

Introduction

The following report provides information on the long term adequacy of the Alberta electric energy market. The report contains metrics that include tables on generation projects under development and generation retirements, an annual reserve margin with a five year forecast period, a two year daily supply cushion, and a two year probabilistic assessment of the Alberta Interconnected Electric System (AIES). The Long Term Adequacy (LTA) Metrics provide an assessment and information that can be used to facilitate further assessments of long term adequacy. This report is updated quarterly in February, May, August, and November. Inquiries on the report can be made at forecast@aeso.ca.

*All metrics have been updated and use the most recent corporate load forecast the 2019 LTO found at <https://www.aeso.ca/grid/forecasting>.

Summary of Changes since Previous Report

New Generation and Retirements Metric

Projects completed and removed from list:

- Enel Castle Rock Ridge - Phase 2
- Enel Riverview Wind Farm
- FortisAlberta Coaldale 254S DER Cogen
- Shell Canada Limited Air Liquide Canada Scotford ALS1 Change

Generation Projects moved to “Active Construction”:

- Keyera West Pembina 359S Gas Turbine
- FortisAlberta Innisfail 214S DER Solar
- Suncor Forty Mile Granlea WAGF
- Perimeter Claresholm Solar
- FortisAlberta Burdett 368S DG P/V

Generation projects moved to “Regulatory Approval”:

- ATCO Three Hills 770S DER Solar 1
- BowArk Energy Drywood Gas Generator
- TransAlta Windrise MPC Wind
- TransAlta Windcharger Battery Energy Storage
- FortisAlberta Brooks 121S DER Solar I (83L)
- FortisAlberta Brooks 121S DER Solar II (257LE)
- EDF Cypress Wind
- Grand Prairie MPC Gas

Generation projects that have been added to “Announced, Applied for AESO Interconnection, and/or Applied for Regulatory Approval”:

- CNRL Primrose East 641S Gas
- FortisAlberta Cutting Lake 227S DER Gas
- ATCO Bridge Creek 798S DER Gas
- FortisAlberta Killarney Lake 267S DER Solar/Battery Storage

- FortisAlberta East Crossfield 64S DER Wasteheat
- FortisAlberta Burdett 368S DER Solar Battery Storage
- RESC Enterprise MPC Solar
- EDF Vulcan Solar
- Nose Hill MPC Wind

Generation projects that have been removed:

- Three Creeks Power Plant
- FortisAlberta Stirling 67S DG P/V
- RESC Picture Butte MPC Solar
- RESC Enterprise MPC Solar

Other changes to generation projects:

Project	Change
Enbridge – WhiteTail Peaking	New ISD of Jan-2020 from Oct-2019
Keyera – West Pembina 359S Gas Turbine	New ISD of Feb-2020 from Nov-2019
ATCO – Fieldgate 824S DER Gas	New ISD of Feb-2020 from Jan-2020
FortisAlberta – Vauxhall Solar DER	New ISD of Feb-2020 from Nov-2019
FortisAlberta – 257S Hull DER Solar	New ISD of Feb-2020 from Oct-2019
FortisAlberta – Innisfail 214S DER Solar	New ISD of Feb-2020 from Dec-2019
ENMAX – Shepard Gas Upgrade	New ISD of Apr-2020 from Sep-2020
Medicine Hat – CMH Al Rothbauer 321S Contract Change (unit 17)	New ISD of Jun-2020 from May-2020
Imperial Oil – Edmonton 95S Cogen	New ISD of Jun-2020 from Apr-2020
FortisAlberta – 895S Suffield DG PV	New ISD of Jun-2020 from Feb-2020
Greengate Power – Stirling WAGF	New ISD of Sep-2020 from Nov-2020
FortisAlberta – 421S Hays DG PV	New ISD of Oct-2020 from Mar-2020
ATCO – Michichi DER Solar	New ISD of Nov-2020 from May-2020
FortisAlberta – FortisAlberta High River 65S DER Gas	New ISD of Nov-2020 from Sep-2020
FortisAlberta – Spring Coulee 385S Solar DG	New ISD of Nov-2020 from Jun-2020
FortisAlberta – FortisAlberta Buffalo Creek 526S DER Storage	New ISD of Dec-2020 from Nov-2020

TransAlta – Windrise MPC Wind	New ISD of Dec-2020 from Nov-2020
BowArk Energy – Drywood Gas Generator	New ISD of Jan-2021 from Oct-2020
Transalta – Kaybob 3 Cogen	New ISD of Jun-2021 from Dec-2021
ENGIE – Duchess Solar	New ISD of Sep-2021 from Sep-2020
E.ON – Grizzly Bear	New ISD of Oct-2021 from Dec-2020
ENGIE – Buffalo Trail North MPC Wind	New ISD of Nov-2021 from Sep-2021
TCE – TCE Saddlebrook Solar	New ISD of Dec-2021 from Nov-2021
BER Hand Hills Wind LP – BER Hand Hills MPC Wind	New ISD of Dec-2021 from Nov-2021
Sunset Solar Inc. – Sunset Solar	New ISD of Dec-2021 from Nov-2021
Spirit Pine – Lone Pine WAGF	New ISD of Apr-2022 from Dec-2019
Naturener – Wild Rose 1	New ISD of Aug-2022 from Dec-2019
Naturener – Wild Rose 2	New ISD of Aug-2022 from Dec-2019
Suncor – Forty Mile Maleb WAGF	New ISD of Sep-2022 from Sep-2020
Greengate Power – Wheatland WAGF	New ISD of Sep-2022 from Dec-2019
Capital Power – Halkirk 2	New ISD of Sep-2022 from Dec-2020
Alberta Wind Energy – Old Elm & Pothole Creek	New ISD of Oct-2022 from Oct-2019
RESC – McLaughlin WAGF	New ISD of Nov-2022 from Nov-2020
Pteragen – Peace Butte	New ISD of Dec-2022 from Dec-2019

Reserve Margin Metric

The reserve margin has been updated to reflect changes to the project list.

Supply Cushion Metric

The forecast supply cushion has been updated to reflect the new time period.

Two Year Probability of Supply Adequacy Shortfall Metric

New values for the metric have been calculated with Total Energy Not Served equaling 133 MWh. This value is below the 2,031 MWh threshold.

New Generation Projects and Retirements Metric

The New Generation Projects and Retirements Metric is a summary of generation at various stages of development in Alberta and is shown in Tables 1 to 4 below. In Alberta’s deregulated electricity market competitive forces determine the location, magnitude and timing of new generation additions. Information on prospective generation additions and retirements provides context for the future market in Alberta. The information is drawn from a variety of public sources and includes new generation, changes to existing generation and the retirement of generating units. Changes in project in-service dates (ISDs) and regulatory stages occur as projects move forward and/or market conditions change. Current information on connection project ISDs can be found in the [AESO Project List](#) and information on power plant applications can be found at the [Alberta Utilities Commission](#) website.

Table 1: Generation Projects under Construction

Sponsor(s)	Project Name	Fuel	Unit Capacity*	ISD*
Keyera	West Pembina 359S Gas Turbine	Gas	12	Feb-2020
Maxim Power	Milner Gas	Gas	208	Feb-2020
FortisAlberta	Vauxhall Solar DER	Solar	22	Feb-2020
FortisAlberta	257S Hull DER Solar	Solar	25	Feb-2020
FortisAlberta	Innisfail 214S DER Solar	Solar	16	Feb-2020
Suncor	Forty Mile Granlea WAGF	Wind	200	Jun-2020
Imperial Oil	Edmonton 95S Cogen	Gas	43	Jun-2020
FortisAlberta	895S Suffield DG PV	Solar	22	Jun-2020
Perimeter	Claresholm Solar	Solar	130	Jun-2020
FortisAlberta	Burdett 368S DG P/V	Solar	10	Jul-2020
Inter Pipeline	Strathcona Cogeneration	Gas	96	Oct-2020
FortisAlberta	421S Hays DG PV	Solar	24	Oct-2020
Total (MW)			808	

*Unit Capacity – Expected MW capacity; ISD – Estimated in-service date

Table 2: Generation Projects with Regulatory Approval

Sponsor(s)	Project Name	Fuel	Unit Capacity	ISD
Enbridge	WhiteTail Peaking	Gas	200	Jan-2020
ATCO	Sarah Lake 743S DER Geothermal	Gas	21	Mar-2020
ATCO	Rainbow Lake Gas	Gas	45	Apr-2020
ENMAX	Shepard Gas Upgrade	Gas	13	Apr-2020
TransAlta	Summerview 2 Battery Storage	Other	10	Jun-2020
ATCO	Poplar Hill 790S Gas Change	Gas	32	Jul-2020
ATCO	Valleyview Gas	Gas	32	Jul-2020
FortisAlberta	255S Vulcan Faribault Farms P/V	Solar	25	Aug-2020
FortisAlberta	Coaldale 254S DER Solar 3	Solar	22	Aug-2020
FortisAlberta	Monarch 492S DER Solar	Solar	24	Aug-2020
FortisAlberta	Stavely 349S DER Solar	Solar	8.5	Aug-2020
Joss Wind	Jenner WAGF	Wind	122	Aug-2020
Capital Power	Whitla Wind Power - Phase 2	Wind	97.2	Sep-2020
FortisAlberta	Buffalo Atlee Cluster 1 WAGF	Wind	18	Sep-2020
FortisAlberta	Buffalo Atlee Cluster 3 WAGF	Wind	17	Sep-2020
Greengate Power	Stirling WAGF	Wind	115	Sep-2020
ATCO	Three Hills 770S DER Solar 1	Solar	25	Sep-2020
ATCO	Michichi Creek 802S DER Solar	Solar	25	Sep-2020
FortisAlberta	498S Tilley DG PV	Solar	22	Oct-2020
ATCO	Michichi DER Solar	Solar	75	Nov-2020
FortisAlberta	275S Jenner Solar DER	Solar	23	Nov-2020

EDP Renewables	Sharp Hills Wind	Wind	300	Nov-2020
FortisAlberta	Spring Coulee 385S Solar DG	Solar	29	Nov-2020
Maxim Power	Deerland Peaking	Gas	186	Dec-2020
ENMAX	Zephyr Wind Farm	Wind	200	Dec-2020
Greengate	Travers Solar	Solar	400	Dec-2020
TransAlta	Garden Plain Wind	Wind	131	Dec-2020
TransAlta	Windrise MPC Wind	Wind	220	Dec-2020
FortisAlberta	Brooks 121S DER Solar 1	Solar	14	Dec-2020
FortisAlberta	Brooks 121S DER Solar 2	Solar	12.5	Dec-2020
Cascade	Combined Cycle Phase 1	Gas	450	Jan-2021
BowArk Energy	Drywood Gas Generator	Gas	38	Jan-2021
EPCOR	WSI DG Solar	Solar	12	Jan-2021
FortisAlberta	Jenner 275S DER	Gas	23	Feb-2021
FortisAlberta	368S Burdett DER Solar	Solar	20	Apr-2021
FortisAlberta	FortisAlberta Empress 394S DER Solar 1	Solar	22.5	May-2021
FortisAlberta	FortisAlberta Empress 394S DER Solar 2	Solar	16	May-2021
EDF	Cypress Wind	Wind	201.6	Jun-2021
Suncor	Base Plant Cogen	Gas	815	Jul-2021
Medicine Hat	CMH Unit 17 Gas	Gas	44	Jul-2021
Turning Point Gen	Canyon Creek PHES Storage	Other	75	Aug-2021
Kineticor	Peace River Power Generator	Gas	98	Sep-2021
E.ON	Grizzly Bear	Wind	120	Oct-2021
Grand Prairie	Grand Prairie MPC Gas	Gas	360	Oct-2021
Enmax	Calgary Energy Centre Peaking	Gas	150	Dec-2021

BER Hand Hills Wind LP	BER Hand Hills MPC Wind	Wind	200	Dec-2021
Sunset Solar Inc.	Sunset Solar	Solar	60	Dec-2021
Cascade	Combined Cycle Phase 2	Gas	450	Jan-2022
Capital Power	Genesee 4	Gas	525	Mar-2022
Naturener	Wild Rose 1	Wind	192	Aug-2022
Naturener	Wild Rose 2	Wind	218	Aug-2022
Suncor	Forty Mile Maleb WAGF	Wind	200	Sep-2022
Capital Power	Halkirk 2	Wind	150	Sep-2022
Greengate Power	Wheatland WAGF	Wind	120	Sep-2022
Alberta Wind Energy	Old Elm & Pothole Creek	Wind	60	Oct-2022
RESC	McLaughlin WAGF	Wind	47	Nov-2022
Pteragen	Peace Butte	Wind	120	Dec-2022
Capital Power	Genesee 5	Gas	525	Mar-2023
Imperial Oil	Kearl - Phase 2	Gas	100	TBD
PetroChina	MacKay-Phase 1	Gas	85	TBD
Nexen	Long Lake South	Gas	85	TBD
Imperial Oil	Kearl - Phase 3	Gas	35	TBD
City of Calgary	Bonnybrook Cogen Expansion	Gas	10	TBD
Kronos Solar	Oyen Solar Park	Solar	10	TBD
Solar Krafte	Wrentham Solar Project	Solar	42	TBD
Enmax	Bonnybrook	Gas	168	TBD
Maxim Power	Milner 2 Phase 2	Gas	260	TBD
TransCanada	Saddlebrook	Gas	350	TBD
TransAlta	Sundance 7	Gas	850	TBD

Syncrude	Mildred Lake (Base Plant)-Phase 1	Gas	85	TBD
BluEarth Renewables	Yellow Lake Solar Project	Solar	19	TBD
FortisAlberta	Enchant 447S DER Solar	Solar	74	TBD
Suncor	Hand Hills Wind Energy Project	Wind	80	TBD
Total (MW)			10,029	

Table 3: Generation Projects that have been Announced, Applied for AESO Connection, and/or Applied for Regulatory Approval

Sponsor(s)	Project Name	Fuel	Unit Capacity	ISD
Soventix	Forestburg Area Solar	Solar	40	Jan-2020 (A)
ATCO	Fieldgate 824S DER Gas	Gas	18	Feb-2020 (A)
FortisAlberta	Willesdengreen DER Gas Turbine	Gas	10	Mar-2020 (A)
FortisAlberta	Ponoka 331S DER Solar	Solar	5	Mar-2020 (A)
HEP Capital	Alderson Solar	Solar	100	Apr-2020 (A)
FortisAlberta	Taber 83S DER Solar	Solar	16	May-2020 (A)
FortisAlberta	Taber 83S DER Solar	Solar	19	May-2020 (A)
ATCO	Monitor 2 774S DER Solar	Solar	30	May-2020 (A)
ATCO	Monitor 1 774S DER Solar	Solar	10	May-2020 (A)
ATCO	ATCO Wapiti 823S DER Gas	Gas	15	May-2020 (A)
FortisAlberta	Westfield 107S DER Solar	Solar	19	Jun-2020 (A)
FortisAlberta	Namaka DER Solar	Solar	20	Jun-2020 (A)
FortisAlberta	Gleichen DG Solar	Solar	17	Jun-2020 (A)
Medicine Hat	CMH AI Rothbauer 321S Contract Change (unit 17)	Gas	44	Jun-2020 (A)
PBC	Paul Band Solar	Solar	45	Jul-2020 (A)

ATCO	Rycroft 730S Battery DER	Other	20	Jul-2020 (A)
FortisAlberta	198S Blackfalds DER Gas Phase 2	Gas	4	Aug-2020 (A)
FortisAlberta	Conrad DER Solar	Solar	23	Aug-2020 (A)
FortisAlberta	Conrad DER Solar 2	Solar	22	Aug-2020 (A)
Joss Wind	Jenner WAGF - Phase 2	Wind	180	Aug-2020 (A)
Joss Wind	Jenner Wind Phase 3	Wind	106	Aug-2020 (A)
ENMAX	Crossfield CRS3 Battery Storage	Other	0	Aug-2020 (A)
Quill	Rocky Mountain Gas	Gas	295	Sep-2020 (A)
FortisAlberta	Buffalo Atlee Cluster 2	Wind	14	Sep-2020 (A)
ATCO	Coronation 773S Solar DG	Solar	10	Sep-2020 (A)
ATCO	Three Hills 770S DER Solar 2	Solar	25	Sep-2020 (A)
Altagas	Glenridge Wind	Wind	150	Oct-2020 (A)
Pengrowth	Cold Lake Area Energy Centre	Gas	100	Oct-2020 (A)
EDP Renewables	Blue Bridge Solar	Solar	150	Oct-2020 (A)
Joss Wind	Northern Lights	Wind	400	Nov-2020 (A)
NextEra	Buffalo Trail Solar	Solar	70	Nov-2020 (A)
Northland	Bow City MPC Solar	Solar	400	Nov-2020 (A)
FortisAlberta	Acheson 305S DER Solar	Solar	10	Nov-2020 (A)
Solar Krafte	Rainier	Solar	450	Nov-2020 (A)
FortisAlberta	Strathmore 151S DER Solar 1	Solar	18	Nov-2020 (A)
FortisAlberta	Strathmore 151S DER Solar 2	Solar	22.5	Nov-2020 (A)
FortisAlberta	FortisAlberta High River 65S DER Gas	Gas	16.5	Nov-2020 (A)
NextEra	Red Deer Battery Energy Storage	Other	40	Dec-2020 (A)
NextEra	Ghost Pine Battery ES System	Other	30	Dec-2020 (A)

NextEra	Red Deer River Solar	Solar	150	Dec-2020 (A)
ENMAX	Taber Wind Farm	Wind	21	Dec-2020 (A)
Greengate	Lathom Solar	Solar	120	Dec-2020 (A)
TransAlta	Tempest MPC Wind	Wind	115	Dec-2020 (A)
Enbridge	South Terminal Gas	Gas	20	Dec-2020 (A)
FortisAlberta	Chappice Lake 649S DER Solar	Solar	15	Dec-2020 (A)
FortisAlberta	FortisAlberta Buffalo Creek 526S DER Storage	Other	20	Dec-2020 (A)
RealPart	Calgary Area Solar	Solar	150	Dec-2020 (A)
Northland	Buffalo Trail	Wind	100	Dec-2020 (A)
TransAlta	Cowley Ridge 1 Wind	Wind	21	Dec-2020 (A)
FortisAlberta	Red Deer 63S DER Solar	Solar	20	Dec-2020 (A)
FortisAlberta	Fieldgate 824S DER Gas	Solar	6	Mar-2021 (A)
Four Rivers	Four Rivers Wind	Wind	450	Mar-2021 (A)
ATCO	ATCO Michichi Creek 802S DER Solar	Solar	13.5	Apr-2021 (A)
FortisAlberta	FortisAlberta Metiskow 648S DER Solar	Solar	22.5	May-2021 (A)
FortisAlberta	Killarney Lake 267S DER Solar/Battery Storage	Solar	22.5	May-2021 (A)
FortisAlberta	Burdett 368S DER Solar Battery Storage	Solar	17.5	May-2021 (A)
ATCO	Bridge Creek 798S DER Gas	Gas	10	May-2021 (A)
FortisAlberta	Bassano 435S DER Solar	Solar	11	Jun-2021 (A)
Transalta	Kaybob 3 Cogen	Gas	43	Jun-2021 (A)
Solar Krafte	Vauxhall	Solar	150	Jun-2021 (A)
Solar Krafte	Brooks	Solar	400	Jun-2021 (A)
FortisAlberta	Tilley 498S DG Gas	Gas	22	Jul-2021 (A)

CNRL	Primrose East 641S Gas	Gas	32	Jul-2021 (A)
FortisAlberta	East Crossfield 64S DER Wasteheat	Biomass	10	Jul-2021 (A)
RESC	Rattlesnake Ridge MPC Wind	Wind	118	Jul-2021 (A)
CKPC	CKPC Petrochemical Facility	Gas	30	Jul-2021 (A)
RESC	Forty Mile MPC Wind	Wind	400	Aug-2021 (A)
Archer	Piikani Solar	Solar	40	Sep-2021 (A)
ENGIE	Duchess Solar	Solar	90	Sep-2021 (A)
Greengate Power	Paintearth Wind Farm	Wind	150	Sep-2021 (A)
Kineticor	Peace River Power Upgrade	Gas	125	Sep-2021 (A)
E.ON	Grizzly Bear Wind Phase 2	Wind	30	Oct-2021 (A)
Pembina	Empress Cogen	Gas	46	Oct-2021 (A)
ENGIE	Buffalo Trail North MPC Wind	Wind	200	Nov-2021 (A)
FortisAlberta	Cutting Lake 227S DER Gas	Gas	12	Nov-2021 (A)
RESC	Enterprise MPC Solar	Solar	100	Nov-2021 (A)
Chiniki	Chiniki Solar	Solar	40	Nov-2021 (A)
Enerfin	Winnifred MPC Wind	Wind	90	Dec-2021 (A)
Sequoia Energy	Oyen MPC Wind	Wind	100	Dec-2021 (A)
TCE	TCE Saddlebrook Solar	Solar	17.5	Dec-2021 (A)
ENGIE	Buffalo Trail MPC Wind	Wind	400	Dec-2021 (A)
Spirit Pine	Lone Pine WAGF	Wind	173	Apr-2022 (A)
Suncor	Meadow Creek Cogen	Gas	126	Jul-2022 (A)
NaturEner	Buffalo Trail WAGF	Wind	100	Jul-2022 (A)
NaturEner	Ross Creek WAGF	Wind	100	Jul-2022 (A)
RESC	RESC Hilda MPC Wind	Wind	100	Aug-2022 (A)

BowArk Energy	Lanfine North Wind WAGF	Wind	145	Sep-2022 (A)
Pattern Development	Lanfine South Wind	Wind	140	Sep-2022 (A)
Buffalo	Buffalo Plains MPC Wind	Wind	500	Oct-2022 (A)
Sequoia Energy	Schuler WAGF (MPC)	Wind	100	Dec-2022 (A)
Enterprise	Prosperity WAGF	Wind	175	Dec-2022 (A)
Mustus Energy	Mustus Energy Biomass	Biomass	41	Jun-2023 (A)
Nose Hill	MPC Wind	Wind	120	Oct-2023 (A)
EDF	Vulcan Solar	Solar	77.5	Dec-2023 (A)
AHP Development	Amisk Hydroelectric Project	Hydro	330	Dec-2023 (C)
Total (MW)			9,142	

* - (P):Power Plant application filed with AUC, (A): AESO application in process, (C): Corporate announcement

Table 4: Generation Projects that have Announced to be Retired

Sponsor(s)	Project Name	Fuel	Unit Capacity	Retire Date	Status
Total (MW)					

Federal Coal Compliance Schedule

In 2012, the federal government approved the *Reduction of Carbon Dioxide Emissions from Coal-fired Generation of Electricity Regulations*. The regulation requires that coal-fired generation units meet a GHG emissions intensity target once it reaches end of life. The AESO has adopted the federal compliance dates as retirement dates to evaluate metrics included in this report. The decision to retire a coal unit could also be impacted by several potential drivers, including the economics of plant operations, contractual agreements, and provincial and federal legislation.

The recent Climate Leadership Plan announced by the Alberta provincial government has not impacted assumptions on retirements in this report. Announcements from the government will continue to be assessed as they are released.

Table 5: Federal Coal Compliance Schedule

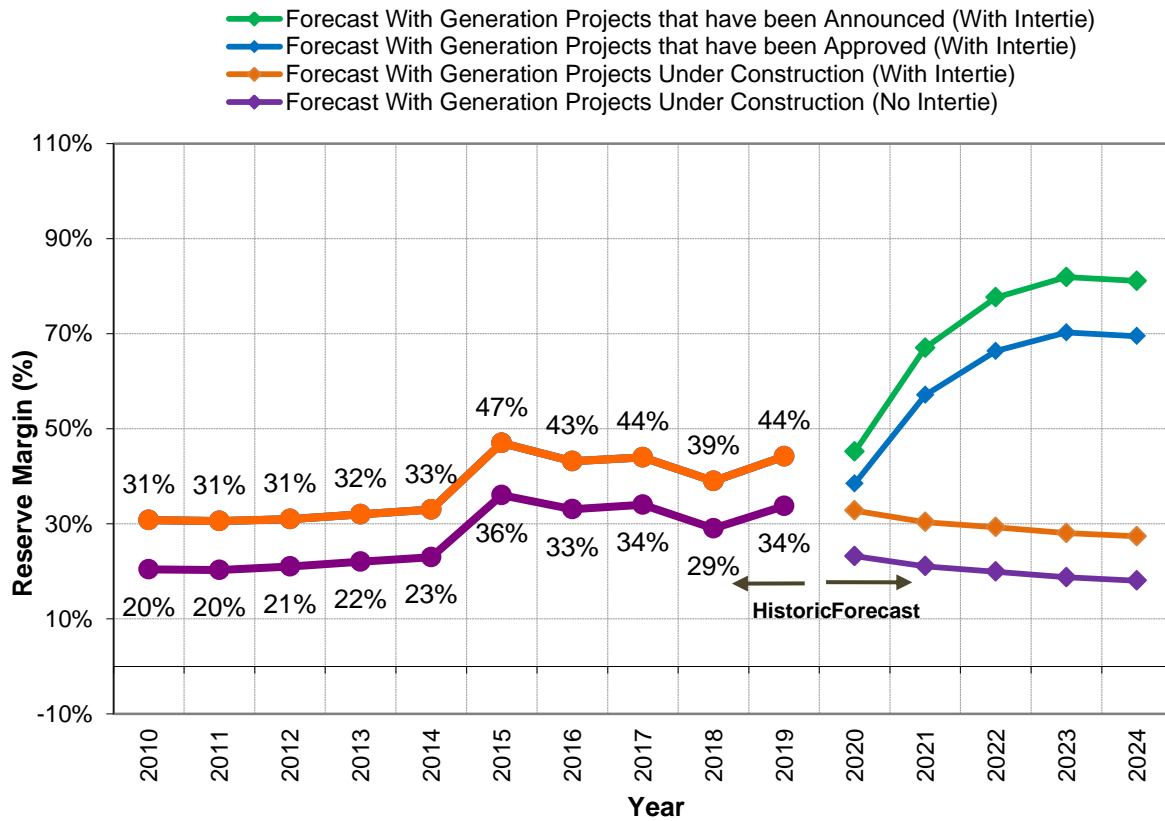
Sponsor(s)	Project Name	Fuel	Unit Capacity	In Service Date	Federal Compliance Date ¹
Heartland	Battle River 4	Coal	155	1975	Dec-2025
TransAlta	Sundance 3	Coal	368	1976	Dec-2026
Total (MW)			523		

¹ Federal Compliance Dates are based upon the applicable provisions of the Reduction of Carbon Dioxide Emissions from Coal-fired Generation of Electricity Regulations, as set forth in the Canada Gazette Vol. 146, No.19.

Reserve Margin Metric

The Reserve Margin Metric, shown in Figure 1, presents a comparison of generation supply and demand in Alberta. It is a calculation of the firm generation capacity at the time of system peak that is in excess of the system annual peak demand, expressed as a percentage of the system peak. Information on the annual peak demand within the reserve margin can be found on the AESO's [Forecasting](#) web page. Firm generation is defined as installed and future generation capacity, adjusting for seasonal hydro capacity and behind-the-fence demand and generation, and excludes wind and solar capacity. Three forecast reserve margins are presented, each with different future supply additions. The supply additions correspond to the stage of the generation projects in the New Generation Projects and Retirements Metric. The metric is graphed with and without intertie capacity in one reserve margin since full import capability may not always be available at the time of system peak demand.

Figure 1: Alberta Interconnected Electric System (AIES) Reserve Margin, 2010 – 2024



Supply Cushion Metric

The Supply Cushion Metric provides visibility of the Alberta Interconnected Electric System’s ability to meet peak demand on a daily basis. The supply cushion is the difference between the daily available firm supply minus daily peak demand. Only existing generation and generation under construction are used within the metric. The supply cushion refines the reserve margin calculation by using daily system peak rather than annual and incorporates planned outages. Figure 2 presents the estimated daily supply cushion for the next two years. Figure 3 presents daily peak demand and firm supply by fuel type, as well as interties, wind and solar which are not included in the supply cushion calculation due to the intermittent or uncertain nature of the supply. When the supply cushion is negative in Figure 2, there is an increased level of reliance on interties and wind, as indicated in Figure 3.

Figure 2: Alberta Interconnected Electric System (AIES) Daily Supply Cushion, February 1, 2020 to January 31, 2022

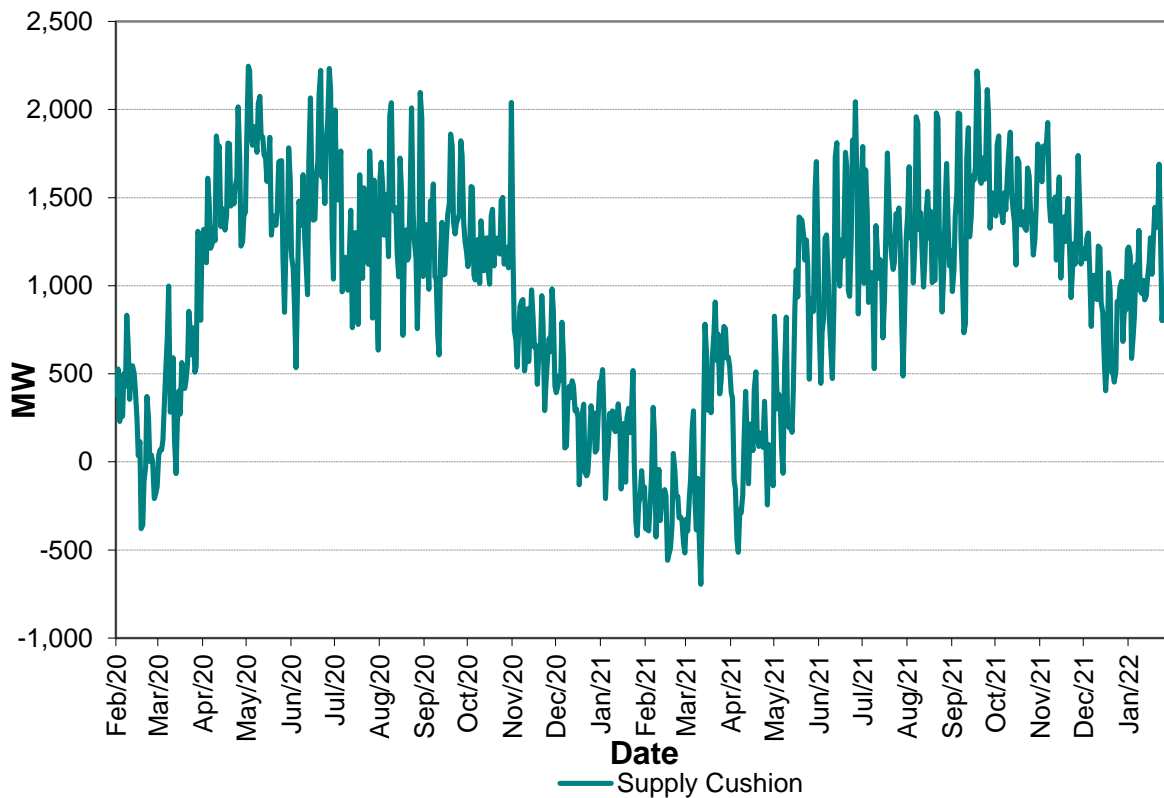
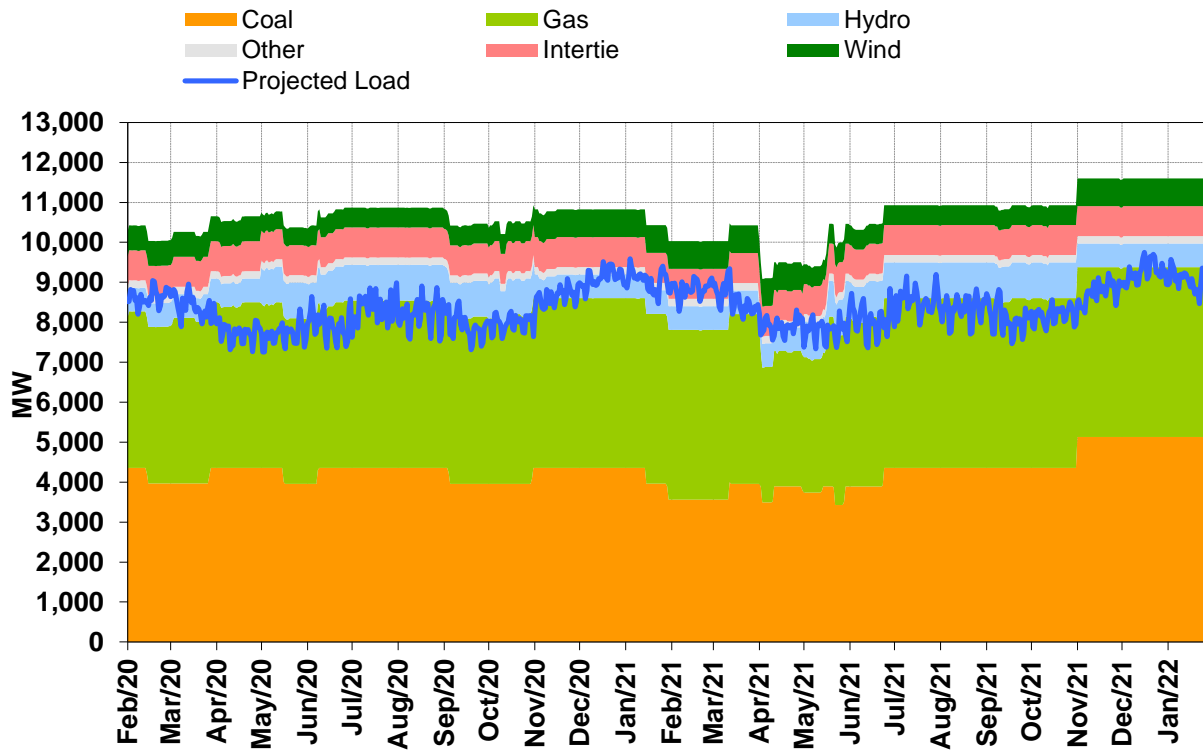


Figure 3: Alberta Interconnected Electric System (AIES) Daily Peak Demand and Available Supply, February 1, 2020 to January 31, 2022



Outage information as of Jan 20th, 2020

Two Year Probability of Supply Adequacy Shortfall Metric

The Two Year Probability of Supply Adequacy Shortfall Metric is a probabilistic assessment of encountering a supply shortfall over the next two years. It builds on the Supply Cushion Metric by incorporating the probability of wind production, forced generation outages and generation derates into the calculation of hourly firm supply. The calculation estimates, on a probabilistic basis, how much load may go without supply over the next two year period. Based on extensive consultation with stakeholders, when this unserved energy exceeds 2,031 MWh (consistent with ISO rule 202.6, Section 5(1)), the AESO may take certain actions to bridge the temporary supply adequacy gap while maintaining investor confidence in the market. The total energy not served shown in Table 6 does not reach the threshold.

Table 6: Two Year Probability of Supply Adequacy Shortfall, February 1, 2020 to January 31, 2022

Worst Shortfall Hour (MW)	# of Hours in Shortfall	Total Energy Not Served (MWh)
48	1	133

Note: Values are rounded and represent average outputs