Review of Ontario Natural Gas Markets During the 2013-2014 Winter

Prepared for:
Union Gas Limited
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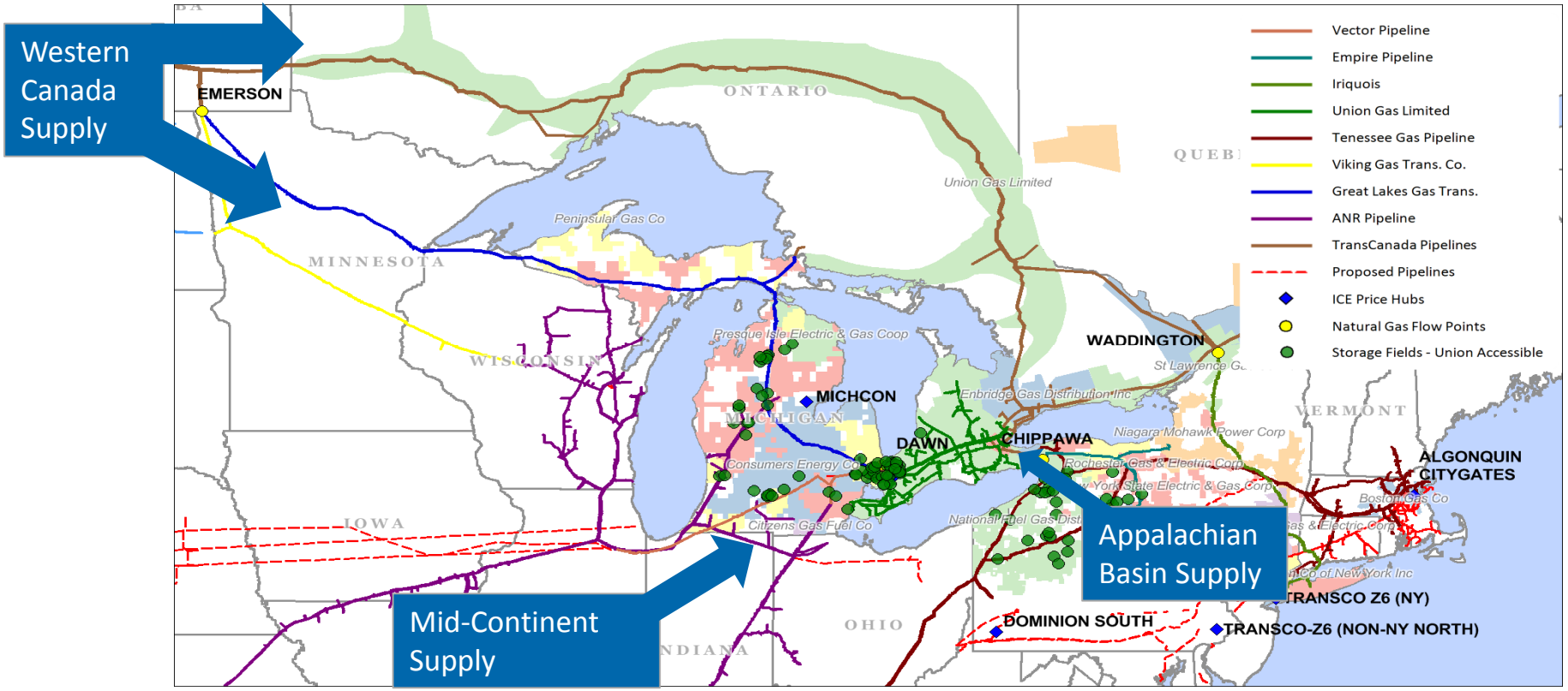
Section 1: Executive Summary

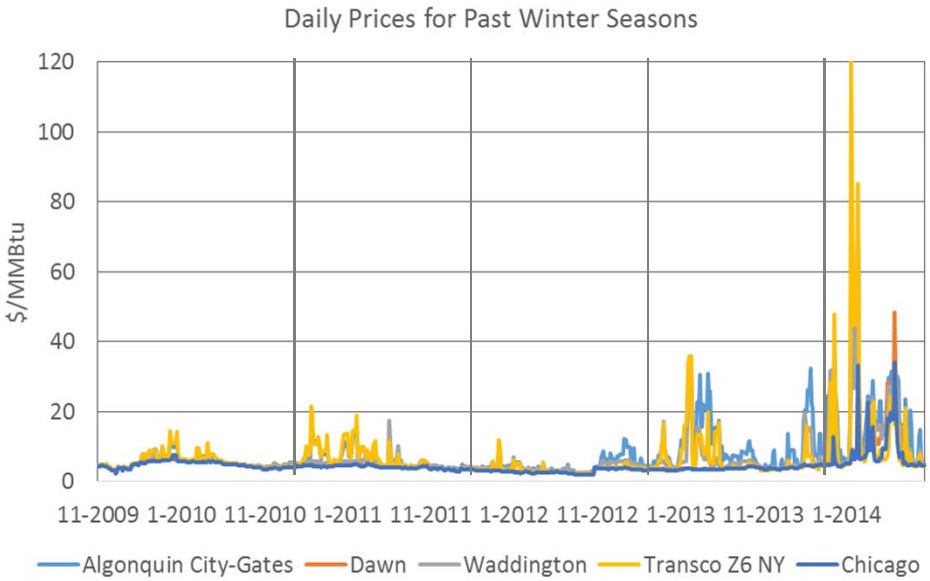
Ontario Natural Gas Infrastructure



- The Ontario market imports natural gas from a number of major supply basins and has direct access to the major storage hub at Dawn.

Source: Ventyx, LCI

Historical Winter Prices (November to March) in U.S. and Canadian Markets



Average Winter Prices (Nov-Mar) ($/MMBtu)

	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014
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Dawn	$ 5.19	$ 4.58	$ 3.25	$ 3.83	$ 8.05
Waddington	$ 5.56	$ 5.47	$ 3.70	$ 6.10	$ 11.79
Transco Z6 NY	$ 6.11	$ 6.84	$ 3.73	$ 6.50	$ 10.97
Chicago	$ 5.05	$ 4.28	$ 2.90	$ 3.63	$ 6.65

- Prices went up throughout U.S. and Eastern Canadian markets last winter. However average prices in the Great Lakes region, such as Dawn and Chicago, were notably lower than other markets where supply was more constrained and access to storage more limited.
- Prices in the Great Lakes region also experienced significantly less volatility than those observed in New York and New England.

Source: SNL

Winter Prices in Key Supply Areas that Provide Gas to Eastern U.S. and Canadian Markets

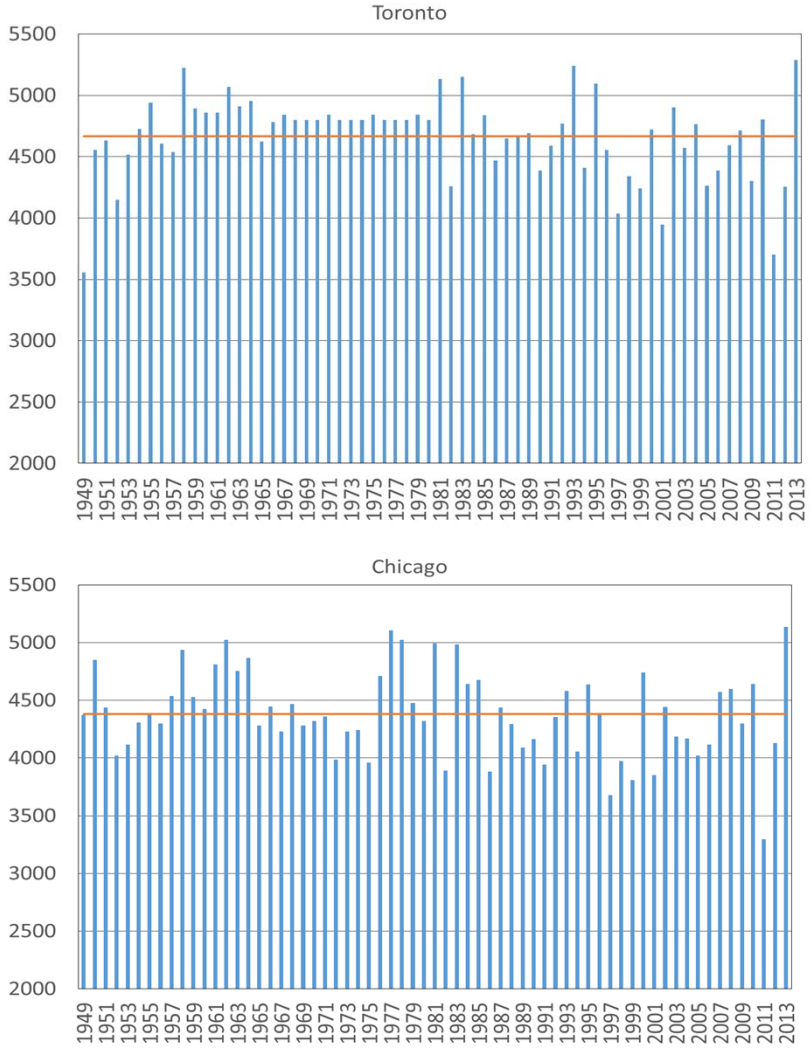
Average Winter Prices (Nov-Mar) ($/MMBtu)

	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014
AECO	$ 4.61	$ 3.58	$ 2.43	$ 3.05	$ 4.46
Dominion South Point	$ 5.15	$ 4.33	$ 2.84	$ 3.48	$ 4.25
Henry Hub	$ 4.90	$ 4.09	$ 2.78	$ 3.47	$ 4.63
Empress	$ 4.52	$ 3.48	$ 2.11	$ 2.99	$ 5.19

- Prices in supply regions from last winter are above those in previous winters, even though they were substantially more stable than market area prices.
- Prices in the Appalachian Basin (Dominion South Point) were more stable than prices at AECO and Empress.

Source: SNL

The 2013/14 Winter Set Heating Degree Day Records in the Midwest U.S. and Ontario

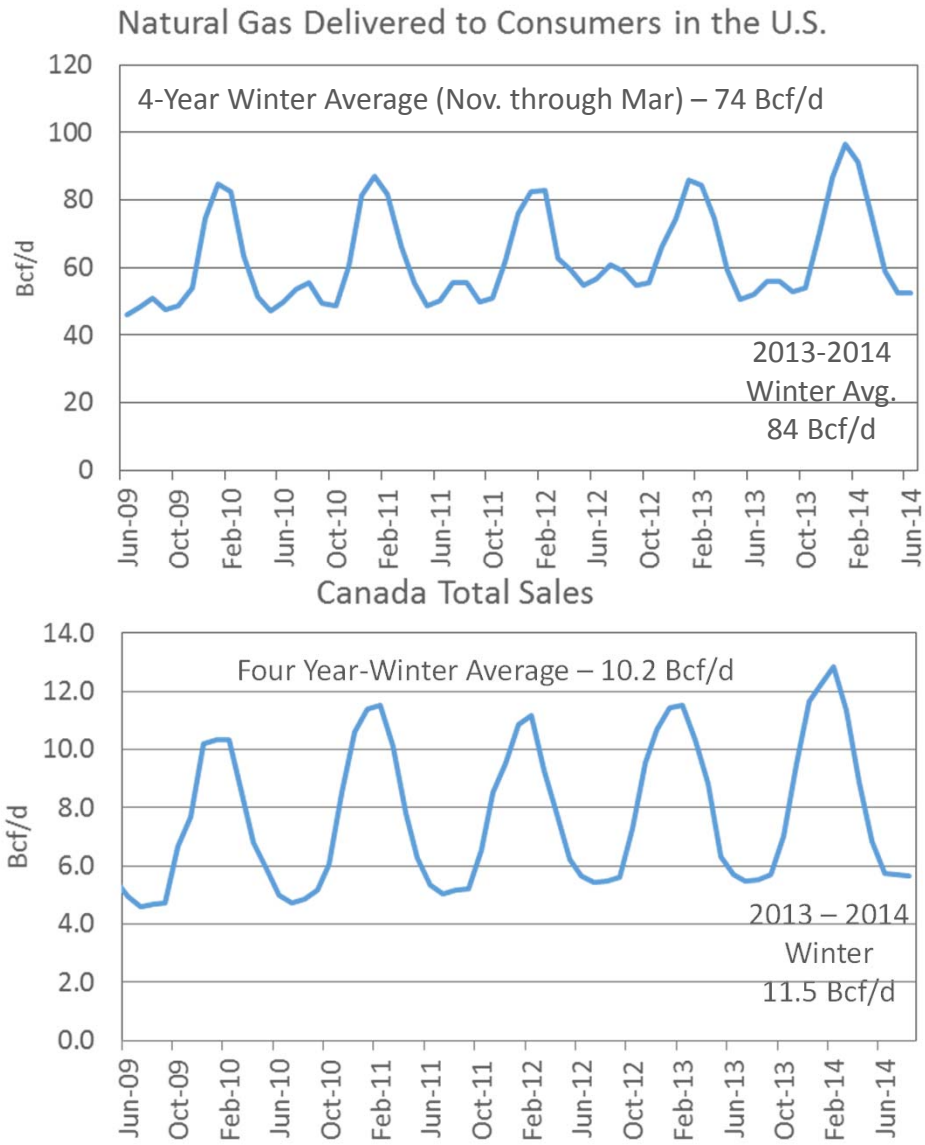


- The Great Lakes area in the U.S. and Canada experienced the coldest December through March in the last 65 years.
- Mid-Atlantic and New England weather last winter was also colder than the 65-year average.
  - The U.S. South Atlantic was also colder than average.
- In total, the Eastern U.S. and Eastern Canada had the second highest HDDs since the 1950s, as reflected by the sum of HDDs from the five weather stations– Chicago, Toronto, NYC, Boston and Atlanta airports.

Notes on HDD Charts: The blue bars represent the sum of heating degree days for December through March of the following year. For example, the 2013 bar reflects total HDDs between December 2013 through March 2014. The red-line represents the average December to March HDDs for the period of 1949-2013. Daily HDD data at Toronto from 1968 through 1980 is missing and ICF applied approximate data for these years.

Source: NOAA, ICF

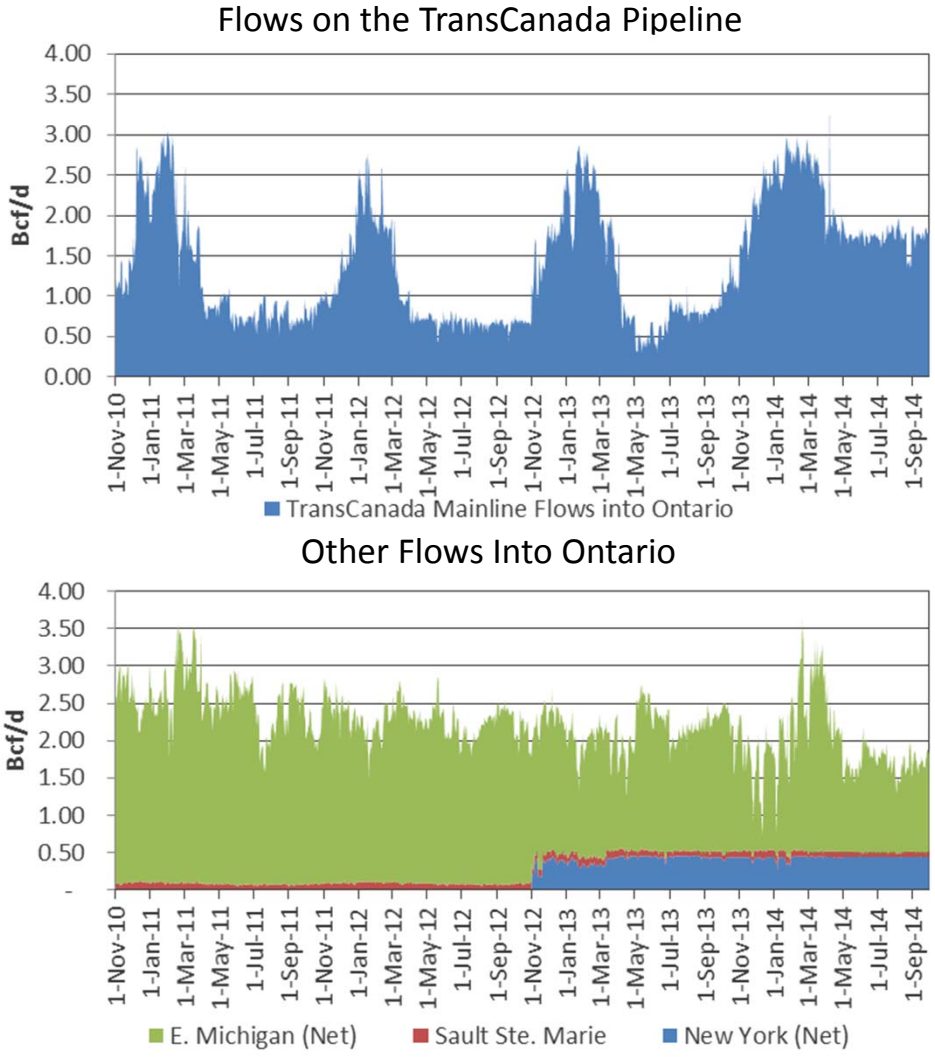
Winter U.S. and Canadian Demand



- Total U.S. demand from November 2013 through March 2014 was 13% higher than the average over the previous four winters.
  - Gas use was up over 23% in the U.S. Mid-Atlantic and Midwest, relative to the average over the previous four winters.
- Canadian demand was 14% higher than the average over the previous four winters.
  - Ontario's demand was 15% higher than the average over the previous four winters. (4.0 Bcf/d versus 3.5 Bcf/d)
- The combination of high U.S. and Canadian demand placed stress on the entire supply chain.

Source: EIA, StatsCan

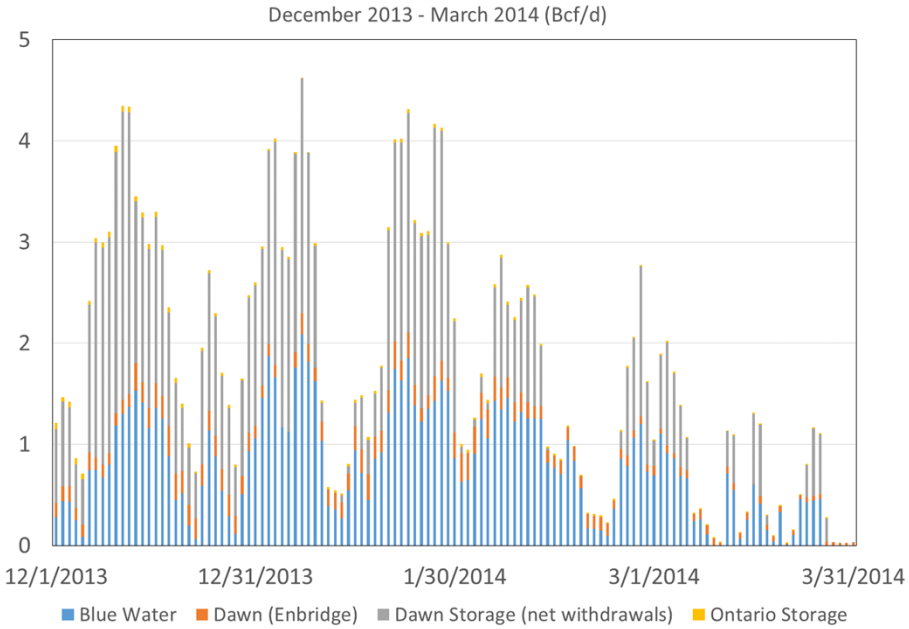
Pipeline Deliveries Into Ontario

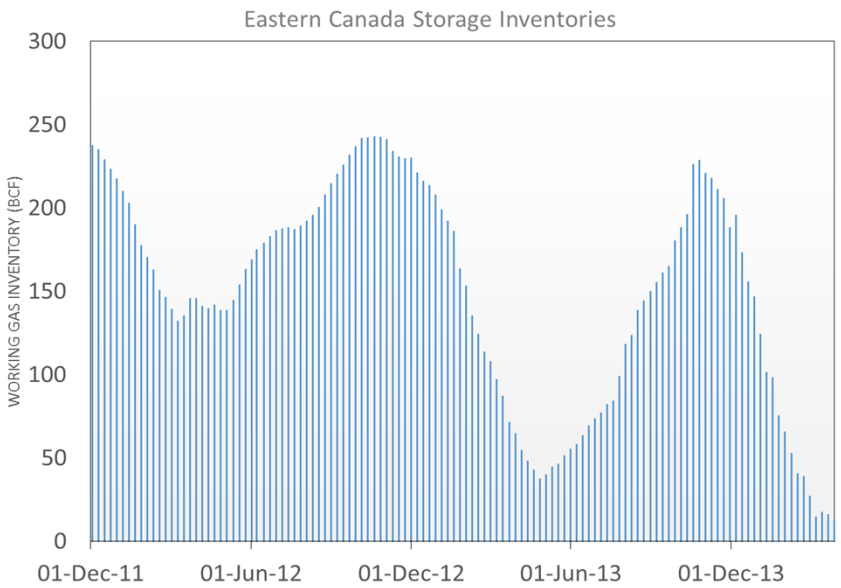


- TransCanada deliveries into the Eastern Ontario Triangle were sustained at high levels at or near capacity on the EOT for an extended period of time.
- During peak periods, flows on other pipes into Ontario from Michigan dropped due to high regional demand and pipeline capacity constraints.
  - Great Lakes reversed flow to Emerson to move gas from Dawn to the EOT.
- Flows into Ontario increased in February and March of 2014 due to limited storage inventory.

Source: Ventyx, LCI

Access to Storage is a Critical Component of Ontario's Natural Gas Supply Portfolio





- Storage withdrawals were used throughout the 2013-14 winter season to meet incremental demand in Ontario during peak demand periods.
- Access to storage helped to dampen and delay the impact of the high prices seen in the spot markets.
- By the end of the season, storage inventories in East Canada were depleted to historical lows, reducing available storage withdrawals and leading to late season price increases during February and March.

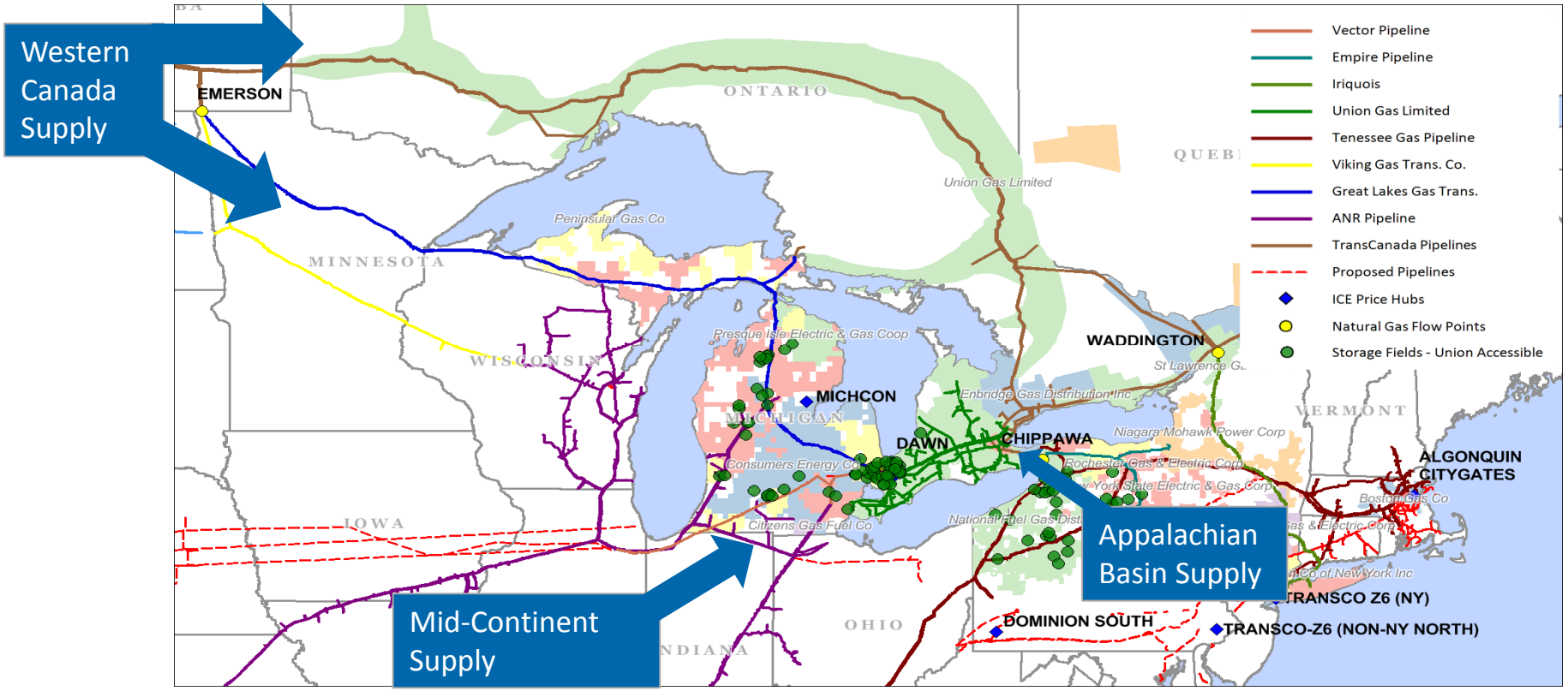
Source: Union Gas

Summary of Key Observations

- Last winter, natural gas prices in regional markets throughout Ontario and the U.S. Midwest and Northeast regions rose to historically unprecedented levels. Price spikes observed in Ontario reflected weather conditions, demand, market competition for gas supplies, storage inventory levels, and physical pipeline constraints into and through Ontario.
  - Weather in the Midwest and Ontario markets was the coldest in 65-years. U.S. Mid-Atlantic and New England weather was also among the top 25% of the coldest winters observed during the past 65 years.
- Regional storage access played a critical role in managing the 2013-2014 winter and dampened and delayed the impact of high prices on Ontario consumers.
  - Heavy storage withdrawals resulted in storage inventories falling to below the "normal" end of season inventory levels by the end of January.
  - Availability of regional storage is, in part, the cause of relatively modest price increases in the Midwest and Ontario markets (represented by Chicago City-gates and Dawn) up to the end of January 2014.
- ICF believes that pipeline access to regional storage and to gas supply from the Appalachian Basin is important in managing future high demand situations similar to those observed in the 2013-2014 winter.
  - Prices in the Appalachian Basin were considerably more stable than those observed elsewhere last winter.
  - Infrastructure projects that directly connect the fast growing production from the area into Ontario will provide significant stabilizing benefits to the Ontario market.

Section 2: Ontario Natural Gas Infrastructure

Ontario Natural Gas Infrastructure



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Section 3: Winter Prices and Price Volatility

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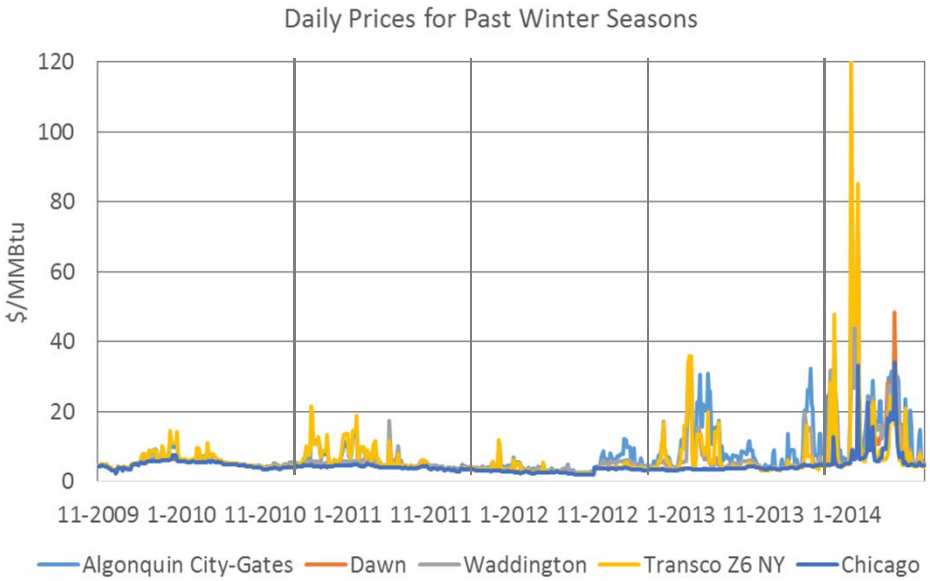

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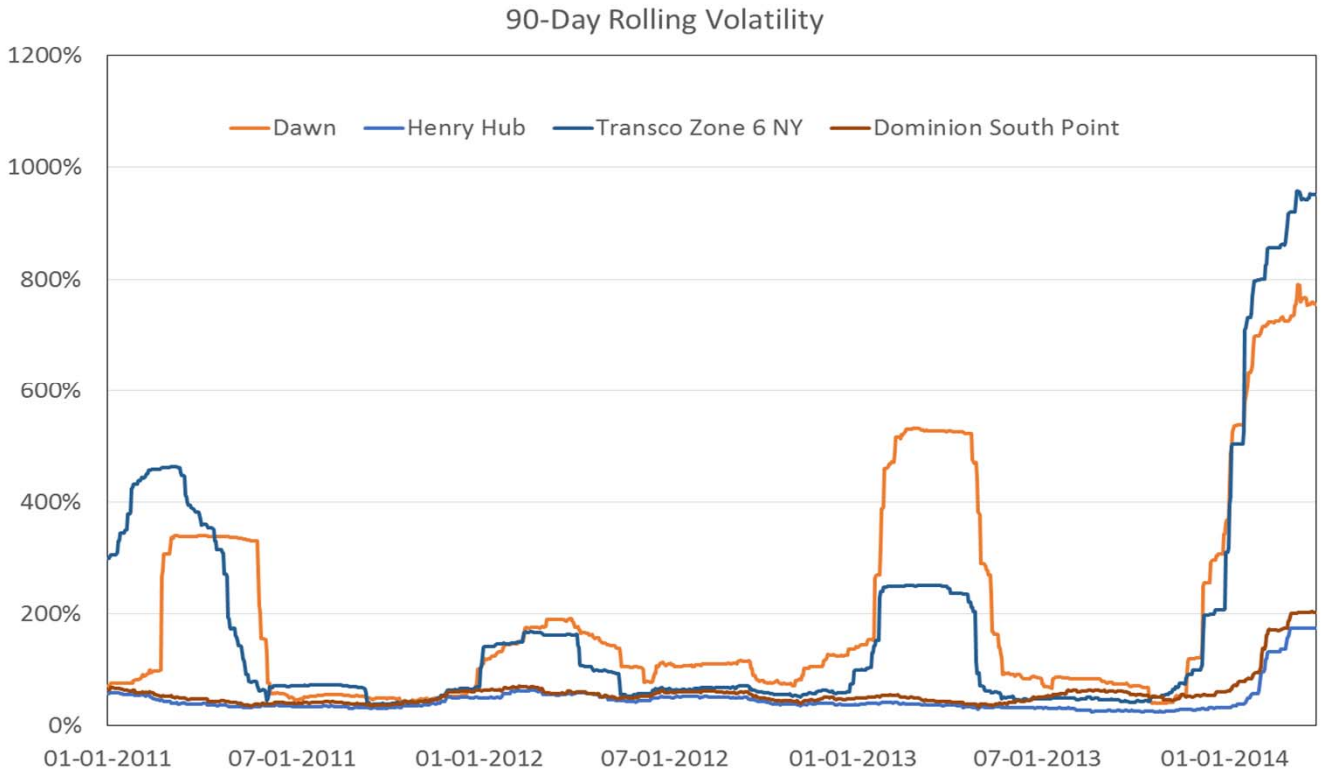
Source: SNL

Historical Price Volatility

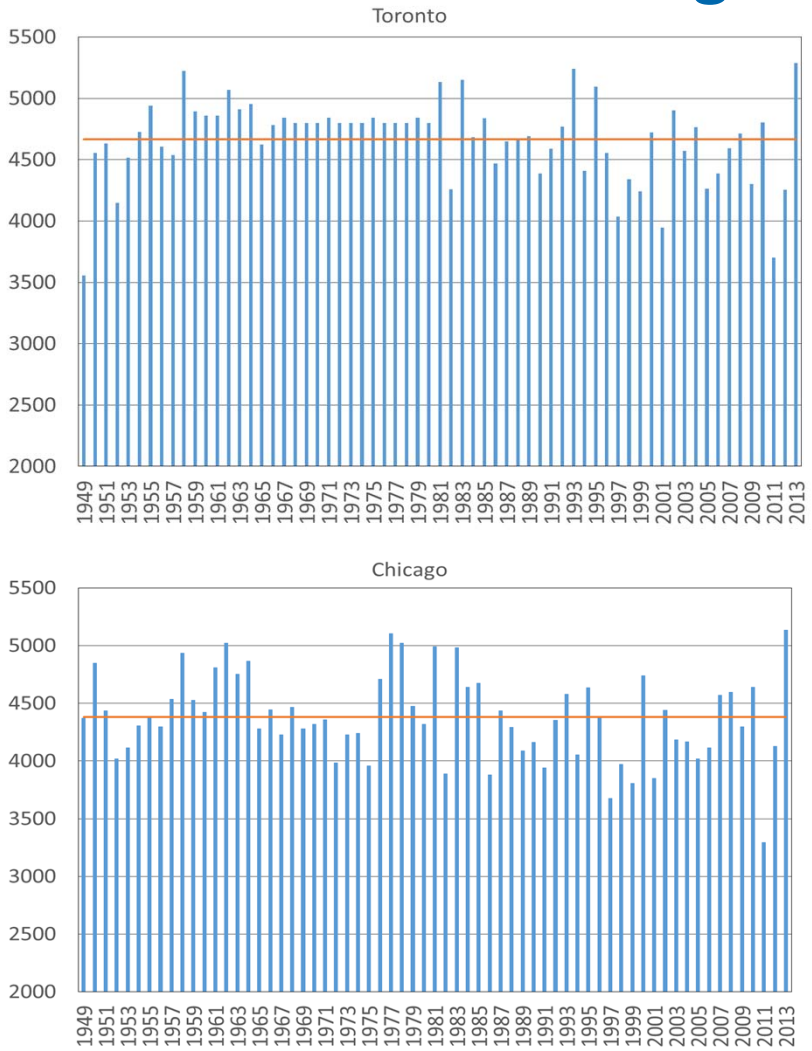


- Price volatility observed in supply basins, including Henry Hub and Dominion South Point, was significantly below market area price volatility.
- Adequate natural gas supply and transportation infrastructure in supply areas reduces gas price volatility.

Source: SNL, ICF Analysis

Section 4: Winter Weather and Demand

Sum of Heating Degree Days from December to March of the Following Year



- The Great Lakes area in the U.S. and Canada experienced the coldest December through March in the last 65 years.
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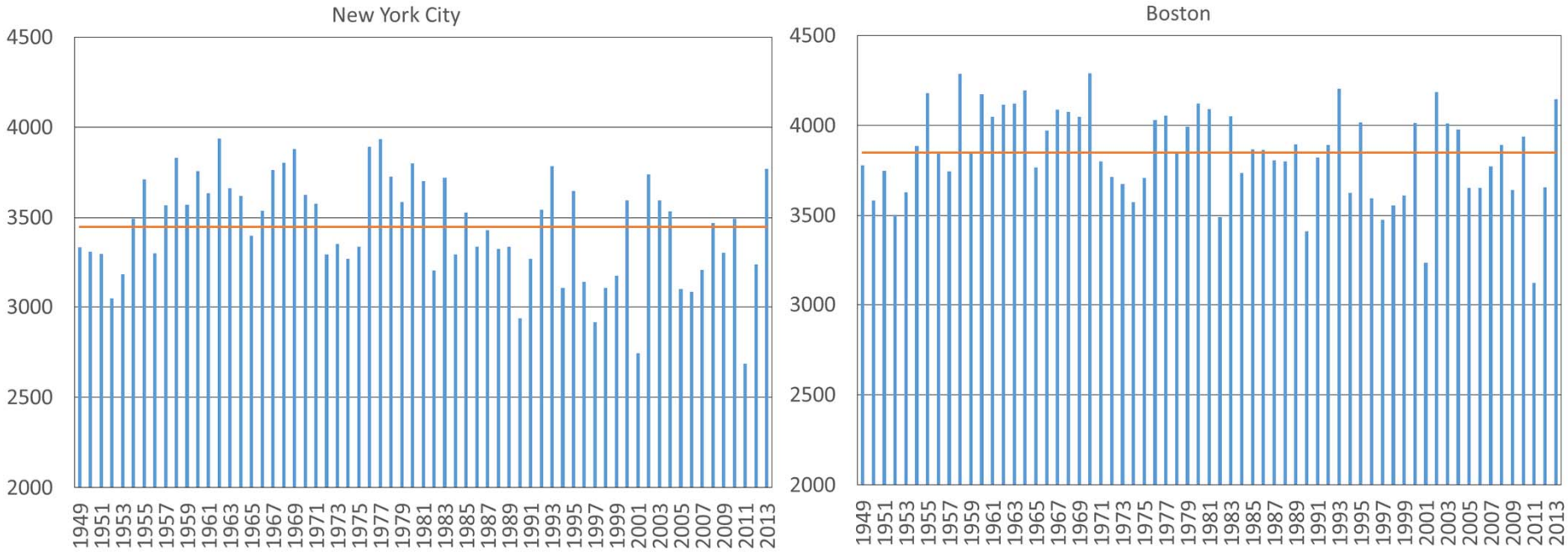
Source: NOAA, ICF

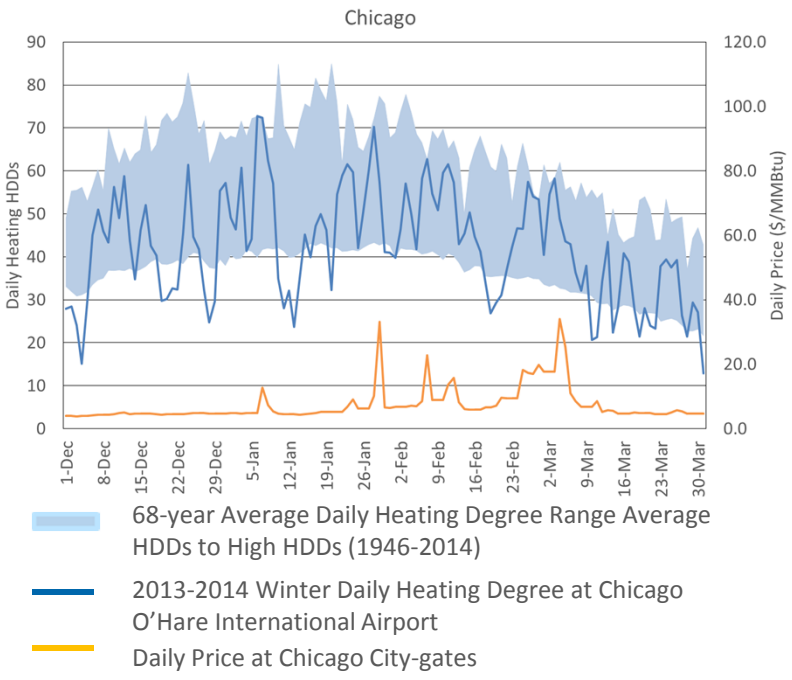
Sum of Heating Degree Days from December to March of Following Year – U.S. Northeast

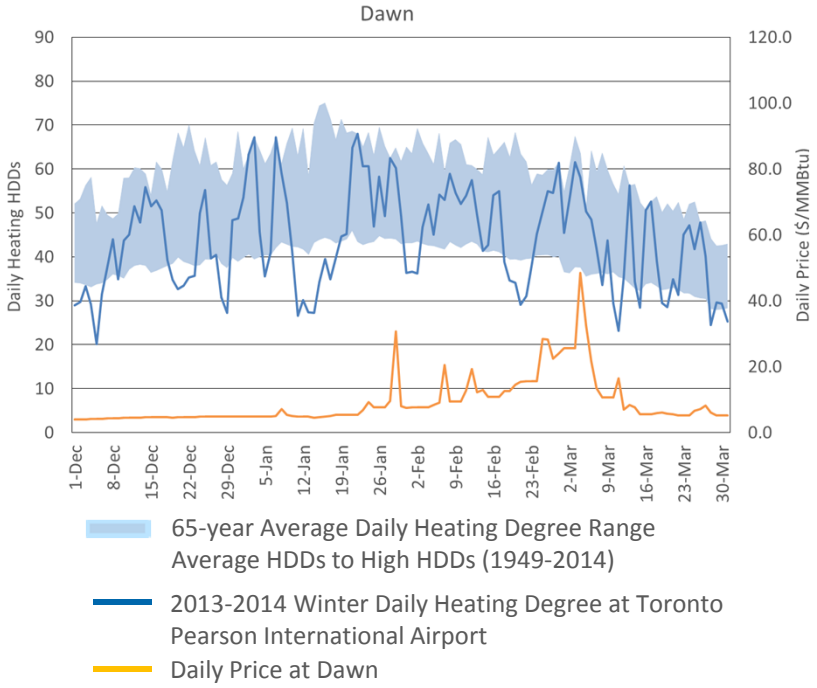


- Mid-Atlantic and New England weather last winter was also colder than the 65-year average.
- The U.S. South Atlantic (although not shown) was also colder than average. In total, the Eastern U.S. and Eastern Canada had the second highest HDDs since the 1950s, as reflected by the sum of HDDs from the five weather stations– Chicago, Toronto, NYC, Boston and Atlanta airports.

Source: NOAA, ICF

Daily HDDs and Spot Prices Observed Last Winter – U.S. Midwest and Eastern Canada

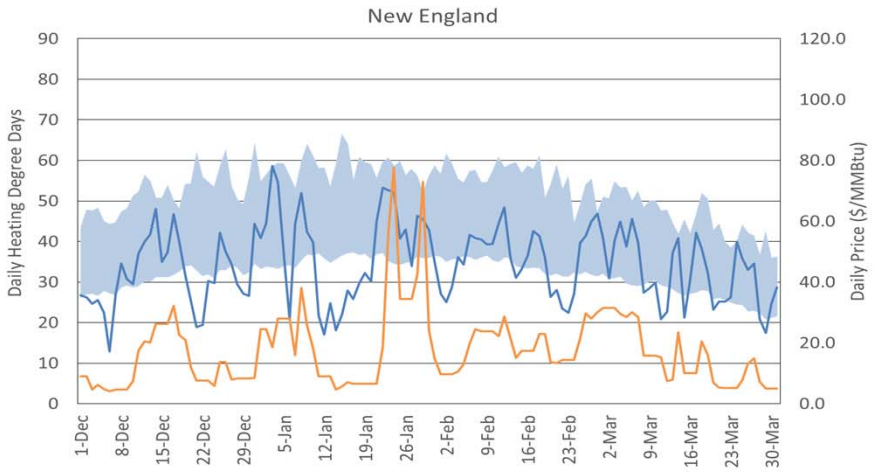




- Extreme cold temperature in the Great Lakes region led to regional natural gas price spikes, but the spikes were far less extreme than those observed in New York and New England, an area with greater infrastructure constraints and more limited access to storage.
- Incremental infrastructure to transport Marcellus and Utica production will enhance Ontario's market supply security in future extreme weather conditions as gas use grows.

Source: NOAA, ICF, SNL

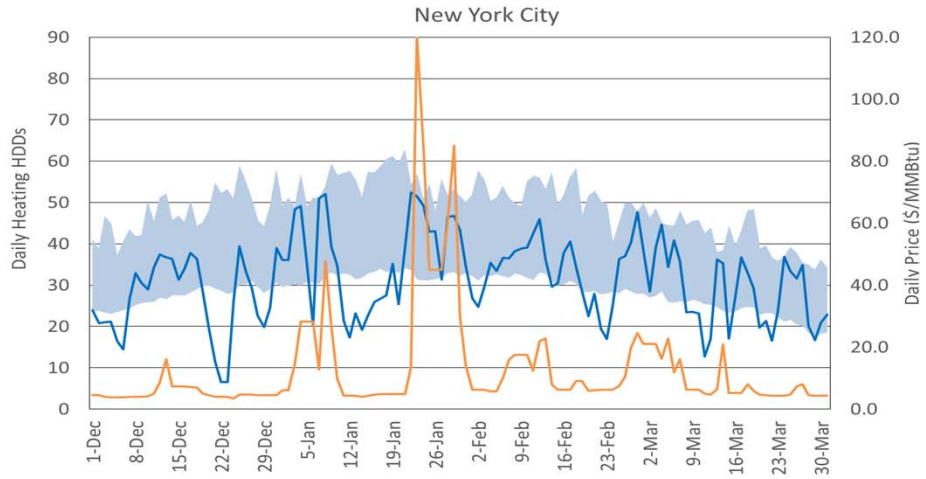
Daily HDDs and Spot Prices Observed Last Winter – U.S. Northeast



71-year Average Daily Heating Degree Range Average HDDs to High HDDs (1943-2014)

2013-2014 Winter Daily Heating Degrees at Boston Logan International Airport

Daily Price at Algonquin City-gates



66-year Average Daily Heating Degree Range Average HDDs to High HDDs (1948-2014)

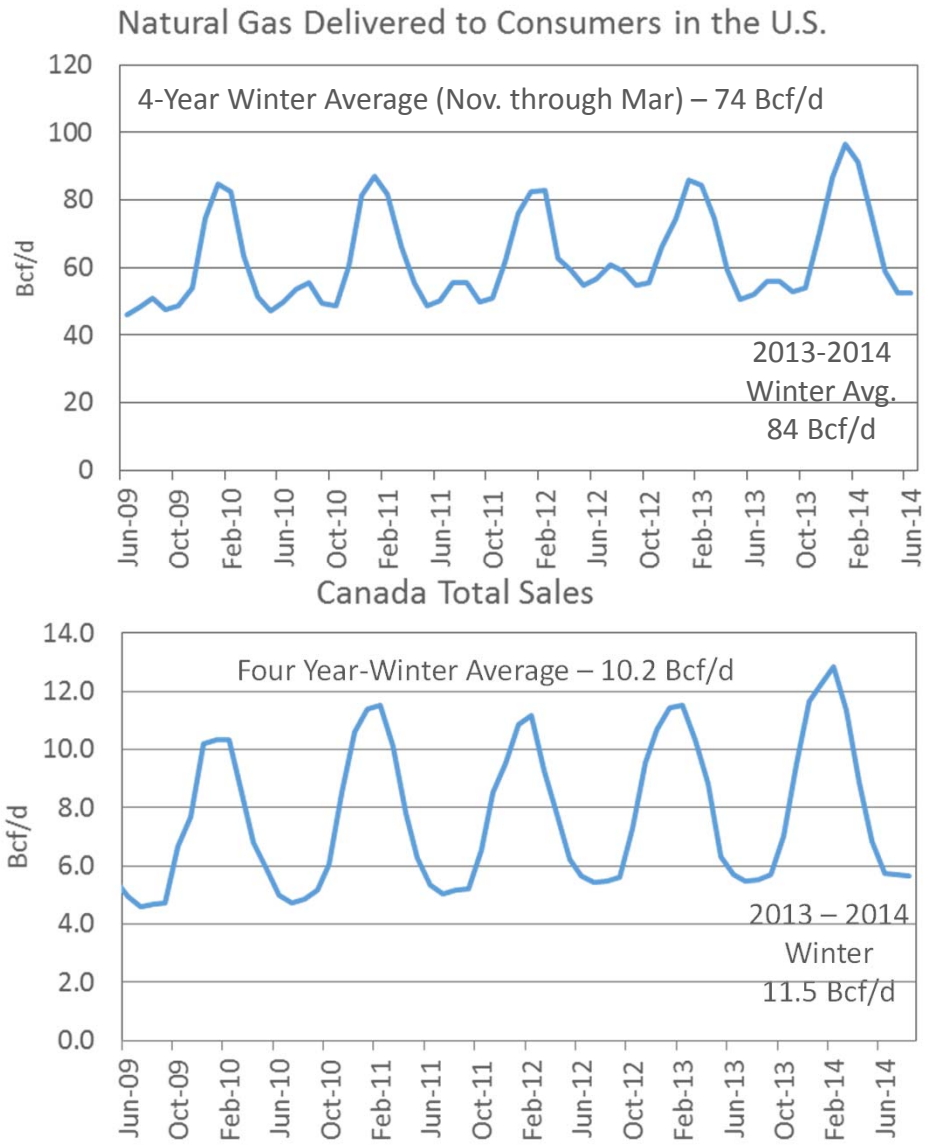
2013-2014 Winter Daily Heating Degree at New York City LaGuardia International Airport

Daily Price at Transco Zone 6 NY

- Daily temperatures in New England and New York were moderately colder than the 65 year history, however, simultaneous and widespread cold fronts drove natural gas prices in the U.S. Northeast to record levels.
  - New York's Transco Zone 6 price jumped to a record of $120/MMBtu.

Source: NOAA, ICF, SNL

Winter U.S. and Canadian Demand



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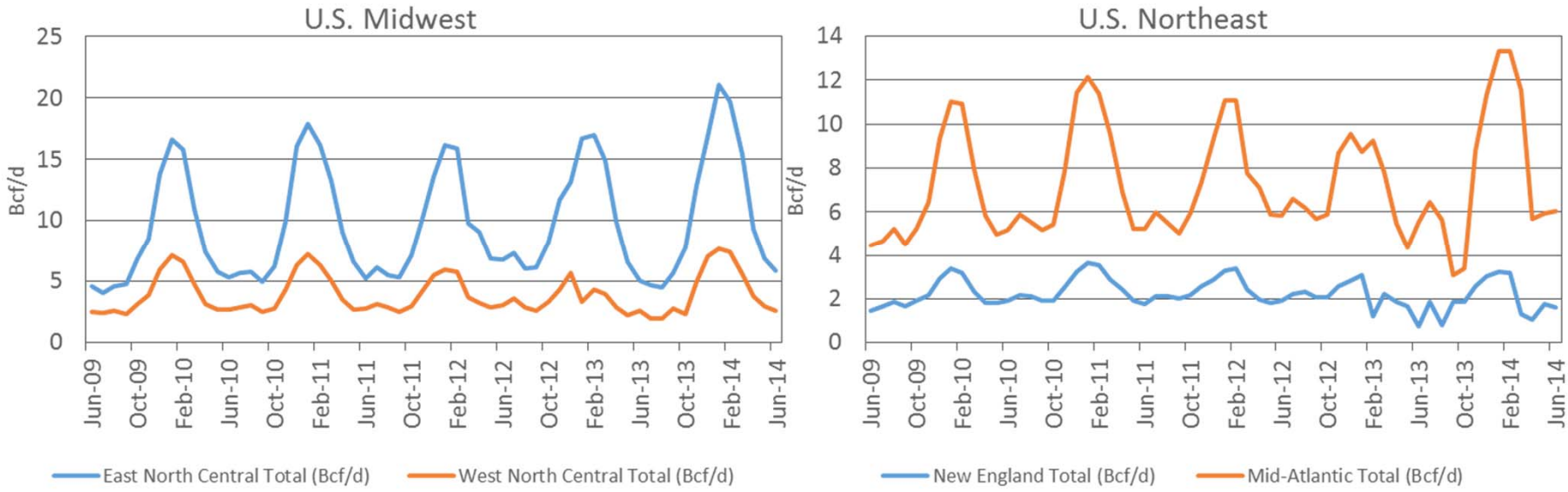
- The combination of high U.S. and Canadian demand placed stress on the entire supply chain.

Source: EIA, StatsCan

U.S. Northeast and Midwest Gas Use

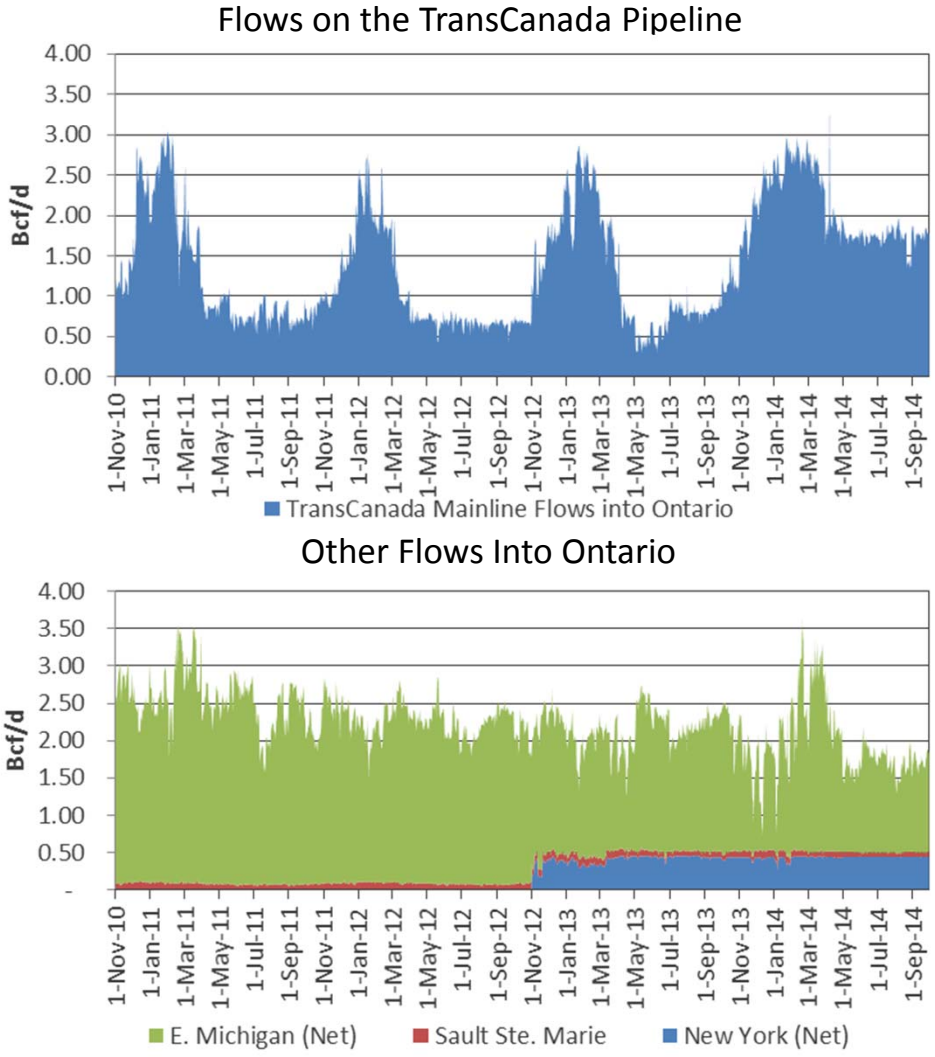


- Gas use was up more than 23% in the U.S. Mid-Atlantic and Midwest, relative to the average over the previous four winters.
- The combination of high U.S. and Canadian demand placed stress on the entire supply chain.

Source: EIA

Section 5: Winter Supply and Storage

Pipeline Deliveries Into Ontario



- TransCanada deliveries into the Eastern Ontario Triangle were sustained at high levels at or near capacity on the EOT for an extended period of time.
- During peak periods, flows on other pipes into Ontario from Michigan dropped due to high regional demand and pipeline capacity constraints.
  - Great Lakes reversed flow to Emerson to move gas from Dawn to the EOT.
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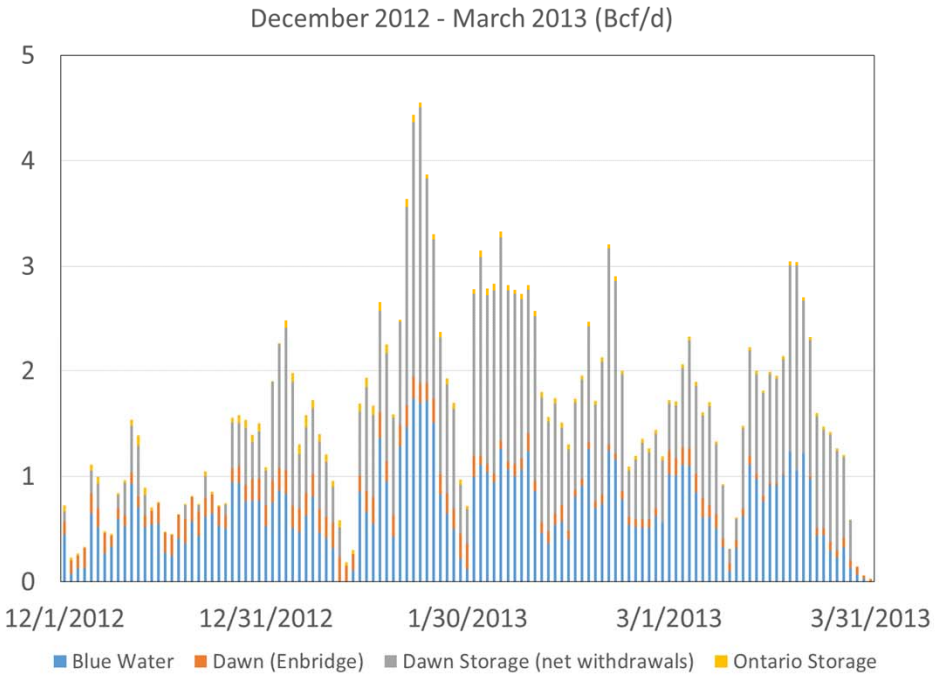
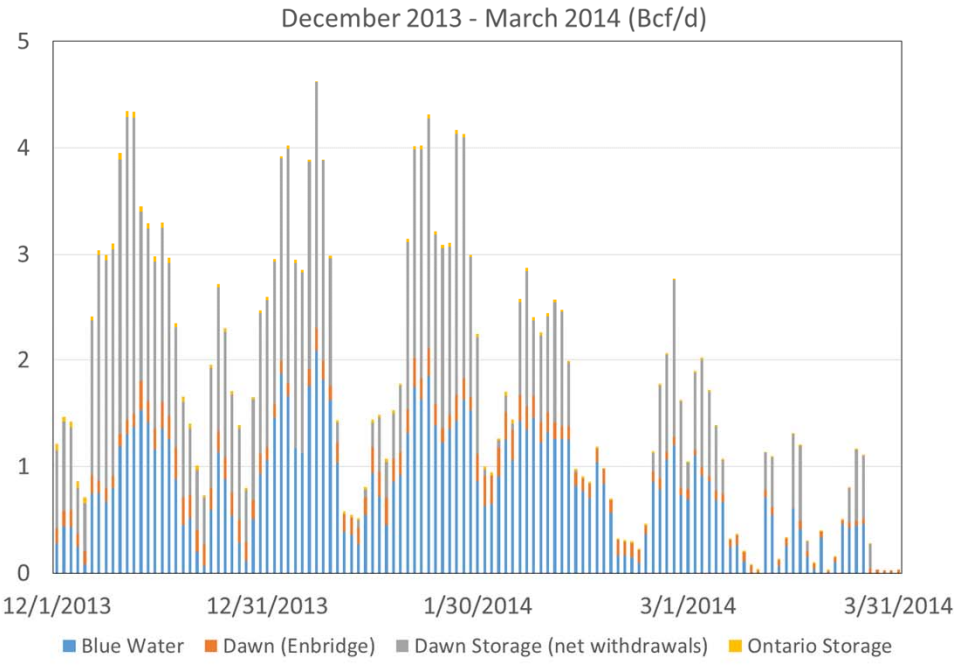
Source: Ventyx, LCI

Winter Storage Supplies Serving Union's Market

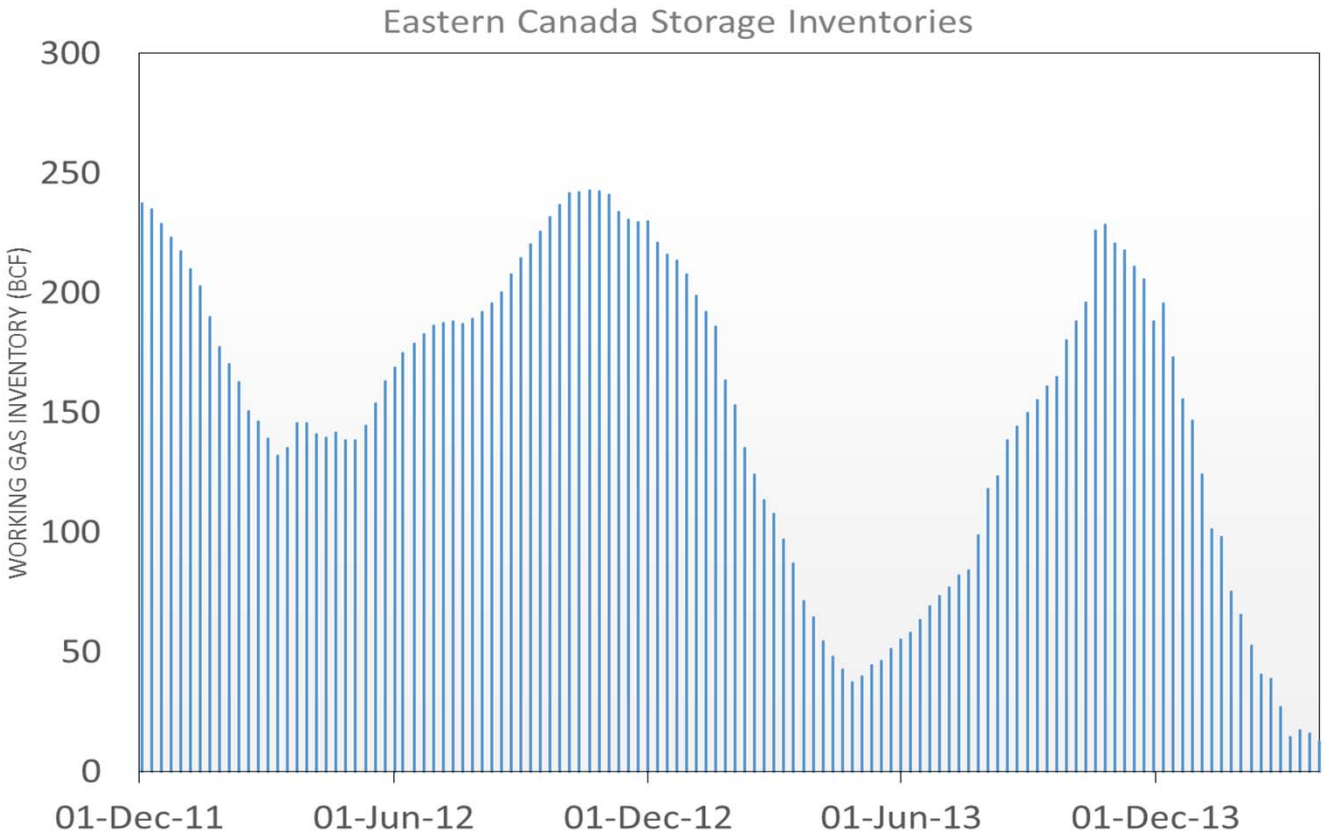




- Winter 2013-2014 storage withdrawal levels were substantially higher than in the previous year.
- Access to storage dampened and delayed the impact of high prices observed in spot markets on Ontario consumers, and kept the spot prices in Dawn and Chicago relatively stable versus other areas.

Source: Union Gas

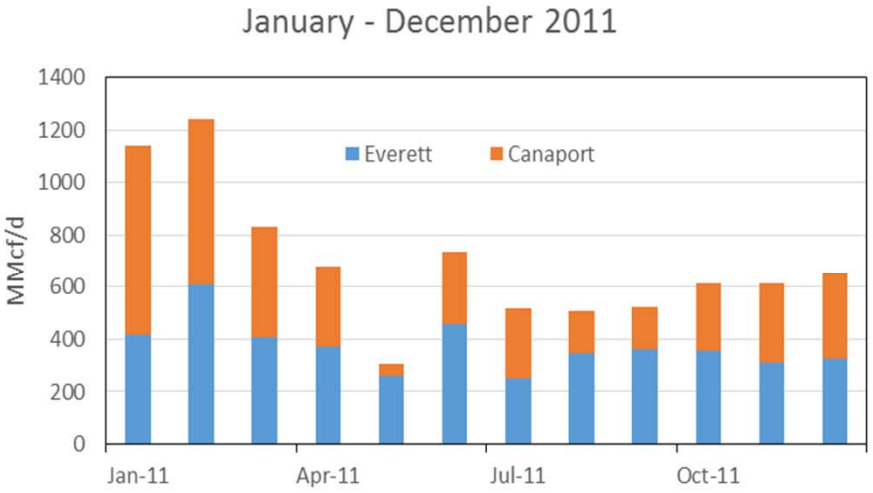
Eastern Canadian Storage Inventory

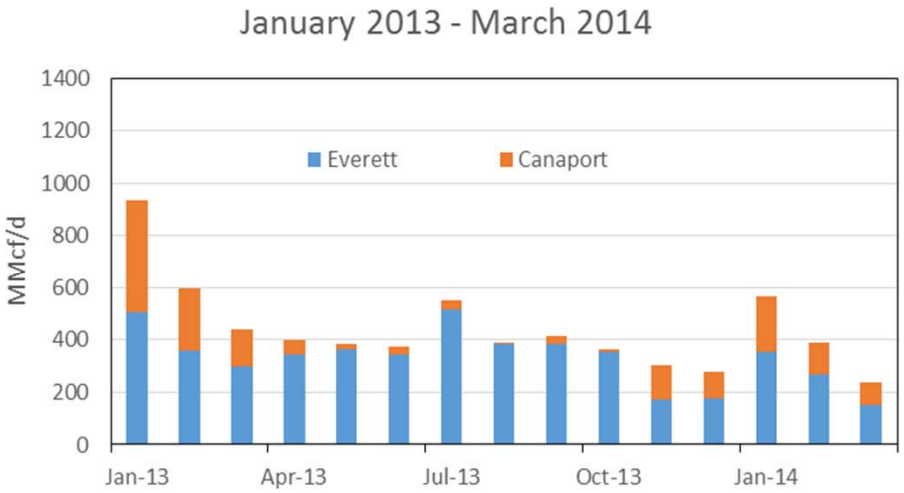


- By the end of January, Eastern Canada storage inventories had fallen below normal end-of-season levels. Dawn and Chicago prices rose in February and March 2014 as colder than normal weather continued to hit the area and storage withdrawals were limited due to the lack of inventories.

Source: Platts, ICF

Declines in LNG Imports to Atlantic Coast Terminals Reduced Supply Availability in the Northeast





- Supplies from the Canaport LNG and Everett LNG terminal were down approximately 40% from 2011 to 2014.
- These imports traditionally serve New England's peak winter demand; their decline further contributed to the constrained market conditions in the U.S. Northeast.

Source: EIA

FERC 2013-2014 Winter Review

- The FERC Office of Enforcement ("OE") conducted an analysis of the 2013-2014 winter, and found that record natural gas spot prices were the result of:
  - Extreme and universally cold temperatures.
  - Storage depletion.
  - Incorrect market & weather forecasts which led to poor hedging strategies.
  - Poor gas-electric coordination.
- The FERC OE found no evidence of widespread or sustained market manipulation.

Source: https://www.ferc.gov/media/news-releases/2014/2014-4/10-16-14-A-4-presentation.pdf

Section 6: Observations on the Ontario Market

Key Observations

- Last winter, natural gas prices in regional markets throughout Ontario and the U.S. Midwest and Northeast rose to historically unprecedented levels. Price spikes observed in Ontario reflected weather conditions, demand, market competition for gas supplies, storage inventory levels, and physical pipeline constraints into and through Ontario.
  - Weather in the Midwest and Ontario markets was the coldest in 65-years. U.S. Mid-Atlantic and New England weather was also among the top 25% of the coldest winters observed during the past 65 years.
  - Lower than expected LNG imports to the Atlantic Coast terminals also contributed to the price pressure in the U.S. Northeast and New England.
  - FERC's investigation into U.S. prices found no evidence of market manipulation.
- TransCanada flows from Alberta increased to meet demand in the US Midwest, Ontario and U.S. Northeast markets.

Key Observations

- Regional storage access played a critical role in managing the 2013-2014 winter and dampening and delaying the impact of high prices on Ontario consumers.
  - Storage inventory provides the high gas supply needs that arise from simultaneous cold weather in the eastern U.S. and Midwest.
  - Availability of regional storage is, in part, the cause of relatively modest price increases in the Midwest and Ontario markets (represented by Chicago City-gates and Dawn) up to the end of January 2014.
- ICF believes that pipeline access to regional storage and to gas supply from the Appalachian Basin is important in managing future high demand situations similar to those observed during the 2013-2014 winter.
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