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April 1, 2014

MEMORANDUM

TO: Power Committee

FROM: Steven Simmons

SUBJECT: Draft 2014 Power Price Forecast

At the January 2014 Power Committee meeting, the approach, assumptions and topics for the upcoming wholesale power price forecasts were discussed. The presentation covered both the expected Seventh Power Plan forecast, as well as the 2014 forecast version. Meanwhile, work has been progressing on the 2014 version and preliminary results are now available.

The previous wholesale power price forecast was published in February of 2013. Since then, updates have been made to many of the AURORA model inputs including:

- Electricity Loads – annual and peak
- Fuel prices – natural gas and coal
- Transmission capacities
- California Greenhouse Cap and Trade

Though the updates for the inputs were broad, there were no significantly large changes from the 2013 forecast version. As a result, the preliminary forecasted power prices output from the model are similar to the previous forecast. Forecasted spot market prices for wholesale power supplies at the Mid Columbia hub remain relatively low and reflect the continued influence of low variable cost hydro generation, slow growth in regional electricity loads, renewable development to meet RPS, and low natural gas prices. Work will continue towards forming a final 2014 forecast for power prices with a focus on evaluating sensitivities around electricity loads, fuel prices and greenhouse gas emission costs.

Draft Power Price Forecast

Presentation to the Power Committee
Steven Simmons
April 8, 2014

Today's Discussion

1. Forecast model background
2. Recent power prices at the Mid C
3. Results
4. Next steps

Power Price Forecast

- Discussed the Approach, Assumptions, Topics at January 2014 Power Committee Meeting
- Annual update to the forecast – last published in February 2013
- To serve as a starting point for the Seventh Plan Forecast work to come

Why We Forecast

- Wholesale Electric Prices are used for power planning purposes, such as portfolio modeling, conservation supply curves, power adequacy modeling
- Power price trends can show where retail prices may go
- Power price models can help to evaluate the impact of changes to demand, generating resources, fuel prices, energy policies, import/exports, and markets

AURORA_{xmp}

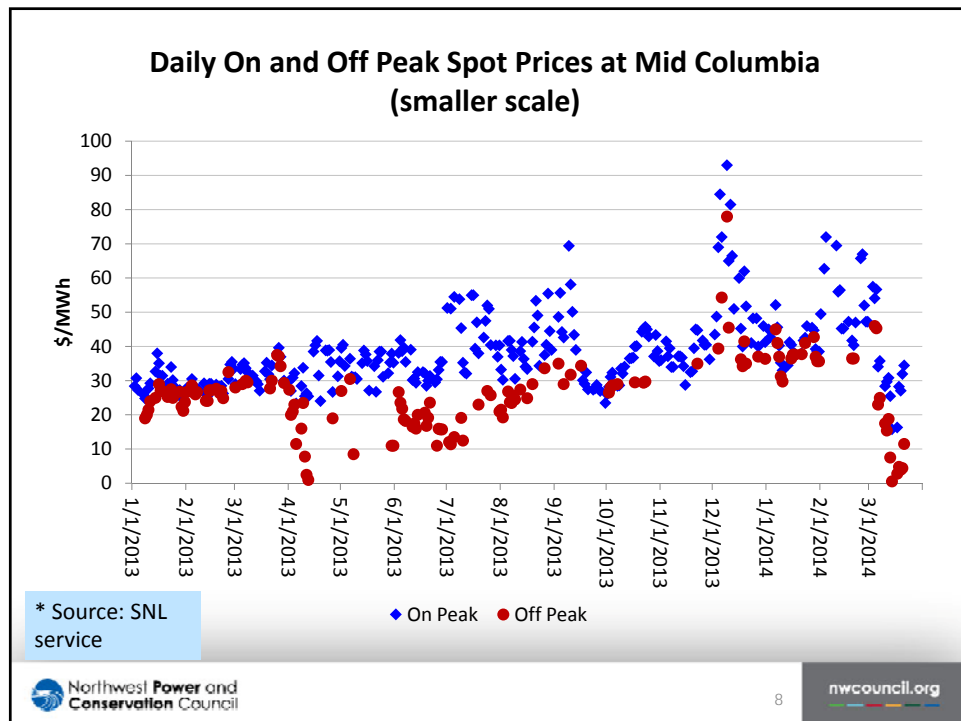
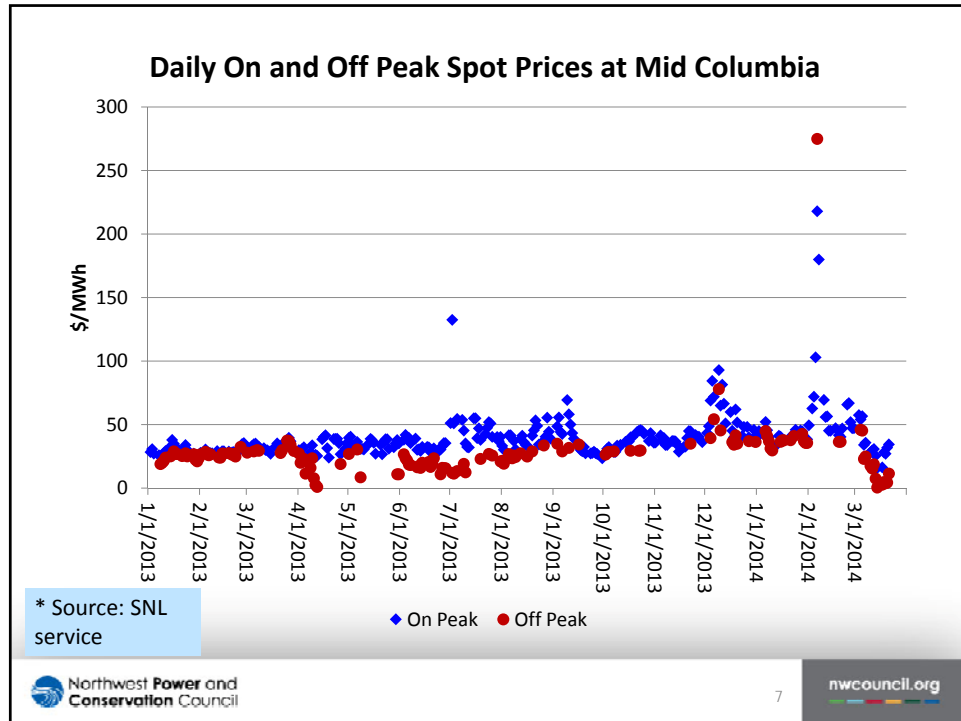
- **Production Cost Model**
- **Price forecasting is a two part process**
 1. Long term capacity expansion – in combination with existing generating units, determines which generation resources are built and retired through time and by location – economics based
 2. Economic hourly dispatch with the existing and new resources
- **Price is the variable cost to serve next unit of demand – could be native generation or import**

2014 Forecast Updates

1. Fresh natural gas and coal price forecasts
2. Hydro generation curve updated to 80-year average and current biological opinion operations
3. Updated load forecast
4. Updated transmission links
5. Updates to CA Cap and Trade and BC Carbon Tax costs
6. Financial parameters set to 2012 dollars
7. New Solar PV utility scale capital cost estimates

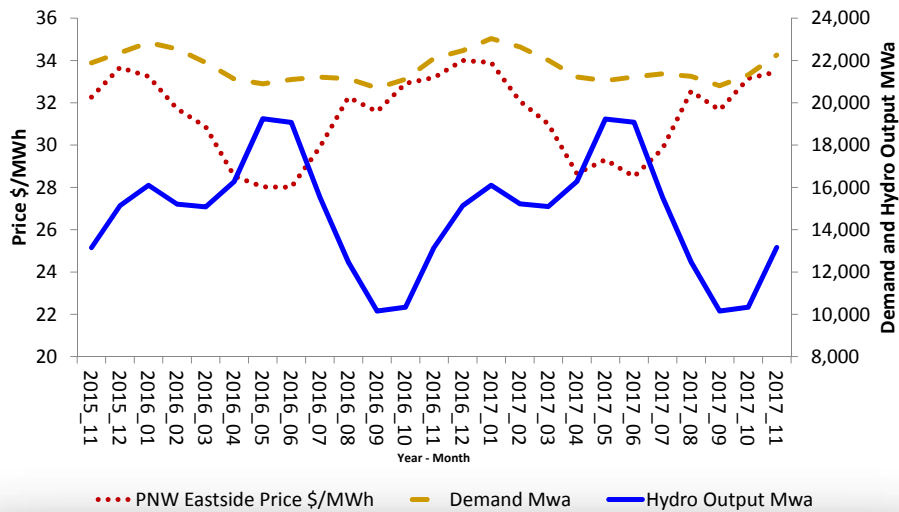
For reference, the 2013 Power Price Forecast Report was published in February 2013:

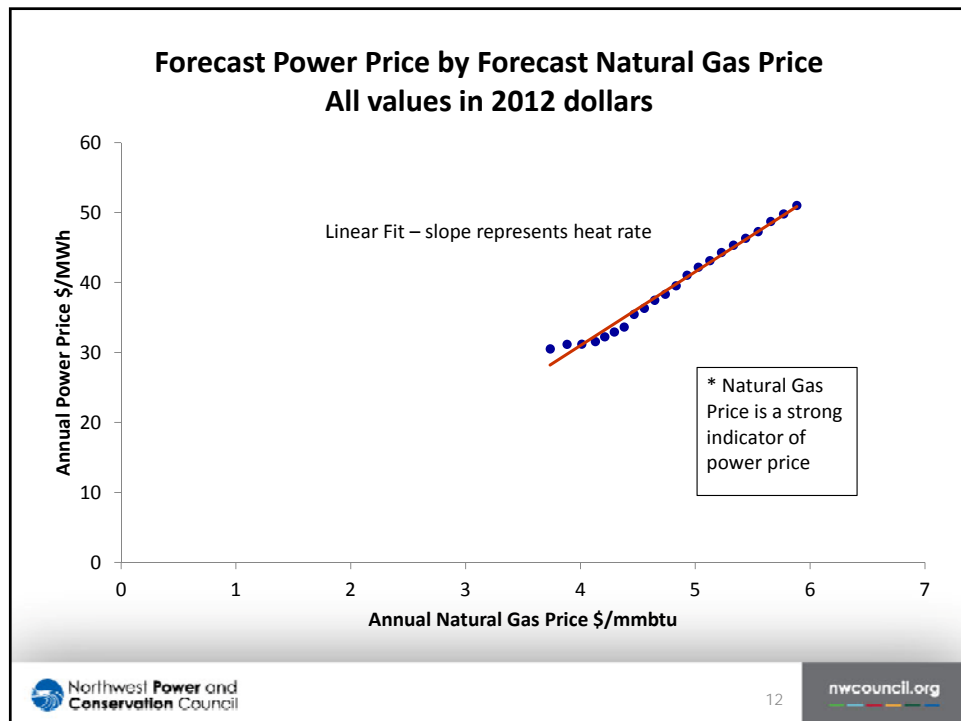
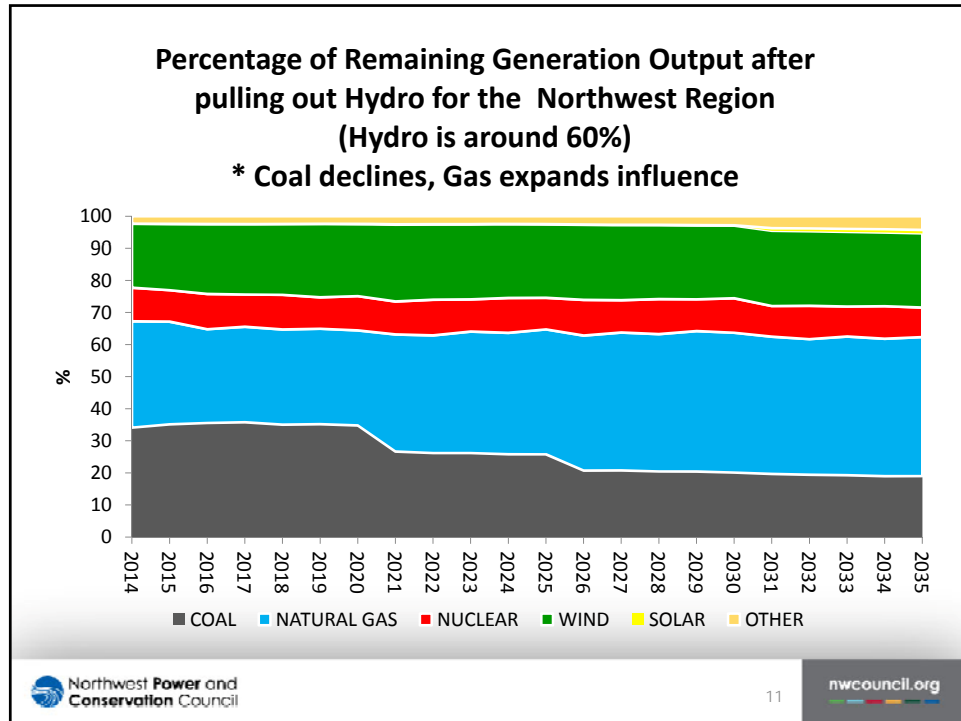
<http://www.nwcouncil.org/media/6829307/wholesaleelectricity.pdf>



Preliminary Forecast Model Results

Northwest Region Monthly Prices and Drivers



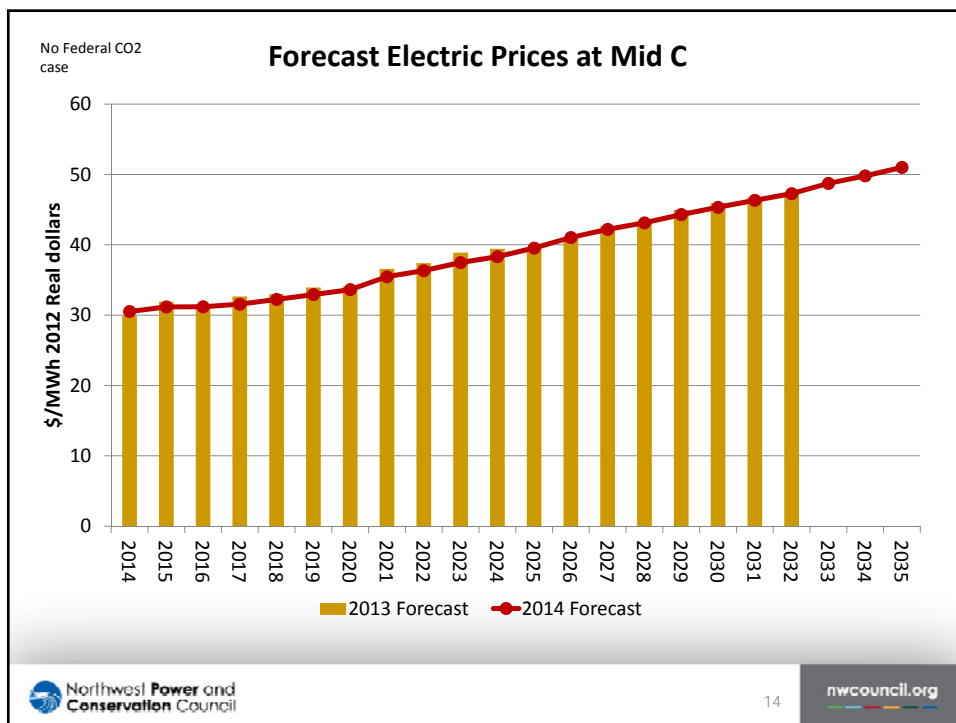


2014 Forecast Results

Little change in price from the 2013 Forecast

Continued relatively low average wholesale electricity prices

1. Hydro generation still key
2. Low demand growth
3. Relatively low natural gas prices
4. Consistent RPS projections
5. No new significant emission policy changes



Next Steps for the 2014 Forecast

Run sensitivities around

1. demand
2. fuel price
3. CO2 emission cost policies

With final results around a May timeframe