measures are legitimate *resource acquisition purchases* so don't refer to them as *financial incentives* or worse yet - *subsidies*!

3. *Acquisition payments* can exceed a consumer's cost when the cost of savings are below avoided cost
   - That's OK, because some generating resource developers make a profit
   - Parsimonious acquisition payments attract larger shares of those who are most likely to take action, therefore *low incentives produce high "free-ridership", resulting in lower program cost-efficiency (but not TRC cost-effectiveness)*

AGAIN - Things You Shouldn't Hear From Your Resource Planners

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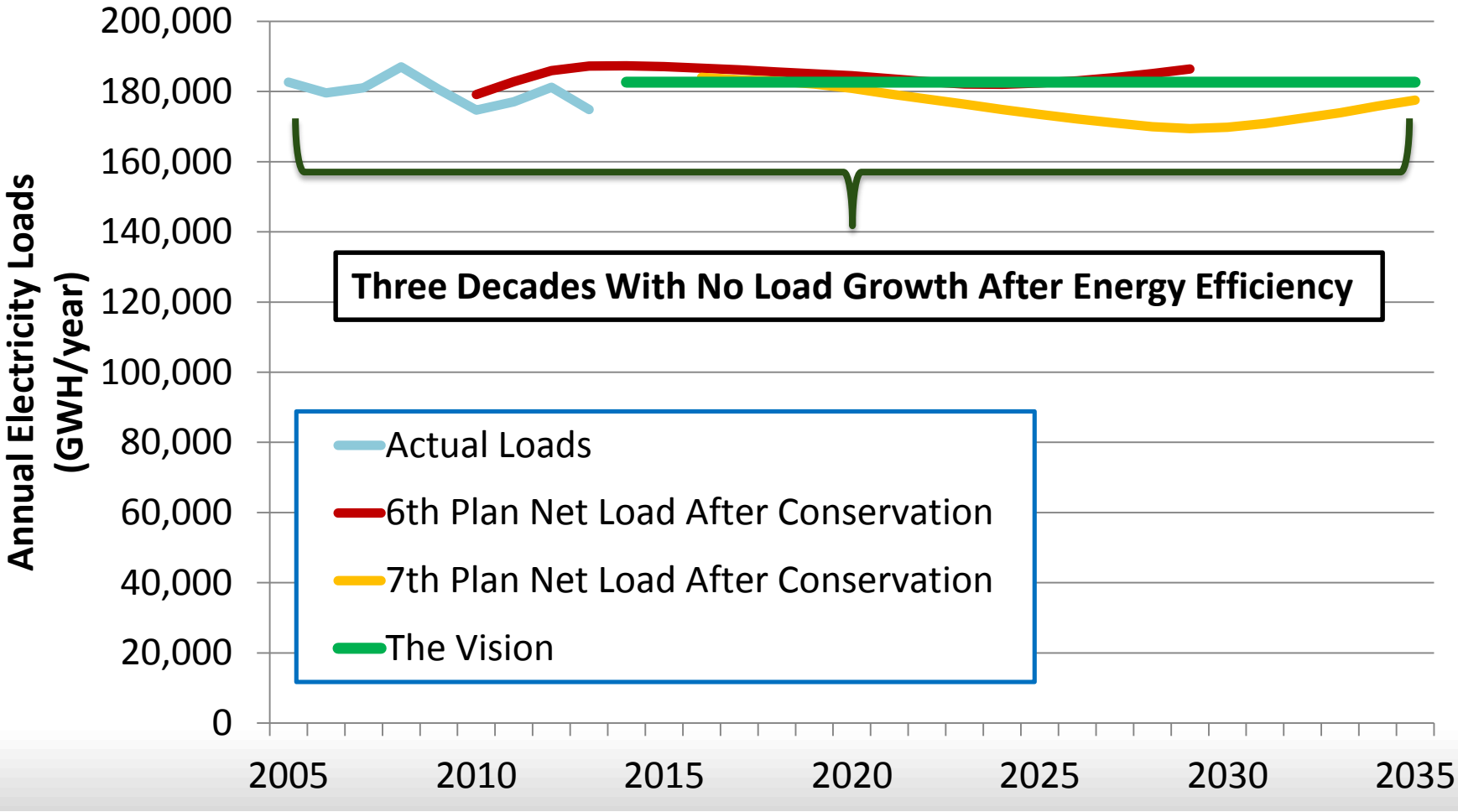
*Direct quote from consultant report for large rural cooperative in the Southeast.

Securing Equal Treatment of Efficiency

- Discrimination is subtle and pervasive
- Correcting it requires changing planning, implementation and evaluation practices and assumptions
- Does not mean "special treatment"
- Requires vigilance

The Northwest's Lowest Cost and Risk Resource Strategy Delays the Opportunity to Make Bad Choices

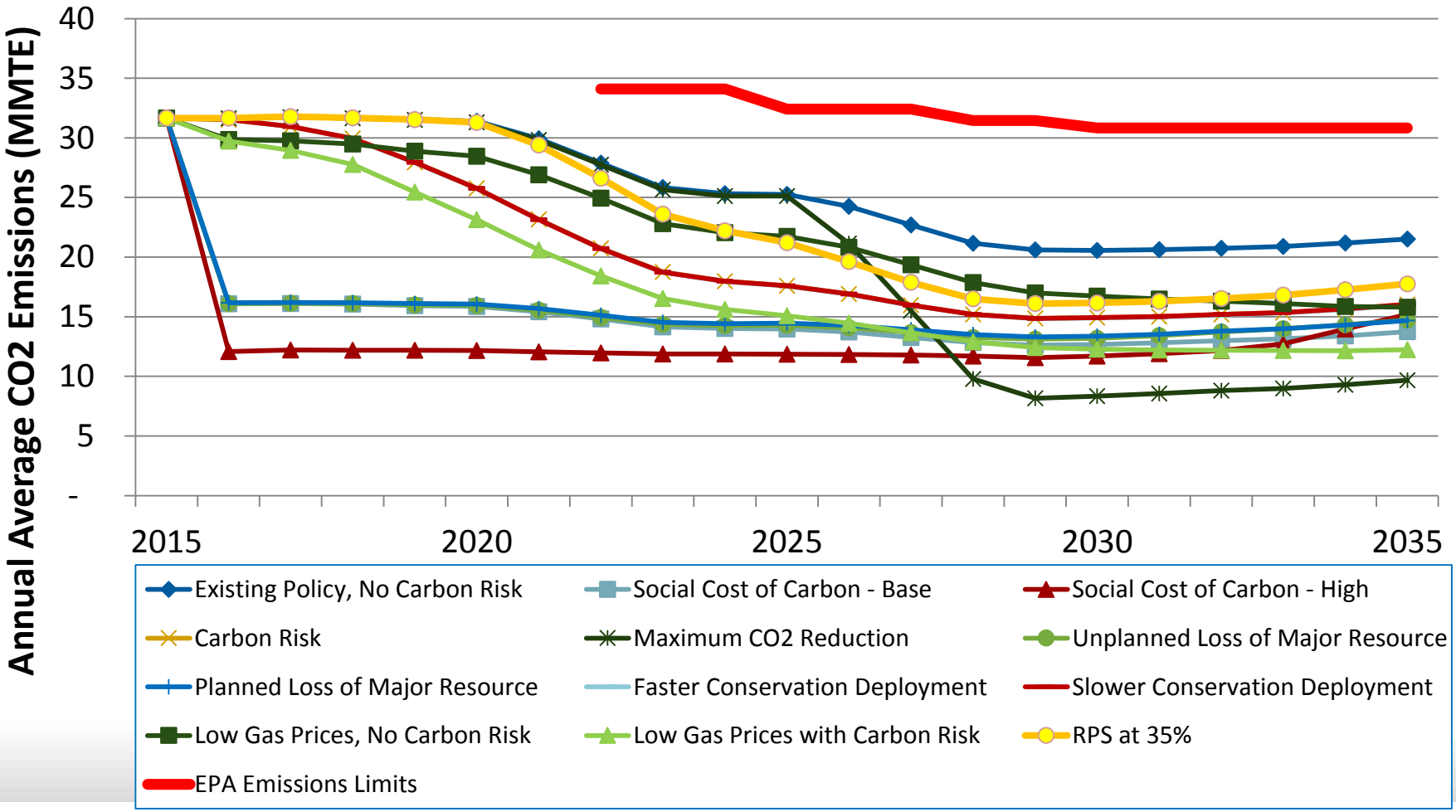


No! Try not. Do, or do not. There is no try.

--YODA, *Star Wars Episode V: The Empire Strikes Back*

Backup Slides

Annual Average CO2 Emissions for Least Cost Resource Strategies Are Below EPA's Clean Power Plan [111(b) & 111(d)] Emission Limits *At the Regional Level*



What Really Made It Happen?

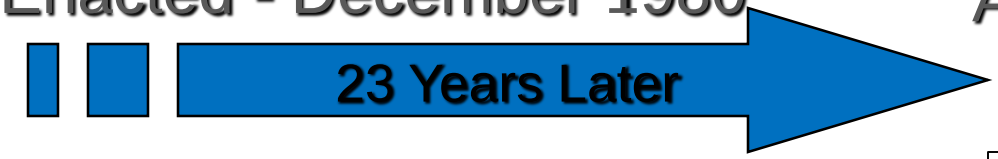
- It was "the law" – Northwest Electric Power Planning and Conservation Act of 1980
  - Defined EE as a Resource
  - Required acquisition of "least cost" resources
  - Made EE development first priority (23.33 years before CA "loading order")
  - Required public involvement in planning
- The Council was as persistent as gravity in

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.