

Long Term Adequacy Metrics

Nov 2018



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.

Summary of Changes since Previous Report

New Generation and Retirements Metric

Projects completed and removed from list:

- N/A

Generation Projects moved to “Active Construction”:

- TransCanada Scoria 318S Cogen
- Capital Power Whitla Wind Power – Phase 1

Generation projects moved to “Regulatory Approval”:

- Fortis Vauxhall Solar DER
- EDP Renewables Sharp Hills Wind
- RESC Forty Mile WAGF
- Turning Point Gen Canyon Creek PHES
- Fortis Stirling 67S DG PV
- Fortis Jenner 275S DER
- Capital Power Whitla Wind Power – Phase 2
- Fortis Warner 344S DER Solar
- Greengate Power Wheatland Wind

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

- FortisAlberta Kaybob 3 Cogen
- GP JOULE Kennedy Farm Solar
- NextEra Kitscoty MPC Wind
- Chephren Power Gas
- ATCO Power Poplar Hill 790S Contract Change
- NGCI Ermineskin Cree Nation MPC Solar
- EDF Cypress Wind
- Northland Bow City MPC Solar
- EDF Bull Trail MPC Wind
- ACCEL Morse River Cogen
- Indigena Blood Pe-na-koam Wind

- Enerfin Winnifred MPC Wind
- Quill Rocky Mountain Gas
- PBC Paul Band Solar
- NextEra Jensen MPC Wind
- ATCO Rainbow Lake Gas
- ATCO Power Valleyview Gas
- ATCO Power Hanna Solar
- Maxim Power Milner Change
- Solar Krafte Wrentham Solar Project
- BluEarth Renewables Yellow Lake Solar Project

Generation projects that have been removed:

- Suncor Forty Mile P/V
- Fortis 257S Hull P/V
- Suncor Forty Mile Granlea Solar
- FortisAlberta High River 65S DER Solar 1
- FortisAlberta High River 65S DER Solar 2
- Kronos Solar Heisler Solar Park
- Kronos Solar Veteran Solar Park
- Aura Power Big Bend Solar

Other changes to generation projects:

Project	Change
NextEra – Heritage Wind	New ISD of Sep-2020 from Sep-2019
Alberta Wind Energy – Windy Point	New ISD of Oct-2020 from Jul-2019
Alberta Wind Energy – Old Elm & Pothole Creek	New ISD of Oct-2019 from Dec-2020
Enbridge – WhiteTail Peaking	New ISD of Jul-2019 from Jun-2020
Inter Pipeline – Strathcona Cogeneration	New ISD of Mar-2020 from May-2019
Eolectric – Welsch Wind	New ISD of Dec-2020 from Jul-2019
Greengate Power – Wheatland Wind	New ISD of Dec-2019 from Oct-2019
Invenergy – Schuler Windfarm	New ISD of Jul-2020 from Jan-2020
Sequoia Energy – Schuler WAGF	New ISD of Dec-2019 from Jun-2021
Fortis – Genalta Bellshill	New ISD of Mar-2019 from Sep-2020

Fortis – GP Joule Canada Cluny DG	New ISD of Oct-2019 from Nov-2019
Fortis – Stirling 67S DG P/V	New ISD of Mar-2019 from Sep-2019
Fortis – Enchant 447S DER Solar	New ISD of Aug-2019 from Aug-2019
EDF EN – Red Rock WAGF	New ISD of May-2021 from Jun-2020
Fortis – Krafte 257S Hull DER Solar	New ISD of Jul-2019 from Sep-2019
Archer – Piikani Solar	New ISD of Jun-2020 from Jan-2019
TransAlta – Garden Plain Wind	New ISD of Feb-2020 from Jul-2019
Fortis – West Brooks DER Solar	New ISD of Oct-2019 from Apr-2020
RealPart – Calgary Area Solar	New ISD of Oct-2019 from May-2019
Fortis – Namaka DER Solar	New ISD of Jun-2019 from May-2019
Fortis – Jenner 275S DER	New ISD of Jul-2019 from Aug-2019
Fortis – Duchess DER Solar	New ISD of Mar-2019 from May-2019
Fortis – Gleichen DG Solar	New ISD of Jun-2019 from Mar-2019
Fortis – Coaldale Cogen DER	New ISD of Nov-2019 from Nov-2020
Pengrowth – Cold Lake Area Energy Centre	New ISD of Aug-2020 from May-2019
FortisAlberta – Bullshead 523S DER Solar 1	New ISD of Jul-2019 from Sep-2019
FortisAlberta – Bullshead 523S DER Solar 2	New ISD of Sep-2019 from Sep-2019
Imperial Oil – Edmonton 95S Cogen	New ISD of Nov-2019 from Sep-2019
FortisAlberta – Blackfalds 198S Gas 2	New ISD of Jul-2019 from Oct-2020
FortisAlberta – Brooks 121S DER Solar 1	New ISD of Dec-2019 from Jul-2019
FortisAlberta – Brooks 121S DER Solar 2	New ISD of Dec-2019 from Sep-2019
TransAlta – Tempest MPC Wind	New ISD of Dec-2020 from Oct-2020
Elemental Energy – WD MPC Wind	New ISD of Dec-2021 from Dec-2021

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 142 MWh. This value is below the 1,600 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*
TransCanada	Scoria 318S Cogen	Gas	45	Jan-2019
Fortis	Genalta Bellshill	Gas	5	Mar-2019
Capital Power	Whitla Wind Power - Phase 1**	Wind	202	Sep-2019
Total (MW)			252	

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

** - Denotes a project that was successful in the first Renewable Electricity Program competition. Companies successful in this round were awarded a Renewable Electricity Support Agreement and receive support through an Indexed Renewable Energy Credit in exchange for the project's renewable attributes.

Table 2: Generation Projects with Regulatory Approval

Sponsor(s)	Project Name	Fuel	Unit Capacity	ISD
EDF EN	Vulcan Solar PV - Phase 1	Solar	55	Dec-2018

EDF EN	Vulcan Solar PV - Phase 2	Solar	23	Dec-2018
Fortis	Buffalo Atlee Cluster 1 WAGF	Wind	18	Mar-2019
FortisAlberta	Blackfalds 198S Gas 1	Gas	6	Mar-2019
Fortis	Buffalo Atlee Cluster 3 WAGF	Wind	17	Mar-2019
Fortis	Stirling 67S DG P/V	Solar	17	Mar-2019
Fortis	Spring Coulee 385S Solar DG	Solar	29	Apr-2019
Fortis	Warner 344S DER Solar	Solar	10	May-2019
BluEarth Renewables	Burdett DG PV	Solar	20	May-2019
Fortis	498S Tilley DG PV	Solar	22	Jun-2019
Fortis	895S Suffield DG PV	Solar	22	Jun-2019
Fortis	275S Jenner Solar DER	Solar	23	Jun-2019
Fortis	158S Vauxhall DG PV	Solar	16	Jun-2019
Fortis	421S Hays DG PV	Solar	23	Jun-2019
Enel	Castle Rock Ridge - Phase 2**	Wind	31	Jun-2019
Joss Wind	Jenner Wind	Wind	122	Jun-2019
Fortis	Vauxhall Solar DER	Solar	22	Jun-2019
Naturener	Wild Rose 2	Wind	192	Jul-2019
Naturener	Wild Rose 1	Wind	218	Jul-2019
Fortis	Jenner 275S DER	Gas	23	Jul-2019
Enbridge	WhiteTail Peaking	Gas	200	Jul-2019
Fortis	Krafte 257S Hull DER Solar	Solar	25	Jul-2019
EDP Renewables	Sharp Hills Wind**	Wind	300	Aug-2019
Fortis	Enchant 447S DER Solar	Solar	74	Aug-2019
Suncor	Hand Hills	Wind	80	Sep-2019

Maxim Power	HR Milner Expansion Gas	Gas	90	Sep-2019
ATCO	Three Hills 770S DER Solar 1	Solar	25	Sep-2019
Mustus Energy	Mustus Biomass	Biomass	41	Sep-2019
ATCO	Heartland Power Station 1	Gas	510	Nov-2019
Fortis	Coaldale Cogen DER	Gas	6	Nov-2019
Imperial Oil	Edmonton 95S Cogen	Gas	46.5	Nov-2019
Pteragen	Peace Butte	Wind	120	Dec-2019
Greengate Power	Wheatland Wind	Wind	120	Dec-2019
Turning Point Gen	Canyon Creek PHES	Other	75	Jan-2020
Inter Pipeline	Strathcona Cogeneration	Gas	101	Mar-2020
Three Creeks	Three Creeks Unit 1	Gas	230	Jun-2020
Three Creeks	Three Creeks Unit 2	Gas	230	Jun-2020
Three Creeks	Three Creeks Unit 3	Gas	230	Jun-2020
RESC	Forty Mile WAGF	Wind	400	Jun-2020
NextEra	Heritage Wind	Wind	291	Sep-2020
BluEarth Renewables	Hand Hills Wind Farm	Wind	80	Sep-2020
Capital Power	Whitla Wind Power - Phase 2	Wind	97.2	Sep-2020
Alberta Wind Energy	Windy Point	Wind	50.4	Oct-2020
BowArk Energy	Queenstown Power Plant	Gas	80	Oct-2020
Maxim Power	Deerland Peaking 1-Phase 1	Gas	186	Dec-2020
Capital Power	Halkirk 2	Wind	150	Dec-2020
ENMAX	Zephyr Wind Farm	Wind	200	Dec-2020
E.ON	Grizzly Bear	Wind	120	Dec-2020
Eolectric	Welsch Wind	Wind	69	Dec-2020

RESC	McLaughlin WAGF	Wind	47	Dec-2020
Capital Power	Genesee 4	Gas	525	Mar-2021
Kineticor	Peace River Power Generator	Gas	98	Sep-2021
Enmax	Calgary Energy Centre Peaking	Gas	150	Dec-2021
Capital Power	Genesee 5	Gas	525	Mar-2022
C&B Alberta Solar	Newell Solar Project	Solar	13	Jan-1999
Altogas	Kent Generation-Phase 1	Gas	100	Jan-1999
Enmax	Bonnybrook	Gas	168	Jan-1999
TransCanada	Saddlebrook	Gas	350	Jan-1999
TransAlta	Sundance 7	Gas	850	Jan-1999
PetroChina	MacKay-Phase 1	Gas	85	Jan-1999
Maxim Power	Milner 2 Phase 1	Gas	260	Jan-1999
Maxim Power	Milner 2 Phase 2	Gas	260	Jan-1999
Nexen	Long Lake South	Gas	85	Jan-1999
Imperial Oil	Kearl - Phase 2	Gas	100	Jan-1999
Imperial Oil	Kearl - Phase 3	Gas	35	Jan-1999
Kronos Solar	Oyen Solar Park	Solar	10	Jan-1999
City of Calgary	Bonnybrook Cogen Expansion	Gas	10	Jan-1999
Syncrude	Mildred Lake (Base Plant)-Phase 1	Gas	85	Jan-1999
NAT3	Jenner DG	Gas	20	Jan-1999
BluEarth Renewables	Yellow Lake Solar Project	Solar	19	Jan-1999
Total (MW)			8,931	

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
FortisAlberta	Willesdengreen DER Gas Turbine	Gas	10	Nov-2018 (A)
Chiniki	Solar	Solar	40	Dec-2018 (A)
Fortis	Bassano DER Solar	Solar	10	Jan-2019 (A)
Fortis	Wainwright DER Solar	Solar	13	Jan-2019 (A)
Fortis	Provost DER Solar	Solar	16	Jan-2019 (A)
Fortis	Killarney Lake DER Solar	Solar	16	Jan-2019 (A)
Seven Generations	Gold Creek Gas Plant	Gas	32	Jan-2019 (P)
Fortis	Hays 421S DER Solar	Solar	10	Jan-2019 (A)
ATCO	Coronation 802S Solar DG	Solar	10	Mar-2019 (A)
ATCO	Vilna 777S DER Solar	Solar	22.7	Mar-2019 (A)
Fortis	Coaldale 254S DG P/V	Solar	20	Mar-2019 (A)
Fortis	Coaldale 254S DER Solar 2	Solar	20	Mar-2019 (A)
Fortis	Duchess DER Solar	Solar	16	Mar-2019 (A)
TransAlta	Cowley Ridge 1 Wind	Wind	21	Apr-2019 (A)
Joss Wind	Jenner Phase 2	Wind	180	May-2019 (A)
Fortis	Empress DER Solar	Solar	23	May-2019 (A)
Fortis	Provost DER Solar	Solar	23	May-2019 (A)
Fortis	Metiskow DER Solar	Solar	23	May-2019 (A)
Fortis	Burdett DER Solar 1	Solar	8	May-2019 (A)
Fortis	Burdett DER Solar 2	Solar	16	May-2019 (A)
Fortis	Taber DER Solar 1	Solar	12	May-2019 (A)

Fortis	Taber DER Solar 2	Solar	22	May-2019 (A)
Fortis	Fincastle DER Solar	Solar	20	May-2019 (A)
Fortis	Killarney DER Solar	Solar	22	May-2019 (A)
ATCO	Michichi DER Solar	Solar	75	May-2019 (A)
ATCO	Monitor DER Solar	Solar	10	May-2019 (A)
FortisAlberta	Taber 83S DER Solar	Solar	16	May-2019 (A)
FortisAlberta	Empress 394S DER Solar	Solar	15.6	May-2019 (A)
FortisAlberta	Taber 83S DER Solar	Solar	19	May-2019 (A)
Keyera	West Pembina 359S Gas Turbine	Gas	12	May-2019 (A)
ATCO Power	Poplar Hill 790S Contract Change	Gas	32	Jun-2019 (A)
Fortis	Namaka DER Solar	Solar	20	Jun-2019 (A)
Fortis	Gleichen DG Solar	Solar	17	Jun-2019 (A)
Enel	Riverview Wind Farm**	Wind	115	Jun-2019 (A)
Fortis	Burdett 368S DG P/V	Solar	10	Jun-2019 (A)
Irma	Wainwright Wind Project	Wind	90	Jul-2019 (A)
Greengate Power	Paintearth Wind Farm	Wind	150	Jul-2019 (A)
Greengate Power	Stirling Wind	Wind	115	Jul-2019 (A)
Imperial Oil	Aspen SAGD Project	Gas	30	Jul-2019 (A)
Fortis	Carseland Solar	Solar	12	Jul-2019 (A)
FortisAlberta	Bullshead 523S DER Solar 1	Solar	20	Jul-2019 (A)
FortisAlberta	Blackfalds 198S Gas 2	Gas	4	Jul-2019 (A)
Fortis	Conrad DER Solar	Solar	23	Jul-2019 (A)
Renewable Energy	Rattlesnake Wind	Wind	100	Jul-2019 (A)
Fortis	Brooks DER Solar	Solar	22	Aug-2019 (A)

Altogas	Glenridge Wind	Wind	150	Sep-2019 (A)
Acciona Energy	Glenwood Area Wind	Wind	120	Sep-2019 (A)
ATCO	Three Hills 770S DER Solar 2	Solar	25	Sep-2019 (A)
ATCO	Michichi Creek 802S DER Solar	Solar	25	Sep-2019 (A)
FortisAlberta	Innisfail 214S DER Solar	Solar	24	Sep-2019 (A)
ATCO	Kneehill	Solar	25	Sep-2019 (P)
Solar Krafte	Wrentham Solar Project	Solar	42	Sep-2019 (P)
FortisAlberta	Bullshead 523S DER Solar 2	Solar	20	Sep-2019 (A)
NaturEner	Buffalo Trail WAGF	Wind	100	Sep-2019 (A)
NaturEner	Ross Creek WAGF	Wind	100	Sep-2019 (A)
RESC	McLaughlin Phase 2	Solar	40	Sep-2019 (A)
Enterprise	Prosperity WAGF	Wind	175	Sep-2019 (A)
FortisAlberta	Namaka 428S DER Solar	Solar	25	Sep-2019 (A)
EDF EN	Hand Hills WAGF	Wind	200	Oct-2019 (A)
BowArk Energy	Drywood Gas Generator	Gas	38	Oct-2019 (A)
Maxim Power	Milner Change	Gas	196	Oct-2019 (A)
Fortis	West Brooks DER Solar	Solar	23	Oct-2019 (A)
RealPart	Calgary Area Solar	Solar	150	Oct-2019 (A)
ATCO	Rainbow Lake Gas	Gas	79	Oct-2019 (A)
ATCO Power	Valleyview Gas	Gas	32	Oct-2019 (A)
Alberta Wind Energy	Old Elm & Pothole Creek	Wind	60	Oct-2019 (A)
Suncor	Schuler Wind	Wind	80	Oct-2019 (A)
Suncor	Hand Hills Phase 2	Wind	80	Oct-2019 (A)
Suncor	Hand Hills Solar	Solar	80	Oct-2019 (A)

Suncor	Schuler Solar	Solar	80	Oct-2019 (A)
Suncor	Braconnier Wind	Wind	80	Oct-2019 (A)
Suncor	Huxley Wind	Wind	50	Oct-2019 (A)
Fortis	GP Joule Canada Cluny DG	Solar	5	Oct-2019 (A)
Fortis	Tilley 498S DG Gas	Gas	22	Nov-2019 (A)
FortisAlberta	Strathmore 151S DER Solar 1	Solar	18	Nov-2019 (A)
FortisAlberta	Strathmore 151S DER Solar 2	Solar	22.5	Nov-2019 (A)
Fortis	Conrad DER Solar 2	Solar	22	Nov-2019 (A)
EPCOR	WSI DG Solar	Solar	12	Nov-2019 (A)
Spirit Pine	Lone Pine WAGF	Wind	173	Dec-2019 (A)
NextEra	Buffalo Trail Solar	Solar	70	Dec-2019 (A)
Sequoia Energy	Schuler WAGF	Wind	100	Dec-2019 (A)
Northland	Buffalo Trail	Wind	100	Dec-2019 (A)
FortisAlberta	Brooks 121S DER Solar 1	Solar	15	Dec-2019 (A)
FortisAlberta	Brooks 121S DER Solar 2	Solar	15	Dec-2019 (A)
Soventix	Forestberg Area Solar	Solar	40	Jan-2020 (A)
TransAlta	Garden Plain Wind	Wind	130	Feb-2020 (A)
HEP Capital	Alderson Solar	Solar	100	Apr-2020 (A)
Solar Krafte	Vauxhall	Solar	150	Apr-2020 (A)
Solar Krafte	Brooks	Solar	400	Apr-2020 (A)
BowArk Energy	Lanfine WAGF	Wind	145	May-2020 (A)
Suncor	Forty Mile Granlea WAGF	Wind	200	Jun-2020 (A)
TransCanada	Saddlebrook Solar	Solar	100	Jun-2020 (A)
Perimeter	Sunset Solar	Solar	60	Jun-2020 (A)

Perimeter	Claresholm Solar	Solar	150	Jun-2020 (A)
ENGIE	Duchess Solar	Solar	90	Jun-2020 (A)
Archer	Piikani Solar	Solar	40	Jun-2020 (A)
Invenergy	Schuler Windfarm	Wind	100	Jul-2020 (A)
EDF EN	Fort Saskatchewan WAGF	Wind	300	Aug-2020 (A)
Fortis	255S Vulcan Faribault Farms P/V	Solar	13	Aug-2020 (A)
Fortis	Coaldale 254S DER Solar 3	Solar	22	Aug-2020 (A)
Fortis	Monarch 492S DER Solar	Solar	22	Aug-2020 (A)
Fortis	Stavelly 349S DER Solar	Solar	19	Aug-2020 (A)
Pengrowth	Cold Lake Area Energy Centre	Gas	100	Aug-2020 (A)
Suncor	Forty Mile WAGF	Wind	200	Sep-2020 (A)
Pattern Development	Lanfine South Wind	Wind	140	Sep-2020 (A)
BluEarth	Hand Hills Wind Phase 2	Wind	121.8	Sep-2020 (A)
ACCEL	Morse River Cogen	Gas	107	Sep-2020 (A)
Algonquin	Willow Ridge Wind	Wind	180	Oct-2020 (A)
EDP Renewables	Blue Bridge Solar	Solar	150	Oct-2020 (A)
NextEra	Jensen MPC Wind	Wind	400	Oct-2020 (A)
Quill	Rocky Mountain Gas	Gas	295	Oct-2020 (A)
NextEra	Kitscoty MPC Wind	Wind	90	Oct-2020 (A)
Joss Wind	Northern Lights	Wind	400	Nov-2020 (A)
TransAlta	Red Rock Wind	Wind	65	Nov-2020 (A)
Northland	Bow City MPC Solar	Solar	400	Nov-2020 (A)
TransAlta	Windrise MPC Wind	Wind	220	Nov-2020 (A)
TransAlta	Ardenville Expansion Wind	Wind	40	Nov-2020 (A)

Solar Krafte	Rainier	Solar	450	Nov-2020 (A)
ATCO Power	Hanna Solar	Solar	120	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)
Greengate	Travers Solar	Solar	400	Dec-2020 (A)
Enterprise	Bighorn MPC Wind	Wind	325	Dec-2020 (A)
TransAlta	Tempest MPC Wind	Wind	115	Dec-2020 (A)
PBC	Paul Band Solar	Solar	45	Dec-2020 (A)
Cascade	Combined Cycle Phase 1	Gas	500	Jan-2021 (A)
E.ON	Grizzly Bear Wind Phase 2	Wind	30	Mar-2021 (A)
Four Rivers	Four Rivers Wind	Wind	450	Mar-2021 (A)
EDF EN	Red Rock WAGF	Wind	250	May-2021 (A)
NGCI	Ermineskin Cree Nation MPC Solar	Solar	100	Jun-2021 (A)
EDF	Cypress Wind	Wind	450	Jun-2021 (A)
EDF	Bull Trail MPC Wind	Wind	300	Jun-2021 (A)
Indigena Blood	Pe-na-koam Wind	Wind	200	Jun-2021 (A)
RESC	Oyen Wind Power Project	Wind	350	Jun-2021 (A)
Suncor	Base Plant Cogen	Gas	815	Jul-2021 (A)
Kineticor	Peace River Power Upgrade	Gas	125	Sep-2021 (A)
Enerfin	Winnifred MPC Wind	Wind	90	Dec-2021 (A)

Sequoia Energy	Oyen WAGF	Wind	100	Dec-2021 (A)
Elemental Energy	WD MPC Wind	Wind	150	Dec-2021 (A)
Chephren Power	Gas	Gas	600	Dec-2021 (A)
Cascade	Combined Cycle Phase 2	Gas	400	Jan-2022 (A)
FortisAlberta	Kaybob 3 Cogen	Gas	30	Feb-2022 (A)
GP JOULE	Kennedy Farm Solar	Solar	100	Feb-2022 (A)
AHP Development	Amisk Hydroelectric Project	Hydro	330	Dec-2023 (P)
Total (MW)			16,363	

* - (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
Transalta	Sundance 1	Coal	280	Jan-2018	Retired
Transalta	Sundance 2	Coal	280	Jul-2018	Retired
Valley Power	Drayton Valley	Biomass	11	Sept-2018	Retired
Total (MW)			571		

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
ATCO	Battle River 3	Coal	149	1969	Dec-2019
Maxim	HR Milner	Coal	144	1972	Dec-2019
Total (MW)			869		

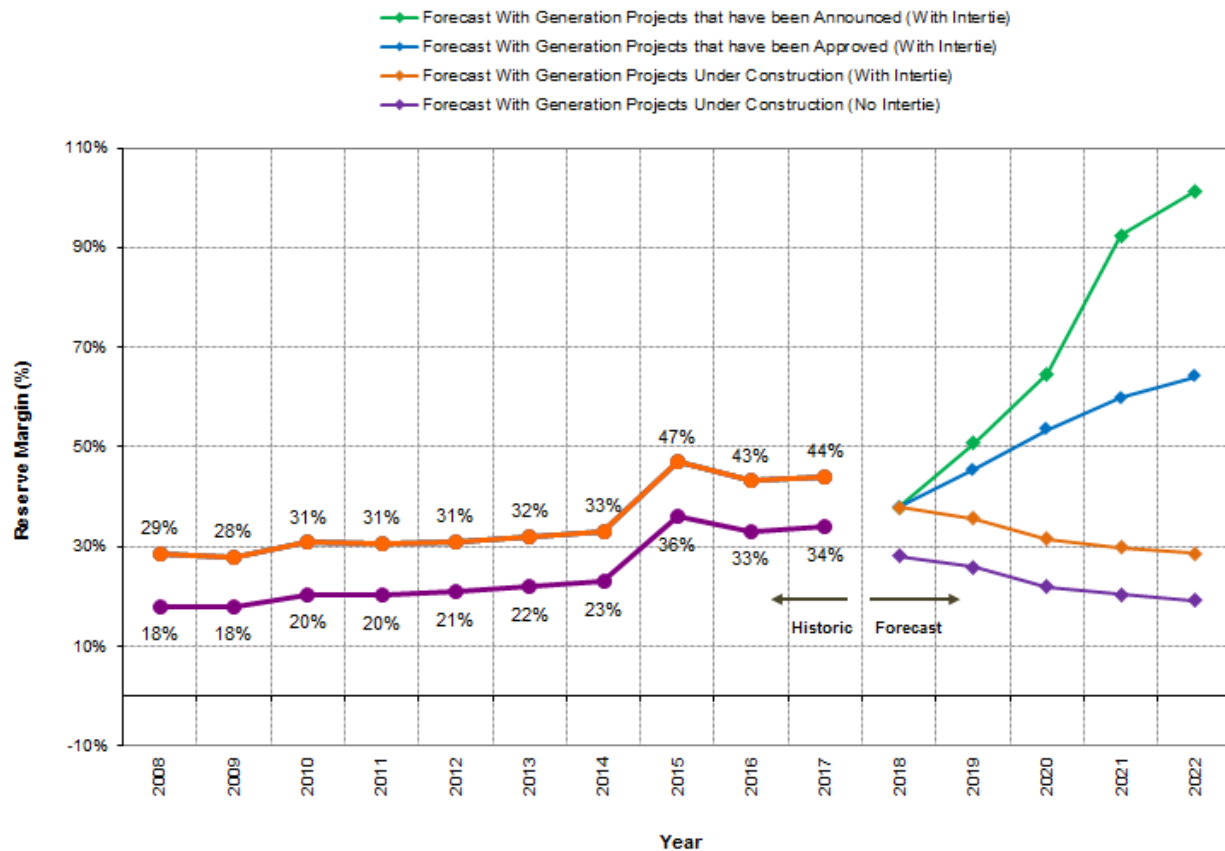
¹ Federal Compliance Dates are based upon the applicable provisions of the Reduction of Carbon Dioxide Emissions from Coal-fired Generation of Electricity Regulations, as set forth in the Canada Gazette Vol. 146, No.19.

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.

Capacity from Sundance 1 and 2 has been excluded from the 2011 and 2012 reserve margin. They returned to service in late 2013.

Figure 1: Alberta Interconnected Electric System (AIES) Reserve Margin, 2008 – 2022



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, Nov 1, 2018 to Oct 31, 2020

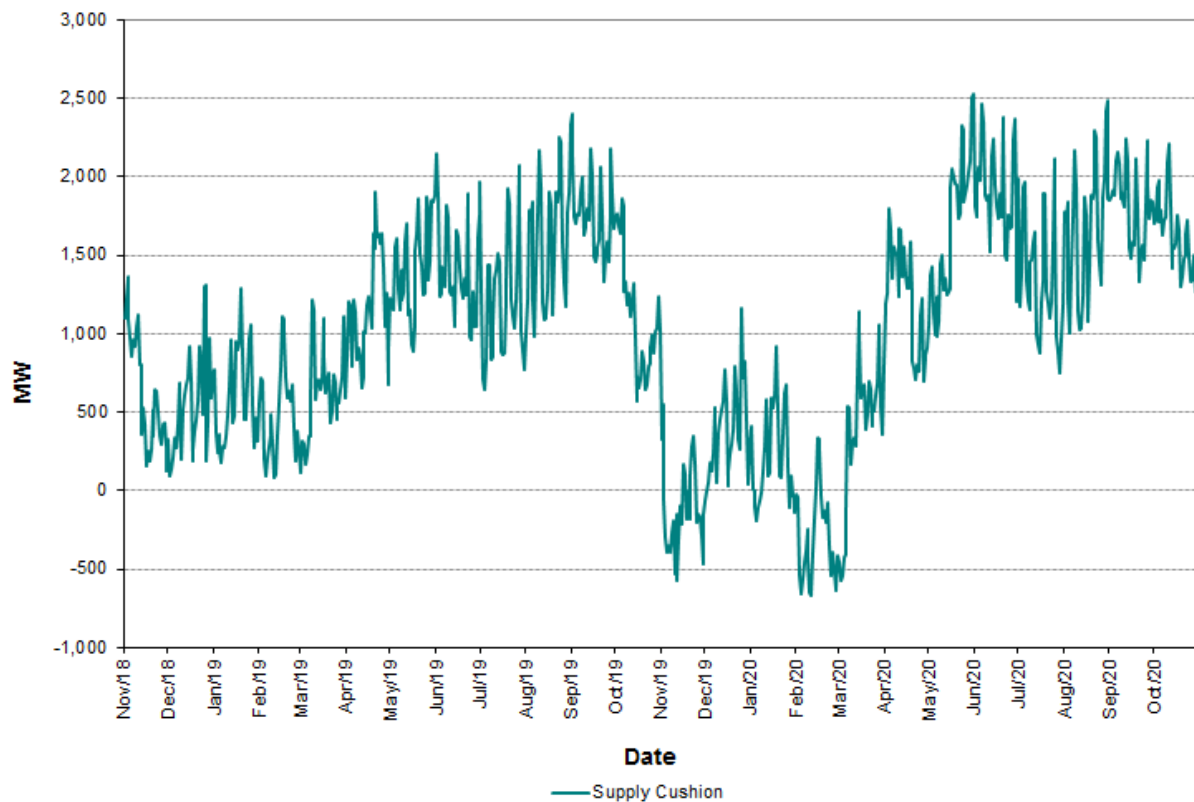
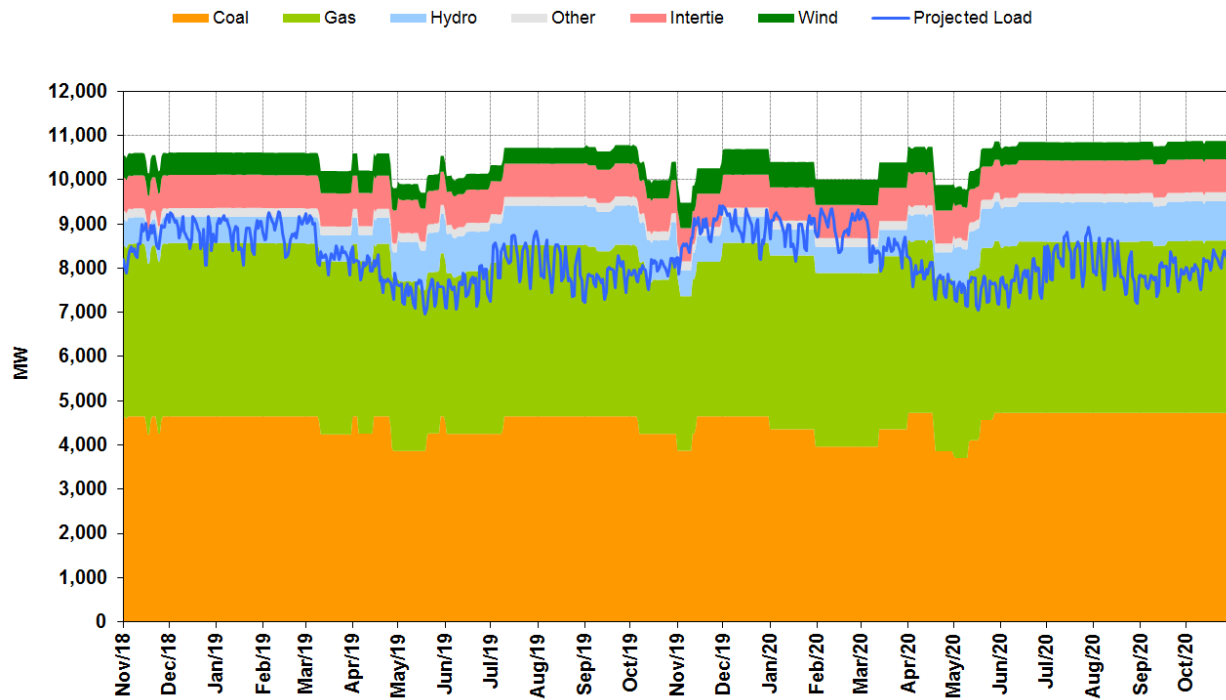


Figure 3: Alberta Interconnected Electric System (AIES) Daily Peak Demand and Available Supply, Nov 1, 2018 to Oct 31, 2020



Outage information as of Oct 17th, 2018

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 1,600 MWh in any two year period (equivalent to one hour 800 MW shortfall in each of the two years), 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, Nov 1, 2018 to Oct 31, 2020

Worst Shortfall Hour (MW)	# of Hours in Shortfall	Total Energy Not Served (MWh)
57	1	142

Note: Values are rounded and represent average outputs