CANADIAN WINTER 2023 MARKET UPDATE WEBINAR
After the call summary

Direct Energy Business an NRG company

Compiled: Oct. 9, 2023

Important highlights at a glance

The following is a quick overview of the most important elements of the Canadian Winter 2023 Market Update presentation.

Weather outlook

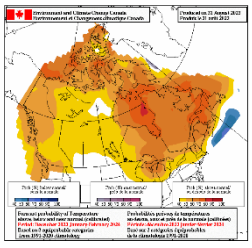
The El Niño Southern Oscillation (ENSO) region has continued to experience strong warming trends (both sea surface/subsurface temps) since spring and is now in a moderate El Niño phase, which is expected to strengthen through the early winter months before trailing off in late winter (which is typical of ENSO to peak mid-winter). When you add other factors to the ENSO measure, including GLAAM, which is a measure of the intensity of the zonal circulation around the equator, the data points to warmer overall risks.

> ***What does a winter El Niño mean?***
>
> El Niño conditions typically indicate dryer/warmer weather for Canada.

According to Agriculture and Agri-Food Canada's National Agroclimate Information Service, drought conditions have increased across Canada since August 2022. This would be expected to continue if we remain in an El Niño phase. Over the last 20 years, climate trends in the major Canadian cities include yearly increases in heating degree days (HDDs) for Calgary (3.8/yr) and Edmonton (4.6/yr), and yearly decreases in HDDs for Toronto (-7.9/yr) and Ottawa (-6.2/yr). This is more inconsistent than what we see across the U.S. and may be attributed to lower latitudes seeing faster changes in climate and/or Canadian cities not growing at the same rate as U.S. cities.

Environment Canada winter forecasts

Environment Canada's forecast probability for Dec. 2023-February 2024, which shows the percent chance of a particular region to be normal, leaning warm, or leaning cooler during the winter months, is showing warm leans in higher percentages across most of Canada.



Regulatory

Ontario

"Powering Ontario's Growth" plan, released by the Ontario government, outlines the actions the province is taking to meet electricity demand over the long term, including:

- Expanding nuclear
- Building its renewable portfolio
- Prioritizing transmission infrastructure
- Addressing transmission bottlenecks

Federal

CER: On Aug. 10, the federal government released draft Clean Electricity Regulation (CER), targeting a net-zero carbon emissions electricity grid by 2035. The final version is expected in 2024 and, if implemented, would take effect on Jan. 1, 2025.

- Applies to grid-connected fossil fuel generation units of 25 MW or greater
- Applies a carbon intensity cap (prohibition) of 30 tonnes CO_2/GWh if there is any net electricity delivery to the grid storage, end-of-season forecasts are calling for 3,700-3,900 Bcf by mid-November.

Carbon Tax: continues to increase annually, with the next rate update/increase occurring on April 1, 2024.

Alberta

Renewable moratorium: The government announced a pause on approving any new renewable projects until Feb 2024. The Alberta Utilities Commission, which is conducting an inquiry for renewable development, will continue processing applications during the moratorium, but no approvals will be issued. The AUC also announced new requirements for new app files on/after Aug. 3.

Regulated Rate Option (RRO) deferral: Consumers on the RRO saw a rate ceiling of 13.5 cents to alleviate costs during the cold winter period. The difference between the approved regulated rates and the price ceiling will be collected until December 2024 by adding 2-4 cents to the monthly regulated rate. The government is expected to announce changes to the current structure.

Market Fundamentals

Natural gas

The story in the U.S.: the lack of winter caused a storage surplus of 285 Bcf above 5-year average levels (1.83 Tcf winter exit). Henry Hub gas prices dipped to lows of $2.32/MMBtu on average so far this summer. Production remains steady, despite low prices, and was up 4.6 Bcf/day YTD average vs. last year but growth has stalled. This year we have set record highs for power burns and LNG feedgas demand, which are helping to rebalance the surplus overhang left from last winter.

A big pullback in producer infrastructure observed in this year's low-price environment could spell trouble for supply to keep up with natural declines let alone the second wave of LNG demand incoming.

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Although near-term fundamentals are bearish, long-term fundamentals are more bullish as a result of growing demand for power burn and LNG feedgas.

- LNG capacity currently sits at 14.5 Bcf/d.
- LNG feedgas has grown +1.1 Bcf/d summer to date
- Next LNG wave expected in second half of 2024
- Between the U.S. and Mexico, at least 9.4 Bcf incremental LNG feedgas demand growing to 23.9 Bcf/d by 2028
- Canadian LNG demand could grow to 4.4 Bcf/day

Eastern/Western Canadian storage levels: are expected to exit winter at 50% full for Alberta and 30% full for Dawn.

Demand—Eastern Canada: demand relatively flat summer-over-summer at 1.5 Bcf/day, despite moderate weather. Expecting flat Y-o-Y demand per degree to continue into winter season.

Supply—Western Canada: upon completion of expansions on Nova system, there was record-setting production this year up to 14.2 Bcf. Fires and maintenance did impact production, but supply remains strong when the system is unconstrained. Looking for supply to grow +0.2 Bcf/day winter-over-winter with risk to the upside.

Demand—Western Canada: demand was 240 Mmcf higher (up 4.5%) summer-over-summer, mostly attributable to oil sand growth and strong ResComm demand. Power burn demand fell 2.3%, in part as a result of renewable penetration. Largest increase in demand this winter is driven by increased contracting pulling away supply at East Gate for exports east to the Midwest/Dawn.

This winter is expected to be slightly tighter in terms of demand outpacing supply and increasing the need for storage withdrawals (Y-o-Y increase of 0.3 Bcf/day). However, we are entering this winter with significantly more inventory and are still expected to exit winter at record levels. Overall AECO looks to remain very well supplied and under bearish pressure this winter and heading into next year.

Power
Western Canada: Historically, coal generation was the inframarginal unit setting the market price in AECO, however the coal-to-gas (CTG) plants, which account for 2.6 GW of gen, are now the inframarginal unit, with a range of heat rates.

Generation buildout: 4.4 GW is currently under construction, with an additional 1.8GW with in-service dates under review.

Economic withholding: during tight market conditions, generators can hold back to influence/drive up prices. This is one of the most impactful short-term fundamentals, which we would expect to soften going into the back half of 2024.

AESO fundamentals:

Bullish risks	Bullish risks
• increased voluntary carbon/carbon costs • increased volatility on tielines/interjurisdictional flows • construction delays for new generation • coal-to-gas units retiring early/economic outages • renewables causing higher hourly volatility	• increased renewable growth/more $0/MWh • increased low heat rate thermal generation • less economic withholding

Eastern Canada: Ontario market is largely contracted with high levels of generation buildout, leading to less price volatility compared to Alberta. Although Ontario is a heat rate market with power prices closely tied to gas, heat rates are up in 2023 compared to 2022, and power prices are down versus 2022, due to nuclear unit refurbishments.

Market renewal: Ontario is expected to implement a market renewal concept in May 2025 (previously scheduled to launch in November) that enhances efficiency via a single schedule market, streamlines the settlement process and allows for more effective price signals for future buildout. The key changes include moving to a nodal market (vs. pool price), using a day-ahead market to schedule energy, adding tools for reliability (ERUC), and making enhancements to the capacity market.

Strategy Considerations

Buying in a contango market: near-term prices are showing value, especially over 2022, but the market has moved from backwardated last year to a contango, so there is less opportunity for reducing price over the term by going long-term.

Even though higher than near-term, long-term prices have fallen. And, there are bullish factors that could impact longer-term prices in the future, making prices now for the long-term potentially a value.