



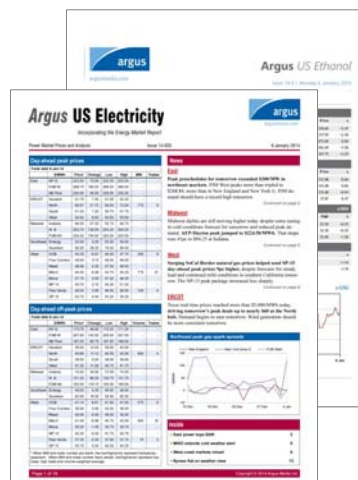
## Northwest Markets Well Prepared for December 2013 Cold Snap

Portland

Jessica Zahnow, Argus US Electricity  
15 January, 2014

## Who is Argus?

- Argus reports on every global energy market.
- A world leader in energy price indexation.
- Owned by the family of the founder and by a handful of employees.
- Over 500 employees in 18 offices worldwide.
- Recent expansion into US Natural Gas
- Indexation
  - Cal ISO GHG Allowance Index
  - Petroleum indexation



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## What will be covered...

- What did the Northwest system look like in early December?
- What did we hear?
- How did the energy market respond?
- What happened to generator economics?

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## Northwest system conditions

### Conditions 9 December

|              | Min temps        | Peak (MW) |                          |
|--------------|------------------|-----------|--------------------------|
| Seattle      | 21 °F            | 1,840     | 12/9 8am and 6pm PT      |
| Portland     | 14 °F            | 3,869     | 12/9 7pm PT              |
| Eugene       | -2 °F            | 557       | 12/9 8am PT              |
| PAC-West     | mid-teens F      | 4,353     | 12/9 8am PT              |
| PAC-East     | low to mid-teens | 7,117     | 12/5 6pm PT              |
| NorthWestern | -18 °F           | 1,710     | 12/6 7pm MT              |
| NWPP         |                  | 64,753    | 2.5pc increase over 2012 |

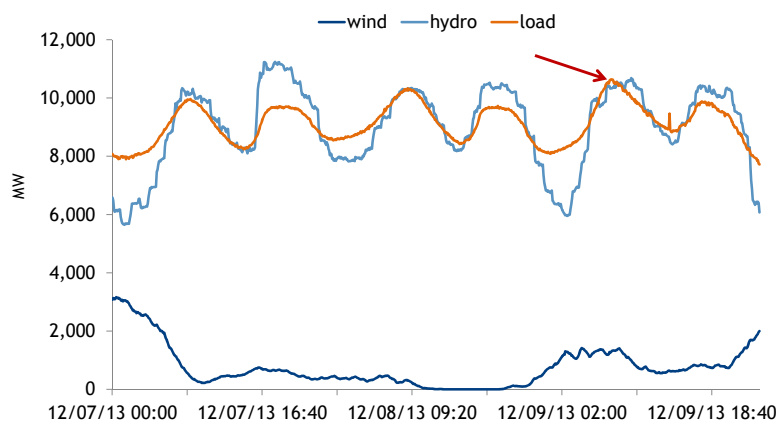
— WeatherUnderground

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## Bonneville wind, hydro, demand



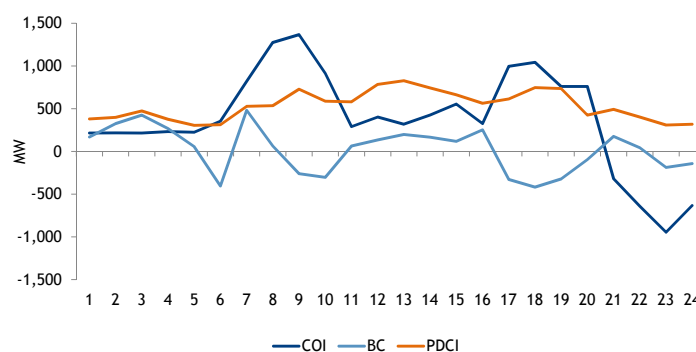
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## Transmission line loadings - 9 December

Northwest is importing nearly 1,400MW/hour over the COI from 8-9am and 1,000MW at 6pm



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## What we heard...

- “Forecasting was good going into Monday, so not many surprises”
- “With the advanced notice, we are not seeing any real issues”
- Using the event as feedback on load forecasting and conservation planning
- “Temps are tracking the forecast and we got a nice shot of rain before the cold hit so although prices are pretty high it’s not a total mess.”

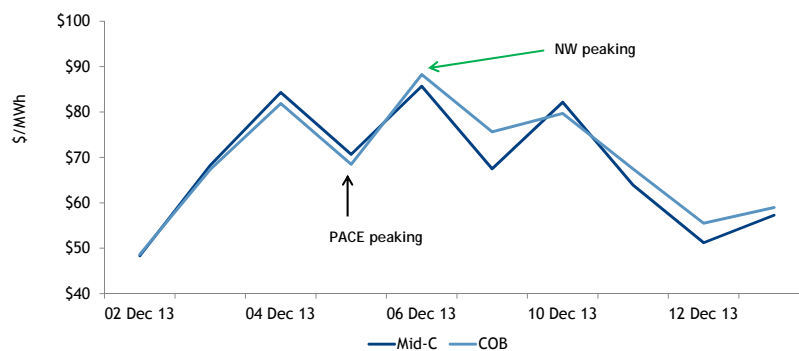
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## Peak day-ahead

- Mid-C was highest on 6 January for 9 January delivery
- Not out of range of surrounding days



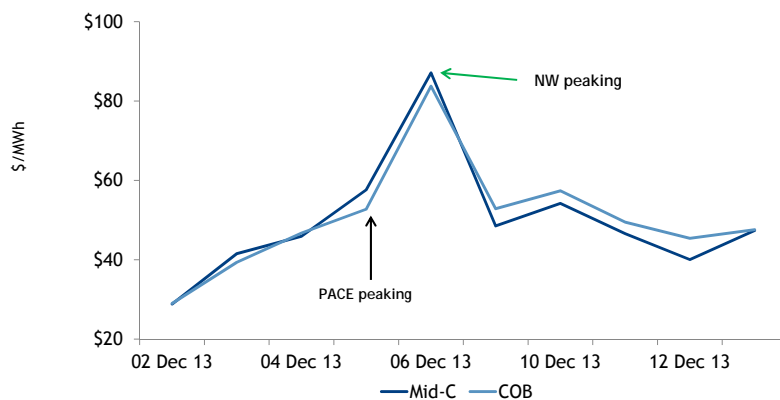
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## Off-peak

- Bigger expectation for a Mid-C event



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## Trade range

- Big off-peak ranges for 9 December deliveries
- Peak range widens day-of event for 10 December flows
- Reaction, uncertainty for a few days

| Date        | Peak    |            | Off-peak |            |
|-------------|---------|------------|----------|------------|
|             | Range   | Volatility | Range    | Volatility |
| 05-Dec-2013 | \$5.50  | \$3.89     | \$10.00  | \$7.07     |
| 06-Dec-2013 | \$22.00 | \$15.56    | \$20.00  | \$14.14    |
| 09-Dec-2013 | \$35.00 | \$24.75    | \$10.50  | \$7.42     |
| 10-Dec-2013 | \$21.00 | \$14.85    | \$16.00  | \$11.31    |

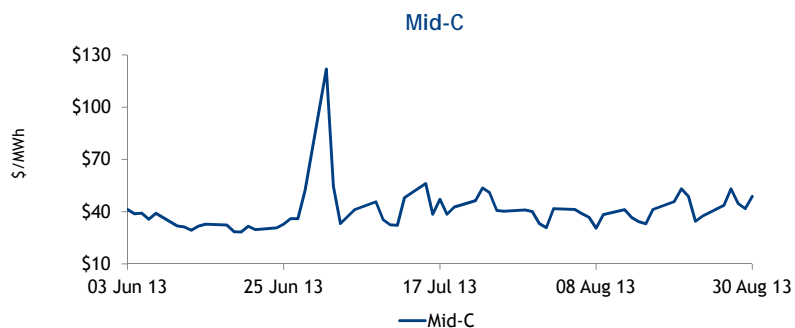
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## Peak day-ahead

But we saw bigger Mid-C values this summer coming off the weekend, very hot, loss of Colstrip, Boardman



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## Mid-C day-head trade volumes for 9 December

- Peak-hour trade volumes fall but hard to pull out an attributable trend
- Off-peak trade volume not remarkable, wind not doing much at this time
- Year over year Mid-C peak volume down 35pc in December
- Off-peak volume down 70pc

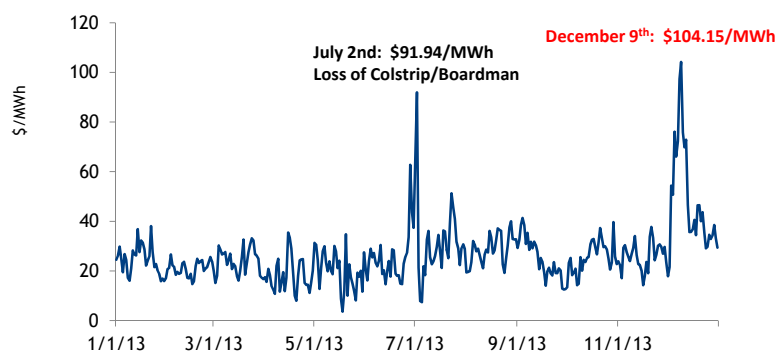
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## Energy Imbalance - NorthWestern Energy

- 5-9 December: imbalance prices reach 2013 highs
- Imbalance at 22pc premium to Mid-C preschedules



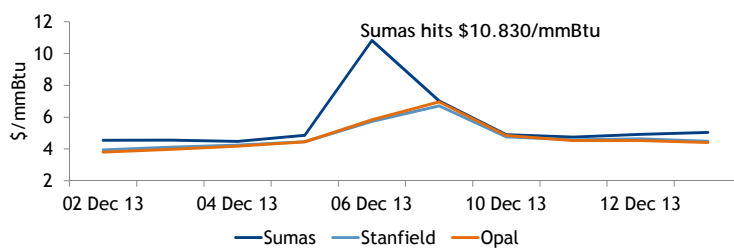
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## Power prices up, but gas up more

- Spike in gas prices makes some generation unprofitable
- Highly efficient combined cycle units fare better



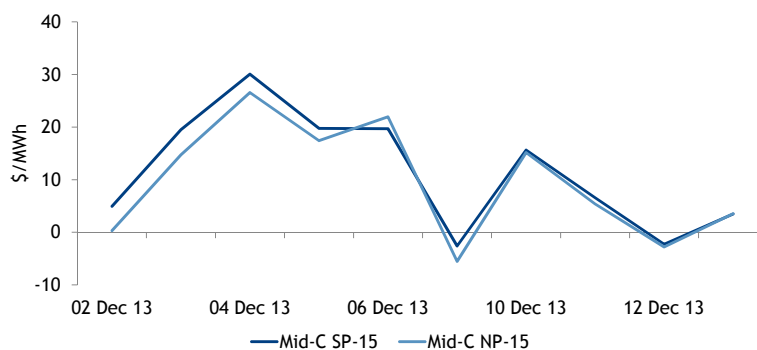
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## Spreads to California - Peak

NW spread to California highest 4 Dec for 5 Dec flows



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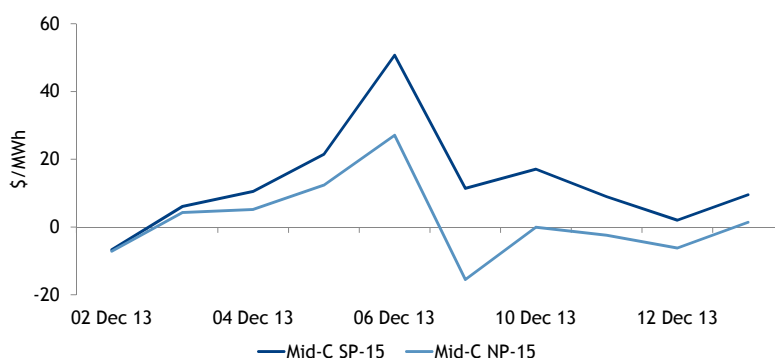
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## Spreads to California - Off-peak

NW spread to California highest 6 Dec for 9 Dec flows



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## California economics - noteworthy

- Spark spreads in the \$15-20/MWh range, Kern spot gas
- Malin was pricing below the Rockies, so California utilities pulled a ton of gas out of storage
- SoCal short gas for interruptible power customers and asks Cal ISO to step in and curtail generation
- CAISO gives unclear report on whether SoCal was short due to physical constraint or spot market avoidance

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## Key takeaways

- Forecasting going into the event appeared accurate
- Power markets did not show extreme signs of scarcity, but eyes on NorthWestern
- Gas prices pushed peakers out of the money even if generators could obtain spot gas
- California has the potential to play a role with notable exports into the Northwest and ISO-pipeline interaction

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## Any questions?

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