

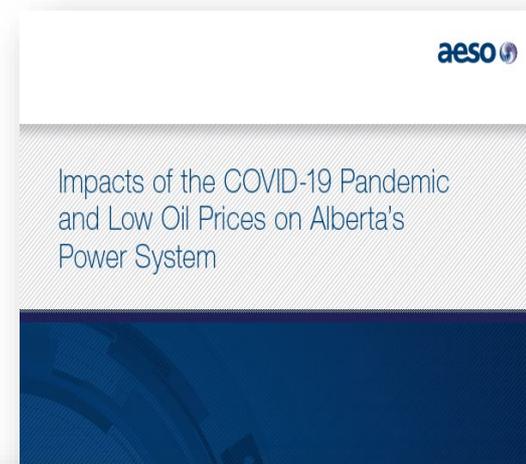
Impact of the COVID-19 pandemic and low oil prices on Alberta load

December 2020 Update

- Throughout 2020, the AESO has published a series of analyses on the effects that the pandemic and low oil prices have had on the provincial demand for electricity
- COVID-19 and low oil prices had unique impacts on Alberta Internal Load (AIL)
 - Measures implemented to flatten COVID-19 cases directly impacted system load*
 - Load at behind-the-fence (BTF*) industrial sites, which are primarily oil and gas related facilities, began to decline due to persistently low oil prices
 - In August, AIL hit its lowest levels at 950 MW or 10% below weather adjusted normal
 - Following the economic relaunch and the end of the COVID-19 lockdowns in the summer and strengthening oil prices through the fall, there has been a steady increase in system load and BTF load – to the point that recovery of AIL is close to complete
- Despite this recovery, total AIL growth is expected to be negative in 2020
- These recent trends, however, do not indicate that Alberta is back to normal
 - Multiple upward/downward risk factors still remain
- The AESO will continue to monitor economic and energy trends, with updates to be provided as needed

Ongoing monitoring and reporting of the impact of COVID-19 and low oil prices

- In light of the COVID-19 pandemic and decline in oil prices through 2020, the AESO has published the following reports:
 - A [report](#) with early analysis and insights on load in April 2020
 - A [supplement](#) to the May 2020 [Long-term Adequacy report](#) with simulation results
 - A [report](#) with regional load analysis during the first half of 2020 released in June 2020
- This report presents an update on load trends up to the end of November 2020
- For other COVID-19 related reports, please visit <https://www.aeso.ca/stakeholder-engagement/covid-19/>



Recent trends of COVID-19 cases and oil prices

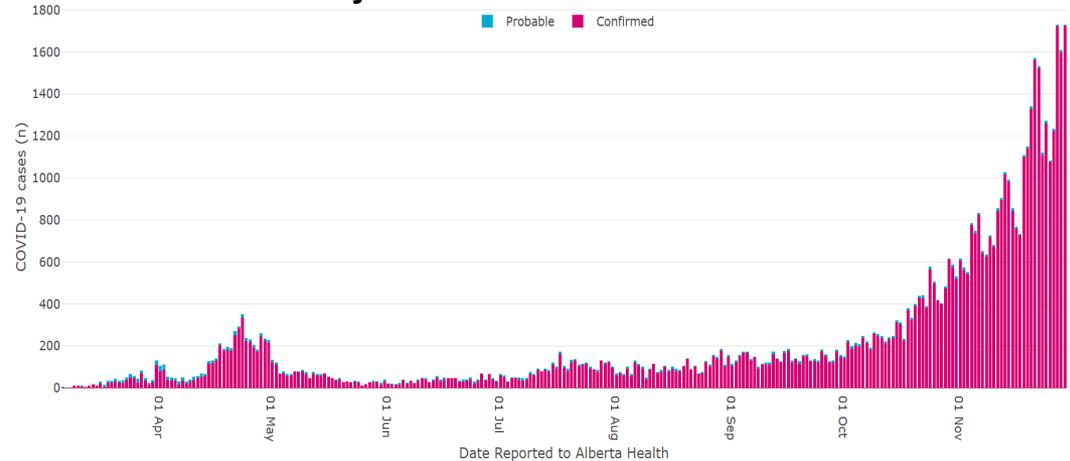
- COVID-19 cases vs lockdowns

- First wave (April-June) led to extreme lockdown measures that halted most economic activity
- Measures to flatten the second wave (from September onward) have not led to similar reductions in economic activity as lockdown measures are less severe

- Oil prices are finally stabilizing

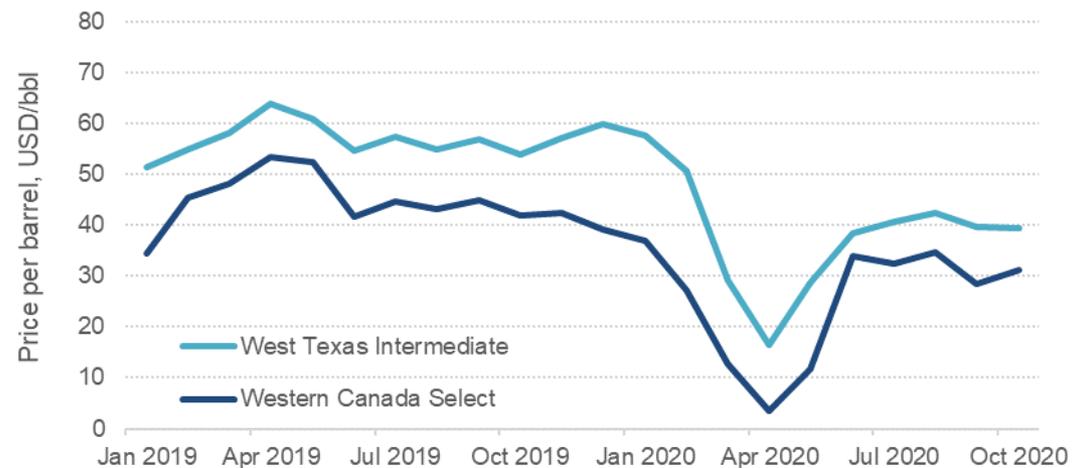
- Steep declines in February thru July – in part due to contractions to global energy demand due to the pandemic and lack of alignment among OPEC+ members
- Since August, oil prices have stabilized – but still below pre-pandemic levels
- Specific to Alberta, curtailment policies have been maintained to prevent further price declines

Daily COVID-19 Cases in Alberta



Source: Alberta Health Services, December 1 2020; <https://www.alberta.ca/stats/covid-19-alberta-statistics.htm>

Monthly Oil Prices



Source: Alberta Energy, December 1 2020; <https://economicdashboard.alberta.ca/OilPrice> AESO Public 4

After significant declines in the summer, full load recovery is within reach

- Alberta internal load (AIL) was negatively impacted by the confluence of factors, such as measures imposed to control and flatten COVID-19 cases, and reductions in industrial output in response to a low oil price environment
- Through 2020, AIL trended lower than a counterfactual load* that is normalized for weather and seasonal variables but ignores unique factors such as COVID-19 and oil prices
- AIL bottomed at 9.6 per cent or around 950 MW lower than normalized load in August, on a daily basis – or around 7.8 per cent or 770 MW lower on a 30-day moving average basis

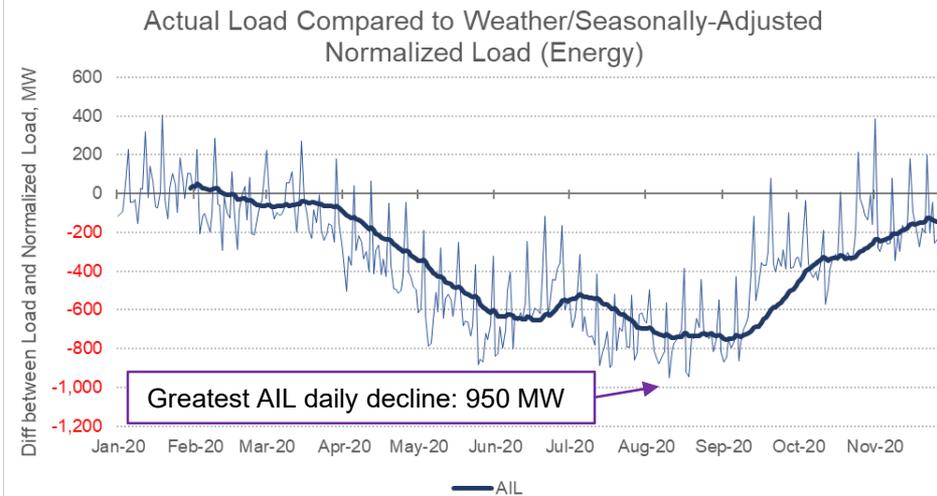
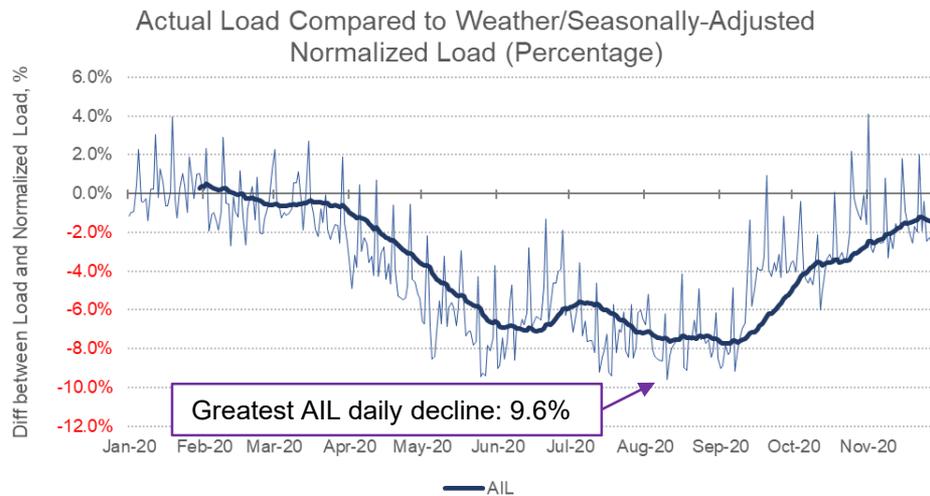


Chart notes: daily estimates are in light coloured lines, 30-day moving average estimates appear in darker lines

* Counterfactual load, also called normalized load, is generated using a linear regression model with time series data of temperature and calendar/seasonal variables for each load type. The model period covers 2017 thru February 2020 (the reference period). The resulting coefficients are then used with observed temperature and calendar/seasonal variables since the reference period to calculate the predicted value for each load type. This methodological approach is similar to [Cicala \(2020\)](#), [Shaffer, Leach and Rivers \(2020\)](#), and [TESLA Inc. \(2020\)](#).

COVID-19 and oil prices affect sub-components of AIL differently



- AIL is composed of system load (73%) plus behind-the-fence (BTF) load (27%)*
 - From March through May, lockdowns and reduced economic activity due to the COVID-19 pandemic caused declines in system load; system load began a gradual increase after lockdowns
 - From May through September, low oil prices led to declines in industrial load in Fort McMurray and also provided opportunity for maintenance cycles; this drop in BTF more than offset increases in system load
 - Since September, recoveries in BTF and further increases in system load indicate AIL is close to returning to normal levels
- Compared to normalized loads, on a 30-day moving average basis AIL is 1 per cent lower, system load is virtually at normal, and BTF is 6 per cent lower as of November 2020

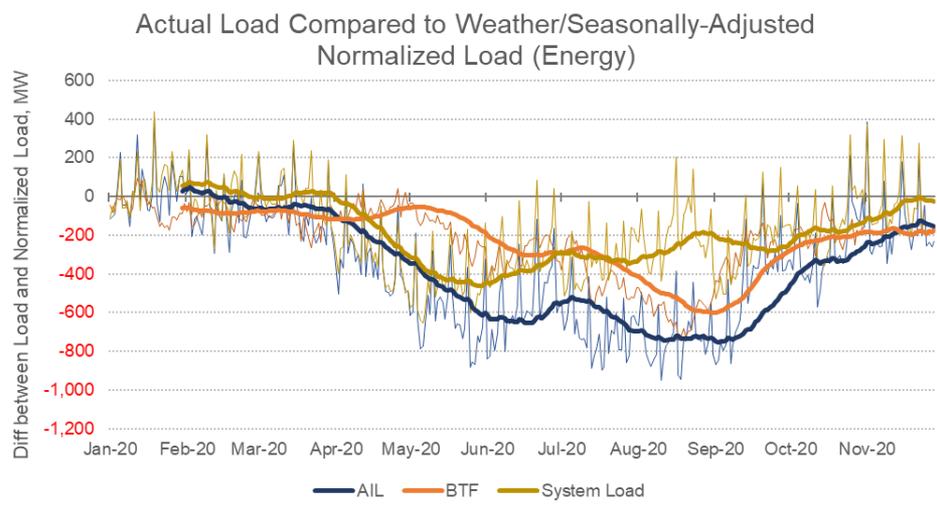
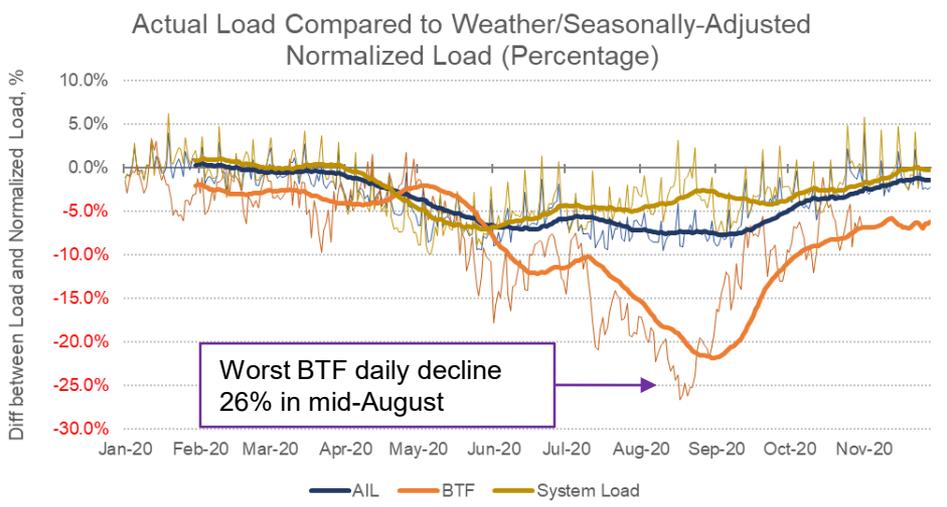
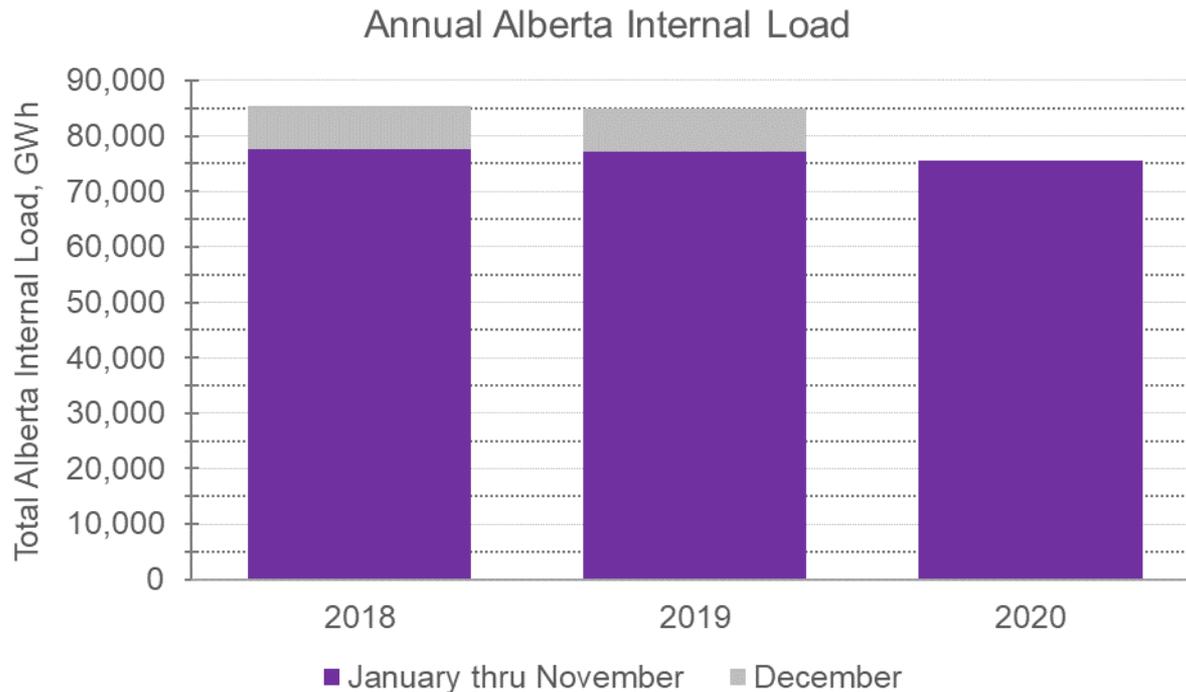


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* For context, system load is generally represented by residential, commercial and industrial customers without self-supply generation; whereas BTF represents load that is served by on-site generation, typically located at industrial sites, as well as City of Medicine Hat; line losses also represent a small part of AIL, but are not included in this analysis AESO Public 6

Despite recovery, negative growth expected for 2020

- AIL is expected to contract in 2020
 - Up to November, AIL is 2.2 per cent lower in 2020 compared to 2019 during the same period
- This marks the second year in a row of negative growth
 - In 2019, AIL shrunk by 0.5 per cent year over year
 - Over the past decade, AIL growth has only been negative in 2016 (due to the Fort McMurray wildfires) and 2019



- Recoveries in AIL and sub-components alone do not indicate that load in Alberta has fully returned to an “old” normal, as multiple risks still remain:
 - Downward risks:
 - Second wave of COVID-19 cases and subsequent economic activity reductions
 - Decline in U.S. and global demand of energy
 - Upward risks:
 - Advancements in COVID-19 vaccine development and distribution
 - OPEC+ members may extend curtailments for an additional three months
 - Alberta government oil curtailments no longer in effect as of December 2020
- Over the long term, electricity consumption may permanently change as a portion of the workforce and education sectors move to a remote environment, commercial and industrial activity are restructured, and the evolution of the energy sector continues
 - The AESO will continue assessing trends and potential impacts, providing further updates as required
- Scenarios in the 2021 Long-term outlook will also assess effects of oil and gas activity and COVID-19, among other factors, on long-term load and supply in Alberta

**Questions or comments?
Contact forecast@aeso.ca**