

March 4, 2019

A Day Which Shall Live in MidC Infamy

By

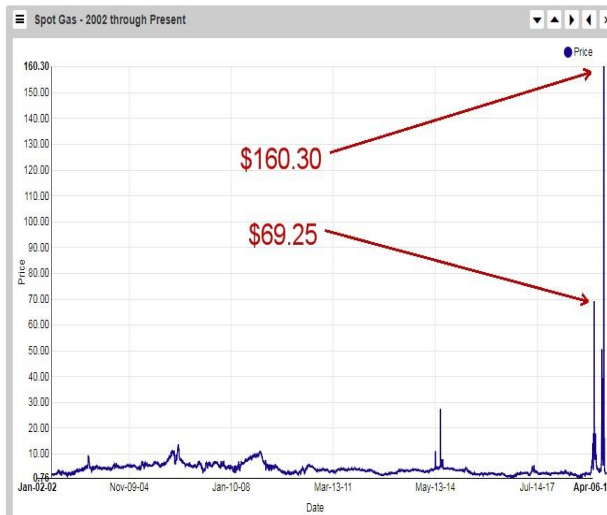
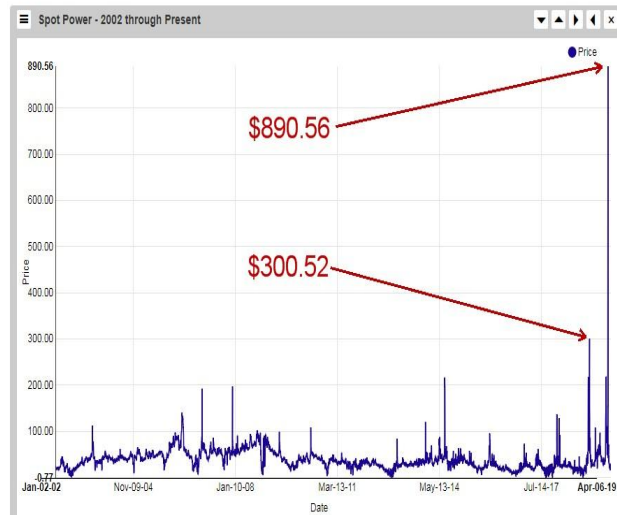
Michael T. Griswold

Ansergy WECC

Spot Prices - MidC HL - 2002 to 2019

Available Dashboards: WSP/SpotMarkets - Historical Range +

WSP/SpotMarkets - Historical Range



- Highest spot power price by a Factor of **Three**
- Highest spot gas price by a Factor of **Five**

The Two Highest Power and Gas Prices Occurred in last Eight Months

Coincidence?

What Drove these Record High Prices?

1. **Demand** was moderately high
 - a. But Feb 7 was much higher
2. **Hydro** was tight
 - a. But just below normal
3. **Wind** was Minimal
4. BC Hydro Imported from MidC
 - a. Offset by export cuts to the ISO
5. Maintenance on Westcoast Pipeline cut Sumas imports
6. **Liquidity** issues

BPA Loads & Resources - by Week

DATE ▼	PP ▲	GP ▲	HR ▲	LOAD ▲	HYDRO ▲	THRML ▲	WIND ▲	AC ▲	DC ▲	BC ▲
03-22-2019	31.55	3.06	10.31	7,544	10,190	1,753	1,826	2,679	1,724.00	2,438
03-15-2019	71.49	16.10	11.00	9,214	10,348	1,804	2,638	1,913	1,209.00	2,407
03-08-2019	890.56	160.30	10.54	9,826	10,909	1,358	915	1,568	934.00	2,231
03-01-2019	154.00	39.42	6.07	9,338	10,305	1,137	1,376	1,637	1,475.00	1,907
02-22-2019	99.19	9.51	11.52	9,322	10,925	1,656	1,358	3,001	2,663.00	1,588
02-15-2019	218.65	50.42	14.21	8,992	10,468	980	1,818	1,937	950.00	38
02-08-2019	145.34	22.55	7.66	10,232	10,654	1,684	1,093	2,051	1,296.00	1,694
02-01-2019	36.53	3.61	10.18	8,787	10,743	1,754	381	2,646	2,238.00	1,692

Feb 8 vs Mar 8

- Price - \$750 higher
- Load - 400 MW lower
- Hydro - 250 MW higher
- BC Exports - 600 MW higher
- ISO Exports - 1000 MW Lower

Fundamentals do not explain the price spike. Loads were lower and hydro higher.

Gas price drove power.

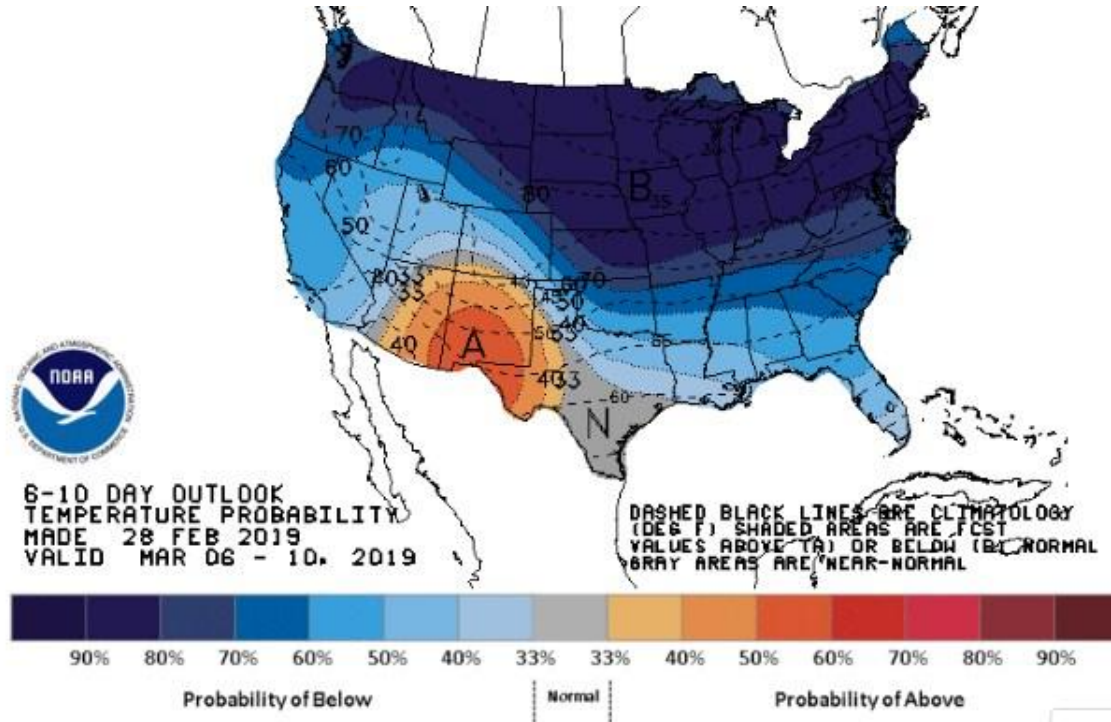
BPA Loads & Resources - by Year

YEAR ▲	PP ▲	GP ▲	HR ▲	LOAD ▲	HYDRO ▲	THRML ▲	WIND ▲	AC ▲	DC ▲	BC ▲
▼ Year										
2019	890.56	160.30	10.54	9,826	10,909	1,358	915	1,568	934.00	2,231
2018	22.82	2.41	9.65	8,517	13,148	1,545	2,243	4,288	3,035.00	1,731
2017	21.42	2.46	8.88	8,541	13,047	2,288	3,925	2,898	2,895.00	1,751
2016	14.38	1.42	10.73	7,303	12,302	2,780	3,525	3,957	2,597.00	1,626
2015	24.25	2.43	10.31	8,590	13,482	2,780	636	3,973	1,956.00	824
2014	57.01	8.02	8.59	7,561	14,109	3,604	4,193	2,910	2,824.00	1,666
2013	34.98	3.83	9.58	8,280	10,038	5,283	3,218	2,823	2,552.00	345
2012	25.11	2.54	9.89	8,430	11,408	3,153	3,910	3,009	2,161.00	1,698
2011	31.78	3.83	8.30	8,497	14,525	3,358	2,520	2,728	2,924.00	1,745
2010	41.65	4.58	9.23	7,135	9,433	5,020	1,715	2,267	1,925.00	785
2009	32.92	3.33	11.17	8,074	10,659	5,286	1,712	2,760	538.00	1,522
2008	71.53	8.75	8.69	8,785	13,433	5,141	1,187	2,879	1,886.00	1,822
2007	58.97	6.56	8.99	7,745	13,514	3,669	611	3,114	1,647.00	831

Week Ending March 7

- Highest Power Price
- Highest Gas Price
- Highest Load
- 4th Lowest Hydro
- Lowest Thermal
- 2nd Lowest Wind
- Lowest AC
- 2nd Lowest DC
- Highest Northern Intertie

NOAA's 6-10 at Start of Trading on March 4



- NOAA's 6-10 Day, on Feb 28, was Cold
- **36 Consecutive Below Normal Forecasts** starting on Jan 28

How Cold Was It on March 4?

Realized Temperatures

Weather Actuals Chart

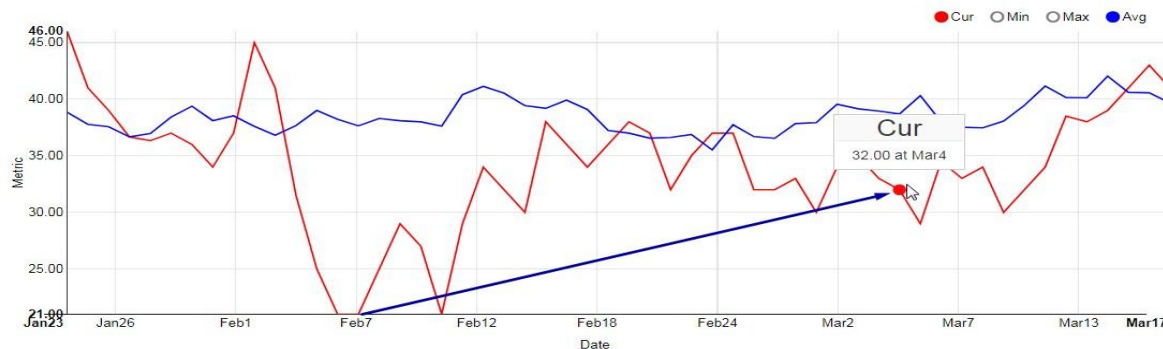
+ Description

[Weather Actuals Summary](#) - [Chart Data](#) - [Weather Actuals - Degree Day Summary](#) - [Line Chart](#)

Location: Metric: Stat:

SUBMIT

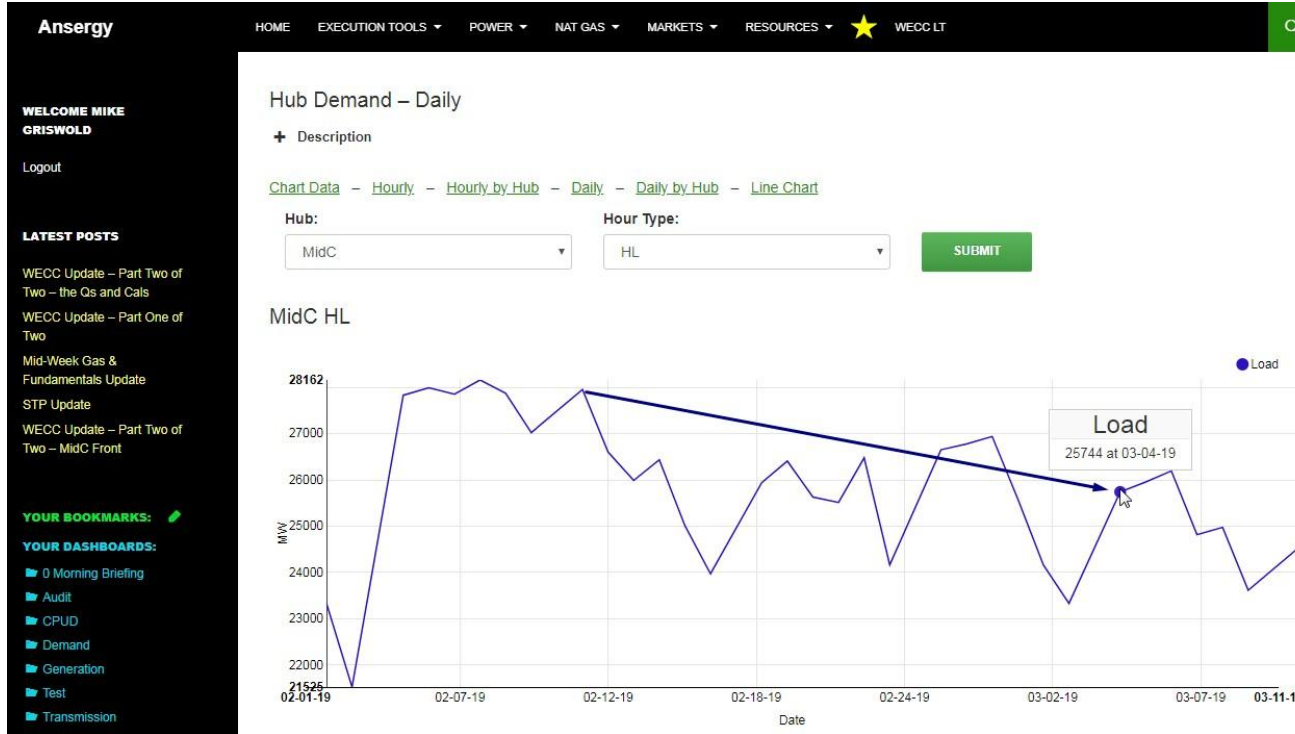
MidC_Seattle Temperature Min



- March 4 low at Seattle was 32 degrees
- 11 degrees **Warmer** than on Feb 7
- Mar 5 was 29 degrees, 3 degrees **colder** than the 4th

○ **But traded \$900 LOWER**

MidC Peak Demand by Day



- Peak load was 2400 MW **Lower** than Feb 7
- Wednesday, Mar 6, was 400 MW **Higher** than Monday

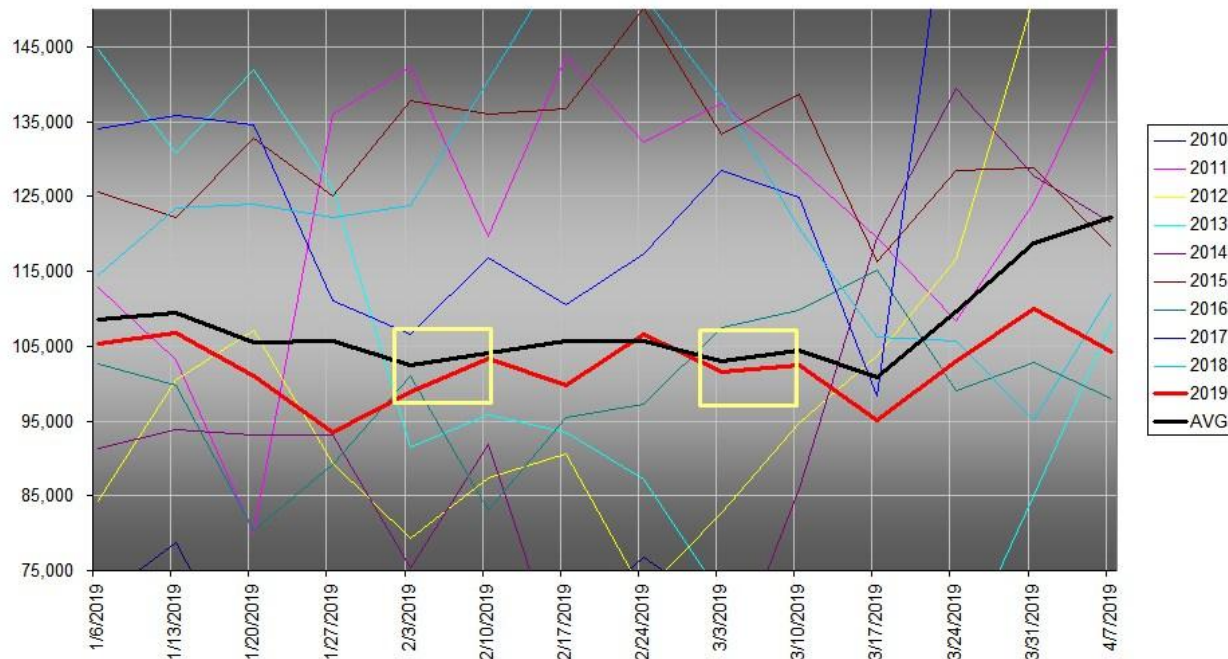
Demand Conclusions

- Demand **did not** drive prices to \$900
- Loads were substantially **lower** than the early Feb cold event

Other Factors

Hydro?

Coulee Avg Flows by Week



Weekly Average Coulee Outflows

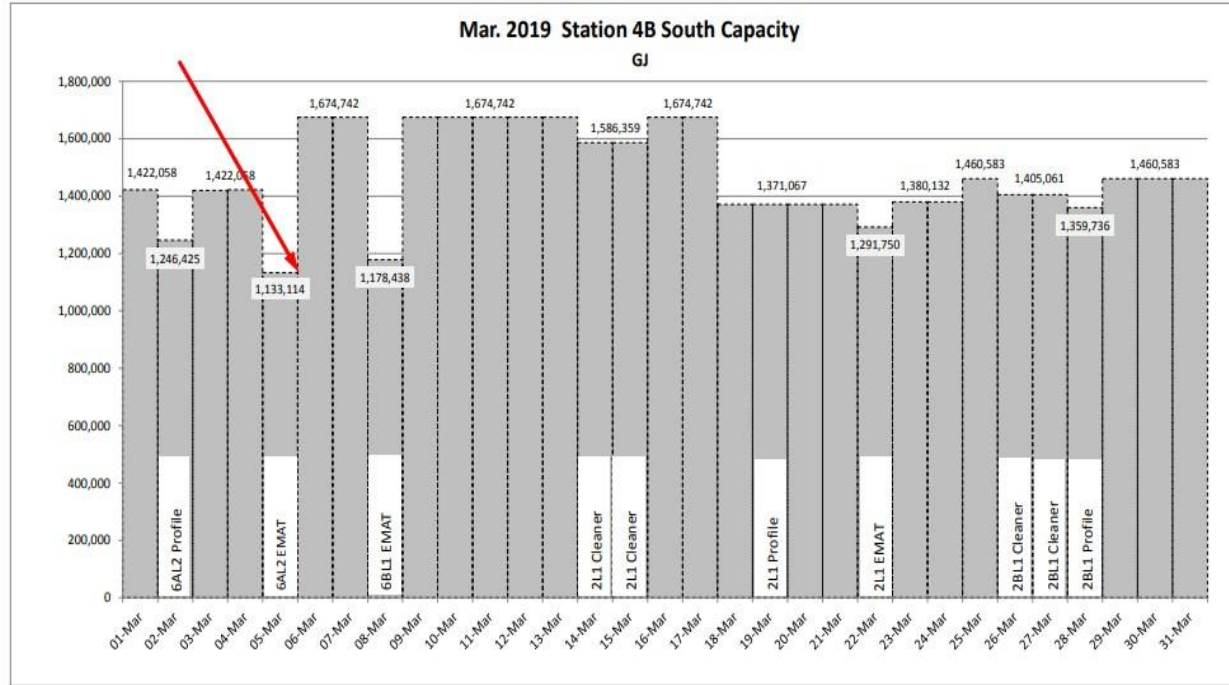
- 2019, both weeks, were closer to average than not

Hydro production **did not** drive the \$900 prices

Blame it on Gas

- Power fundamentals were bullish
 - They were not **4 STD DEVIATIONS** Bullish
- Gas Price mostly to blame

Gas Supply Fears



- Westcoast releases the Station 4B Schedule on Feb 21
- 500 MMCF cuts on Mar 5
- 300 MMCF cuts for Mar 4

Market knew cuts in supply were coming

Westcoast Revises Schedule on Saturday



Westcoast Energy Inc.
Critical Notice
Curtailment - Pipeline
 Notice: #51634 Revision: #0

Subject: TSouth Capacity Update for March 3 to March 7th, 2019

Summary: TSouth Capacity Update for March 3 to March 7th, 2019

Enbridge BC Pipeline has completed its assessment and repair plan for the 2L2 dig. Operationally available capacity for TSouth for the period March 3 - 7 during this time is forecast to be as follows:

Station 4B South:

March 3, 2019	1,600,000 GJ
March 4, 2019	1,674,742 GJ
March 5, 2019	1,246,425 GJ <i>Tool Run</i>
March 6, 2019	1,674,742 GJ
March 7, 2019	1,674,742 GJ

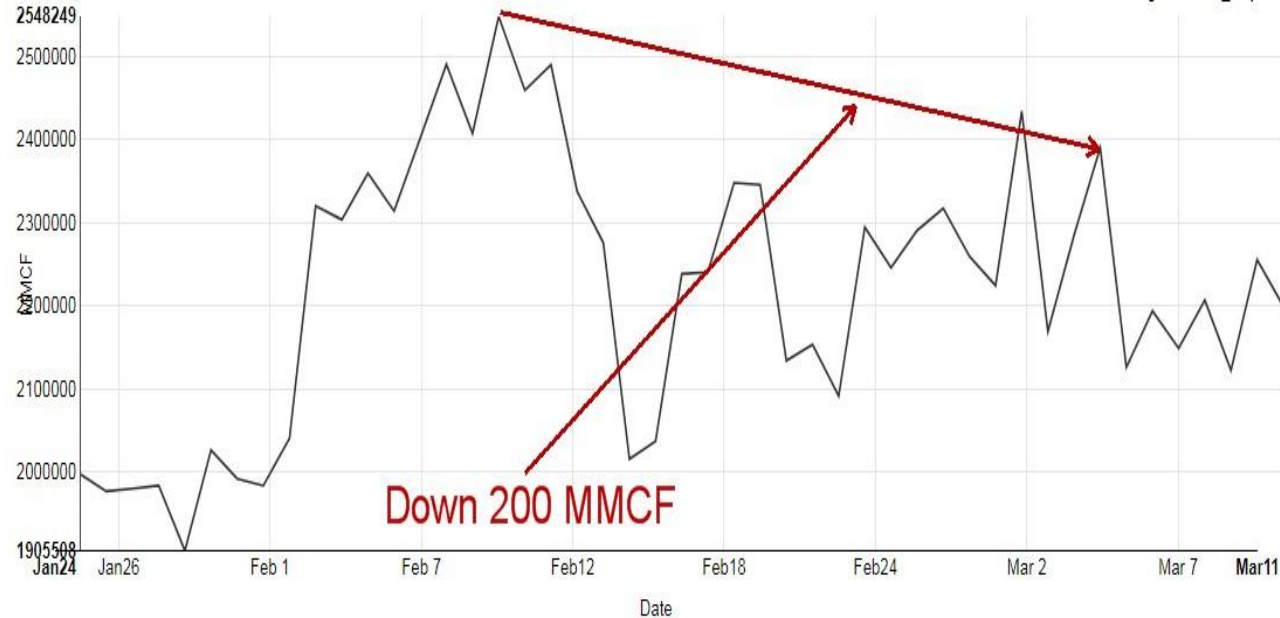
With the increase in capacity, Enbridge BC Pipeline shippers are required to match supply and demand to avoid drafting the pipeline.

Shippers must ensure accounts are within tolerance in order for out of tolerance

- Westcoast changes the expected maintenance impacts after seeing the wild Mar 4 prices
 - On Saturday, but market already traded
- Adds 100-200 MMCF to both Monday and Tuesday

Why didn't the pipeline revise earlier in the week?

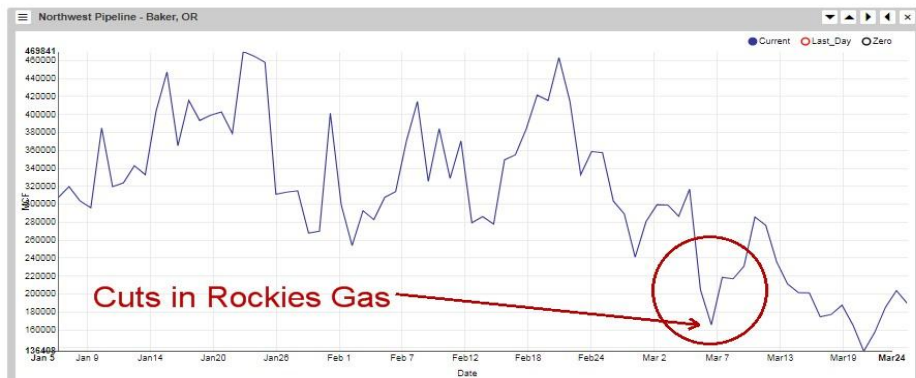
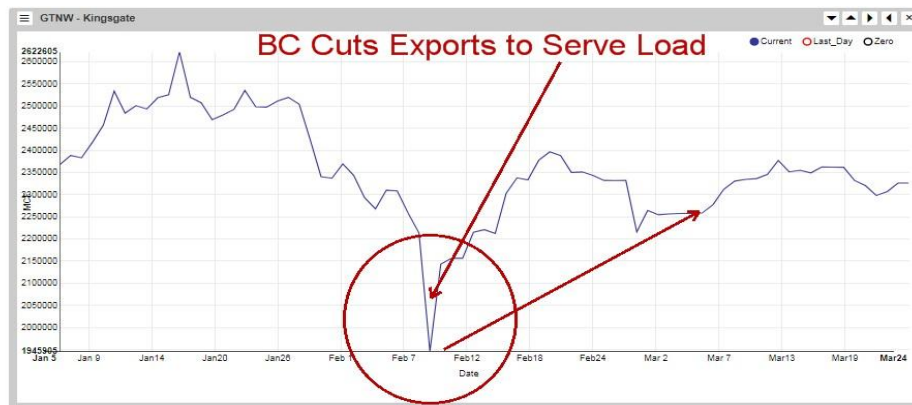
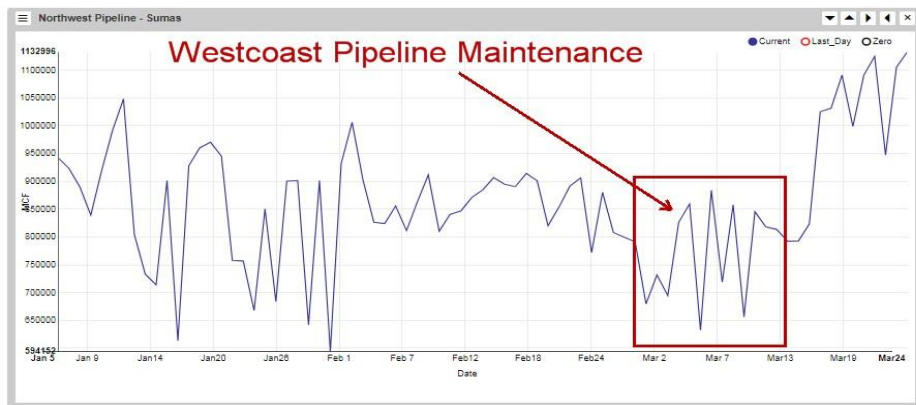
Gas Demand



- Down 200 MMCF from Feb 7
- Up 80 MMCF from prior week

What about Supply?

Northwest Gas Supply: GTNW & Northwest Pipeline



Supply Observations

- Frequent, yet irregular, capacities at Sumas increased price volatility
- GTNW became MidC's swing gas resource
 - Feb 8 saw a massive cut in GTNW flows at Kingsgate
- Northwest Pipeline flows from the Rockies were very low as Idaho realized cold weather
- PG&E bore the brunt of the Northwest Cold

What happened at Jackson Prairie?

Withdrawals from Jackson Prairie

Nodal Storage Daily

+ Description

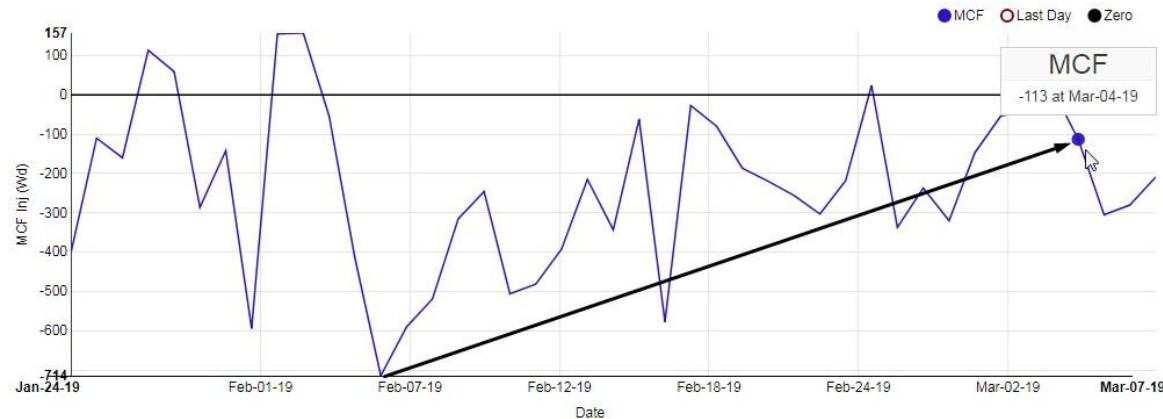
[Summary](#) - [Chart Data](#) - [Weekly](#) - [Line Chart](#)

Location:

Change_Jackson Prairie

SUBMIT

Change_Jackson Prairie



- 113 MMCF withdrawal on March 4
- 744 MMCF pulled on February 7
 - 630 MMCF Less on March 4!

Why wasn't more gas pulled from storage on a day where the price was \$160?

Can't Blame the March 4 Blow Up on Gas

- Price was 5 Times Higher on March 4 than Feb 7
 - Demand was 200 MMCF lower on March 4
 - Supply was 200 MMCF lower than February 7

Fundamentals Do Not Support the Price

Were there Other Reasons?

Liquidity

Two Reasons for Falling Liquidity

- **EIM** - Four of the Largest MidC Players in the Day Ahead markets Joined the EIM
 - Powerex, Puget, Portland, and PacWest
- **Witch Hunt**
 - War on speculative trading has ruined the market

EIM Markets are Growing

Region	2015	2016	2017	2018	2019
Northwest	376	520	841	1,293	4,345
Northwest	328	531	926	1,741	4,728
Northwest	382	382	720	1,652	4,653
Northwest	288	385	763	3,305	4,037
Northwest	378	406	871	3,039	
Northwest	431	617	774	3,880	
Northwest	397	635	764	4,610	
Northwest	376	446	821	4,281	
Northwest	402	404	748	4,002	
Northwest	324	798	1,394	4,059	
Northwest	696	813	1,490	4,108	
Northwest	450	840	1,525	5,003	

- EIM Volume is soaring; these are MWH not traded in the Dailies
 - Powerex
 - Puget Sound Energy
 - Portland General
 - PacWest
 - Idaho Power

Day Ahead Volumes are falling because of EIM.

Liquidity - Historical ICE Volumes

Year	Month	MWH	Trades	Counter Parties
2014	3	1,656,800	3,419	23
2015	3	1,030,400	2,105	20
2016	3	1,651,200	3,172	23
2017	3	971,600	1,927	20
2018	3	796,000	1,463	17
2019	3	535,600	1,038	17

- > 1 Million MWHs less than 2014; a 70% drop
- 2,400 Less Combined Trades
- Average Daily Counterparties dropped from 23 to 17

Consequences of
Falling Liquidity?

March MidC - Term Market

Power Price

T
MC HL 201903



- BOM hits \$119
- Gaps **UP** \$60 on Friday
- **DROPS** \$70 on Monday

**Blame it on
Liquidity**



Thank You

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