

The Sixth Northwest Electric Power and Conservation Plan



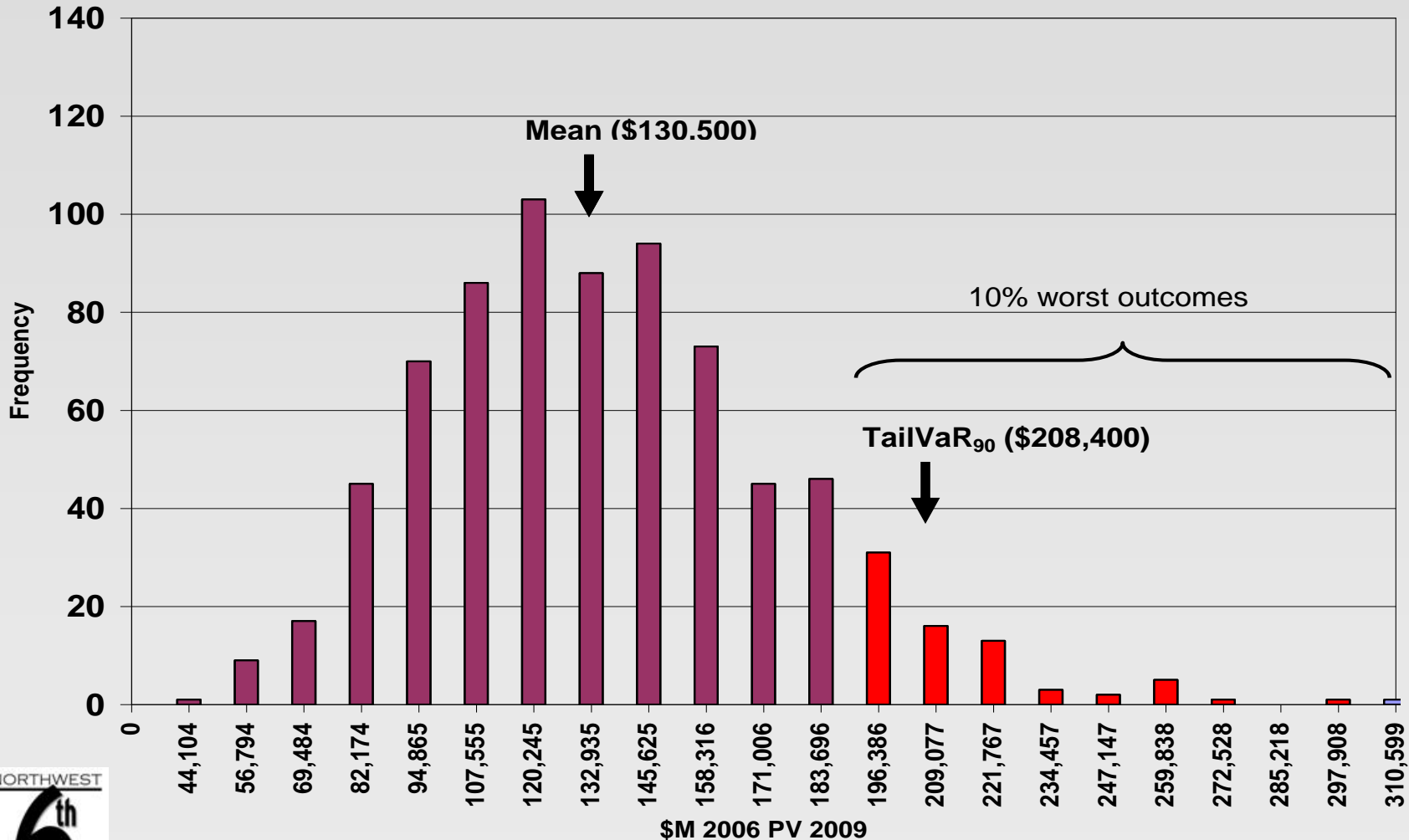
What is the Council's Power Plan?

- 20-year forecast of regional electricity demand
- Recommended resource strategy for meeting forecasted demand
- Actions to facilitate implementation of recommended strategy in first 5 years
- Plan revised at 5-year intervals; reviewed 2 years following adoption

Goal of the Power Plan

- Recommend a **low-cost and low-risk resource strategy** to assure the region of an adequate, efficient, economic, and reliable power system, while supporting implementation of the Fish and Wildlife Program

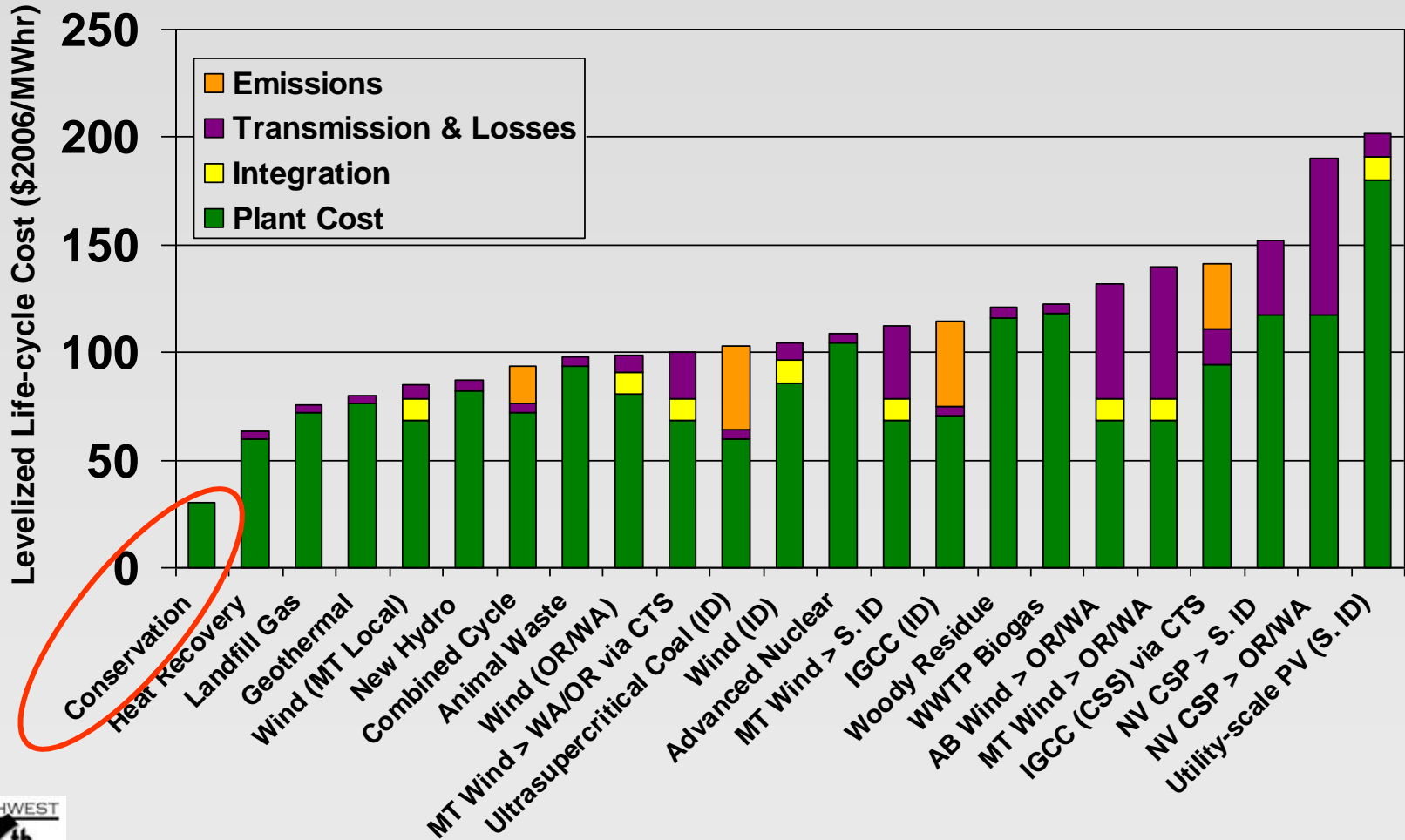
Assess Cost and Risk: One Portfolio over 750 Futures



Resource strategy in a nutshell

- 1200 MWa of new conservation by 2014
- New generation to meet RPS with emphasis on small-scale renewables and cogeneration
- Additional cost-effective generation if needed for monthly energy, firm capacity or flexibility
- Improve power system operating procedures to expand ability to integrate wind power
- R&D for promising new efficiency, demand response and low-carbon generation technologies

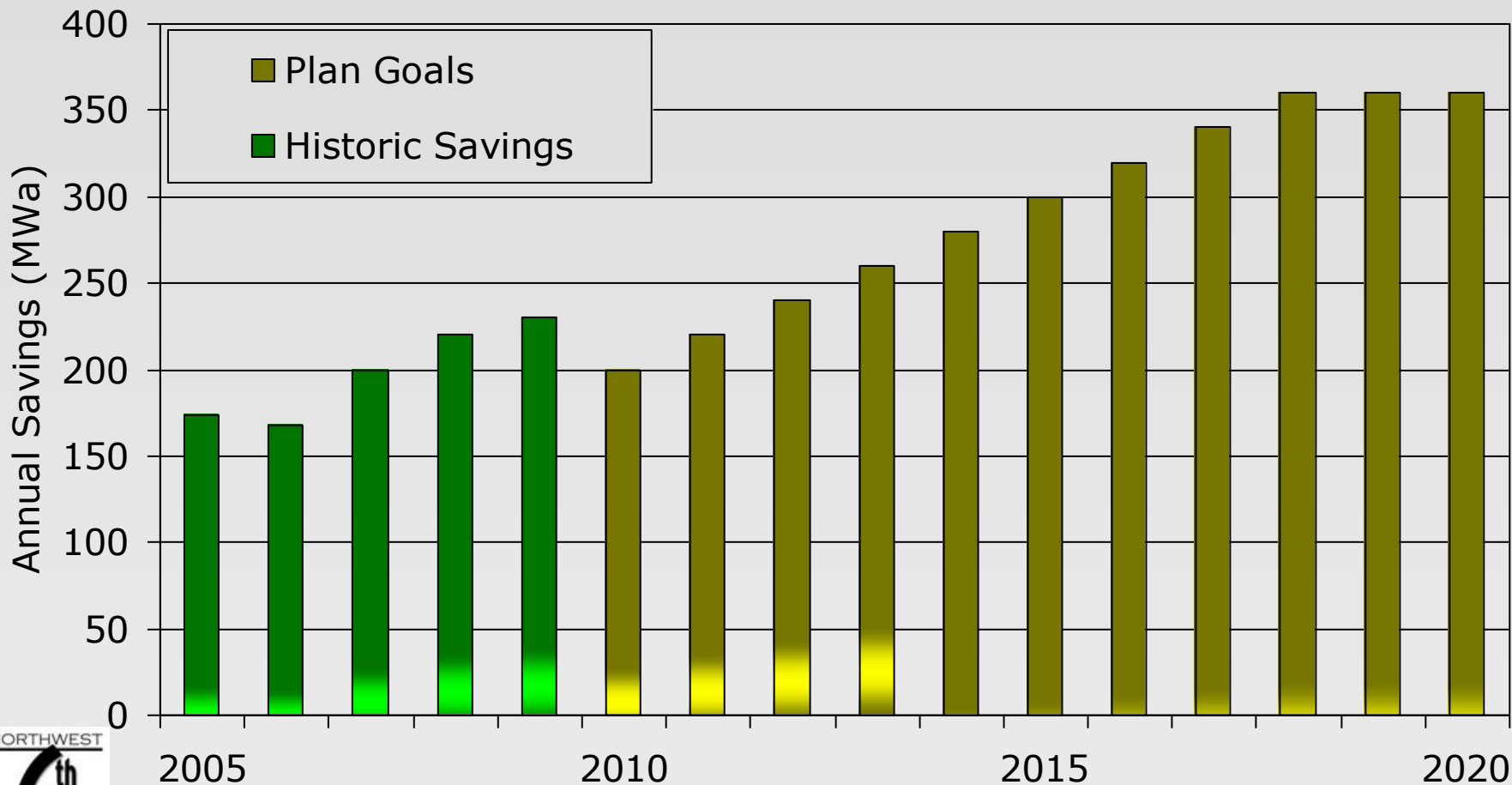
Resource options considered



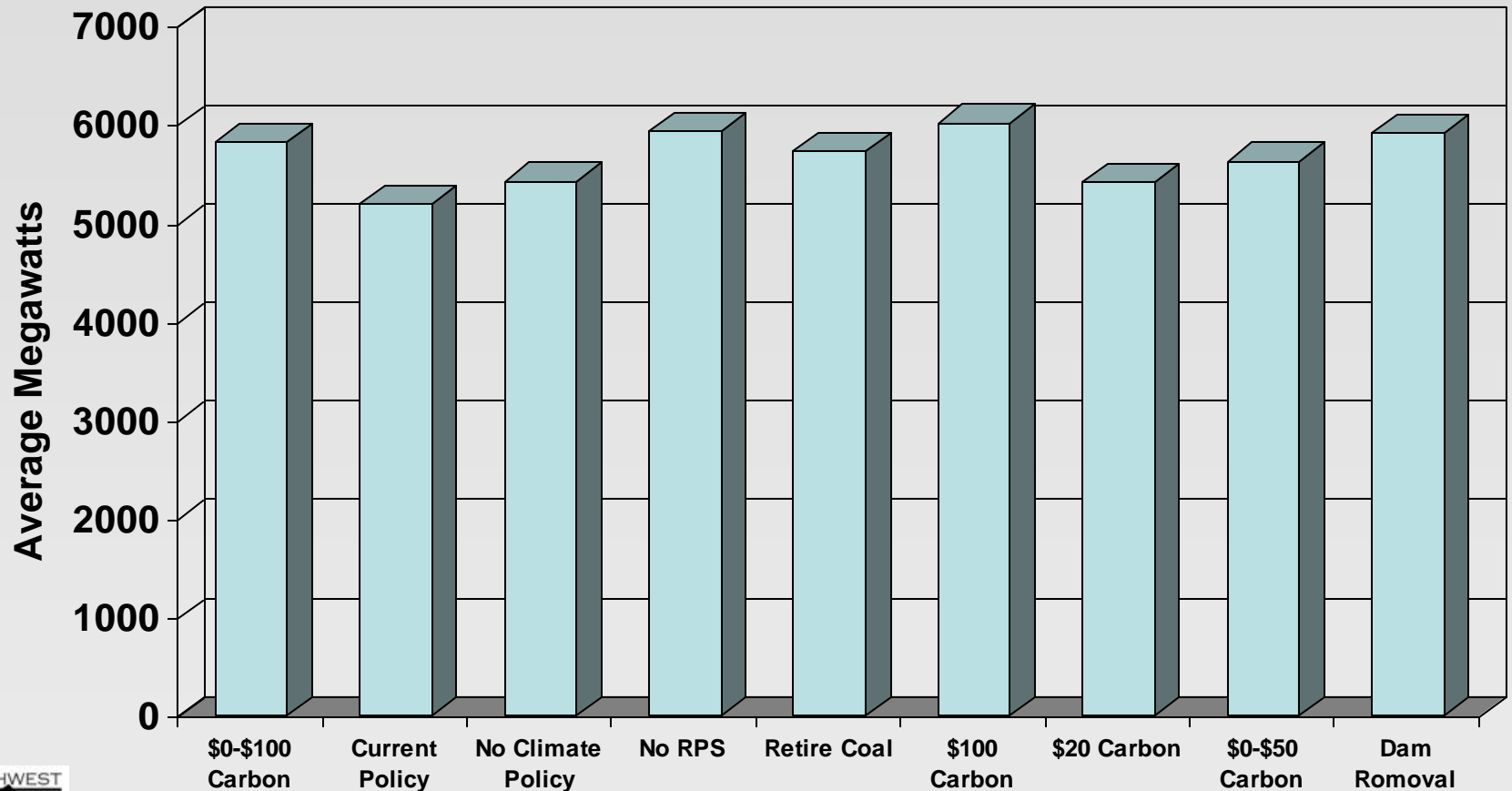
Key Findings - Conservation

- The lowest-cost resource
- Can potentially meet 85% of demand growth
- Avoids the risks of volatile fuel prices and potential carbon penalties
- Contributes to meeting peak demand as well as annual energy needs
- It creates local jobs and economic activity

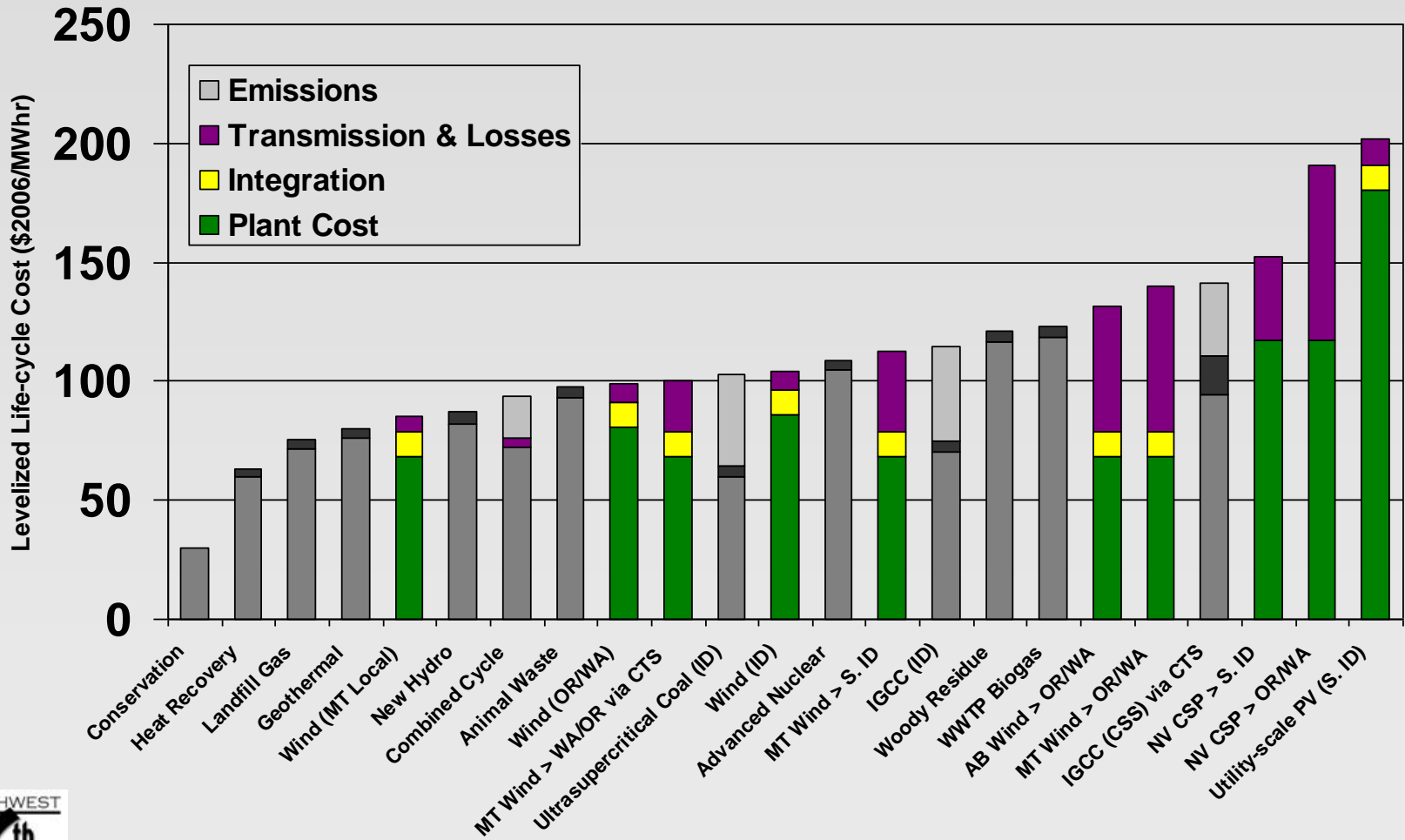
Draft 6th Plan Calls for A Doubling of Annual Energy Efficiency Savings the Over Next Decade



Conservation is Cost-effective Under Many Different Future Scenarios



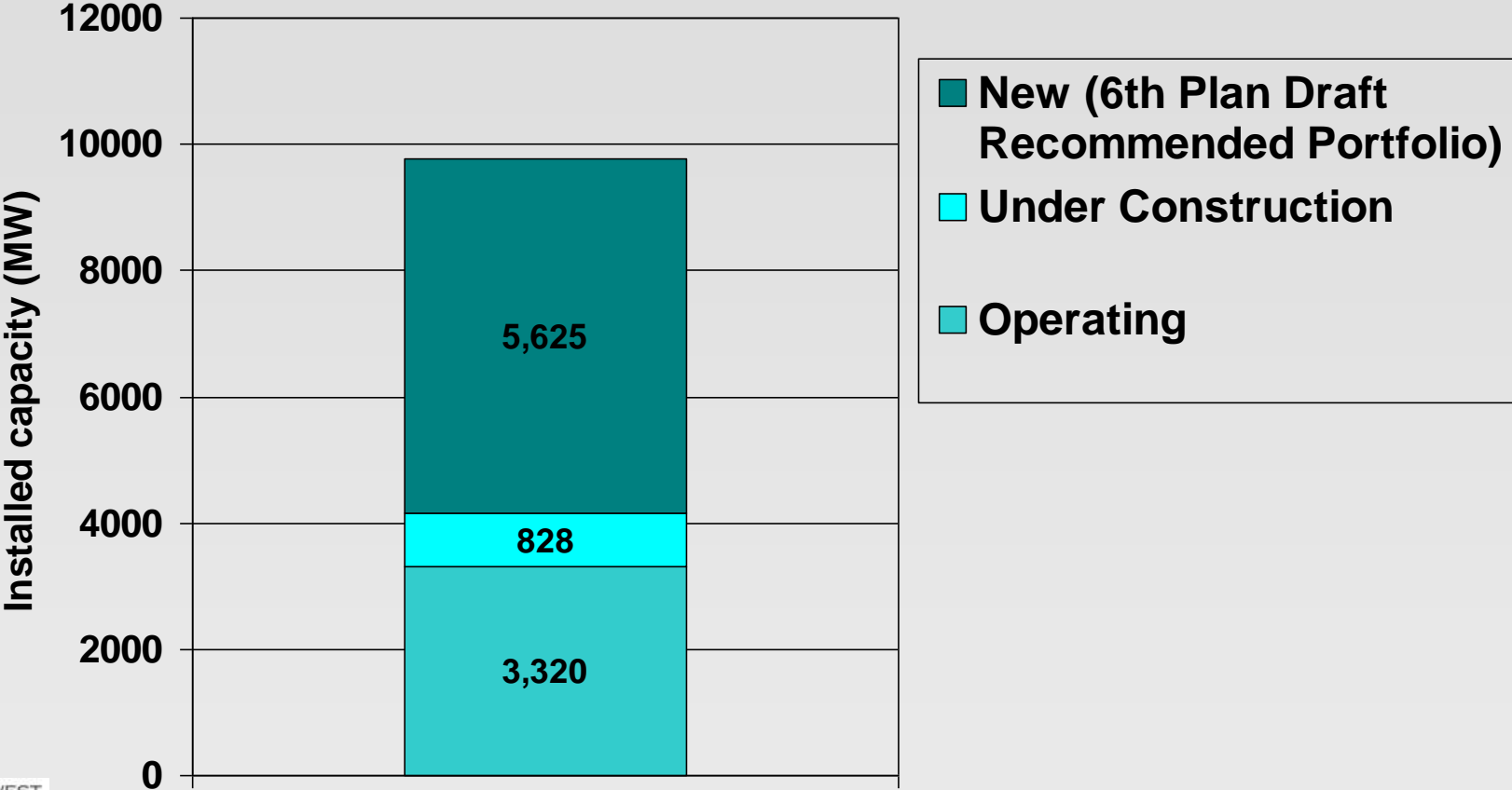
Intermittent resource options



Key Findings - Renewable Generation

- Wind is cost-competitive with other generating technologies and is needed to meet renewable portfolio standards (RPS)
- Renewables avoid the risks of volatile fuel prices and potential carbon penalties
- Variable output of wind creates integration challenges for the power system

Cost-effective Wind Generating Capacity

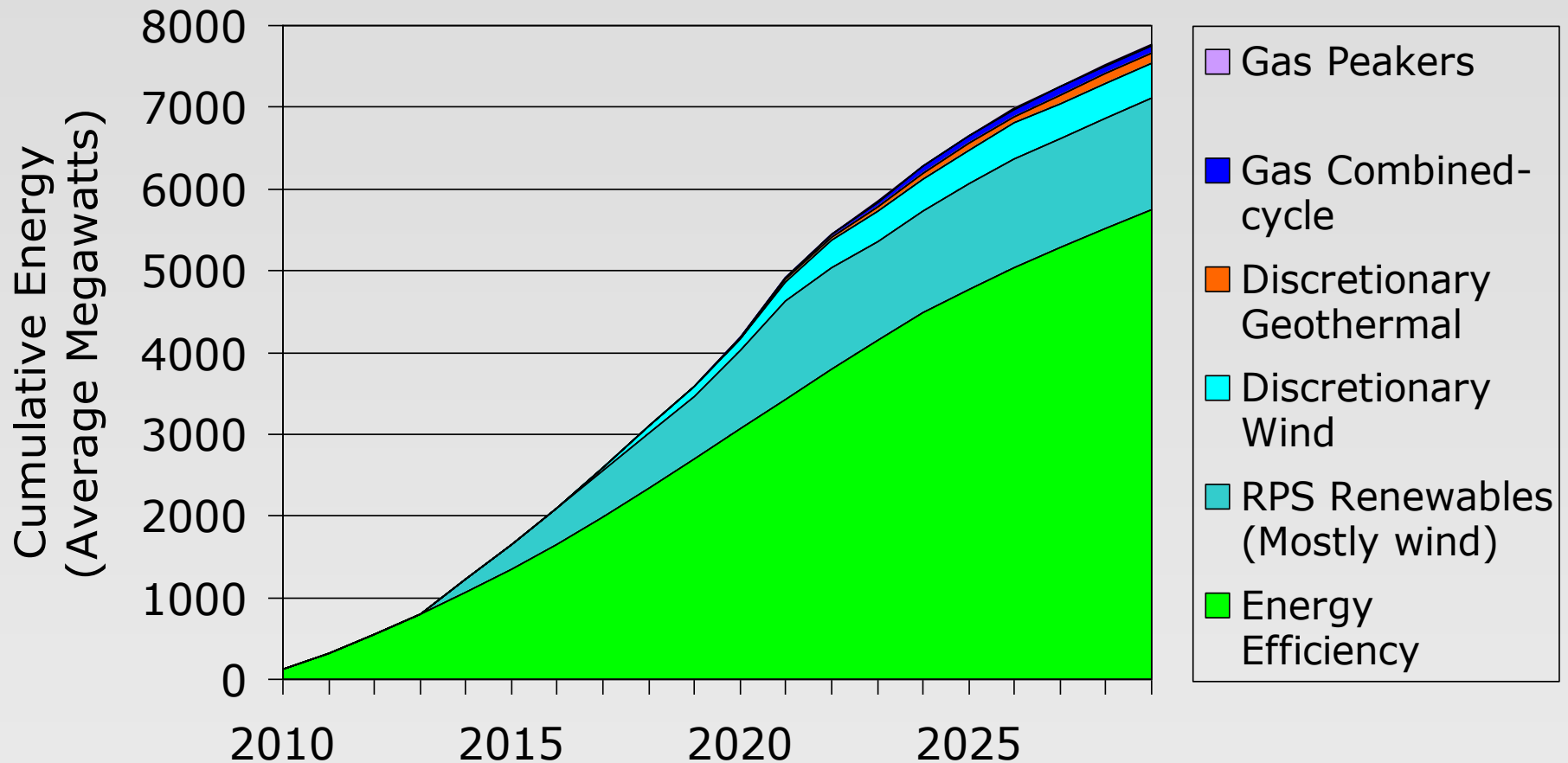


Existing & Under Construction as of Sep 30, 2009 within four-state WECC region.

Key Findings – Natural Gas

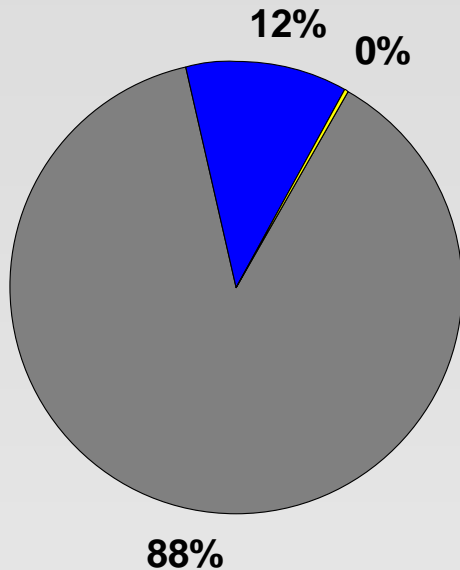
- Natural gas carries fuel-price risk, but has much lower carbon emissions than coal
- Some utilities may need to acquire natural gas plants in the near-term to provide energy, capacity or wind integration services
- In the longer-term, natural gas generation may also be needed to protect against high carbon costs and rapid demand growth

Recommended Resource Portfolio*



*Expected Build Out. Actual build out schedule depends on future conditions

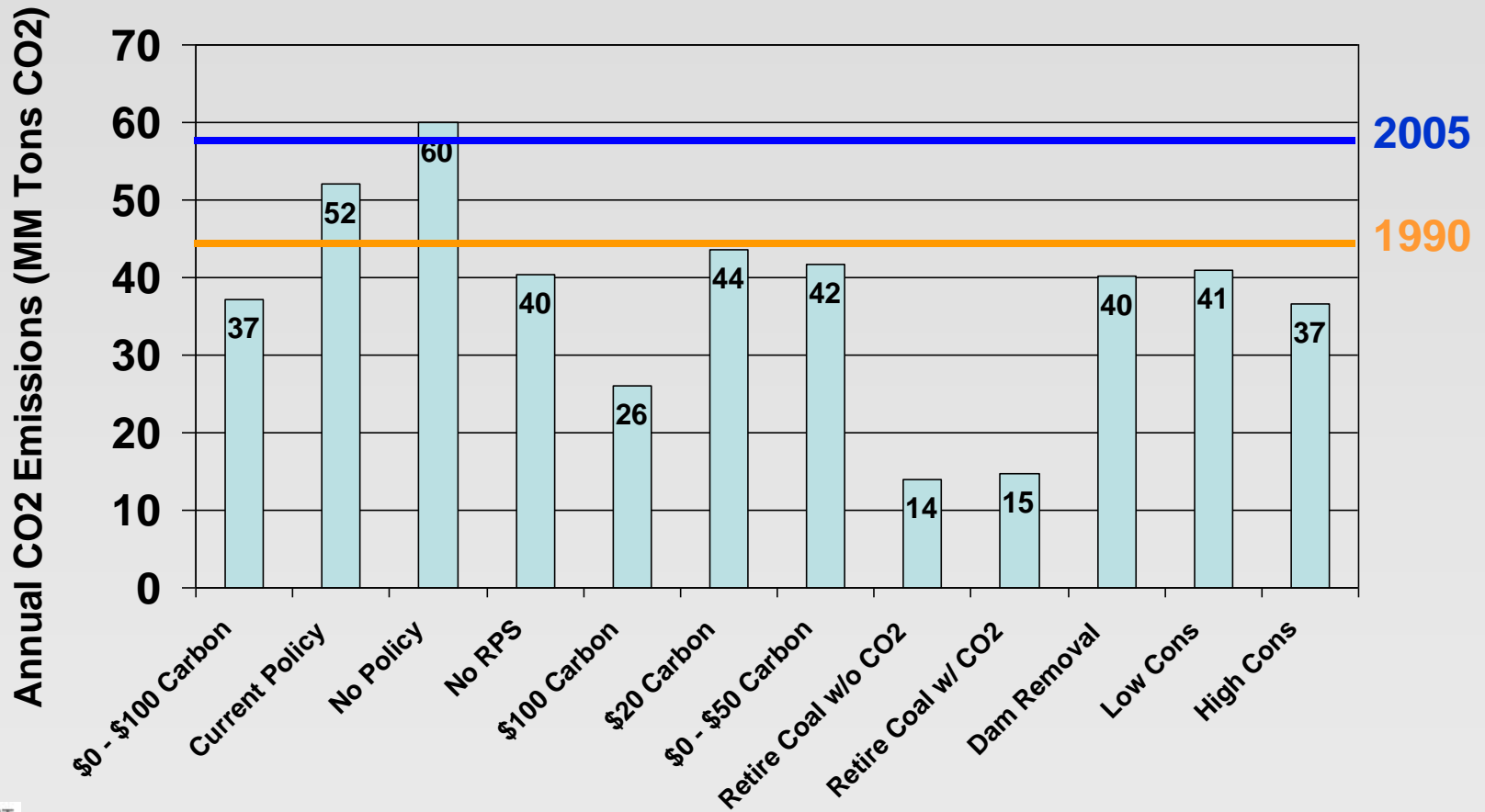
Key Findings – Carbon Risk



- Coal Plants
- Natural Gas Plants
- Other

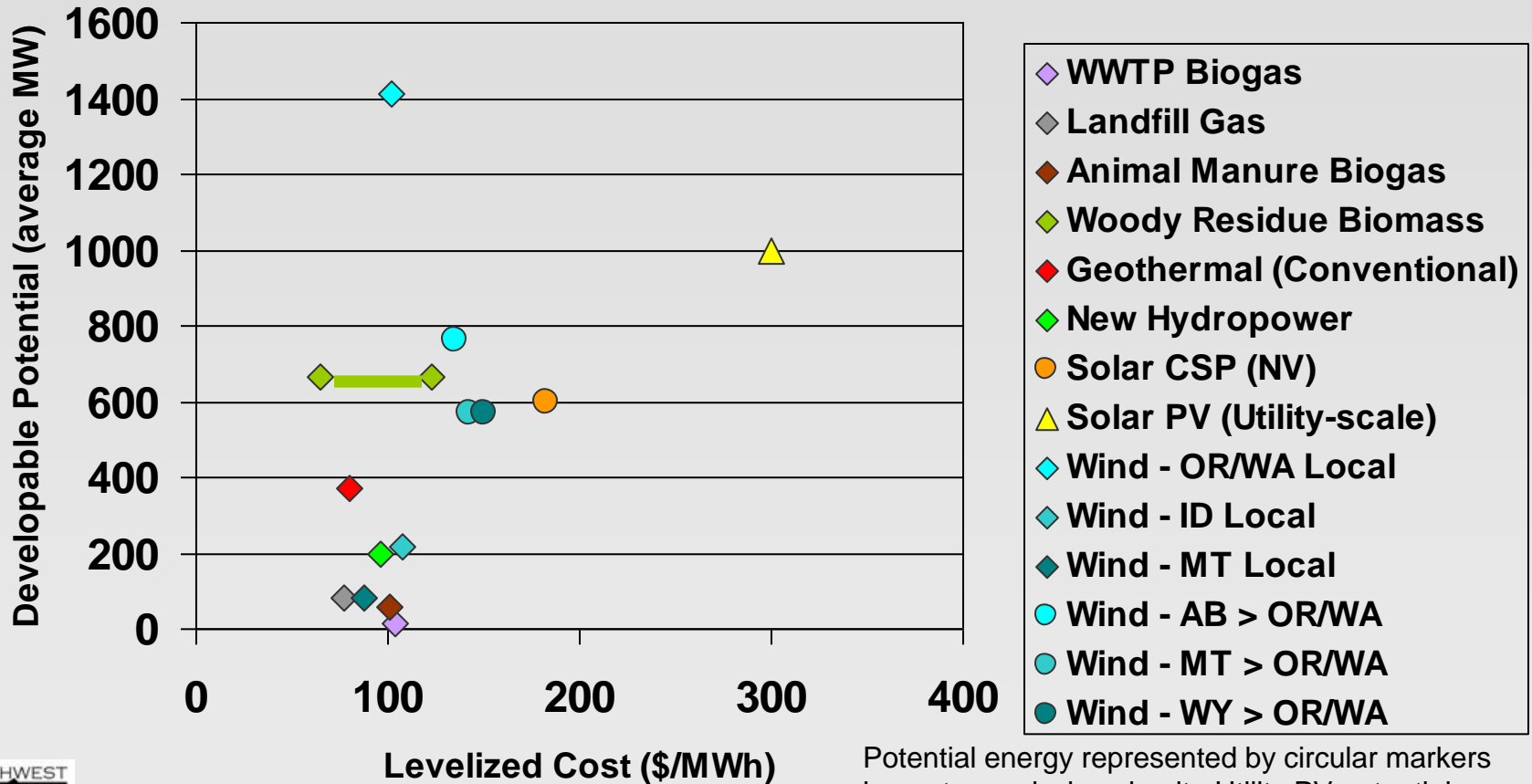
- 88% of power system CO₂ is from existing coal units
- Significant reductions of power system CO₂ emissions require reduced coal use
- Reduced coal use would require additional natural gas generation

Effects of Scenarios on CO2 Production (expected by 2030)

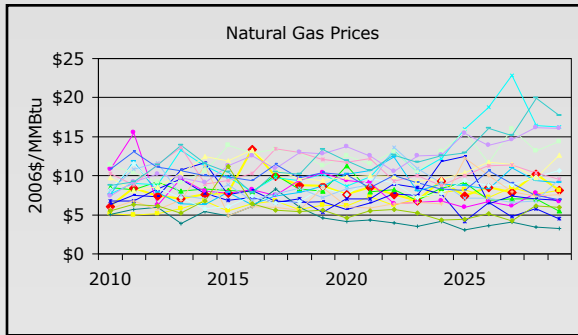
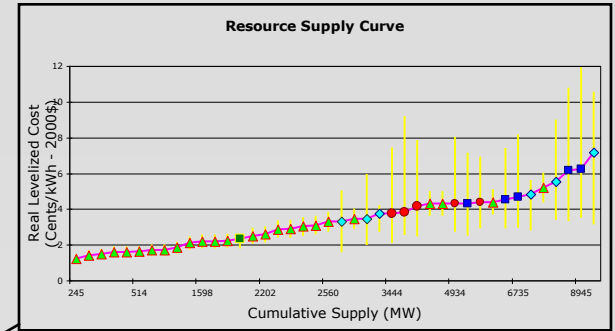
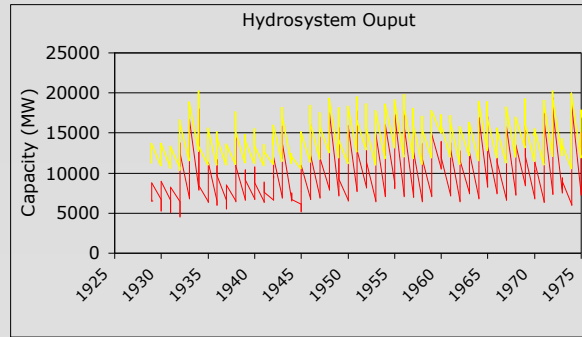
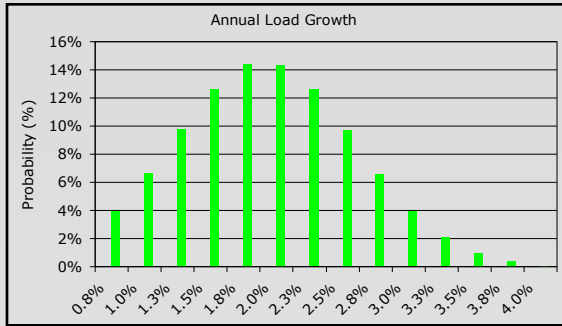


Extra Slides

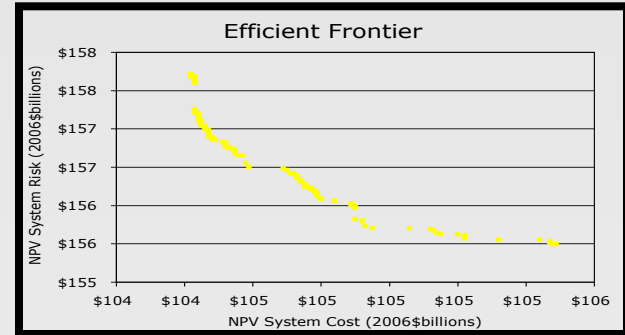
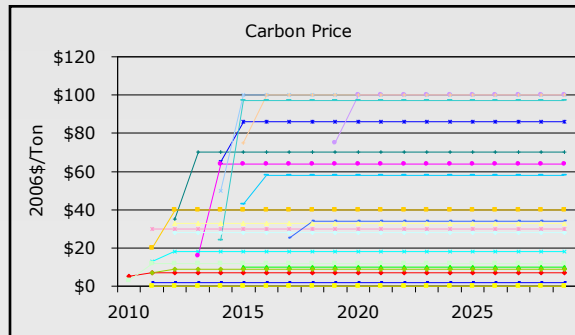
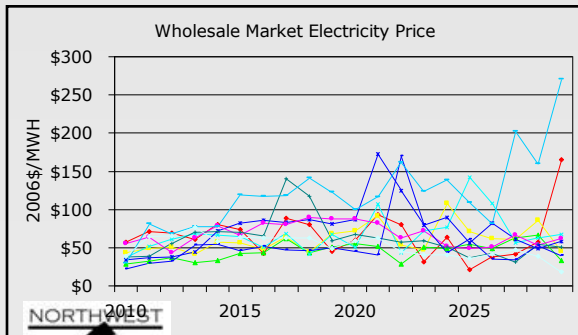
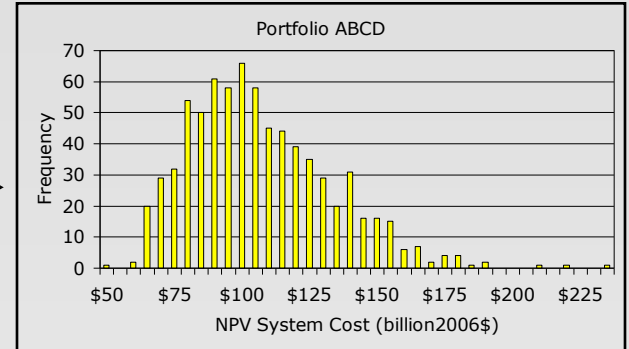
Potentially developable renewables



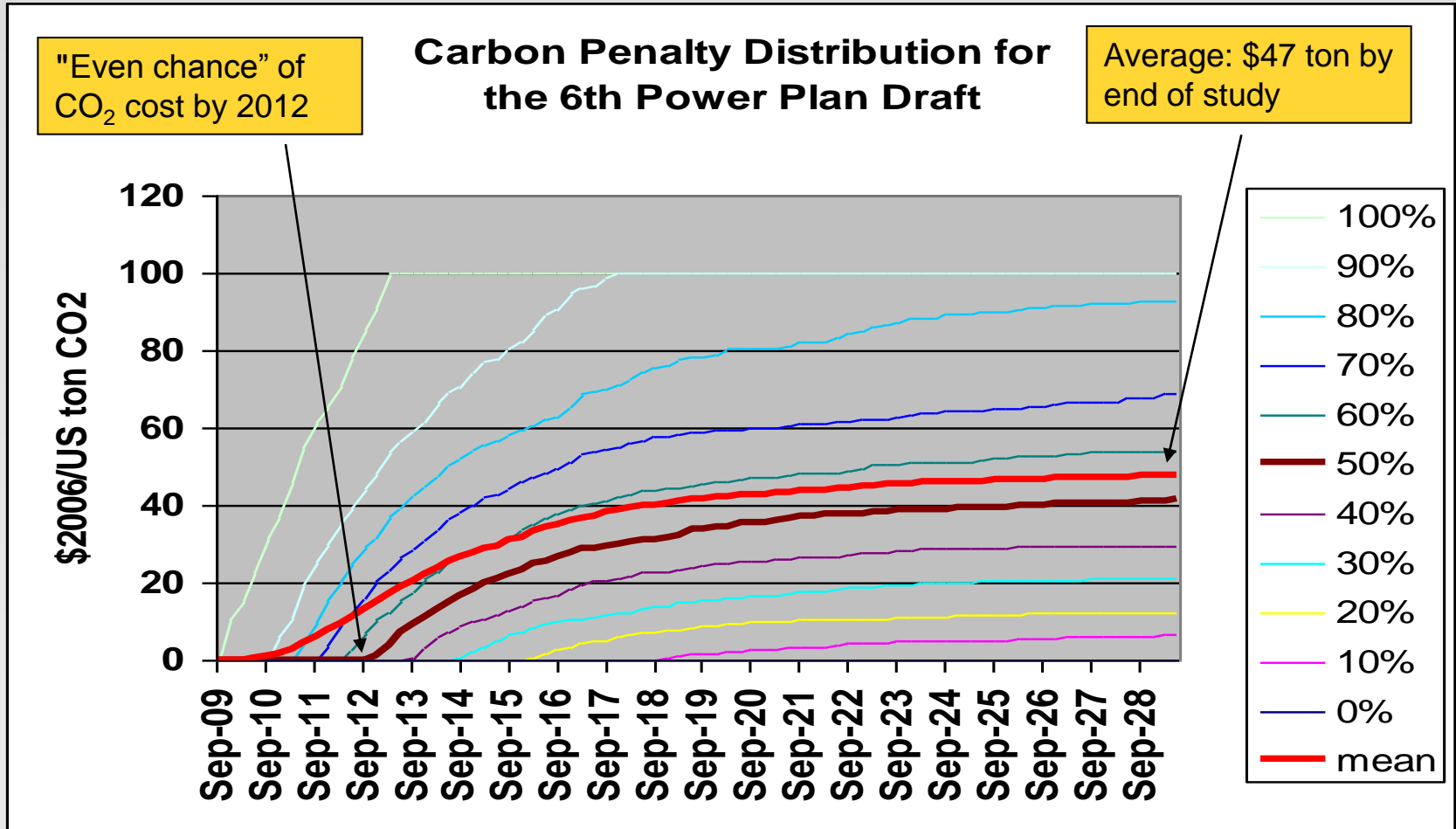
Portfolio Model Analysis



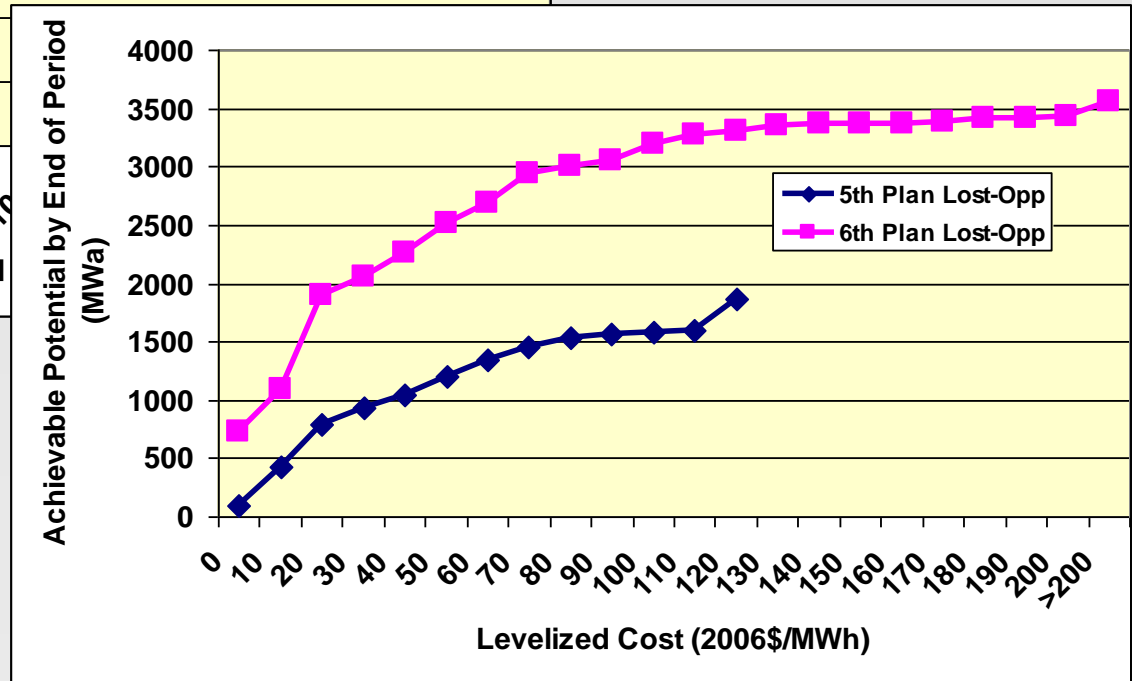
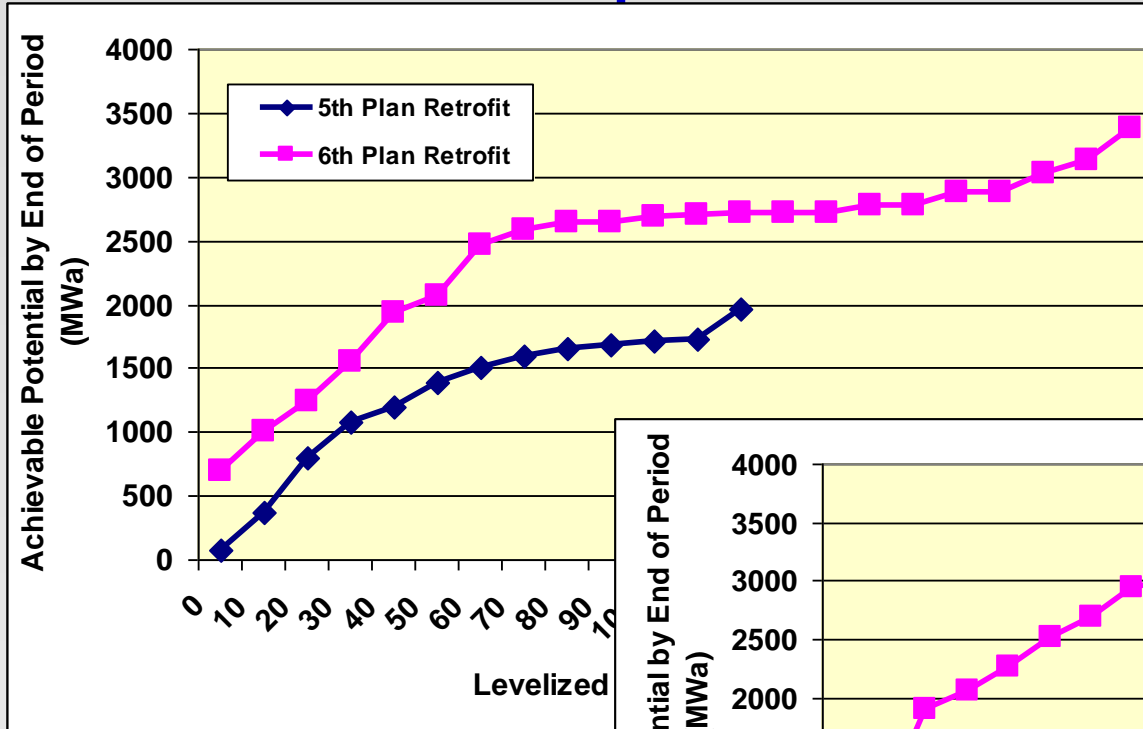
Portfolio Analysis Model



CO2 allowance cost: \$0-100 distribution



Conservation Potential: Compared to 5th Plan



Where's the Difference?

MWa Achievable End of Period and <\$120/MWh	5th Plan	6th Plan
Consumer Electronics	155	920
Industrial	350	800
Distribution Efficiency	0	420
Residential	2119	2460
Commercial	1183	1320
Agriculture	93	100
Total	3902	6020