

# Forecast Power System CO<sub>2</sub> Production



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Power Committee

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## Status Report

# Forecasting power system CO<sub>2</sub> production

- The amount of carbon dioxide produced by expected operation of the power system

Average (lb CO<sub>2</sub>/kWh)

Annual (tons CO<sub>2</sub>/yr)

Cumulative (tons CO<sub>2</sub>)

Marginal (lb CO<sub>2</sub>/kWh) (Not yet incorporated)

- 2005 – 2024
- Base case plus several scenarios
- Today – Current Status vs. Base Case

# Base Case:

## *December 2004 looking forward*

- Forecast as of the adoption of the Fifth Power Plan.
- Fifth Plan Medium Case fuel price forecast.
- Committed resources as of Dec 2004.
- Approximation of the Fifth Plan resource portfolio (L27a2).
- Other Fifth Plan assumptions (load growth, state RPS, renewable PTC, CO2 costs, etc.).
- Balance of WECC future resource mix:

Created using AURORA long-term (capacity addition) study

Northwest (L27a2) additions fixed

## Current Status Case:

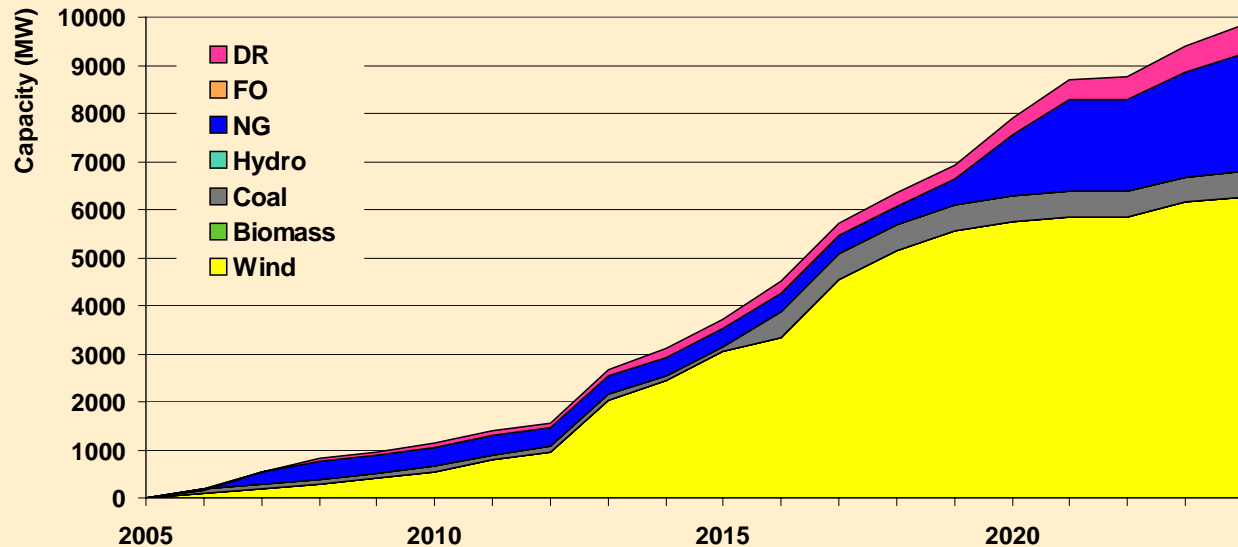
### *Committed & Planned resources ca: March 2007*

- Fifth Plan Medium Case fuel price forecast.
- Committed resource additions & retirements as of March 2007.
- Planned resource actions from current PNW utility IRPs (supplied by PNUCC).
- Balance of WECC future resource mix:
  - Created using AURORA long-term (capacity addition) study
  - Northwest resource additions (IRP values) fixed
- No specific RPS or SBC additions (PNW or other WECC).
- Other Fifth Plan assumptions (load growth, renewable PTC, CO2 costs, etc.).

## Recent modeling updates

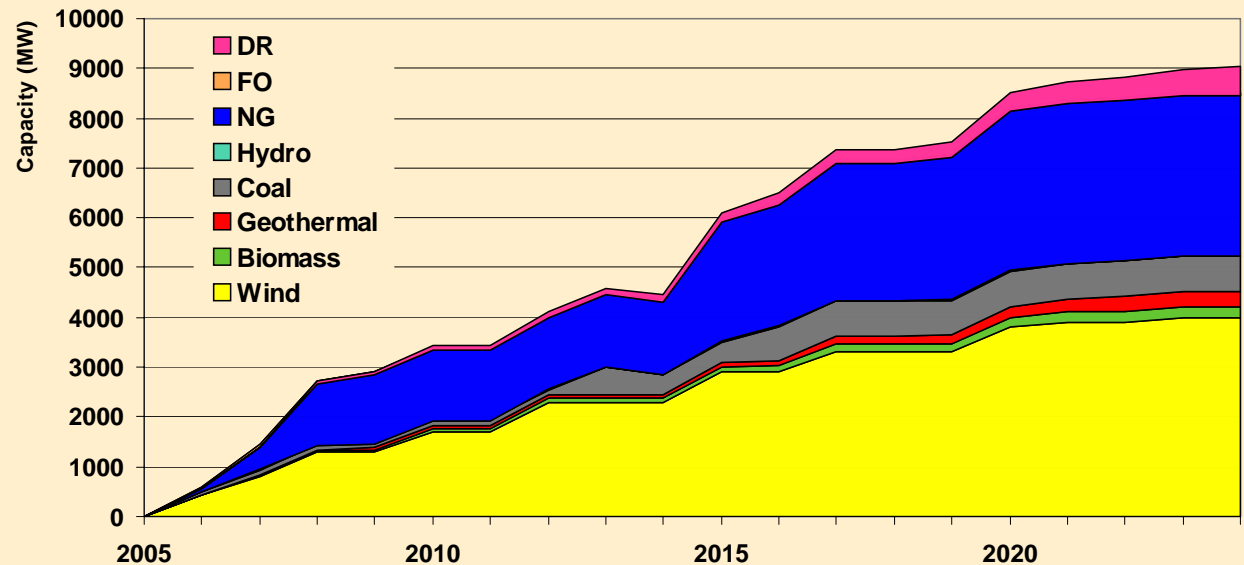
- AURORA Version 8.4 (Used for both Base and Current Status cases).
- Review and update of existing resource data set (Current Status case only).
- Average hydropower vs “Mean Price Water” (Current status case only).
- Still in the works – “Maintain Planning Reserve Margins” option for capacity addition studies.
- Will retroactively apply all of these to the Base Case.

# Comparative PNW resource development



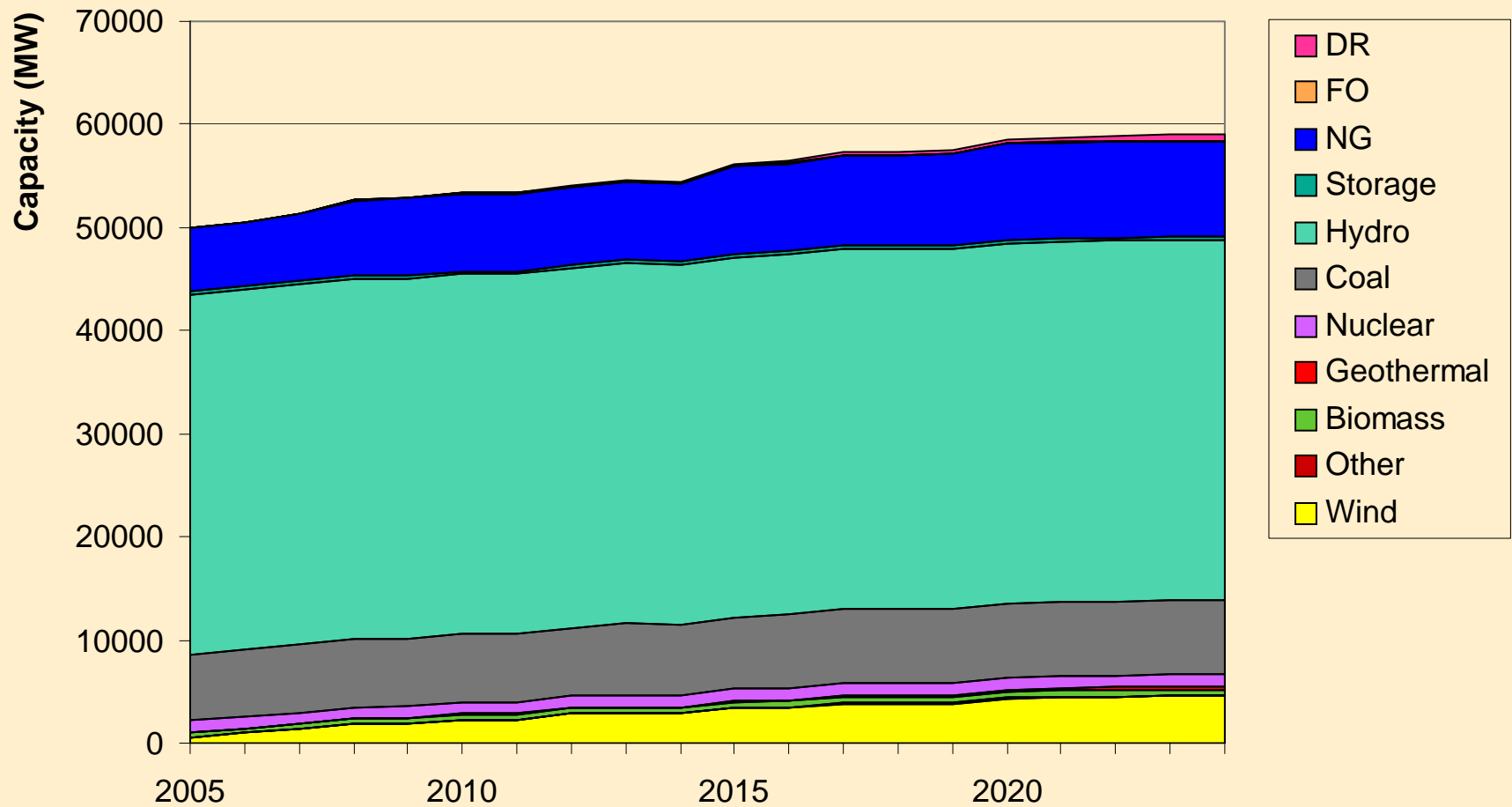
<< Base (5PL27a2)

Current Status >>

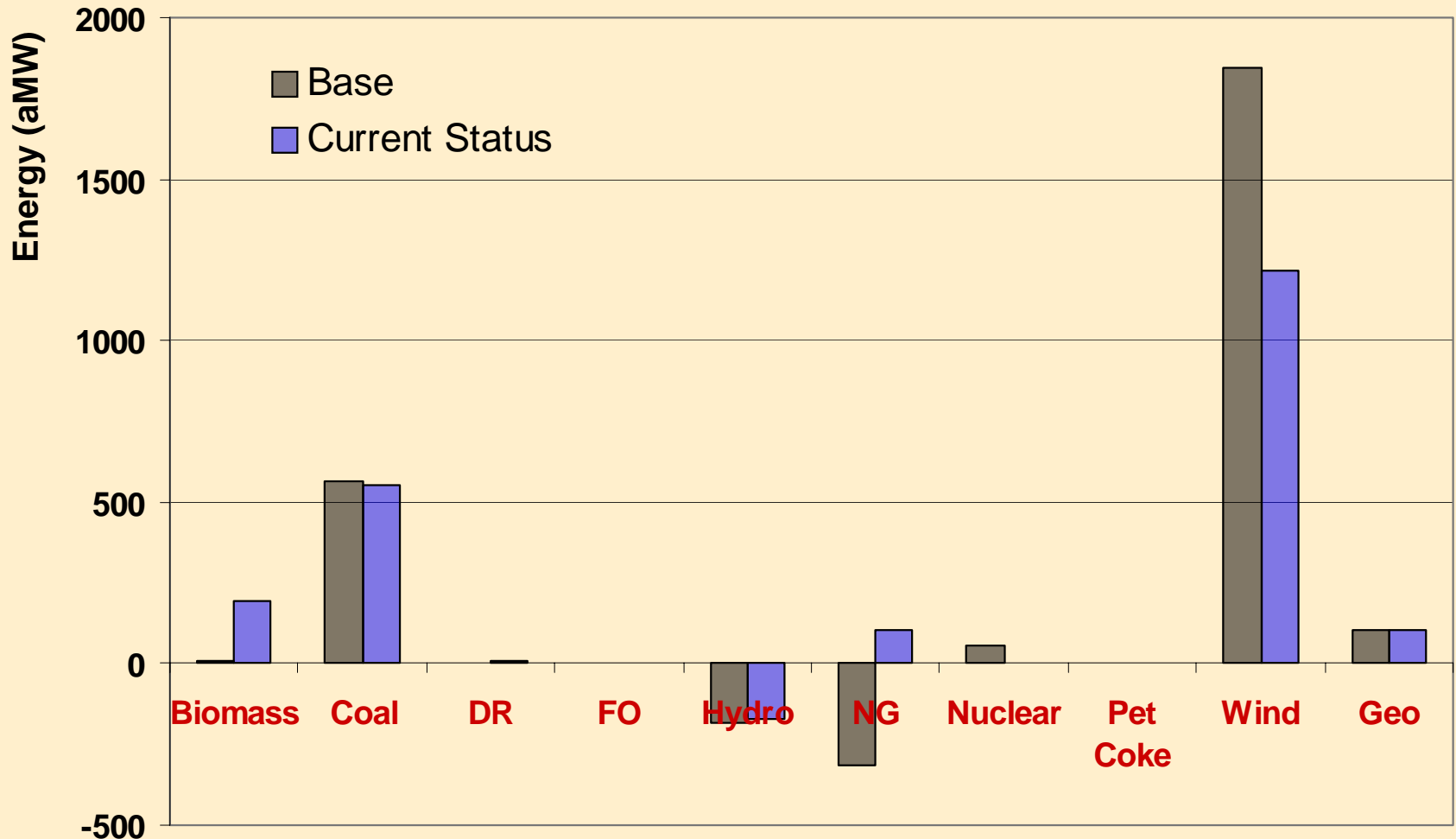


# Northwest resource mix

## Current Status case

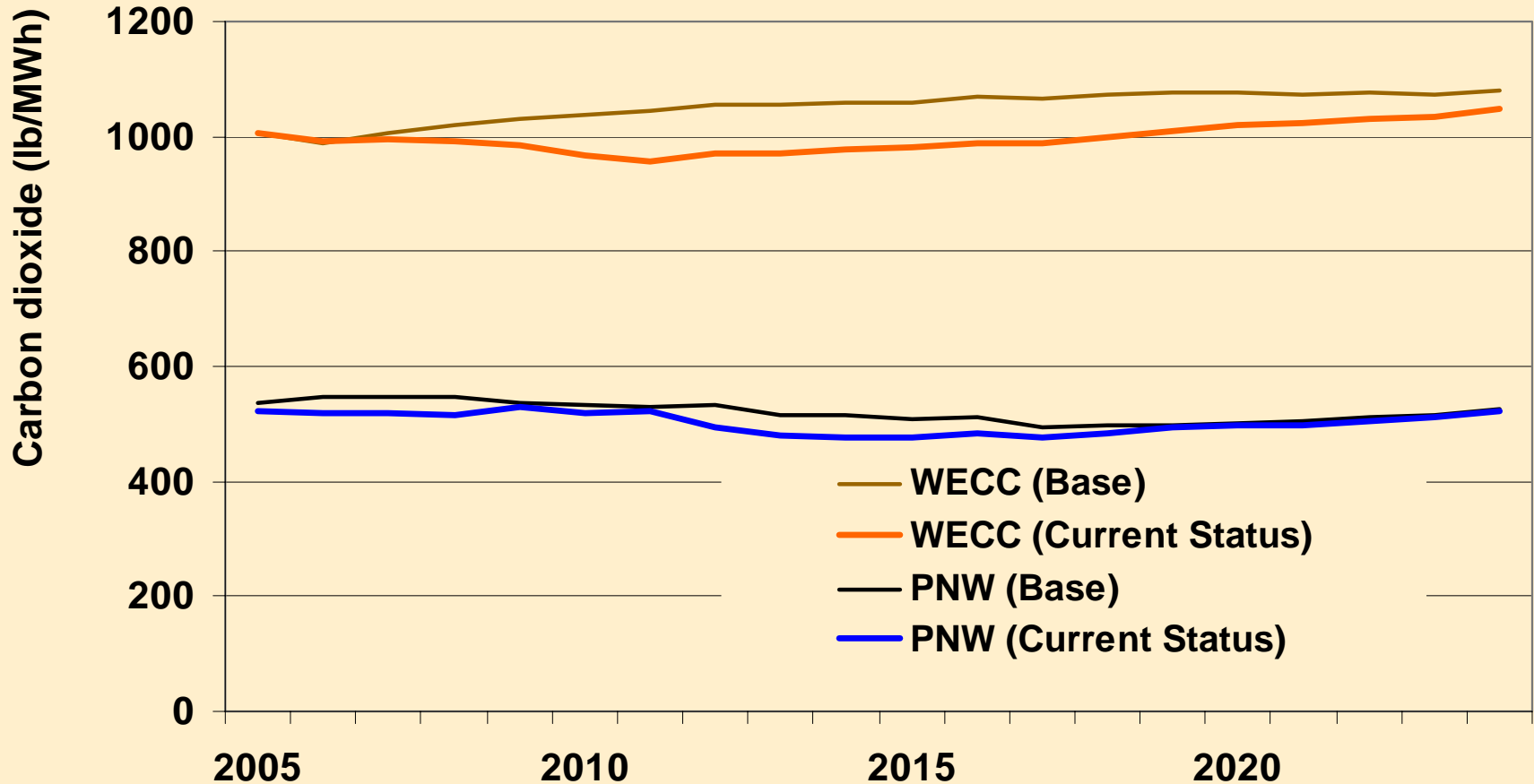


# Comparison of energy generation (PNW)

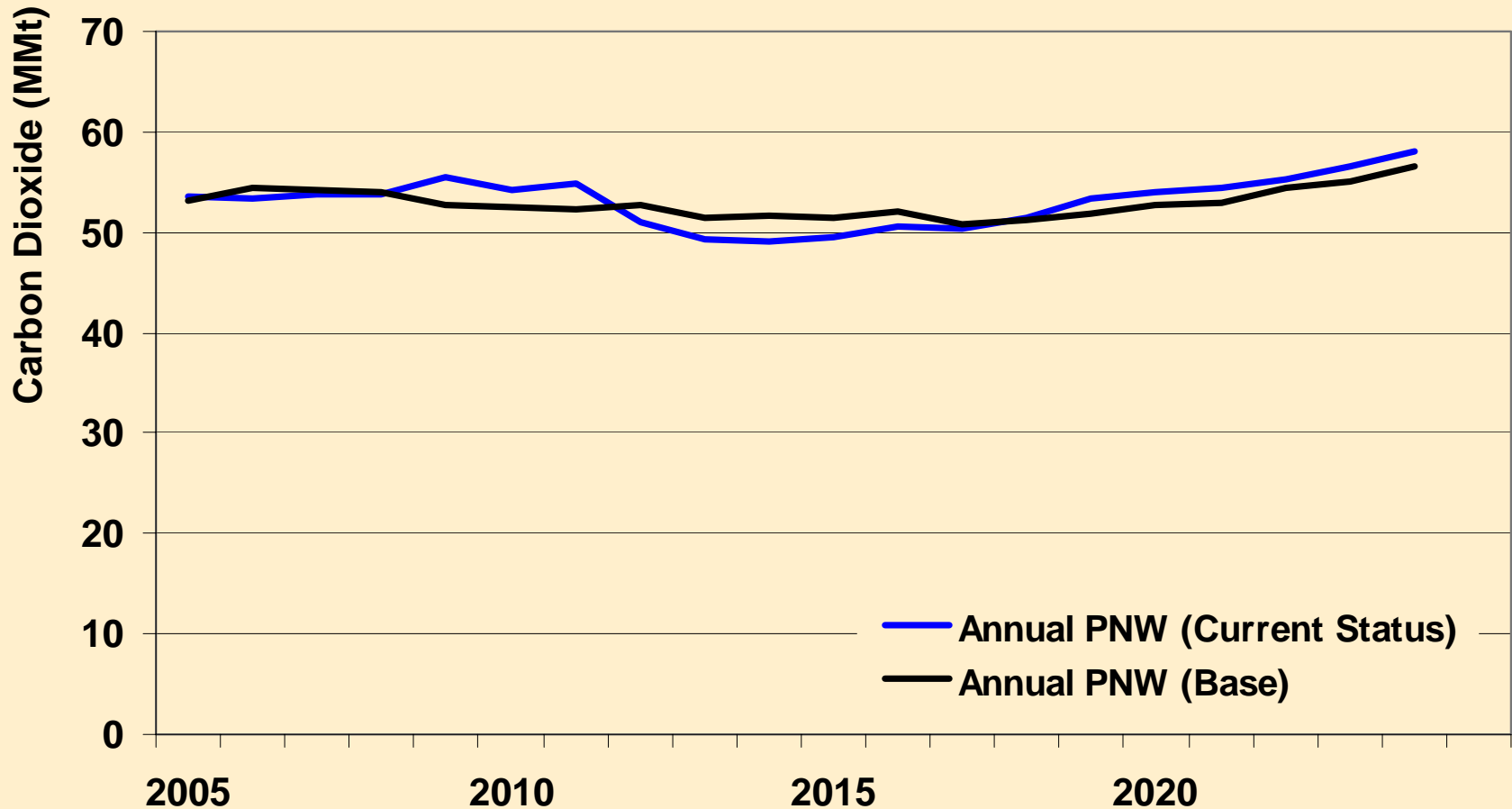




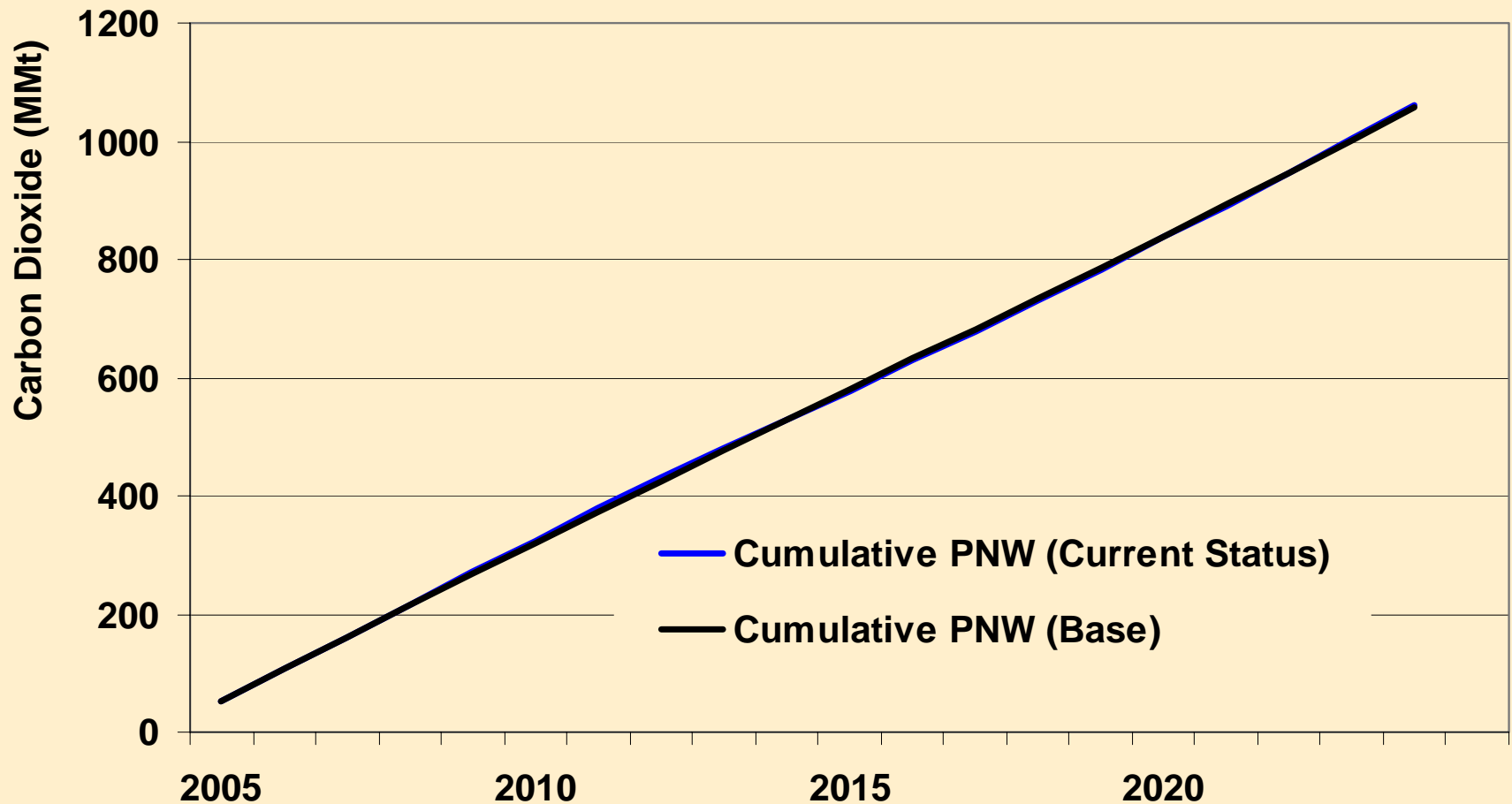
# Average unit CO<sub>2</sub> production (net load basis)



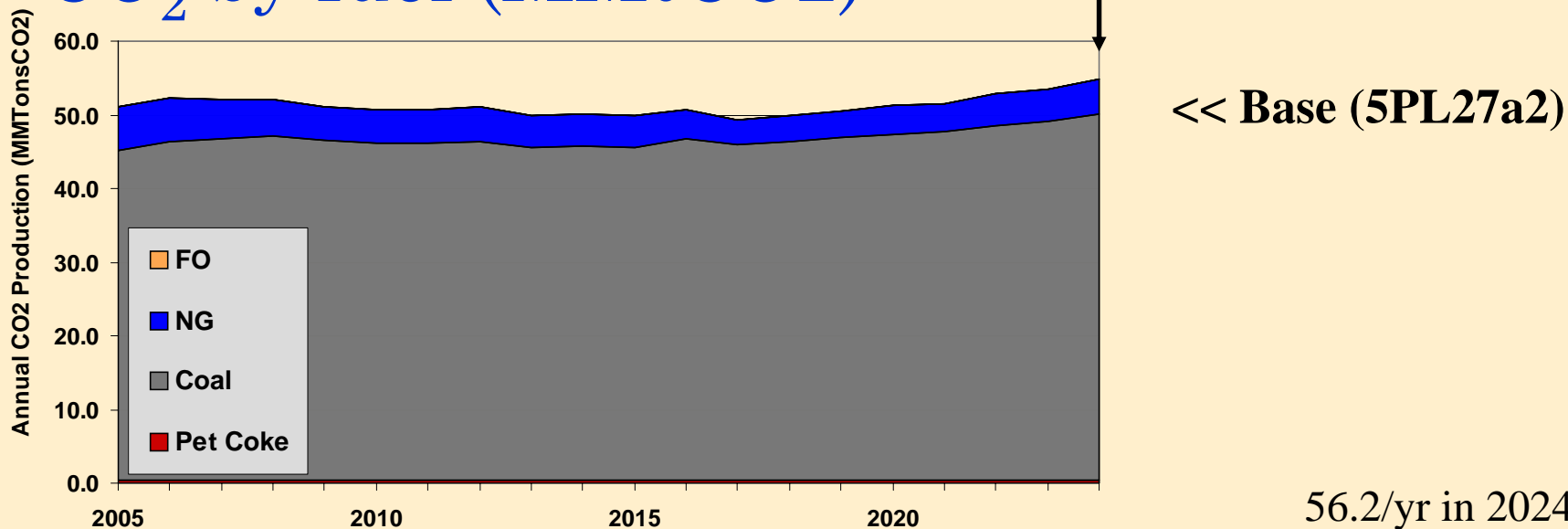
# Annual Northwest power system CO<sub>2</sub> production



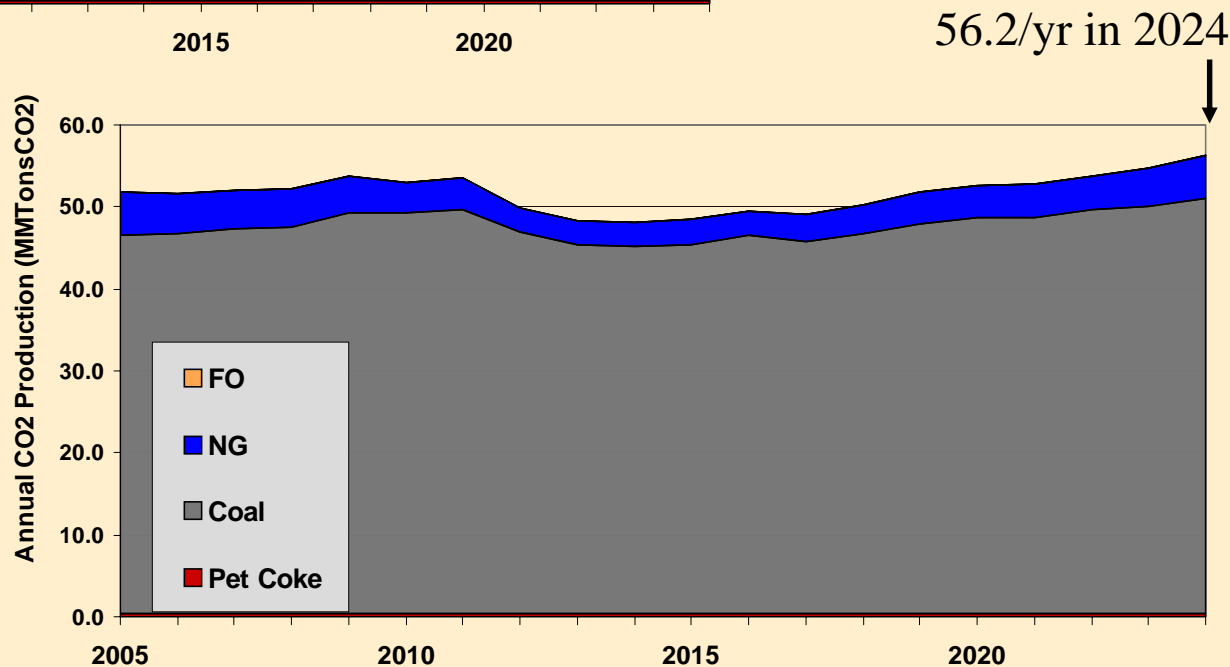
# Cumulative Northwest power system CO<sub>2</sub> production



# CO<sub>2</sub> by fuel (MMtCO<sub>2</sub>)



Current Plans >>



# Planned for May

Confirm validity of “Maintain Planning Reserve Margins”  
AURORA option.

Rerun Base case:

Cleaned resource input data (limited to confirmed resources ca: 12/04)

“Maintain Planning Reserve Margins” option enabled

Run remaining scenarios:

Low Conservation

No summer spill

High Renewables (Full state RPS implementation)

Lower Snake R. Dam removal

Possible draft revised fuel price forecast.