

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:

Generation Projects moved to “Active Construction”:

- Enmax Shepard Gas Upgrade
- TransAlta Summerview 2 Battery Storage

Generation projects moved to “Regulatory Approval”:

- Pattern Development Lanfine South Wind
- Pattern Development Lanfine North Wind
- ATCO Rycroft 730S Battery DER
- Greengate Power Paintearth Wind Farm
- Enbridge South Terminal Gas
- EDF Vulcan Solar
- CNRL Primrose East 641S Gas

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

- Capital Power Genesee 3 Change
- Alberta Power Battle River Unit 6 Gas
- FortisAlberta Joffre 535S DER Solar 1
- FortisAlberta Joffre 535S DER Solar 2
- Pembina Duvernay Cogen
- FortisAlberta High River 65S DER Gas
- EDF North Slope Solar
- FortisAlberta Taber 83S DER Solar 1 Storage
- FortisAlberta Taber 83S DER Solar 2 Storage
- FortisAlberta Taber 83S DER Solar 3 Storage
- FortisAlberta Taber 83S DER Solar 4 Storage
- FortisAlberta Brooks 121S DER Gas

- RES Spirit River MPC Wind
- TCE Saddlebrook Solar Storage
- FortisAlberta Vulcan 255S DER Solar
- Dunmore Solar Inc. Dunmore Solar
- Capital Power Whitla Wind Phase 3

Generation projects that have been removed:

- Mustus Energy Biomass Generator
- Enmax Calgary Energy Centre Peaking
- NextEra Buffalo Trail Solar
- FortisAlberta Willesdengreen DER Gas Turbine
- FortisAlberta Taber 83S DER Solar 1
- FortisAlberta Taber 83S DER Solar 2
- ATCO Three Hills 770S DER Solar 2
- ATCO Fieldgate 824S DER Gas
- TCE Saddlebrook Solar and Storage
- Nexen Long Lake South
- Kronos Solar Oyen Solar Park

Other changes to generation projects:

Project	Change
FortisAlberta – Vauxhall Solar DER	New ISD of Apr-2020 from Feb-2020
Maxim Power – Milner Gas	New ISD of Apr-2020 from Feb-2020
FortisAlberta – 257S Hull DER Solar	New ISD of Apr-2020 from Feb-2020
Enbridge – WhiteTail Peaking	New ISD of Apr-2020 from Jan-2020
FortisAlberta – Innisfail 214S DER Solar	New ISD of May-2020 from Feb-2020
Keyera – West Pembina 359S Gas Turbine	New ISD of Jun-2020 from Feb-2020
ATCO – ATCO Wapiti 823S DER Gas	New ISD of Jul-2020 from May-2020
FortisAlberta – Spring Coulee 385S Solar DG	New ISD of Sep-2020 from Nov-2020
ATCO – Rycroft 730S Battery DER	New ISD of Nov-2020 from Jul-2020
FortisAlberta – 368S Burdett DER Solar	New ISD of Nov-2020 from Apr-2021
FortisAlberta – Westfield 107S DER Solar	New ISD of Nov-2020 from Jun-2020
Suncor – Forty Mile Granlea WAGF	New ISD of Nov-2020 from Jun-2020

FortisAlberta – Burdett 368S DG P/V	New ISD of Dec-2020 from Jul-2020
ATCO – Sarah Lake 743S DER Geothermal	New ISD of Jan-2021 from Mar-2020
Inter Pipeline – Strathcona Cogeneration	New ISD of Feb-2021 from Oct-2020
FortisAlberta – FortisAlberta High River 65S DER Gas	New ISD of Feb-2021 from Nov-2020
FortisAlberta – 421S Hays DG PV	New ISD of Mar-2021 from Oct-2020
ATCO – Bridge Creek 798S DER Gas	New ISD of Apr-2021 from May-2021
FortisAlberta – Conrad DER Solar	New ISD of Apr-2021 from Aug-2020
FortisAlberta – Conrad DER Solar 2	New ISD of Apr-2021 from Aug-2020
FortisAlberta – 255S Vulcan Faribault Farms P/V	New ISD of May-2021 from Aug-2020
FortisAlberta – Coaldale 254S DER Solar 3	New ISD of May-2021 from Aug-2020
FortisAlberta – Monarch 492S DER Solar	New ISD of May-2021 from Aug-2020
FortisAlberta – Stavely 349S DER Solar	New ISD of May-2021 from Aug-2020
RESC – Enterprise MPC Solar	New ISD of Aug-2021 from Nov-2021
TransAlta – Garden Plain Wind	New ISD of Oct-2021 from Dec-2020
Soventix – Forestburg Area Solar	New ISD of Oct-2021 from Jan-2020
EDF – Cypress Wind	New ISD of Nov-2021 from Jun-2021
ENGIE – Buffalo Trail North MPC Wind	New ISD of Dec-2021 from Nov-2021
Solar Krafte – Vauxhall	New ISD of Dec-2021 from Jun-2021
BER Hand Hills Wind LP – BER Hand Hills MPC Wind	New ISD of Feb-2022 from Dec-2021
ATCO – Rainbow Lake Gas	New ISD of Apr-2022 from Apr-2020
Cascade – Combined Cycle Phase 1	New ISD of Sep-2022 from Jan-2021
EDP Renewables – Blue Bridge Solar	New ISD of Oct-2022 from Oct-2020
Cascade – Combined Cycle Phase 2	New ISD of Dec-2022 from Jan-2022
Joss Wind – Northern Lights	New ISD of Nov-2023 from Nov-2020

PBC – Paul Band Solar	New ISD of Jan-2024 from Jul-2020
-----------------------	-----------------------------------

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 129 MWh. This value is below the 2,037 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*
ENMAX	Shepard Gas Upgrade	Gas	13	Apr-2020
FortisAlberta	Vauxhall Solar DER	Solar	22	Apr-2020
Maxim Power	Milner Gas	Gas	208	Apr-2020
FortisAlberta	257S Hull DER Solar	Solar	25	Apr-2020
FortisAlberta	Innisfail 214S DER Solar	Solar	16	May-2020
Keyera	West Pembina 359S Gas Turbine	Gas	12	Jun-2020
TransAlta	Summerview 2 Battery Storage	Storage	10	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
Suncor	Forty Mile Granlea WAGF	Wind	200	Nov-2020
FortisAlberta	Burdett 368S DG P/V	Solar	10	Dec-2020
Inter Pipeline	Strathcona Cogeneration	Gas	96	Feb-2021
FortisAlberta	421S Hays DG PV	Solar	24	Mar-2021

Total (MW)			831	
-------------------	--	--	------------	--

**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	Apr-2020
ATCO	Poplar Hill 790S Gas Change	Gas	32	Jul-2020
ATCO	Valleyview Gas	Gas	32	Jul-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
FortisAlberta	Spring Coulee 385S Solar DG	Solar	29	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
ATCO	Rycroft 730S Battery DER	Storage	20	Nov-2020
FortisAlberta	368S Burdett DER Solar	Solar	20	Nov-2020
FortisAlberta	275S Jenner Solar DER	Solar	23	Nov-2020
EDP Renewables	Sharp Hills Wind**	Wind	300	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
Enbridge	South Terminal Gas	Gas	20	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
ATCO	Sarah Lake 743S DER Geothermal	Gas	21	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	FortisAlberta Empress 394S DER Solar 1	Solar	22.5	May-2021
FortisAlberta	FortisAlberta Empress 394S DER Solar 2	Solar	16	May-2021
FortisAlberta	255S Vulcan Faribault Farms P/V	Solar	25	May-2021
FortisAlberta	Coaldale 254S DER Solar 3	Solar	22	May-2021
FortisAlberta	Monarch 492S DER Solar	Solar	24	May-2021
FortisAlberta	Stavely 349S DER Solar	Solar	8.5	May-2021
Suncor	Base Plant Cogen	Gas	815	Jul-2021
CNRL	Primrose East 641S Gas	Gas	32	Jul-2021
Medicine Hat	CMH Unit 17 Gas	Gas	44	Jul-2021
Turning Point Gen	Canyon Creek PHES Storage	Storage	75	Aug-2021
Greengate Power	Paintearth Wind Farm	Wind	150	Sep-2021
Kineticor	Peace River Power Generator	Gas	98	Sep-2021
E.ON	Grizzly Bear	Wind	120	Oct-2021
TransAlta	Garden Plain Wind	Wind	131	Oct-2021
Grand Prairie	Grand Prairie MPC Gas	Gas	360	Oct-2021

EDF	Cypress Wind	Wind	201.6	Nov-2021
Sunset Solar Inc.	Sunset Solar	Solar	60	Dec-2021
BER Hand Hills Wind LP	BER Hand Hills MPC Wind	Wind	200	Feb-2022
Capital Power	Genesee 4	Gas	525	Mar-2022
ATCO	Rainbow Lake Gas	Gas	45	Apr-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
BowArk Energy	Lanfine North Wind WAGF	Wind	145	Sep-2022
Pattern Development	Lanfine South Wind	Wind	140	Sep-2022
Cascade	Combined Cycle Phase 1	Gas	450	Sep-2022
Alberta Wind Energy	Mustus Energy Biomass	Wind	60	Oct-2022
RESC	McLaughlin WAGF	Wind	47	Nov-2022
Pteragen	Peace Butte	Wind	120	Dec-2022
Cascade	Combined Cycle Phase 2	Gas	450	Dec-2022
Capital Power	Genesee 5	Gas	525	Mar-2023
EDF	Vulcan Solar	Solar	77.5	Dec-2023
City of Calgary	Bonnybrook Cogen Expansion	Gas	10	TBD
Solar Krafte	Wrentham Solar Project	Solar	42	TBD
PetroChina	MacKay-Phase 1	Gas	85	TBD
Syncrude	Mildred Lake (Base Plant)-Phase 1	Gas	85	TBD
Maxim Power	Milner 2 Phase 2	Gas	260	TBD

TransAlta	Sundance 7	Gas	850	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
TransCanada	Saddlebrook	Gas	350	TBD
Enmax	Bonnybrook	Gas	168	TBD
Imperial Oil	Kearl - Phase 2	Gas	100	TBD
Imperial Oil	Kearl - Phase 3	Gas	35	TBD
Total (MW)			10,346	

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
HEP Capital	Alderson Solar	Solar	100	Apr-2020 (A)
ATCO	Monitor 2 774S DER Solar	Solar	30	May-2020 (A)
ATCO	Monitor 1 774S DER Solar	Solar	10	May-2020 (A)
FortisAlberta	Namaka DER Solar	Solar	20	Jun-2020 (A)
FortisAlberta	Gleichen DG Solar	Solar	17	Jun-2020 (A)
ATCO	ATCO Wapiti 823S DER Gas	Gas	15	Jul-2020 (A)
FortisAlberta	198S Blackfalds DER Gas Phase 2	Gas	4	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	Storage	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)
Altagas	Glenridge Wind	Wind	150	Oct-2020 (A)
Pengrowth	Cold Lake Area Energy Centre	Gas	100	Oct-2020 (A)
Northland	Bow City MPC Solar	Solar	400	Nov-2020 (A)
FortisAlberta	Acheson 305S DER Solar	Solar	10	Nov-2020 (A)
FortisAlberta	Westfield 107S DER Solar	Solar	19	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)
NextEra	Red Deer Battery Energy Storage	Storage	40	Dec-2020 (A)
NextEra	Ghost Pine Battery ES System	Storage	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)
FortisAlberta	Chappice Lake 649S DER Solar	Solar	15	Dec-2020 (A)
Capital Power	Whitla Wind Phase 3	Wind	54	Dec-2020 (A)
FortisAlberta	FortisAlberta Buffalo Creek 526S DER Storage	Storage	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	High River 65S DER Gas	Gas	13	Feb-2021 (A)
FortisAlberta	FortisAlberta High River 65S DER Gas	Gas	16.5	Feb-2021 (A)
FortisAlberta	Fieldgate 824S DER Gas	Solar	6	Mar-2021 (A)
FortisAlberta	Joffre 535S DER Solar	Solar	25	Mar-2021 (A)
FortisAlberta	Joffre 535S DER Solar	Solar	22	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)
ATCO	Bridge Creek 798S DER Gas	Gas	10	Apr-2021 (A)
FortisAlberta	Conrad DER Solar	Solar	23	Apr-2021 (A)
FortisAlberta	Conrad DER Solar 2	Solar	22	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)
FortisAlberta	Taber 83S DER Solar 1 Storage	Solar	19	May-2021 (A)
FortisAlberta	Taber 83S DER Solar 2 Storage	Solar	16	May-2021 (A)
FortisAlberta	Taber 83S DER Solar 3 Storage	Solar	16	May-2021 (A)
FortisAlberta	Taber 83S DER Solar 4 Storage	Solar	14	May-2021 (A)
Capital Power	Genesee 3 Change	Coal	6	May-2021 (A)
FortisAlberta	Bassano 435S DER Solar	Solar	11	Jun-2021 (A)
Transalta	Kaybob 3 Cogen	Gas	43	Jun-2021 (A)
FortisAlberta	Vulcan 255S DER Solar	Solar	15	Jun-2021 (A)
Solar Krafte	Brooks	Solar	400	Jun-2021 (A)
FortisAlberta	Tilley 498S DG Gas	Gas	22	Jul-2021 (A)

FortisAlberta	East Crossfield 64S DER Wasteheat	Biomass	10	Jul-2021 (A)
RESC	Rattlesnake Ridge MPC Wind	Wind	118	Jul-2021 (A)
RESC	Forty Mile MPC Wind	Wind	400	Aug-2021 (A)
RESC	Enterprise MPC Solar	Solar	100	Aug-2021 (A)
Archer	Piikani Solar	Solar	40	Sep-2021 (A)
ENGIE	Duchess Solar	Solar	90	Sep-2021 (A)
Kineticor	Peace River Power Upgrade	Gas	125	Sep-2021 (A)
Soventix	Forestburg Area Solar	Solar	40	Oct-2021 (A)
E.ON	Grizzly Bear Wind Phase 2	Wind	30	Oct-2021 (A)
Pembina	Empress Cogen	Gas	46	Oct-2021 (A)
FortisAlberta	Cutting Lake 227S DER Gas	Gas	12	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)
ENGIE	Buffalo Trail North MPC Wind	Wind	200	Dec-2021 (A)
ENGIE	Buffalo Trail MPC Wind	Wind	400	Dec-2021 (A)
Solar Krafte	Vauxhall	Solar	150	Dec-2021 (A)
Alberta Power	Battle River Unit 6 Gas	Gas	260	Dec-2021 (A)
FortisAlberta	Brooks 121S DER Gas	Gas	5	Feb-2022 (A)
Spirit Pine	Lone Pine WAGF	Wind	173	Apr-2022 (A)
TCE	Saddlebrook Solar Storage	Solar	118	Jun-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)
RES	Spirit River MPC Wind	Wind	100	Sep-2022 (A)
EDP Renewables	Blue Bridge Solar	Solar	150	Oct-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)
Dunmore Solar Inc.	Dunmore Solar	Solar	216	Apr-2023 (A)
Pembina	Duvernay Cogen	Gas	46	Jun-2023 (A)
EDF	North Slope Solar	Solar	200	Jun-2023 (A)
Nose Hill	MPC Wind	Wind	120	Oct-2023 (A)
Joss Wind	Northern Lights	Wind	400	Nov-2023 (A)
AHP Development	Amisk Hydroelectric Project	Hydro	330	Dec-2023 (C)
PBC	Paul Band Solar	Solar	45	Jan-2024 (A)
Total (MW)			9,407	

* - (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. Announcements from the government will continue to be assessed as they are released.

Table 5: Federal Coal Compliance Schedule

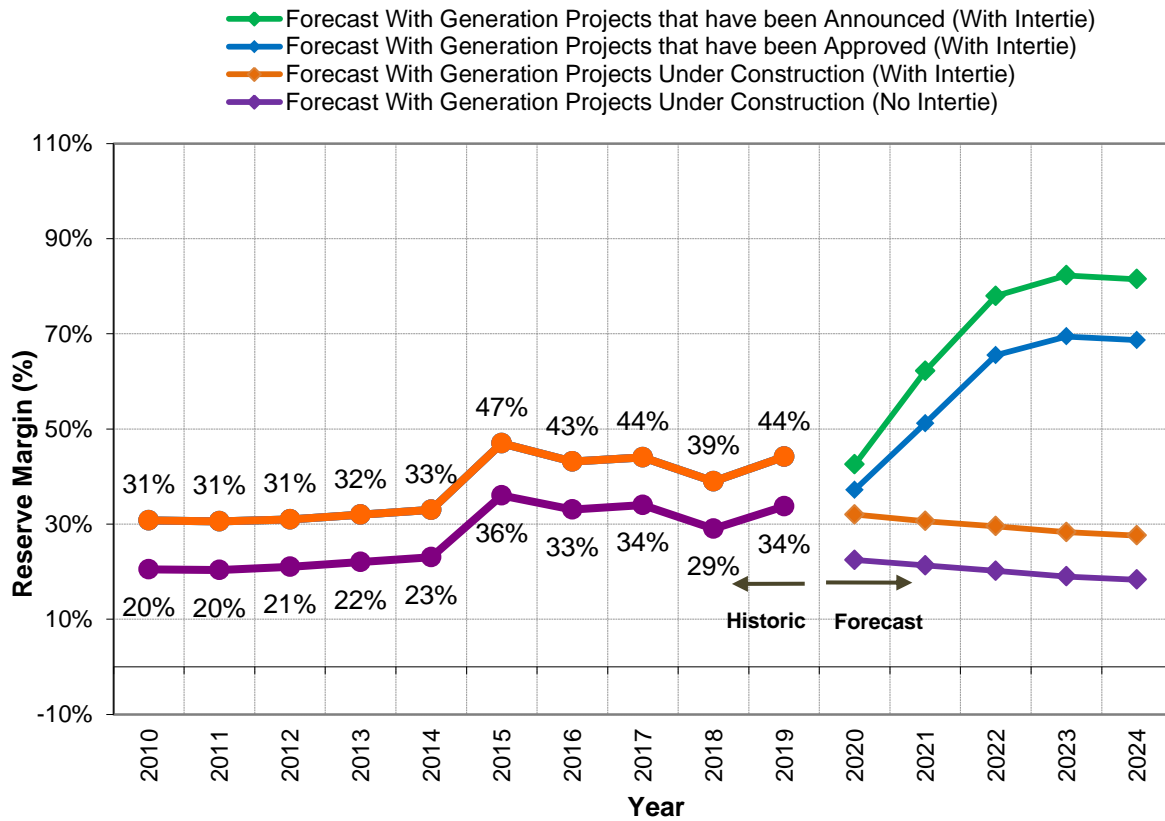
Sponsor(s)	Project Name	Fuel	Unit Capacity	In Service Date	Federal Compliance Date ¹
Heartland	Battle River 4	Coal	155	1975	Dec-2025
TransAlta	Sundance 3	Coal	368	1976	Dec-2026
Total (MW)			523		

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 inertia 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, May 1, 2020 to April 30, 2022

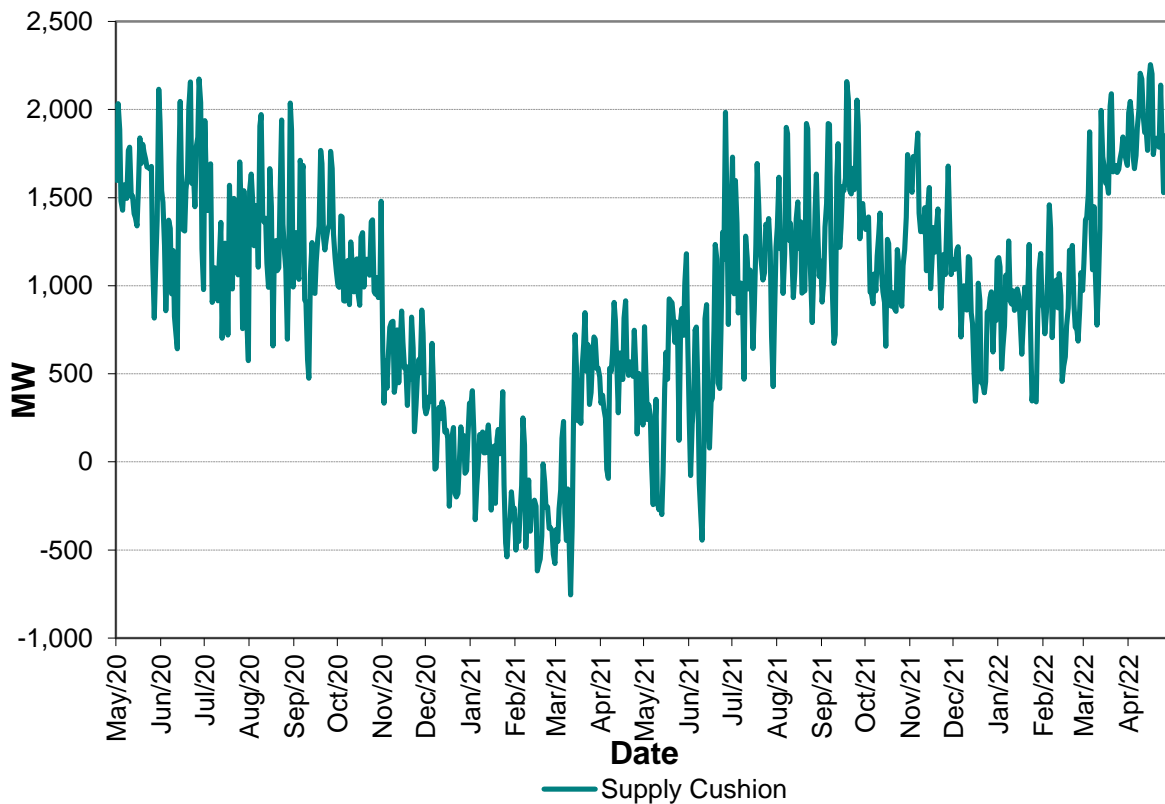
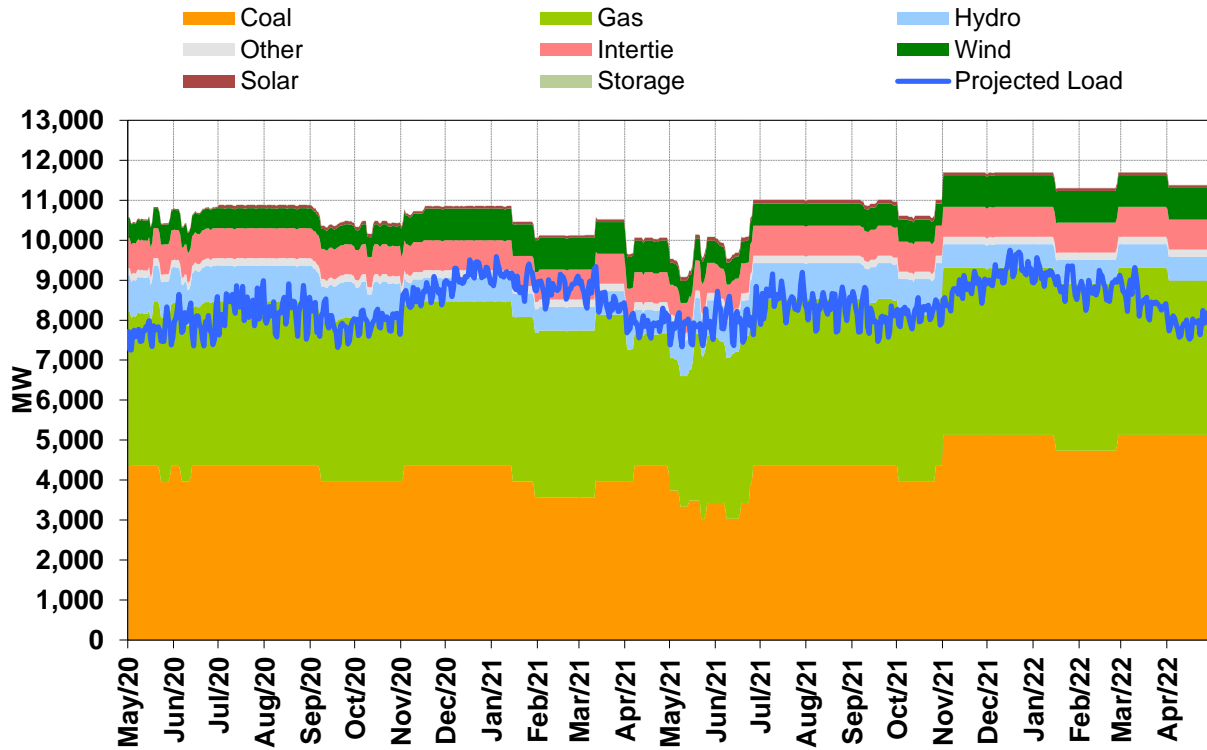


Figure 3: Alberta Interconnected Electric System (AIES) Daily Peak Demand and Available Supply, May 1, 2020 to Apr 30, 2022



Outage information as of Apr 16th, 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 2,037 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, May 1, 2020 to April 30, 2022

Worst Shortfall Hour (MW)	# of Hours in Shortfall	Total Energy Not Served (MWh)
51	1	129

Note: Values are rounded and represent average outputs