Wholesale Electricity Price Forecast

A work in progress

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Regional Technical Forum

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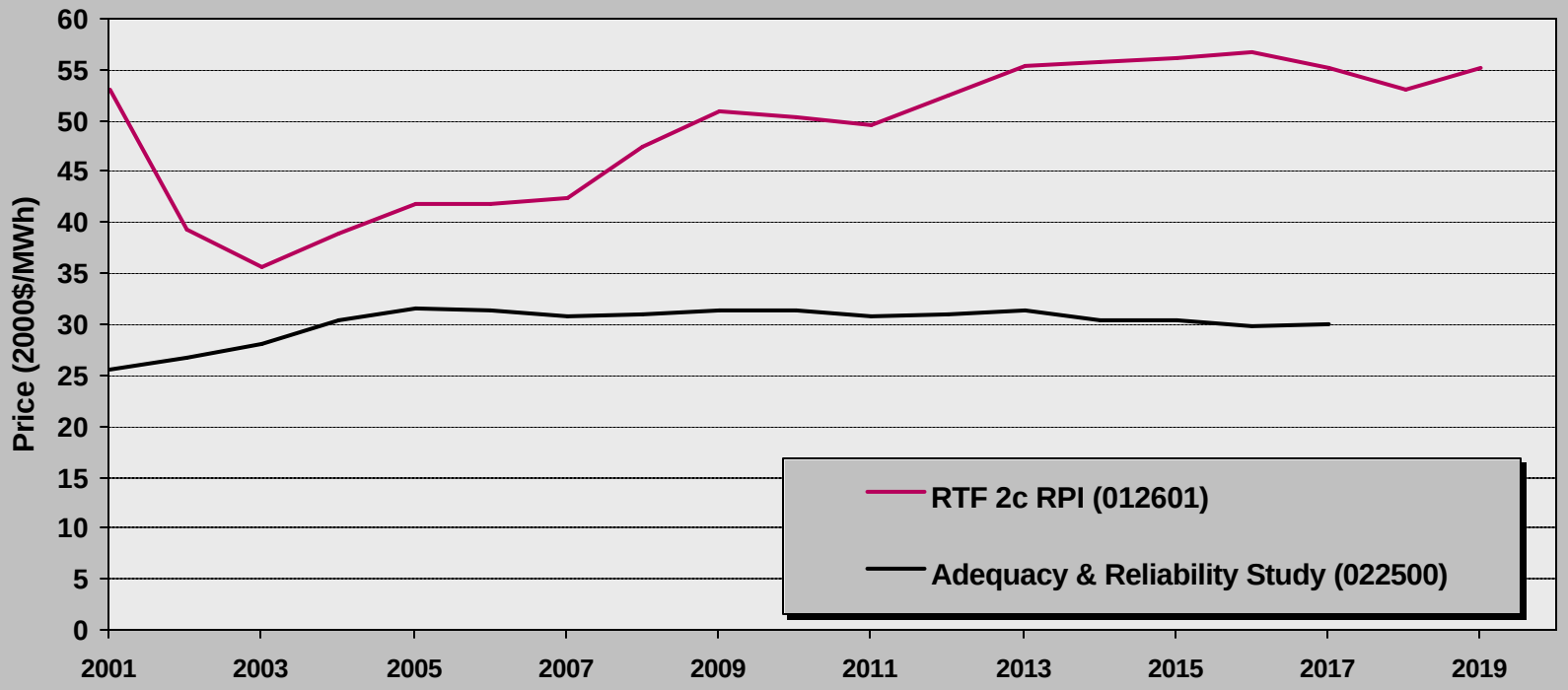
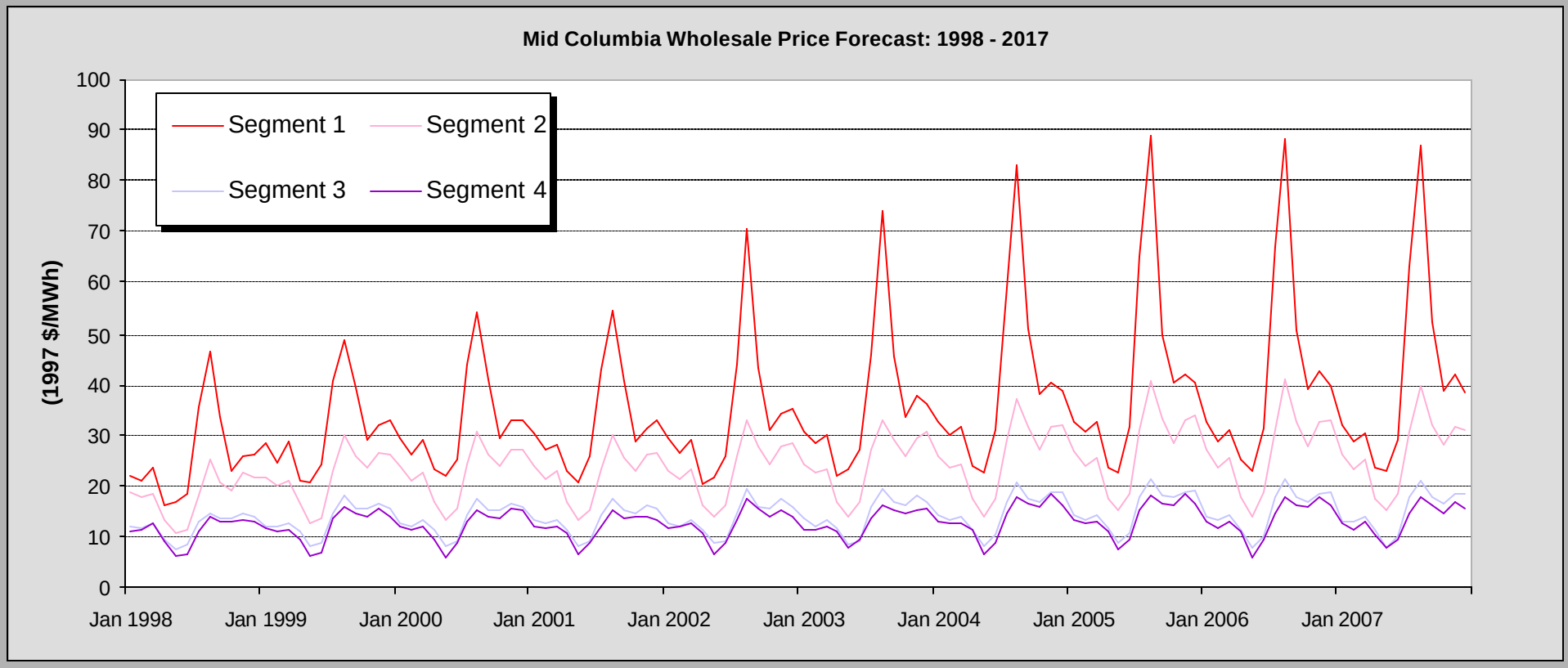
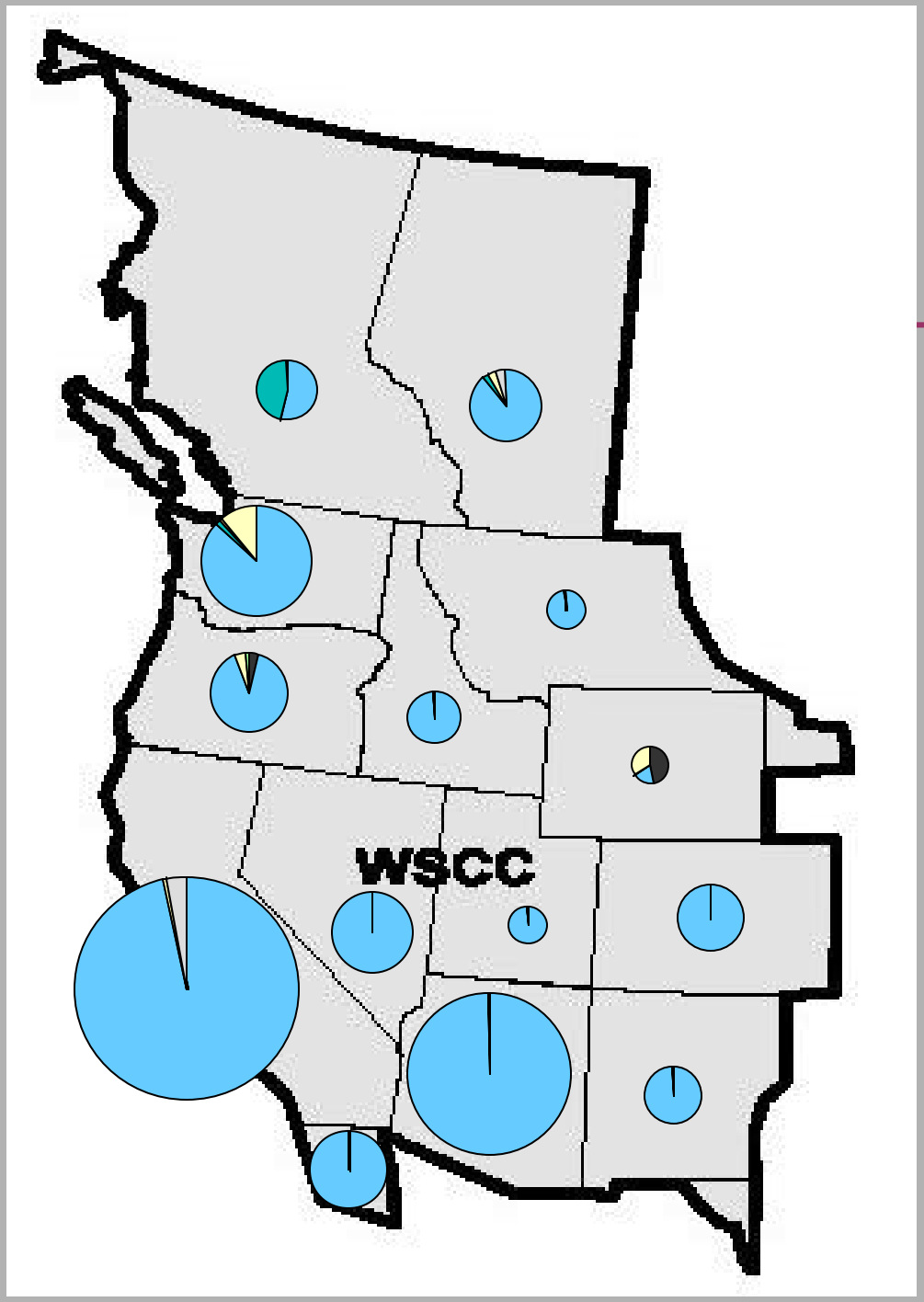
Previous Mid-Columbia price forecasts



Mid-Columbia four-segment monthly averages in current use





Scheduled development in WSCC

- ~ 31,000 MW recently in-service or under construction
- 19% of Jan 2000 total capacity
- 95% Natural gas

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Gas-fired combined-cycle power plants are currently the technology of choice

Hermiston Generating Project
Hermiston, OR (469 MW)

Northwest Power Planning Council: March 2002

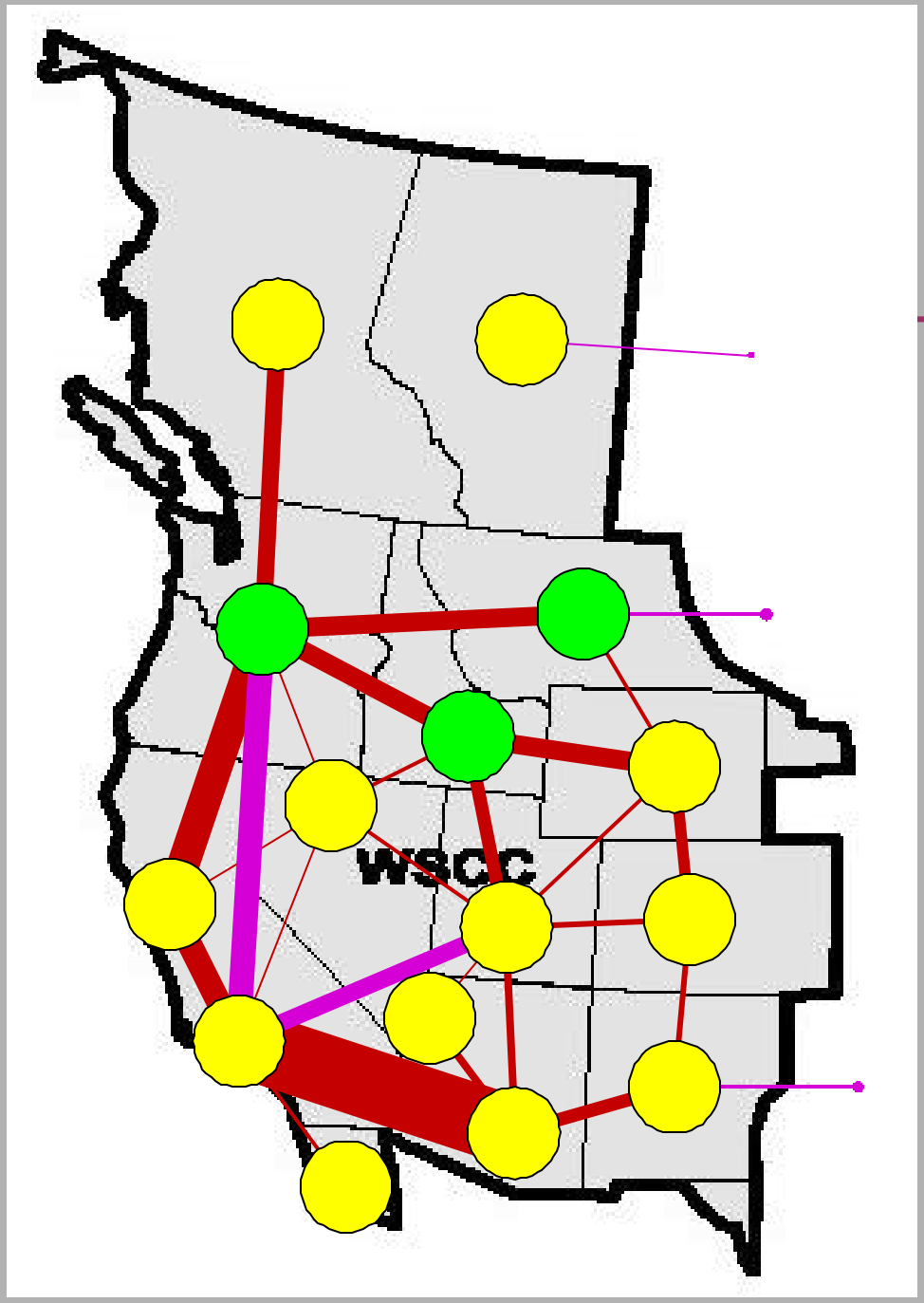
Simulating the WSCC electricity market using the AURORA© Electric Market Model

Pricing mode:

- Hourly market clearing prices are calculated by load-resource area.
- Hourly area price = variable cost + dispatch premium of most expensive resource required to meet load for that hour.

Capacity addition mode:

- Iterative pricing studies with resource cost-effectiveness testing.
- Resources having uneconomic going forward costs are retired.
- New resource options having positive net present value are added.
- Model seeks a least-cost system resource mix.



Modeled WSCC Load-Resource Areas

- generally defined by transmission bottlenecks
- individual generating units (>3700 total)
- fuel price forecasts
- load forecast
- load curtailment blocks
- portfolio of new resource options

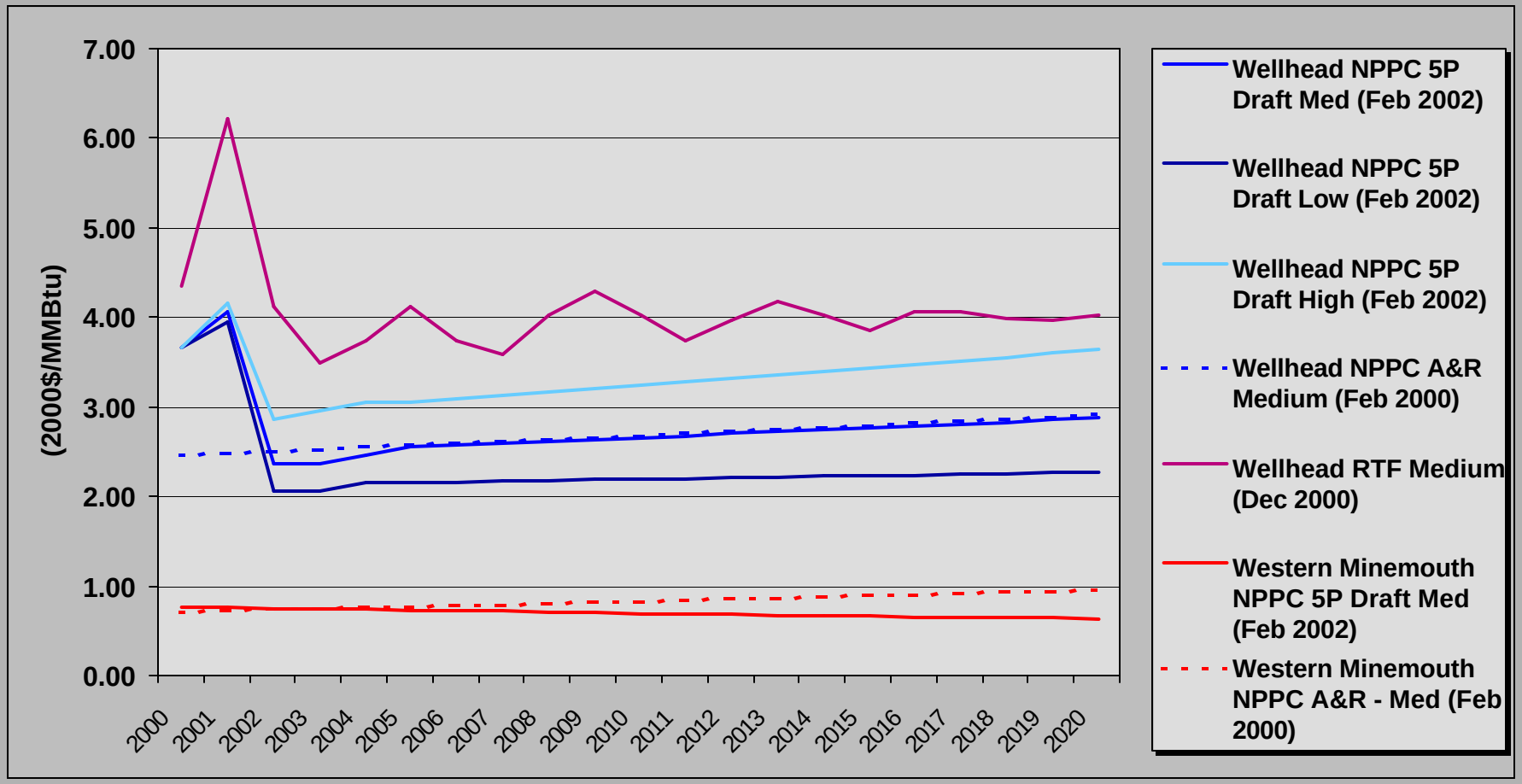
Basic Assumptions

- New projects are developed by private, independent developers.
- Projects under construction, greater than 25% complete are completed; additional projects are market-driven.
- Projects scheduled for retirement are retired; additional retirements are market-driven.
- Average water conditions.
- No transmission upgrades.
- Pancaked transmission rates.
- Bid margin set at 5% of variable cost.
- Operating reserves set at 6.5%.

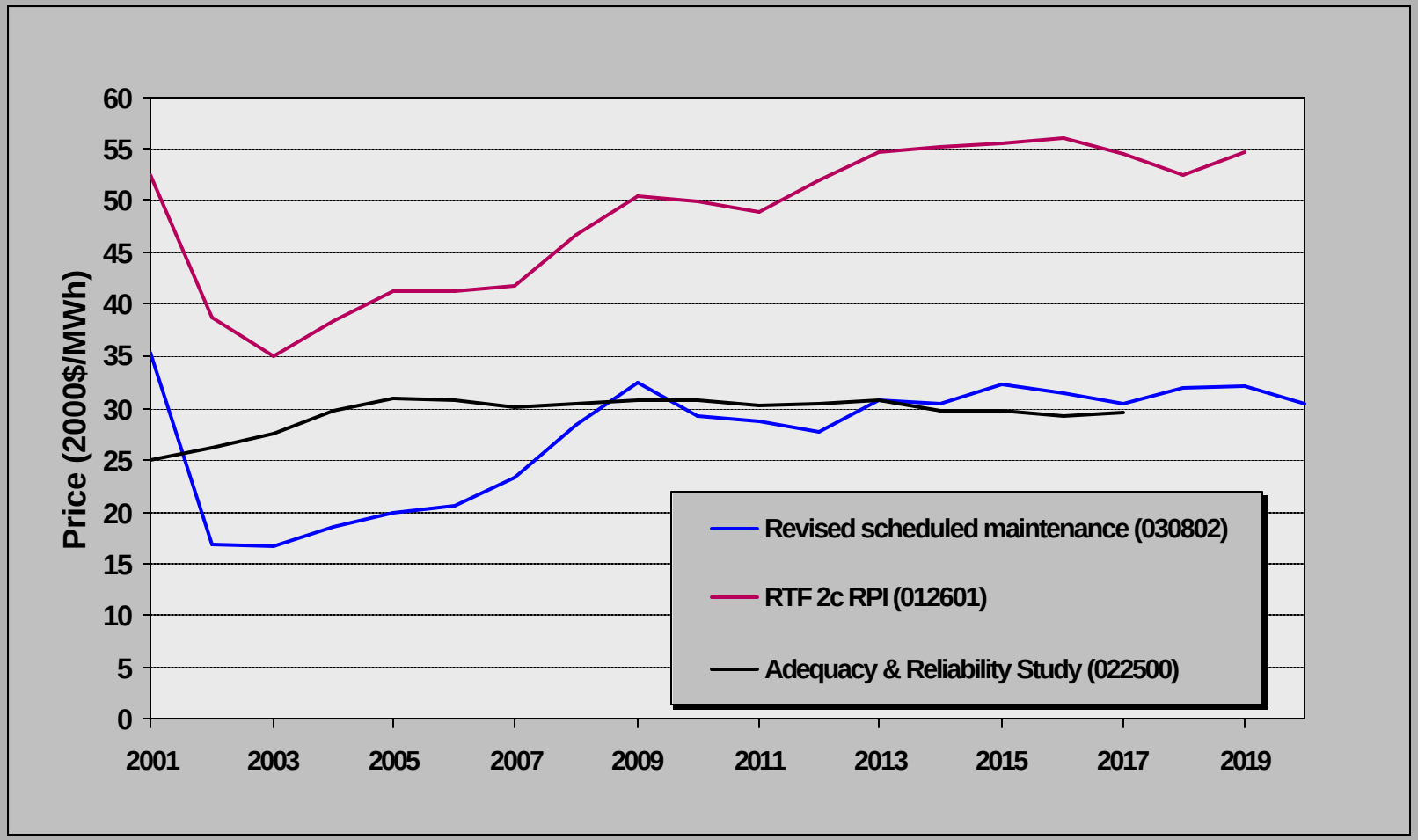
Base case study assumptions

- NPPC draft medium natural gas price forecast.
- NPPC draft medium coal price forecast.
- Demand returns to medium growth rates by 2004.
- NPPC draft medium cost & performance assumptions for new CC, SC, wind & coal plants.
- 2 cents/kWh incentive for new renewables.

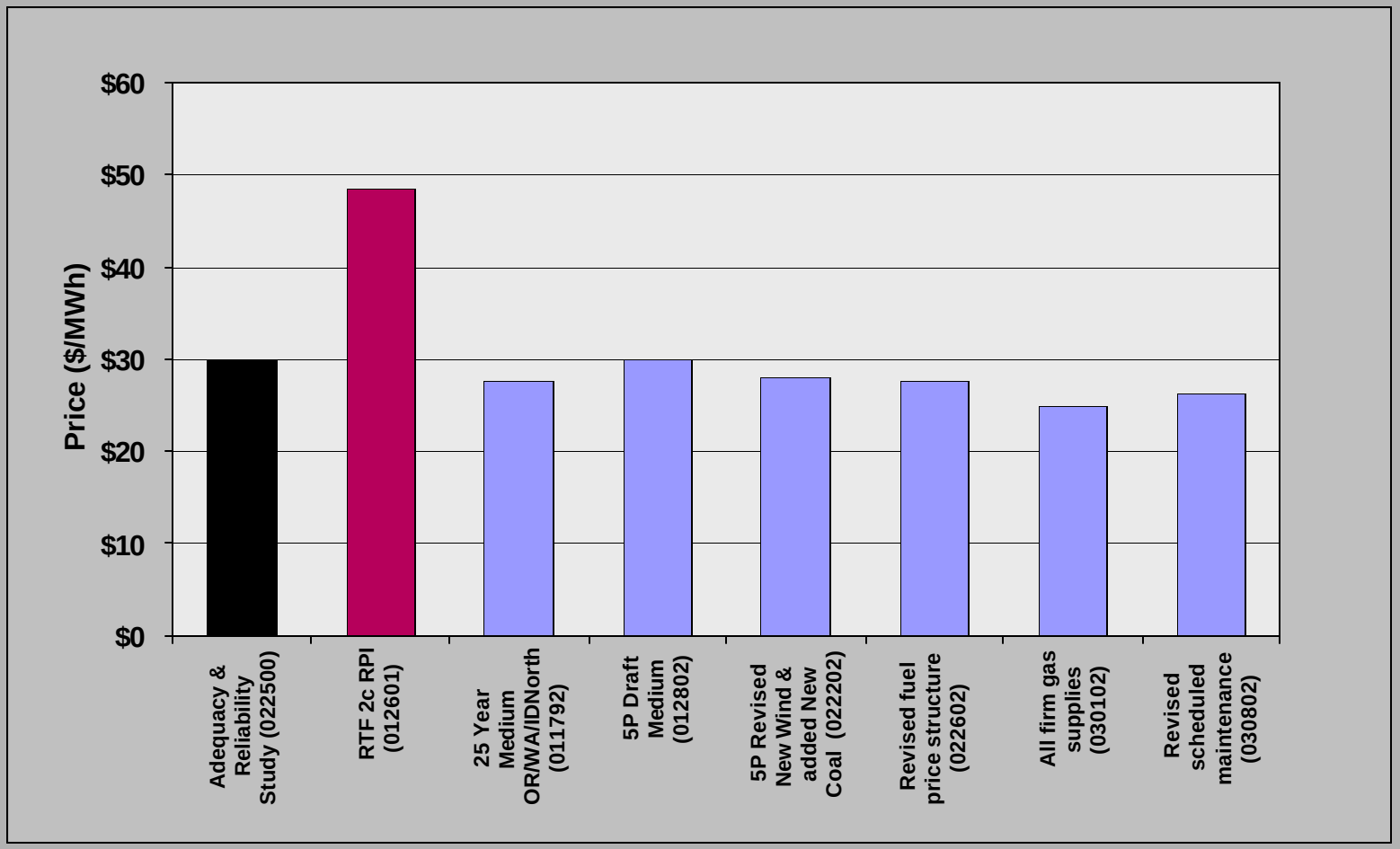
Fuel Price Forecasts



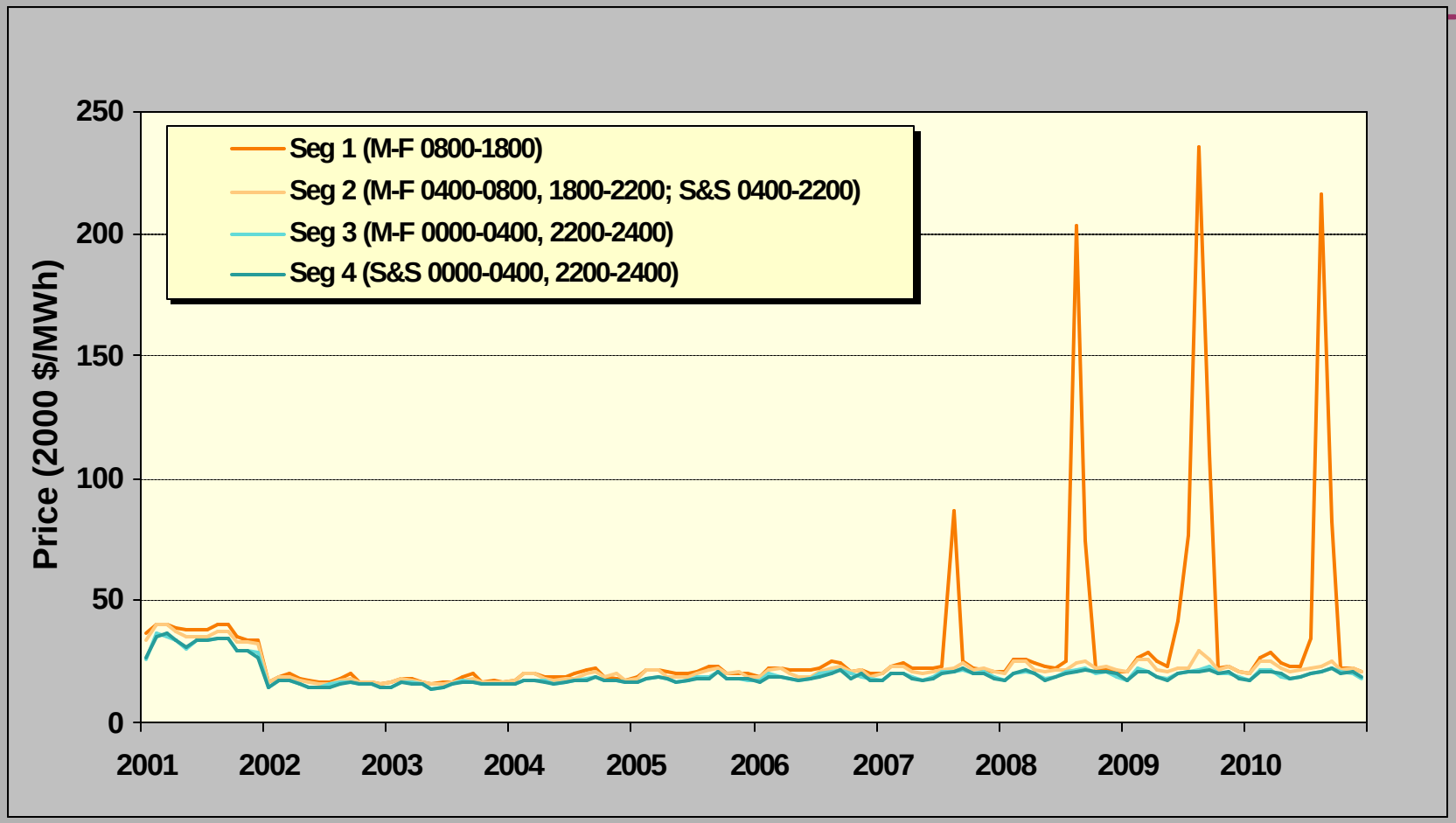
Mid-Columbia price forecasts



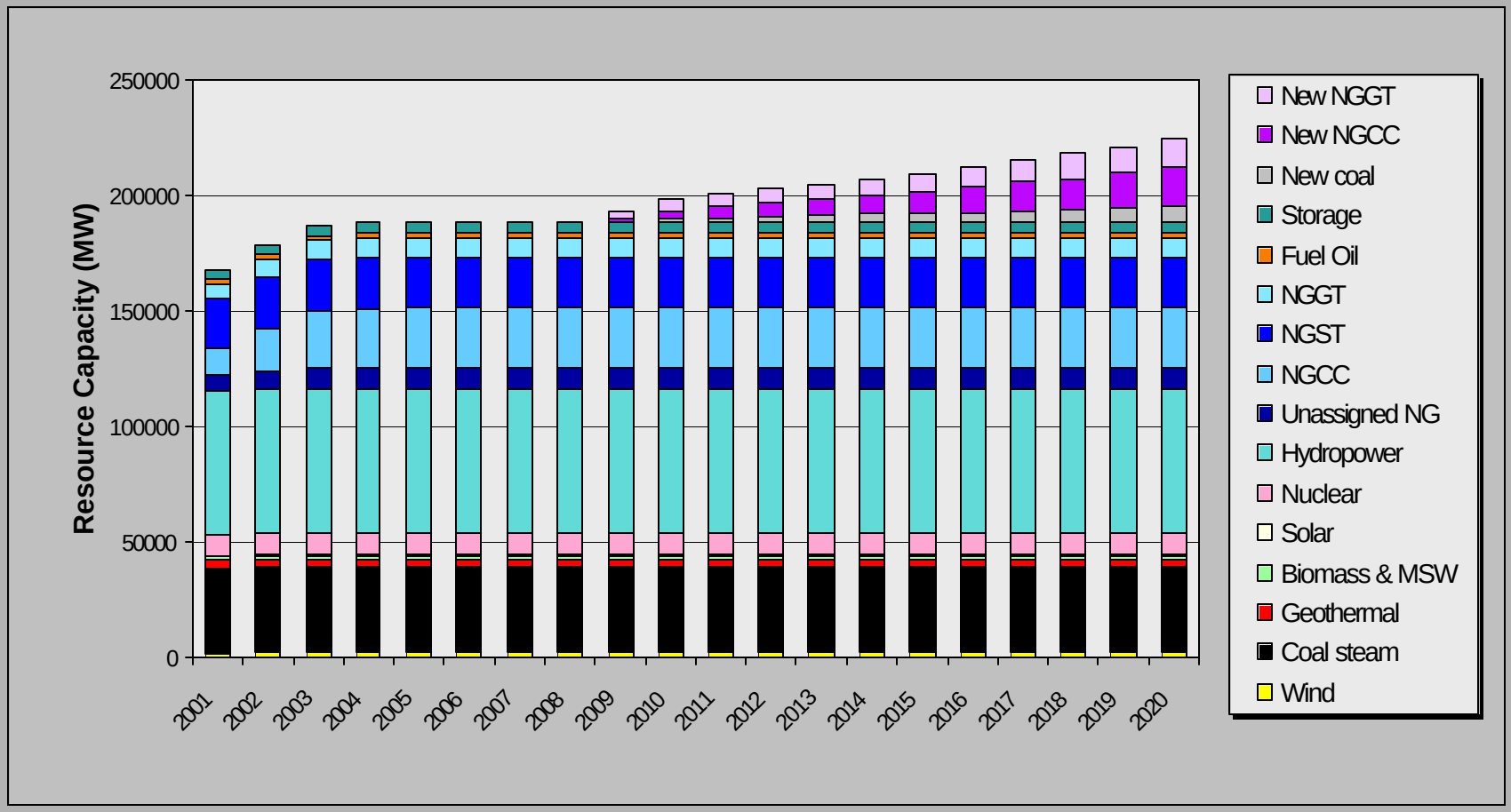
Levelized Mid-Columbia price forecasts



Mid-C four-segment monthly averages



WSCC Resource Mix



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Going from here

- Calibrations:
  - Peak/Off-peak range
  - load sector price relationships.
- Likely revision of fuel price forecasts.
- More detailed modeling of the near-term
- Construct plausible range cases.
  - Fuel prices
  - Load growth
  - Transmission capacities and rates
  - Climate change response
  - Other??