

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 at the time of system peak, a two year daily supply cushion, and a two year probabilistic assessment of the Alberta Internal Load (AIL). 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.

*With the recent release of the 2021 Long Term Outlook, the metrics have been revised to include the AESO's updated load forecast found at <https://www.aeso.ca/grid/forecasting>. Along with this, the AESO has updated the load forecast utilized for the supply cushion and probability of supply adequacy shortfall metrics to represent Alberta Internal Load (AIL) rather than system load with the main difference between forecasts being that AIL includes and accounts for behind the fence load. This increases alignment with the current 2021 LTO forecast as well as the AESO's internal Resource Adequacy Model (RAM). This allows the LTA to more accurately treat and account for risks to the full Alberta Internal Load, including more sophisticated modelling of the impacts of behind the fence generation and load.

Summary of Changes since Previous Report

New Generation and Retirements Metric

Projects completed and removed from list:

- TransAlta Windrise MPC Wind
- FortisAlberta 421S Hays DG PV
- FortisAlberta 275S Jenner Solar DER

Generation Projects moved to "Active Construction":

- EPCOR WSI DG Solar
- FortisAlberta Buffalo Creek 526S DER Storage
- Capital Power Whitla Wind Phase 3
- Milner Power Milner 1 & 2 Gas

Generation projects moved to "Regulatory Approval":

- Capstone Infrastructure Corporation Buffalo Atlee Wind Farm 1
- Capstone Infrastructure Corporation Buffalo Atlee Wind Farm 2
- Capstone Infrastructure Corporation Buffalo Atlee Wind Farm 3
- Aura Power Renewables Killarney Lake

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

- RESC America Development Big Sky MPC Solar
- Kiwetinohk Primo MPC Gas
- Vega Solar Battery
- Greengate Midnight MPC Solar Battery
- Fortis Blackmud DER Solar

- Fortis Leduc DER Solar
- Fortis Devon DER Solar
- Federation Marguerite Lake CAE Storage
- Capital Power Halkirk 2 MPC Wind
- Saamis Solar Park
- Kiwetinohk Homestead MPC Solar
- Fortis Tilley 498S DER Solar
- Greengate Luna MPC Solar Battery
- Claresholm Solar
- Georgetown MPC Battery
- EDTI Edmonton 3 H2 Plant Cogen
- TransCanada Saddlebrook Solar and Storage Project
- Renewable Energy Systems Canada Hilda Wind Power Project
- Enerfin Energy Company of Canada Winnifred Wind Power Project
- Aura Power Renewables Ltd. Metiskow Solar Project
- Siemens Energy Canada Limited Acme Generating Station Project
- Lathom Solar Project
- Jenner Wind-Jenner Wind Power Project 2 and Jenner Wind Power Project 3
- BluEarth Renewables Inc. Wheatcrest Solar Project
- BA4 Wind GP Corp. Buffalo Atlee 4 Wind Farm
- Solar Krafte Utilities Brooks Solar Farm

Generation projects that have been added to on hold status:

- NextEra Red Deer Battery Energy Storage System
- Ghost Pine Battery Energy Storage System
- Lone Pine Wind
- HEP Capital Alderson Solar
- NaturEner Buffalo Trail WAGF
- NaturEner Ross Creek WAGF
- Enterprise Prosperity Wind
- Joss Wind Northern Lights WAGF
- Archer Piikani Solar
- Glenridge Wind
- RealPart Calgary Area Solar
- Solar Krafte Rainier
- ATCO Coronation 773S Solar DG
- Chiniki Solar
- Four Rivers Wind
- EDP Renewables Blue Bridge Solar
- TransAlta Tempest MPC Wind
- Northland Bow City MPC Solar
- Quill Rocky Mountain Gas
- PBC Paul Band Solar

- ATCO Monitor 2 774S DER Solar
- FortisAlberta Acheson 305S DER Solar
- FortisAlberta Red Deer 63S DER Solar
- Grand Prairie MPC Gas
- Suncor Meadow Creek Cogen
- ATCO Monitor 1 774S DER Solar
- ENGIE Buffalo Trail South MPC Wind
- ENGIE Duchess Solar
- Sunset Solar
- ATCO Bridge Creek 798S DER Gas
- FortisAlberta Burdett 368S DER Solar Battery Storage
- Nose Hill MPC Wind
- ATCO Bridge Creek 798S DER Gas
- Old Elm Wind

Generation projects that have been removed:

- Pteragen Peace Butte Wind Farm
- ATCO Power Poplar Hill Gas
- ATCO Valleyview Gas
- ATCO Bullpound 803S DER Solar

Other changes to generation projects:

Project	Change
Joss Wind – Jenner WAGF	New ISD of Jun-2022 from Aug-2022
Joss Wind – Jenner WAGF - Phase 2	New ISD of Jun-2022 from Aug-2022
Greengate Power – Wheatland WAGF	New ISD of Jun-2022 from Sep-2022
FortisAlberta – 498S Tilley DG PV	New ISD of Aug-2021 from Apr-2021
Northland – Buffalo Trail	New ISD of Oct-2024 from TBD
FortisAlberta – Conrad DER Solar	New ISD of Dec-2021 from Aug-2021
Solar Krafte – Vauxhall	New ISD of Feb-2023 from Dec-2021
FortisAlberta – Namaka DER Solar	New ISD of Aug-2021 from Jul-2021
FortisAlberta – Conrad DER Solar 2	New ISD of Dec-2021 from Aug-2021
Soventix – Forestburg Area Solar	New ISD of Oct-2022 from TBD

FortisAlberta – Strathmore 151S DER Solar 1	New ISD of March-2022 from Aug-2021
FortisAlberta – Strathmore 151S DER Solar 2	New ISD of March-2022 from Aug-2021
Pengrowth – Cold Lake Area Energy Centre	New ISD of Apr-2024 from Apr-2023
FortisAlberta – Bassano 435S DER Solar	New ISD of Nov-2021 from Sep-2021
ENGIE – Buffalo Trail North MPC Wind	New ISD of Mar-2023 from Sep-2022
Joss Wind – Jenner Wind Phase 3	New ISD of Jun-2022 from Aug-2022
Pembina – Empress Cogen	New ISD of Jun-2022 from Oct-2021
ATCO – Sarah Lake 743S DER Geothermal	New ISD of Nov-2021 from Jun-2021
ATCO – Michichi Creek 802S DER Solar	New ISD of Jun-2022 from Oct-2021
BER Hand Hills Wind LP – MPC Wind	New ISD of Sep-2022 from Jan-2023
FortisAlberta – Buffalo Creek 526S DER Storage	New ISD of Jul-2021 from Jun-2021
FortisAlberta – Cutting Lake 227S DER Gas	New ISD of Nov-2022 from Nov-2021
FortisAlberta – Vulcan 255S DER Solar	New ISD of May-2022 from Jun-2021
Milner Power – Milner 1 & 2 Gas	New ISD of Dec-2022 from Oct-2021
ATCO – Fieldgate 824S DER Gas	New ISD of Jun-2022 from Jun-2021
ATCO – Elmworth 731S DER Gas	New ISD of Dec-2021 from Sep-2021

Reserve Margin Metric

The reserve margin has been updated to reflect changes to the project list and the updated 2021 LTO system load forecast.

Supply Cushion Metric

The forecast supply cushion has been updated to reflect the new time period and updated using the 2021 LTO Alberta Internal Load forecast.

Two Year Probability of Supply Adequacy Shortfall Metric

New values for the metric have been calculated with Total Energy Not Served equaling 16 MWh. This value is below the 1,964 MWh threshold. The forecast PSAS has been updated to reflect the new time period and updated using the 2021 LTO Alberta Internal Load forecast.

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 5 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
FortisAlberta	Buffalo Creek 526S DER Storage	Storage	20	Jun-2021
RESC	Rattlesnake Ridge MPC Wind	Wind	118	Jul-2021
Capital Power	Whitla Wind Power - Phase 2	Wind	97.2	Aug-2021
FortisAlberta	Namaka DER Solar	Solar	20	Aug-2021
Fengate	Strathcona Cogeneration	Gas	96	Sep-2021
FortisAlberta	255S Vulcan Faribault Farms P/V	Solar	25	Sep-2021
FortisAlberta	Coaldale 254S DER Solar 3	Solar	22	Sep-2021
FortisAlberta	Monarch 492S DER Solar	Solar	24	Sep-2021
FortisAlberta	Spring Coulee 385S Solar DG	Solar	29	Oct-2021
Suncor	Forty Mile Granlea WAGF	Wind	200	Nov-2021
FortisAlberta	Buffalo Atlee Cluster 1 WAGF	Wind	18	Dec-2021
FortisAlberta	Buffalo Atlee Cluster 3 WAGF	Wind	17	Dec-2021
FortisAlberta	Buffalo Atlee Cluster 2	Wind	14	Dec-2021
FortisAlberta	Conrad DER Solar	Solar	23	Dec-2021
FortisAlberta	Conrad DER Solar 2	Solar	22	Dec-2021

FortisAlberta	Stavely 349S DER Solar	Solar	8.5	Feb-2022
FortisAlberta	Strathmore 151S DER Solar 1	Solar	18	Mar-2022
FortisAlberta	Strathmore 151S DER Solar 2	Solar	22.5	Mar-2022
Medicine Hat	CMH Unit 17 Gas	Gas	44	Mar-2022
EPCOR	WSI DG Solar	Solar	12	Mar-2022
Capital Power	Genesee 3 Change	Coal	6	Apr-2022
Joss Wind	Jenner WAGF	Wind	122	Jun-2022
Joss Wind	Jenner WAGF - Phase 2	Wind	180	Jun-2022
Greengate Power	Wheatland WAGF	Wind	120	Jun-2022
ATCO	Ethel Lake 717S DER Wasteheat	Biomass	19	Aug-2022
Cascade	Combined Cycle Phase 1	Gas	450	Sep-2022
Greengate Power	Stirling WAGF	Wind	115	Nov-2022
EDF	Cypress Wind	Wind	201.6	Nov-2022
Capital Power	Whitla Wind Phase 3	Wind	54	Nov-2022
Milner Power	Milner 1 & 2 Gas	Gas	124	Dec-2022
Greengate	Travers Solar	Solar	400	Dec-2022
Cascade	Combined Cycle Phase 2	Gas	450	Dec-2022
Greengate	Travers Solar Phase 2	Solar	65	Dec-2022
Suncor	Base Plant Cogen	Gas	815	Dec-2024
Total (MW)			3,972	

**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
Transalta	Kaybob 3 Cogen	Gas	43	Jun-2021
ATCO	Bullpound 803S DER Solar	Solar	15	Jun-2021
FortisAlberta	498S Tilley DG PV	Solar	22	Aug-2021
EPC	Bonnybrook DER Cogen	Gas	10.1	Sep-2021
FortisAlberta	Jenner 275S DER	Gas	23	Sep-2021
Fortis	Enchant 447S DER Solar	Solar	23	Oct-2021
Fortis	Enchant 447S DER Solar 2	Solar	18	Oct-2021
Fortis	Enchant 447S DER Solar 3	Solar	10	Oct-2021
Fortis	Enchant 447S DER Solar 4	Solar	24	Oct-2021
ATCO	Michichi Creek 802S DER Solar	Solar	25	Oct-2021
ATCO	Three Hills 770S DER Solar 1	Solar	25	Oct-2021
ATCO	Michichi DER Solar	Solar	75	Nov-2021
Pembina	Empress Cogen	Gas	46	Nov-2021
FortisAlberta	Empress 394S DER Solar 2	Solar	16	Nov-2021
FortisAlberta	Brooks 121S DER Solar 1	Solar	14	Nov-2021
FortisAlberta	Brooks 121S DER Solar 2	Solar	12.5	Nov-2021
Turning Point Gen	Canyon Creek PHES Storage	Storage	75	Apr-2022
FortisAlberta	Fieldgate 824S DER Gas	Solar	5	Apr-2022
EDP Renewables	Sharp Hills Wind Farm	Wind	300	Apr-2022
FortisAlberta	Chappice Lake 649S DER Solar	Solar	15	Apr-2022
FortisAlberta	Vulcan 255S DER Solar	Solar	15	May-2022

ATCO	Sarah Lake 743S DER Geothermal	Gas	21	Jun-2022
BowArk Energy	Drywood Gas Generator	Gas	38	Jun-2022
TransAlta	Garden Plain Wind	Wind	131	Jul-2022
ATCO Power	Poplar Hill Gas	Gas	32	Jul-2022
ATCO	Valleyview Gas	Gas	32	Jul-2022
CNRL	Primrose East 641S Gas	Gas	32	Aug-2022
Naturener	Wild Rose 1 Wind Farm	Wind	192	Aug-2022
Naturener	Wild Rose 2 Wind Farm	Wind	218	Aug-2022
Suncor	Forty Mile Maleb WAGF	Wind	200	Sep-2022
ATCO	Michichi Creek 802S DER Solar	Solar	13.5	Sep-2022
BER Hand Hills Wind LP	MPC Wind	Wind	200	Sep-2022
BowArk Energy	Lanfine North Wind WAGF	Wind	145	Sep-2022
Enel	Grizzly Bear Wind	Wind	120	Oct-2022
RESC	McLaughlin WAGF	Wind	47	Nov-2022
FortisAlberta	Killarney Lake 267S DER Solar/Battery Storage	Solar	22.5	Dec-2022
FortisAlberta	Empress 394S DER Solar 1	Solar	22.5	Dec-2022
Capital Power	Genesee 2 Repower GT	Gas	430	Jan-2023
Invenery	Schuler Wind	Wind	150	Mar-2023
Greengate Power	Paintearth Wind Farm	Wind	150	Apr-2023
Enbridge	WhiteTail Peaking Station	Gas	200	May-2023
Potentia Renewables	Stirling WAGF Phase 2	Wind	39	Jul-2023
Capital Power	Genesee 1 Repower GT	Gas	430	Oct-2023
TransAlta	Sundance Unit 5 Gas	Gas	795	Dec-2023

Capital Power	Genesee 1 Repower ST	Gas	286	Dec-2023
Capital Power	Genesee 2 Repower ST	Gas	286	Jan-2024
Grand Prairie	Grand Prairie MPC Gas	Gas	360	TBD
Sunset Solar Inc.	Sunset Solar	Solar	60	TBD
Barlow Solar Park	Barlow Solar Park	Solar	27	TBD
Oyen Solar Partners	Oyen Community Solar Project	Solar	15	TBD
PetroChina	MacKay-Phase 1	Gas	85	TBD
Syncrude	Mildred Lake (Base Plant)-Phase 1	Gas	85	TBD
Kineticor	Peace River Power Generator	Gas	98	TBD
Sequoia Energy	Schuler WAGF (MPC)	Wind	100	TBD
Heartland	Rainbow Lake Gas	Gas	45	TBD
Suncor	Hand Hills Wind Energy Project	Wind	80	TBD
ENMAX	Zephyr Wind Farm	Wind	200	TBD
Imperial Oil	Kearl - Phase 2	Gas	100	TBD
Imperial Oil	Kearl - Phase 3	Gas	35	TBD
Pattern Development	Lanfine South Wind	Wind	140	TBD
Old Elm Wind	Old Elm Wind	Wind	10	TBD
SunAlta Solar Inc.	SunAlta	Solar	20	TBD
Signalta Resources Limited	High River	Gas	21	TBD
Total (MW)			6,525	

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
Kiwetinochk Primo	Kiwetinochk Homestead MPC Solar	Solar	400	May-2021 (A)
FortisAlberta	High River 65S DER Gas	Gas	13	Aug-2021 (A)
RESC	Enterprise MPC Solar	Solar	100	Aug-2021 (A)
ATCO	Bridge Creek 798S DER Gas	Gas	13	Oct-2021 (A)
FortisAlberta	Gleichen DG Solar	Solar	17	Oct-2021 (A)
ATCO	Vilna 777S DER Solar	Solar	5	Oct-2021 (A)
FortisAlberta	High River 65S DER Gas	Gas	16.5	Nov-2021 (A)
ATCO	Mercer Hill 728S DER Battery	Storage	430	Dec-2021 (A)
ATCO	Elmworth 731S DER Gas	Gas	9	Dec-2021 (A)
ENMAX	FMC DER Cogen	Gas	7	Dec-2021 (A)
BluEarth Renewables	Wheatcrest MPC Solar	Solar	60	Mar-2022 (A)
ATCO	Oyen 767S DER Solar	Solar	15	Apr-2022 (A)
FortisAlberta	Castle Meridian DER Wind	Wind	22	May-2022 (A)
ATCO	Updike 886S DER Gas	Gas	33	May-2022 (A)
ATCO	Ksituan River 754S DER Gas	Gas	286	May-2022 (A)
Fortis	Buffalo Atlee Cluster 4 DER Wind	Wind	4.6	May-2022 (A)
Joss Wind	Jenner Wind Phase 3	Wind	106	Jun-2022 (A)
ATCO	Fieldgate 824S DER Gas	Gas	16	Jun-2022 (A)
RESC	Forty Mile MPC Wind	Wind	400	Jun-2022 (A)
Solar Krafte	Brooks	Solar	400	Jun-2022 (A)
ENGIE	Buffalo Trail North MPC Wind	Wind	200	Jun-2022 (A)

Fortis	High River 65S DER Gas	Gas	5	Aug-2022 (A)
Fortis	High River 65S DER Gas 2	Gas	5	Aug-2022 (A)
RESC	Hilda MPC Wind	Wind	100	Aug-2022 (A)
TCE	Saddlebrook Solar Storage	Solar	118	Sep-2022 (A)
Claresholm	Claresholm Solar	Solar	20	Sep-2022 (A)
Soventix	Forestburg Area Solar	Solar	40	Oct-2022 (A)
E.ON	Grizzly Bear Wind Phase 2	Wind	30	Oct-2022 (A)
EDF	Bull Trail Wind	Wind	300	Oct-2022 (A)
ATCO	Youngstown 772S DER Solar	Solar	6	Oct-2022 (A)
FortisAlberta	East Crossfield 64S DER Wasteheat	Biomass	10	Nov-2022 (A)
FortisAlberta	Taber 83S DER Solar 1	Solar	19	Nov-2022 (A)
FortisAlberta	Taber 83S DER Solar 2	Solar	16	Nov-2022 (A)
FortisAlberta	Taber 83S DER Solar 3	Solar	16	Nov-2022 (A)
FortisAlberta	Taber 83S DER Solar 4	Solar	14	Nov-2022 (A)
MECL	Kirkcaldy MPC Solar	Solar	350	Nov-2022 (A)
EDF	Cypress 2 Wind	Wind	50	Nov-2022 (A)
Fortis	Fortis Blackmud DER Solar	Solar	24	Nov-2022 (A)
Fortis	Fortis Leduc DER Solar	Solar	67.3	Nov-2022 (A)
Fortis	Fortis Devon DER Solar	Solar	21	Nov-2022 (A)
FortisAlberta	Cutting Lake 227S DER Gas	Gas	12	Nov-2022 (A)
Pteragen	Peace Butte Wind Farm	Wind	120	Dec-2022 (A)
FortisAlberta	Metiskow 648S DER Solar	Solar	22.5	Dec-2022 (A)
Sollair	MPC Solar	Solar	90	Dec-2022 (A)
Greencells	Estuary Solar	Solar	200	Dec-2022 (A)

ATCO	Anderson 801S DER Solar	Solar	13	Dec-2022 (A)
FortisAlberta	Joffre 535S DER Solar	Solar	25	Dec-2022 (A)
FortisAlberta	Joffre 535S DER Solar	Solar	22	Dec-2022 (A)
Greengate	Lathom Solar	Solar	120	Dec-2022 (A)
RESC	Aurora MPC Solar	Solar	150	Dec-2022 (A)
Solar Krafte	Vauxhall	Solar	150	Feb-2023 (A)
Enerfin	Winnifred MPC Wind	Wind	90	Feb-2023 (A)
FortisAlberta	Bassano 435S DER Solar	Solar	11	Mar-2023 (A)
Nutrien	Redwater Cogen	Gas	30	Mar-2023 (A)
FortisAlberta	Burdett 368S DER Solar Battery	Solar	17.5	Apr-2023 (A)
Dunmore Solar Inc.	Dunmore Solar	Solar	216	Apr-2023 (A)
Buffalo	Buffalo Plains MPC Wind	Wind	500	Apr-2023 (A)
Pembina	Duvernay Cogen	Gas	46	Jun-2023 (A)
EER	Foothills MPC Solar	Solar	150	Jun-2023 (A)
Capital Power	Capital Power Halkirk 2 MPC Wind	Wind	150	Jul-2023 (A)
EDF	North Slope Solar	Solar	200	Aug-2023 (A)
Georgetown	MPC Solar	Solar	230	Aug-2023 (A)
Vega	Vega Solar Battery	Solar	100	Aug-2023 (A)
Vega	Vega Solar Battery	Storage	100	Aug-2023 (A)
Sol	Aurora Solar Battery	Solar	200	Sep-2023 (A)
Sol	Aurora Solar Battery	Storage	100	Sep-2023 (A)
Saamis	Saamis Solar Park	Solar	325	Sep-2023 (A)
Greengate	Greengate Luna MPC Solar Battery	Solar	530	Sep-2023 (A)
EDTI	EDTI Edmonton 3 H2 Plant Cogen	Gas	20	Sep-2023 (A)

Fortis	Fortis Tilley 498S DER Solar	Solar	23.6	Sep-2023 (A)
Georgetown	Georgetown MPC Battery	Storage	100	Oct-2023 (A)
Suncor	Forty Mile Granlea Wind Phase 2	Wind	250	Nov-2023 (A)
Maxim Power	Deerland Peaking Station	Gas	186	Dec-2023 (A)
RESC	Oyen MPC Wind	Wind	250	Dec-2023 (A)
Greengate	Jurassic MPC Solar Battery	Solar	530	Dec-2023 (A)
Greengate	Jurassic MPC Solar Battery	Storage	530	Dec-2023 (A)
RESC America Development	RESC Big Sky MPC Solar	Solar	120	Dec-2023 (A)
Greengate	Greengate Midnight MPC Solar Battery	Solar	530	Dec-2023 (A)
Pengrowth	Cold Lake Area Energy Centre	Gas	100	Apr-2024 (A)
Federation	Federation Marguerite Lake CAE Storage	Storage	320	Aug-2024 (A)
Northland	Buffalo Trail	Wind	100	Oct-2024 (A)
Kiwetinochk Primo	Kiwetinochk Primo MPC Gas	Gas	577	Oct-2025 (A)
NextEra	Red Deer Battery Energy Storage	Storage	40	TBD (A)
NextEra	Ghost Pine Battery ES System	Storage	30	TBD (A)
Spirit Pine	Lone Pine WAGF	Wind	173	TBD (A)
HEP Capital	Alderson Solar	Solar	100	TBD (A)
NaturEner	Buffalo Trail WAGF	Wind	100	TBD (A)
NaturEner	Ross Creek WAGF	Wind	100	TBD (A)
Enterprise	Prosperity WAGF	Wind	175	TBD (A)
Joss Wind	Northern Lights	Wind	400	TBD (A)
Archer	Piikani Solar	Solar	40	TBD (A)
Altagas	Glenridge Wind	Gas	150	TBD (A)

RealPart	Calgary Area Solar	Solar	150	TBD (A)
Solar Krafte	Rainier	Solar	450	TBD (A)
ATCO	Coronation 773S Solar DG	Solar	10	TBD (A)
Chiniki	Chiniki Solar	Solar	40	TBD (A)
E.ON	Four Rivers Wind	Wind	450	TBD (A)
EDP Renewables	Blue Bridge Solar	Solar	150	TBD (A)
TransAlta	Tempest MPC Wind	Wind	115	TBD (A)
Northland	Bow City MPC Solar	Solar	400	TBD (A)
Quill	Rocky Mountain Gas	Gas	295	TBD (A)
PBC	Paul Band Solar	Solar	45	TBD (A)
ATCO	Monitor 2 774S DER Solar	Solar	30	TBD (A)
FortisAlberta	Acheson 305S DER Solar	Solar	10	TBD (A)
FortisAlberta	Red Deer 63S DER Solar	Solar	20	TBD (A)
Suncor	Meadow Creek Cogen	Gas	126	TBD (A)
ATCO	Monitor 1 774S DER Solar	Solar	10	TBD (A)
ENGIE	Buffalo Trail MPC Wind	Wind	400	TBD (A)
ENGIE	Duchess Solar	Solar	90	TBD (A)
ATCO	Bridge Creek 798S DER Gas	Gas	10	TBD (A)
Nose Hill	MPC Wind	Wind	120	TBD (A)
AHP Development	Amisk Hydroelectric Project	Hydro	330	TBD (C)
Total (MW)			16,940	

* - (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/Derated

Sponsor(s)	Project Name	Fuel	Unit Capacity*	Date	Status
TransAlta	Sundance 4	Coal/Gas	113	Jan 1, 2022	Derated
TransAlta	Keephills 1	Coal/Gas	70	Jan 1, 2022	Derated

**MC values are announced derate values*

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

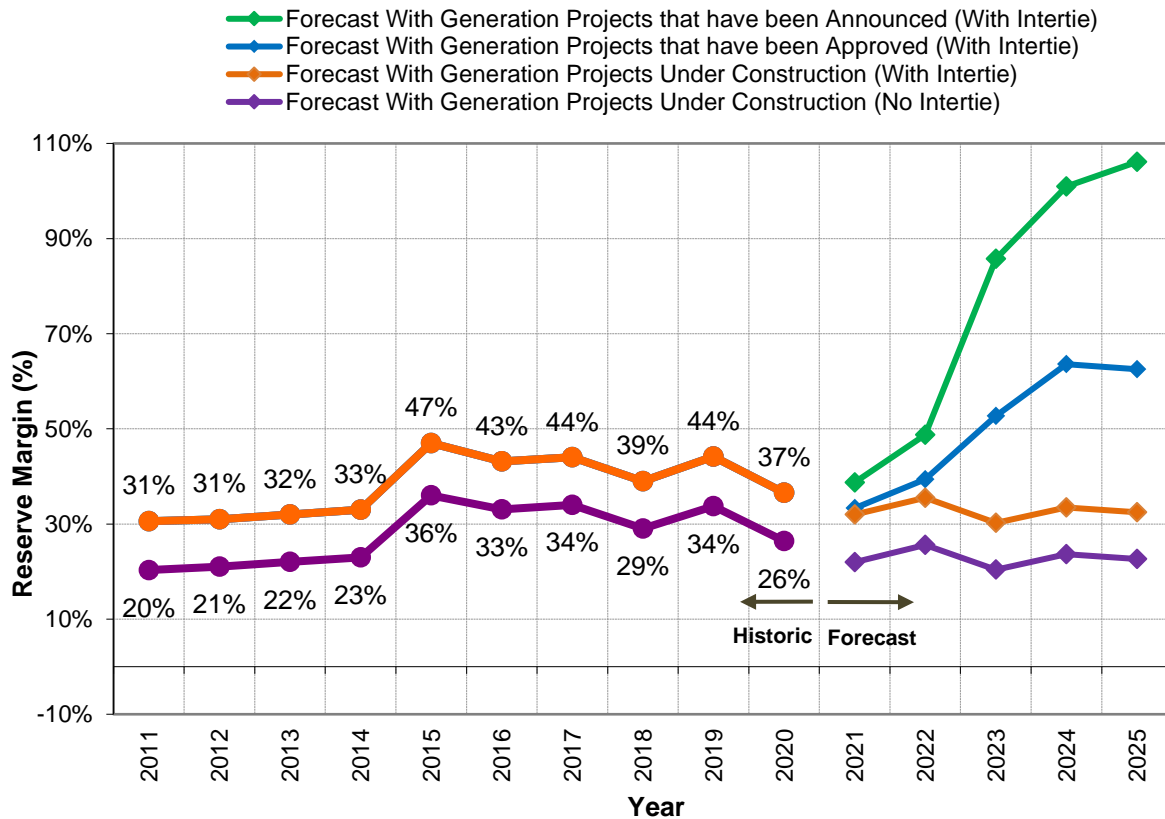
Sponsor(s)	Project Name	Fuel	Unit Capacity	In Service Date	Federal Compliance Date ¹
Heartland	Battle River 4	Coal	155	1975	Dec-2025
Total (MW)			155		

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, 2011 – 2025

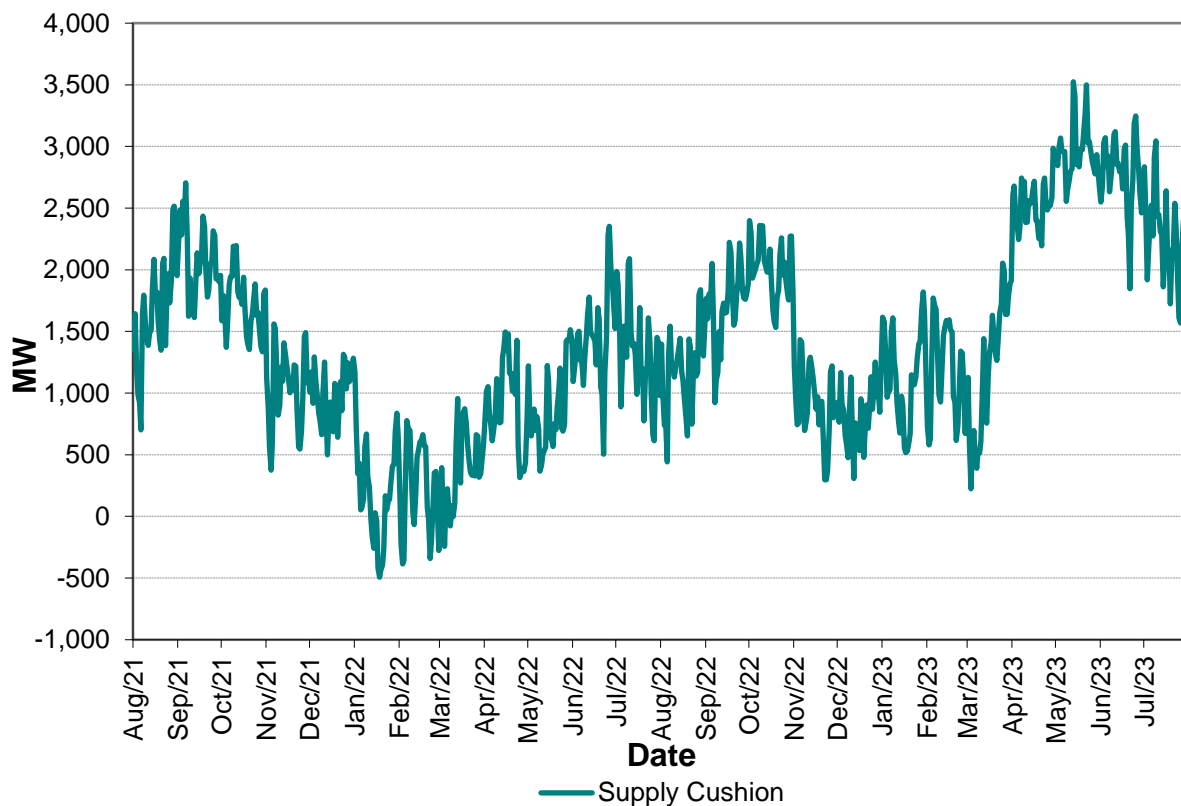


Supply Cushion Metric

The Supply Cushion Metric provides visibility of the Alberta Internal Load’s ability to meet peak demand daily. 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.

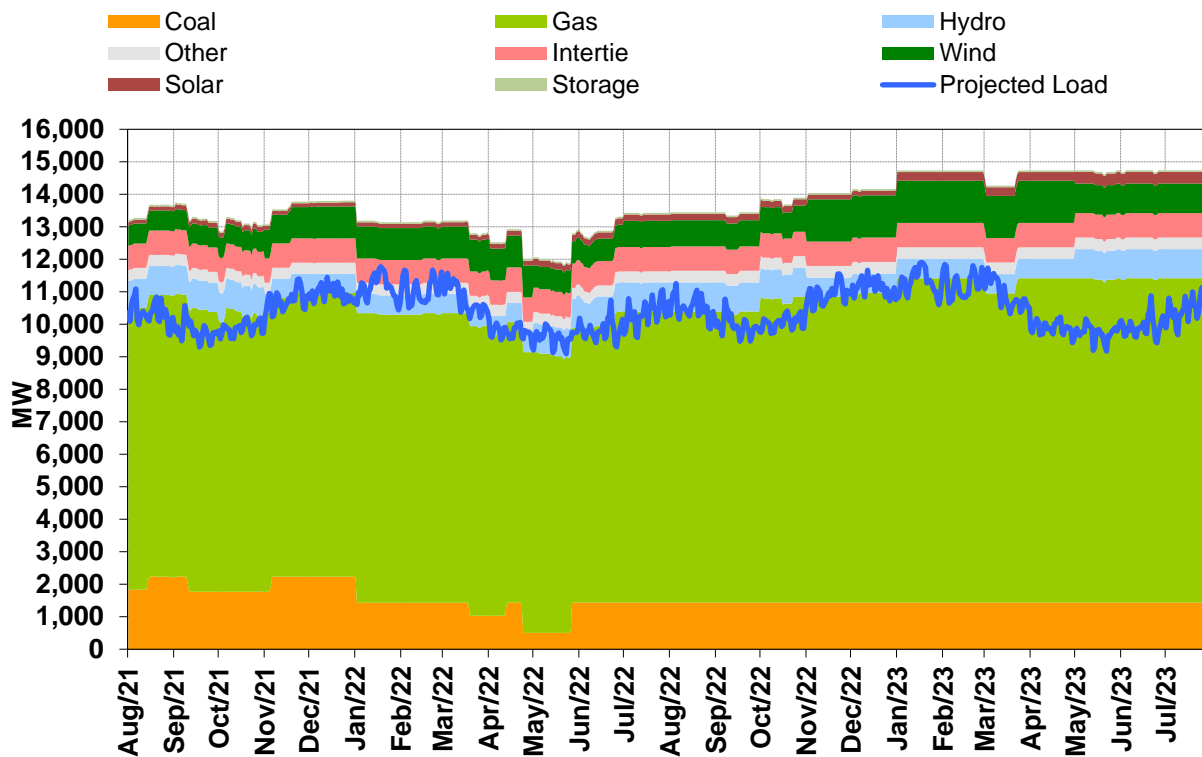
*Note a general increase in the supply cushion from the May 2021 LTA, which is due to the utilization of the 2021 LTO AIL forecast which has overall lower load values compared with the 2019 LTO. This metric uses Alberta Internal Load (AIL) rather than system load with the main difference between forecasts being that AIL includes and accounts for behind the fence load and as such the metric also now accounts for the generation anticipated to supply behind the fence load.

Figure 2: Alberta Internal Load (AIL) Daily Supply Cushion, August 1, 2021 to July 31, 2023



*Note a general increase in the supply cushion from the May 2021 LTA, which is due to the utilization of the 2021 LTO AIL forecast which has overall lower load values compared with the 2019 LTO. This metric uses Alberta Internal Load (AIL) rather than system load with the main difference between forecasts being that AIL includes and accounts for behind the fence load and as such the metric also now accounts for the generation anticipated to supply behind the fence load. Gas supply has increased, and coal supply decreased due to the reclassification of units from coal to gas fired steam and dual fuel.

Figure 3: Alberta Internal Load (AIL) Daily Peak Demand and Available Supply, August 1, 2021 to July 31, 2023



Outage information as of Aug 4th, 2021

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 1,964 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.

*Note the Aug 2021 LTA utilization of the 2021 LTO AIL forecast which has overall lower load values compared with the 2019 LTO. This metric uses Alberta Internal Load (AIL) rather than system load with the main difference between forecasts being that AIL includes and accounts for behind the fence load and as such the metric also now accounts for the generation anticipated to supply behind the fence load. Gas supply has increased, and coal supply decreased due to the reclassification of units from coal to gas fired steam and dual fuel.

Table 6: Two Year Probability of Supply Adequacy Shortfall, Aug 1, 2021 to July 31, 2023

Worst Shortfall Hour (MW)	# of Hours in Shortfall	Total Energy Not Served (MWh)
9	0	16

Note: Values are rounded and represent average outputs