

# Sixth Northwest Conservation & Electric Power Plan

## Draft Wholesale Power Price Forecasts

Maury Galbraith

Northwest Power and Conservation Council  
Generating Resource Advisory Committee Meeting  
Portland, OR  
December 18, 2008



## Outline

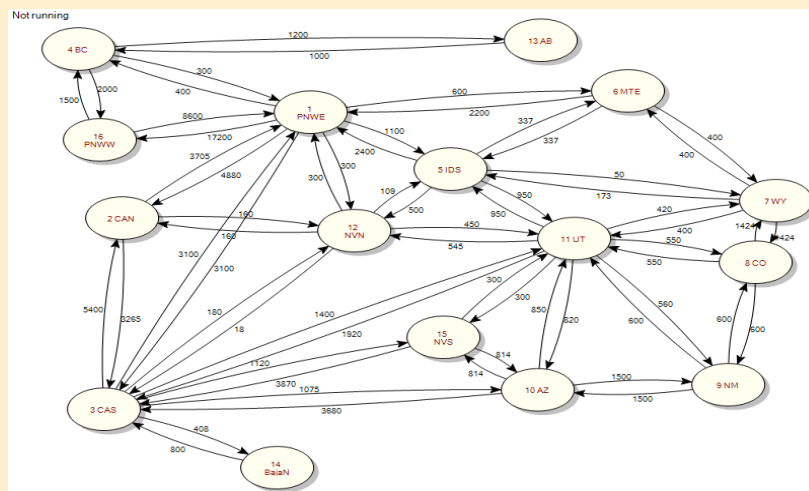
1. Overall Perspective: Major AURORA Updates
2. Updated AURORA zone configuration
3. Updated Fuel Price Forecasts
4. Updated load-resource balance by zones\ regions
  - Energy
  - Capacity
5. Impact of updates on wholesale power market price forecast



## Major AURORA Updates

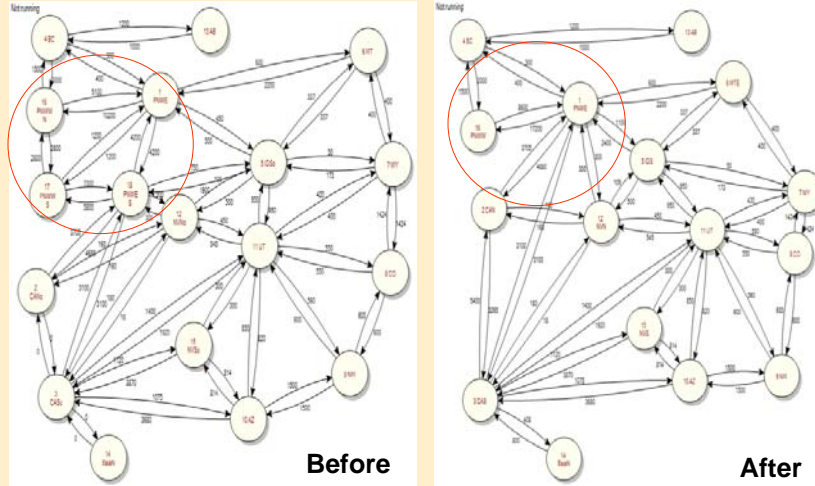
1. **Reduction in the number of load-resource zones used to model the Western Interconnect**
2. Updated transmission links between the modeled load-resource zones
3. **Updated demand forecasts for each of the load-resource zones**
4. Updated fuel price forecasts for each of the zones
5. Updated hydro condition modeling for the Northwest zones
6. Updated inventory of existing generating resources in each of the zones
7. Updated estimates of future Regional Portfolio Standard resource development by zone
8. Updated inventory of candidate resources for future development by zone
9. Improved dispatch parameter for combined cycle combustion turbines
10. Updated carbon dioxide price forecasts

## AURORA Zone Configuration Removed North and South Split of PNW



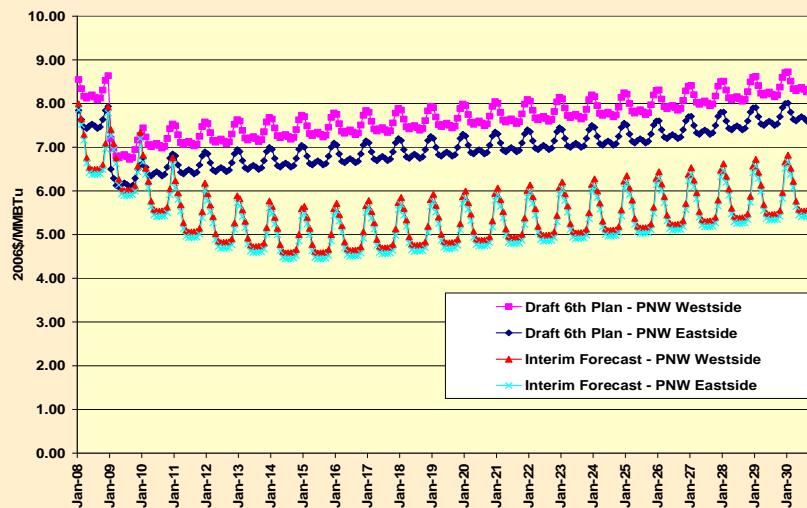
## AURORA Zone Configuration

### Removed North and South Split of PNW

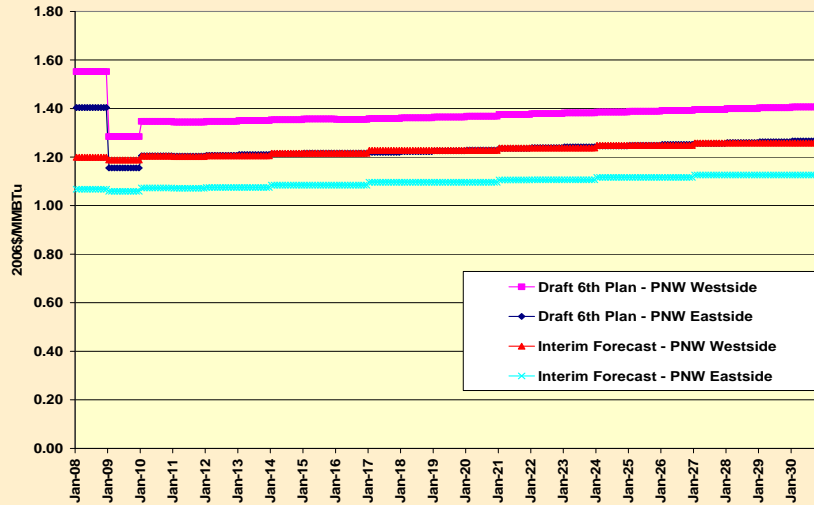


## Higher Natural Gas Prices

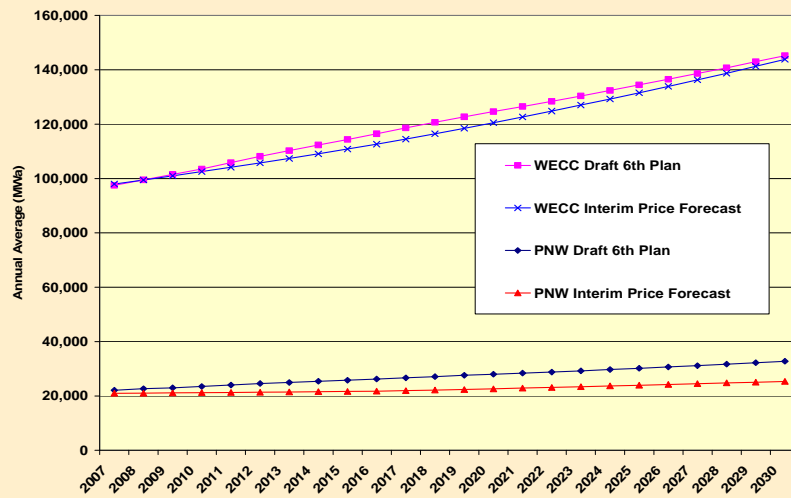
### Medium Long-term Trend Forecasts for PNW Zones



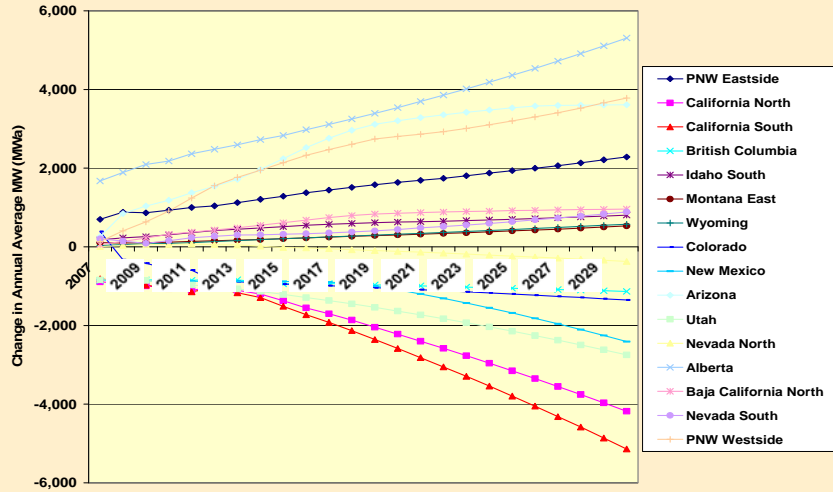
## Higher Coal Prices Medium Long-term Trend Forecasts for PNW Zones



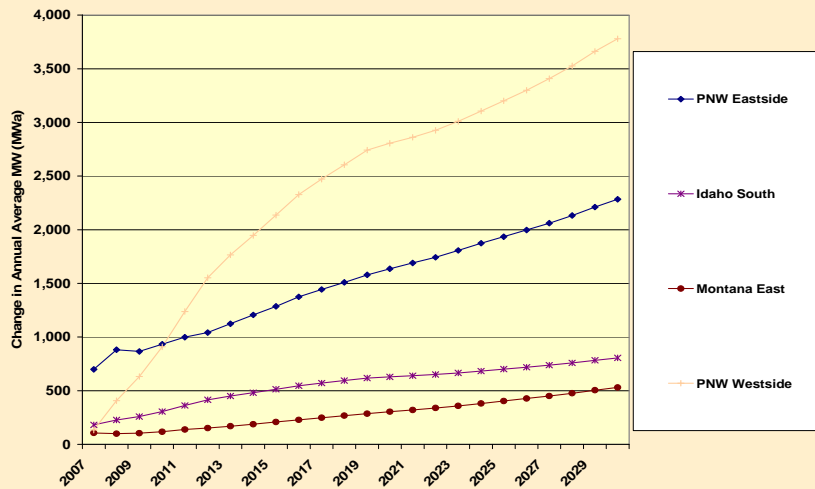
## Comparison of Annual Average Energy Draft 6<sup>th</sup> Plan vs. Interim Price Forecast



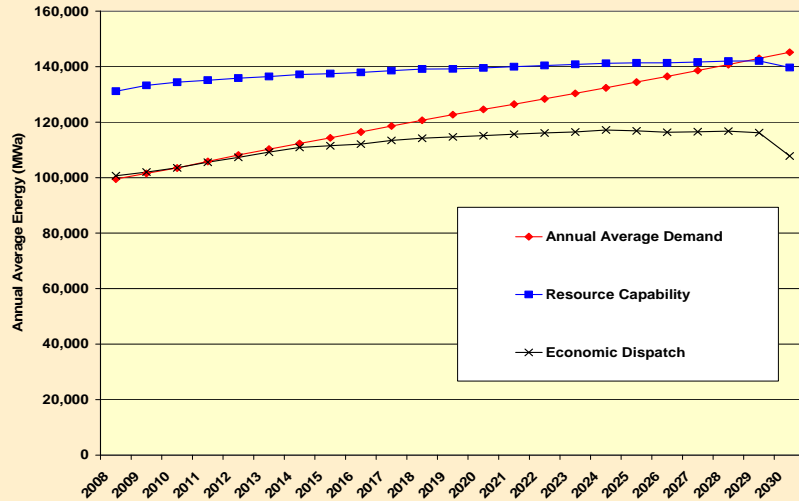
## Change in Annual Average Energy by Zone 6<sup>th</sup> Plan Forecast minus Interim Price Forecast



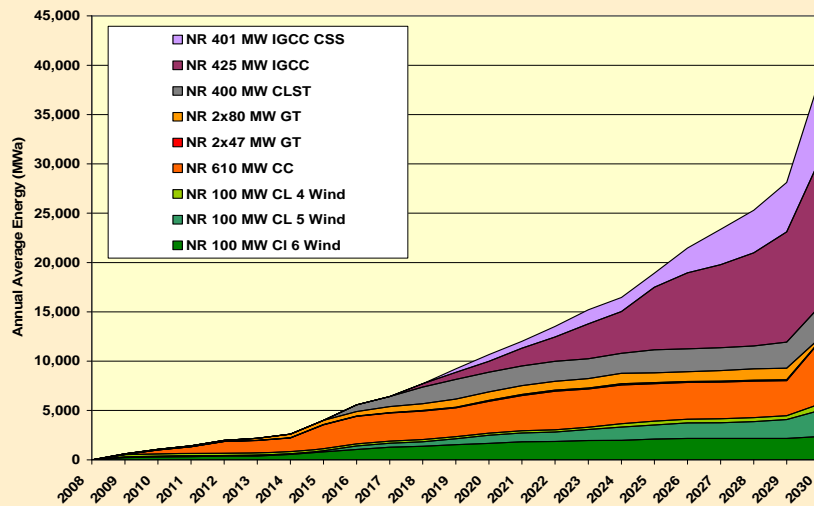
## Change in PNW Annual Average Energy 6<sup>th</sup> Plan Forecast minus Interim Price Forecast



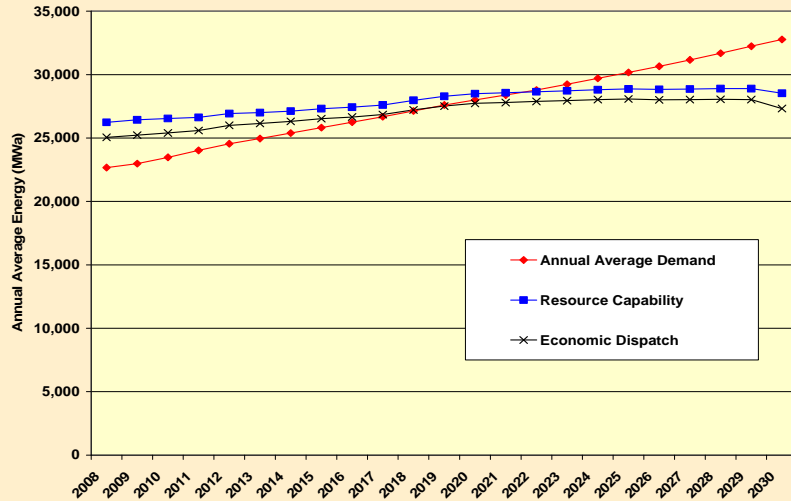
## WECC Load-Resource Balance – Energy Draft 6<sup>th</sup> Plan/ Existing and Incremental RPS Resources Only



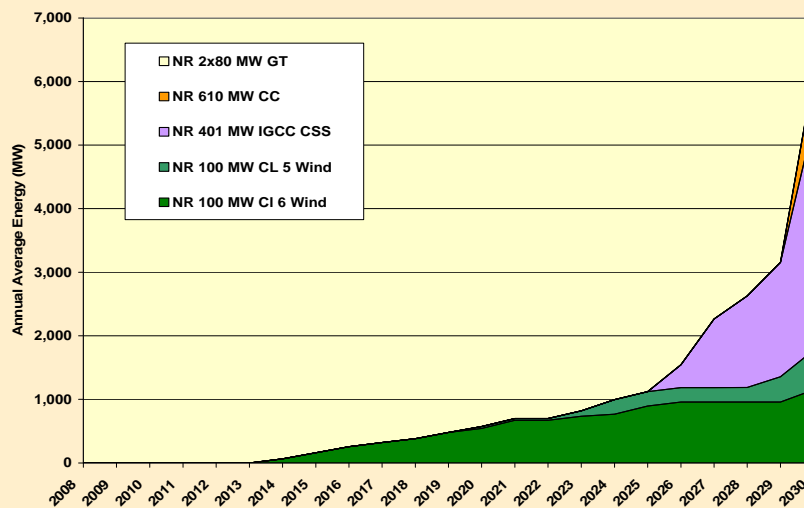
## WECC Resource Expansion – Energy Economic Dispatch



## PNW Load-Resource Balance – Energy Draft 6<sup>th</sup> Plan/ Existing and Incremental RPS Resources Only



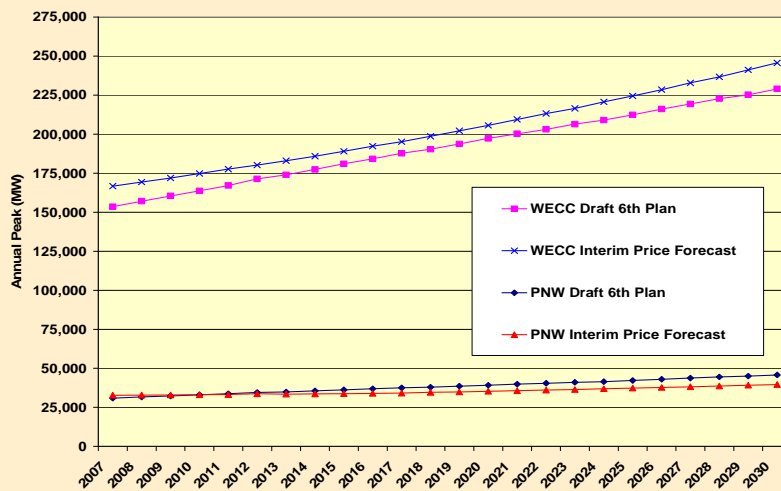
## PNW Resource Expansion – Energy Economic Dispatch



## Energy Summary

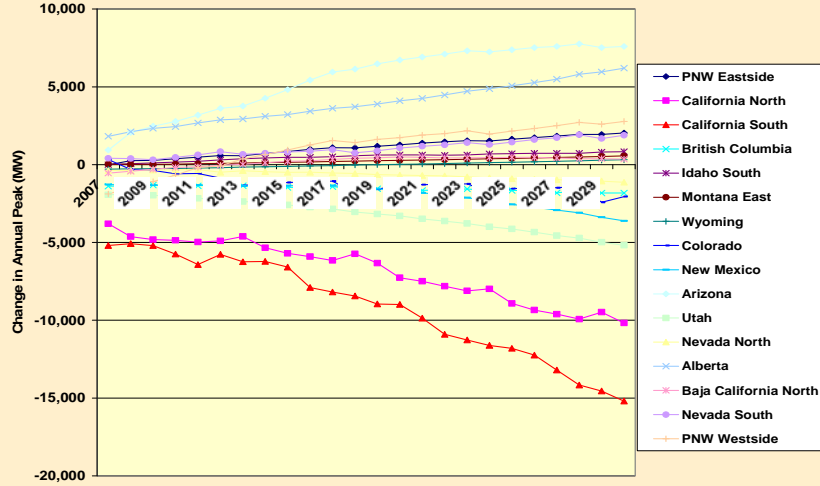
- Increased load forecasts for WECC and PNW
- Shift in forecasts at the zone level
  - CA forecast is down
  - PNW forecast is up
- Preliminary Resource Need – Energy
  - WECC: resource gap begins to develop in 2014 based on economic dispatch of existing and RPS resources
  - PNW: resource gap begins to develop in 2020 based on economic dispatch of existing and RPS resources
  - Economic dispatch depends on fundamental inputs (i.e., fuel prices, new resource costs, etc.)

## Comparison of Annual Peak Demand Draft 6<sup>th</sup> Plan vs. Interim Price Forecast

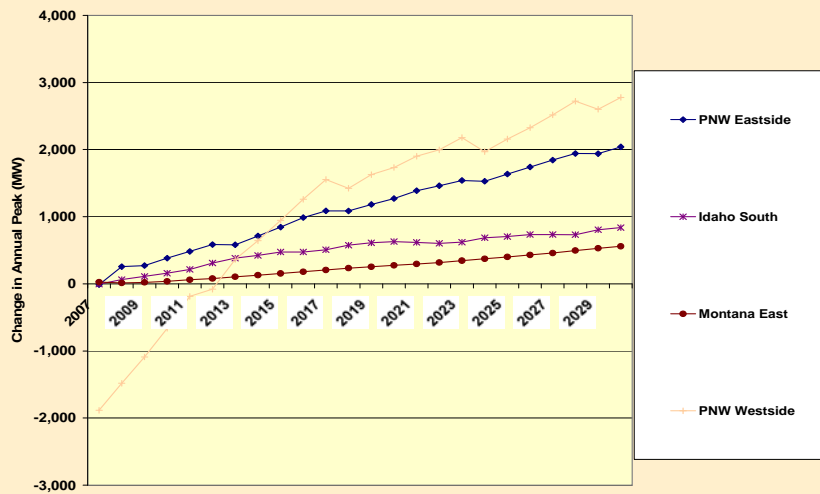




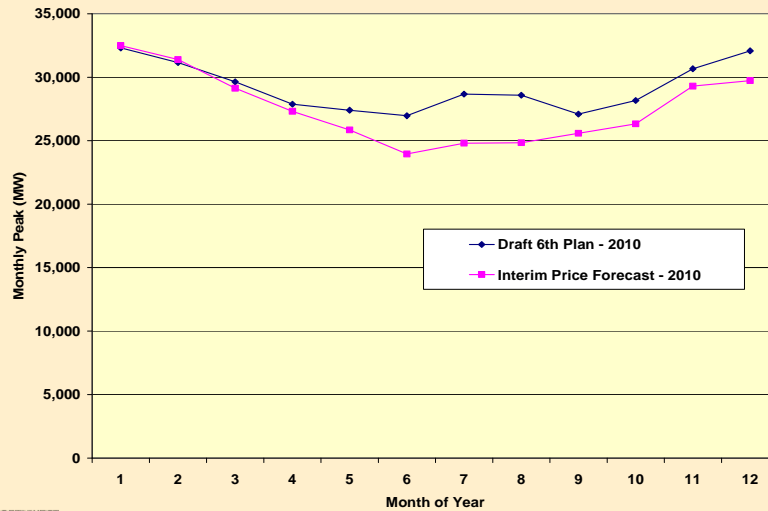
## Change in Peak Demand by Zone 6<sup>th</sup> Plan Forecast minus Interim Price Forecast



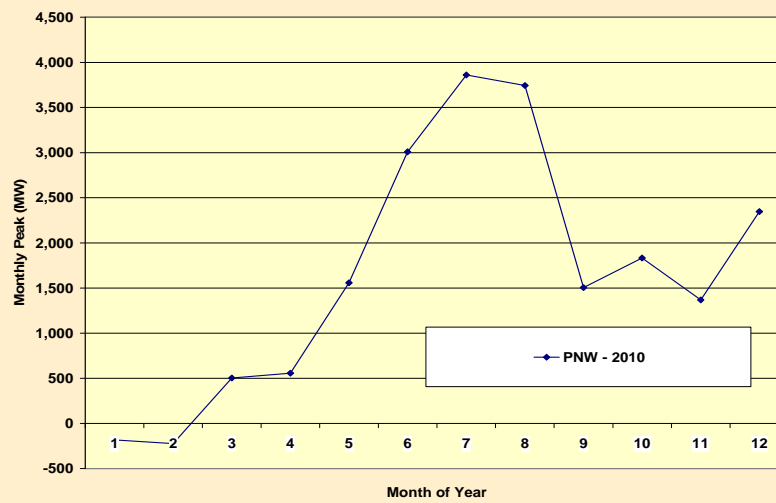
## Change in PNW Peak Demand 6<sup>th</sup> Plan Forecast minus Interim Price Forecast



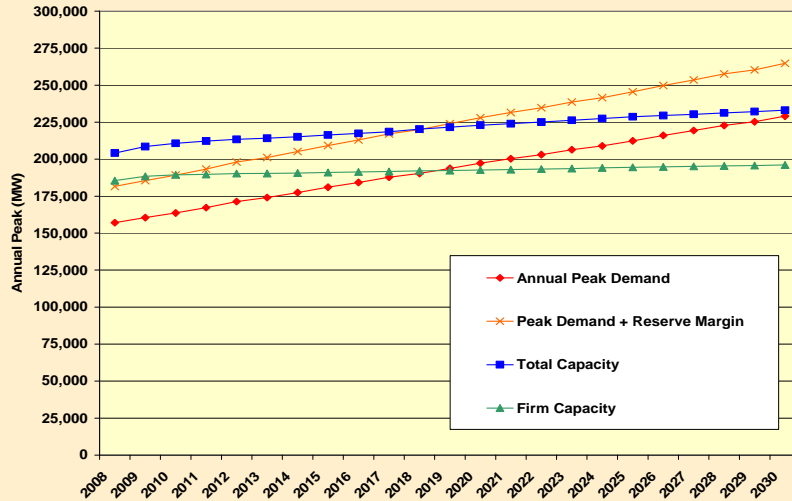
## Comparison of Monthly PNW Peak - 2010 Draft 6<sup>th</sup> Plan vs. Interim Price Forecast



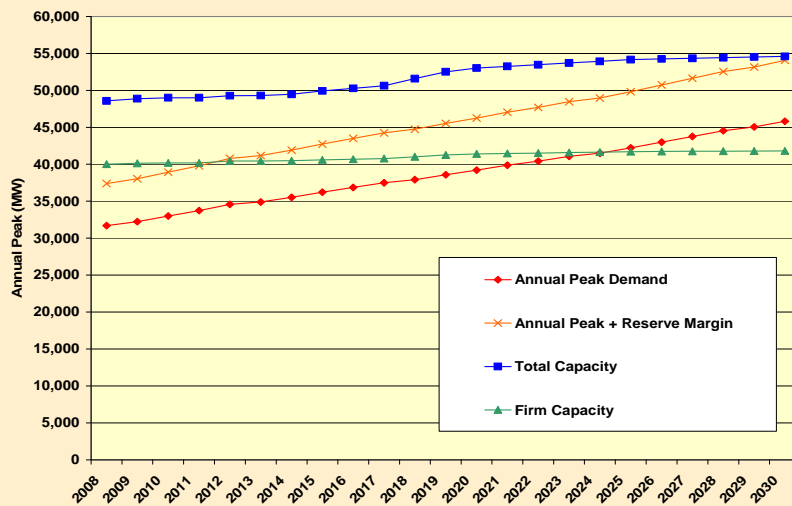
## Change in PNW Monthly Peak - 2010 6<sup>th</sup> Plan Forecast minus Interim Price Forecast



## WECC Load-Resource Balance – Capacity Draft 6<sup>th</sup> Plan



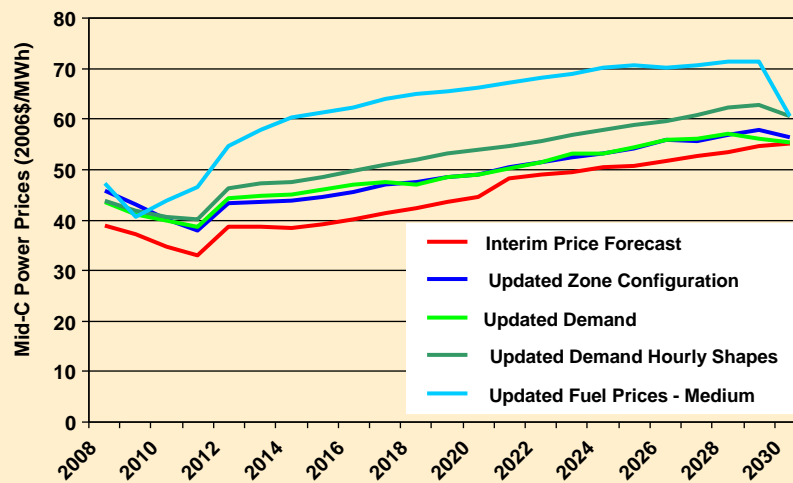
## PNW Load-Resource Balance – Capacity Draft 6<sup>th</sup> Plan



## Capacity Summary

- Reduced peak load forecast for WECC
- Increased peak load forecast for PNW
  - Higher summer peak
  - Still winter peaking
- Shift in forecasts at the zone level
  - CA forecast is down
- Preliminary Resource Need – Capacity
  - WECC: resource gap begins to develop in 2011 based on planning reserve margin and sustained peaking capacity
  - PNW: resource gap begins to develop in 2012 based on planning reserve margin and sustained peaking capacity

## Impact of AURORA Updates on Mid-C Wholesale Power Price Forecast



## Next Steps – More AURORA Updates

1. Reduction in the number of load-resource zones used to model the Western Interconnect
2. Updated transmission links between the modeled load-resource zones
3. Updated demand forecasts for each of the load-resource zones
4. Updated fuel price forecasts for each of the zones
5. Updated hydro condition modeling for the Northwest zones
6. Updated inventory of existing generating resources in each of the zones
7. Updated estimates of future Regional Portfolio Standard resource development by zone
8. Updated inventory of candidate resources for future development by zone
9. Improved dispatch parameter for combined cycle combustion turbines
10. Updated carbon dioxide price forecasts