2015
Loss Factors
Generic Stacking Order

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1 Purpose

The purpose of this document is to describe the 2015 Generic Stacking Order as the order applies to the loss factor calculation.

2 Introduction

The Generic Stacking Order (GSO) is a key component in the loss factor calculation. Generators are dispatched to meet system demand in the base cases according to the order and generation amount specified in the GSO.

The loss factor GSO contains two key pieces of information –

1) Generation supply levels on a net-to-grid basis (NTG) for 12 seasonal cases[1] (four seasons and three load levels as defined below) for all generators, and

Season	Timeframe	Scenario
Winter	December, 2014 – February, 2015	High
		Medium
		Low
Spring	March, 2015 – May, 2015	High
		Medium
		Low
Summer	June, 2015 – August, 2015	High
		Medium
		Low
Fall	September, 2015 – November, 2015	High
		Medium
		Low

2) Generation dispatch order.

   The Rule governing the determination of the GSO generation supply levels can be located at www.aeso.ca > Rules & Standards > ISO Rules > Current ISO Rules > Secton 501.10 Transmission Loss Factor Requirements. In summary, the generation supply levels are determined using historical data for existing generators (in service for more than a year). For generators that have been in service for less than one year, data is provided by the owner or the supply levels are estimated by the Incapability Factors (ICBF) or by a combination of actual data and ICBF. To determine the dispatch order, a statistical analysis is used to determine a relationship between the generator output and the actual historical hourly pool price. The process is explained in Section 4. The AESO will request annually from generation owners confirmation that the previous year's historical data is appropriate to use. Additional blocks are used where necessary to reflect generators' multiple bidding strategies.

   The transmission must-run (TMR) requirement supersedes all other operational criteria and hence TMR generators are dispatched first on the list when required to fulfill the reliability criteria.

[1] Loss Factor base cases are relevant to NTG amount whereas operations and planning cases use more detailed modeling of the system including the behind the fence elements.

3 Background

In 2006, the AESO began utilizing a new methodology, 50% Area Load Corrected R-Matrix, for the determination of generator and opportunity service loss factors. The methodology reflects the requirements of the Transmission Regulation. More information on the methodology can be found in the Current ISO Rules (www.aeso.ca > Rules and Standards > ISO Rules > Current ISO Rules > Secton 501.10 Transmission Loss Factor Requirements.

4 2015 GSO Key Features

The highlights of the 2015 GSO preparation process are:

1) Average historical net-to-grid (NTG) output of a generator is considered for each of the twelve seasonal cases.

2) The determination of TMR and the energy component is done using SCADA data. The historical TMR instruction amount as dispatched by the system controller is used as the TMR amount. The difference between the total SCADA amount and the TMR instruction amount is used as the energy component. For example, if TMR instruction is 25 MW and the actual amount is 45 MW then the TMR amount will be 25 MW and the energy component will be 20 MW.

3) Generator owners were provided an opportunity to comment on and suggest revisions to the GSO capacities[2] to correct calculation errors by the AESO on historical data or proposed operational characteristics on new generation.

4) The net of import and export (separately for BC, Saskatchewan, and Montana) is shown in the GSO only if the net is import. If the net is export the GSO shows zero for the scenario. The net import (if any) is added at the end of the second block of Hydro. If the net is export then it will be reflected in the loss factor base cases. The DOS loads will be reflected in the loss factor base cases.

5) The numbers of hours (H values) used for averaging the historical generator output are taken from the AIES seasonal load duration curve analysis (Please see the Current ISO Rules www.aeso.ca > Rules and Standards > ISO Rules > Current ISO Rules > Secton 501.10 Transmission Loss Factor Requirements, Appendix 1).

6) No maintenance or outage data is used in the 2015 GSO as average historical net-to-grid output of a generator inherently contains this information.

7) 12 seasonal net-to-grid generations are assigned to each individual generator at the point of supply (POS).

8) The generator order, except for units such as wind, import, and hydro generation, is determined by the actual price responsiveness of the generators in each group.

9) Future generators expected to be connected in the forecast year that have Alberta Utilities Commission (AUC) approval through their filing are included in the GSO.

10) Generators who have filed decommissioning plans with the AESO are removed accordingly.

[2] http://www.aeso.ca/downloads/GSO_Data_Confirmation_Request_Letter_2015.pdf

11) The AESO typically relies on an operating profile submitted by the generator owner of a new generator. In the event this information has not been provided, the AESO will rely on the Canadian Electricity Association's (CEA) latest annual report on Generation Equipment Status utilizing the incapability factors to calculate the power available to the AIES. (1- ICBF) has been considered as equivalent to Available Capacity Factors (ACF).

12) The 2015 GSO considers the NTG amount at the point of supply (POS). Since any given loss factor is primarily the function of the NTG amount of generation, the 2015 GSO represents an aggregate of generation at the point of supply. An equivalent generator is considered at the bus from which the NTG amount related to the Measurement Point Identification (MPID) is obtained. For example, Horseshoe has 4 generators with a single MPID which is HSH. The 4 generators are connected to Bus 172 (12 kV). They are represented as a single unit at Bus 171 (138 kV) because the AESO billing database contains NTG data for all of these four units (related to MPID HSH) at Bus 171. The same approach is applied to the Industrial System Designations (ISD). All ISDs are represented by a single equivalent generator and load.

13) An energy stacking order is created for all generation units based on lowest operating cost for units of the same fuel type. If multiple units have the same operating costs the unit's previous year's loss factors are used to determine dispatch order. Each generator's hourly bidding prices and associated generation MW changes are combined and sorted as a multi-block stacking order for that generation unit for the 12 month period (June 1, 2013 - May 31, 2014). The generation unit is then divided into two blocks. Two blocks are chosen to avoid additional complexity for limited modeling improvement. A first block price is determined by calculating the average bid price per MW dispatched as a first block in the 12 month period. The first block size is defined as the percentage of first block MW dispatched divided by total MW dispatched multiplied by the GSO value for that seasonal scenario. Generation volumes above the first block size belong to the second block. The second block price is determined by calculating the average bid price per MW dispatched for every block above the first block for the same 12 month period. The second block size is calculated as the percentage of MW dispatched outside of the first block divided by the total MW dispatched then multiplied by the GSO value for that seasonal scenario. However, not all generators have a second block. The statistical analysis shows that some generators have an insignificant amount of generation in the second block which indicates their price insensitivity. A weighted average of generator output of 12 seasonal outputs is calculated based on the H values or duration of the scenarios. A second block for a generator is considered, in general, if the annual weighted average is 5 MW or greater. In some cases a second block is not assigned to a generator even though the weighted average is more than 5 MW such as for small power research and development (SPR&D) and Wind generators.

The 2015 GSO is similar to its predecessors in the following aspects:

1) The wind and hydro units are ranked according to their relative loss factors.

2) No bid price, specific TMR, maintenance schedules, or heat rate information is revealed.

3) Multiple blocks are used to represent the historical response of the generators to pool price.

4) The GSO is separated into two blocks (where necessary) and into similar generation technologies (i.e. wind, co-gen, coal, etc.).

5 2015 Generic Stacking Order

The following describes the application of the GSO to the loss factor base cases:

1) **Transmission Must-Run generators** – the generators represent the expected TMR dispatch (of gas, combined cycle, or other units) beyond area generation energy market participation. The TMR units are listed in the Information Document # 2011-004(R) Northwest Area Transmission Constraint Management. TMR is required in specific areas of the AIES to meet reliability criteria. The total NTG amount assigned to the TMR generators in the 2015 GSO is obtained from the following two sources:

    a) The average historical TMR total (SCADA) is calculated for 12 seasonal cases in the past twelve months (June 1, 2013 to May 31, 2014). The AIES seasonal load duration curve analysis is used to obtain the average TMR total amount of each generator.

    b) The average TMR instruction amount (as dispatched by the System Controller) is calculated for 12 seasonal cases in the past twelve months (June 1, 2013 to May 31, 2014). The AIES seasonal load duration curve analysis is used to obtain the average TMR instruction amount for each generator.

    According to the OPPs when the area criteria requirement is not met by the generation from local generators through energy market dispatches, TMR dispatches will be issued to TMR-contracted generators to make up the shortfall. TMR-contracted generators will be dispatched according to the TMR dispatch orders. The actual TMR dispatch order is confidential.

2) **Data** – Most of the data used in the 2015 GSO such as Alberta system load, and generation amount at each POS are historical and taken from the most recent 12 months' data in the AESO's billing system. The data extraction period is June 1, 2013 to May 31, 2014.

3) **Dispatch Generator** – In general, the energy stacking order is formed to more closely reflect an actual operational perspective. The generators may bid multiple blocks but the typical block size beyond the second block is very small.

4) **Wind Generation** – Wind generation does not have a relationship to pool price.

5) **Small Power Research & Development**– The relative order remains the same as the 2013 GSO. SPR&D generators are exempt by law from paying for losses.

6) **Distribution Connected Generation** – consists of distribution connected generators with STS contracts that occasionally results in supply of power to the AIES. Several prime movers may exist at a distribution generation location. The placement of the distribution generation in the GSO is determined mainly by the predominant source of generation at the STS location and ranked by historical hourly pool price.

7) **Future Generation** – generators expected to be connected in the forecast year that have AUC approval per their filing will be included in the GSO and placed with the same fuel type group.

8) **Import levels** – as per the 2007 Transmission Regulation, inter-tie levels are included in the loss factor calculation power flows. Imports are added in the GSO following the second block of hydro generation. The location reflects the relative level of availability of import resources for Alberta. The GSO provides a list of generation or equivalent entity (imports or industrial system designation) along with their predicted seasonal output capacity. Exports are not added in the GSO as they are not a supply component of the system.

Appendix 1: 2015 Generic Stacking Order

New GSO Number	Name	MPID	Gen with 2nd Block	Generation Type	Winter Peak Capacity (MW)	Winter Med Capacity (MW)	Winter Low Capacity (MW)	Spring Peak Capacity (MW)	Spring Med Capacity (MW)	Spring Low Capacity (MW)	Summer Peak Capacity (MW)	Summer Med Capacity (MW)	Summer Low Capacity (MW)	Fall Peak Capacity (MW)	Fall Med Capacity (MW)	Fall low Capacity (MW)
1	POPLAR HILL	PH1	1	Gas	3.5	4.8	3.5	1.4	3.5	0.5	0.0	0.6	0.6	4.0	1.5	0.9
2	VALLEYVIEW	VVW1	1	Gas	0.0	0.2	0.0	0.0	0.7	0.0	0.0	0.1	0.0	2.6	0.0	0.0
3	TABER WIND	TAB1		Wind	15.1	27.3	47.9	7.7	22.0	27.0	10.0	14.4	15.6	25.1	25.3	29.3
4	SUNCOR HILLRIDGE WIND FARM	SCR3		Wind	7.2	11.4	18.4	2.3	9.6	11.1	3.5	5.6	7.5	12.1	10.5	12.5
5	FT MACLEOD	0000001511		Wind, DG	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
6	GLENWOOD	0000022911		Wind, DG	0.0	0.0	0.1	0.0	0.1	0.4	0.0	0.2	0.7	0.1	0.2	0.6
7	SUNCOR MAGRATH	SCR2		Wind	8.0	10.8	17.6	3.0	9.8	9.1	3.3	5.7	6.6	12.2	10.5	10.8
8	MCBRIDE	AKE1		Wind	27.6	30.8	45.9	5.0	23.4	17.9	9.6	12.0	15.0	30.5	26.8	26.8
9	CASTLE RIVER	CR1		Wind	13.5	16.2	22.4	2.6	10.8	5.9	9.6	5.2	6.0	15.7	13.2	11.6
10	PINCHER CREEK	0000039611		Wind, DG	0.1	0.8	2.2	0.1	0.9	0.6	0.7	0.6	1.0	0.7	1.4	1.9
11	ENEL ALBERTA CASTLE ROCK WIND FARM	CRR1		Wind	26.1	31.4	46.3	6.0	22.5	16.0	21.9	12.4	12.0	33.1	27.6	25.1
12	KETTLES HILL WIND ENERGY PHASE 2	KHW1		Wind	24.7	26.6	37.2	4.9	20.2	15.0	12.7	11.0	13.4	27.6	24.4	22.4
13	BLACKSPRING RIDGE I WIND PROJECT	BSR1		Wind	135.0	135.0	135.0	0.0	26.3	78.5	76.8	76.8	76.8	114.3	114.3	114.3
14	ALBERTA WIND ENERGY OLD MAN RIVER WIND FARM	OWF1		Wind	20.7	20.7	20.7	15.8	15.8	15.8	11.8	11.8	11.8	17.5	17.5	17.5
15	SUMMERVIEW 2	IEW2		Wind	24.0	21.9	33.8	3.1	17.1	10.6	10.9	7.5	7.5	23.4	19.5	17.2
16	SUMMERVIEW 1	IEW1		Wind	23.0	22.9	35.1	3.1	18.8	11.1	15.3	9.1	9.7	24.6	22.9	20.7
17	SODERGLEN	GWW1		Wind	27.0	29.8	41.2	6.8	24.2	20.7	9.2	13.9	15.6	25.4	25.8	26.7
18	BLUE TRAIL WIND FARM	BTR1		Wind	20.3	21.8	32.8	4.6	18.7	15.3	9.6	10.6	14.2	25.6	22.3	22.0
19	GHOST PINE WIND FARM	NEP1		Wind	24.8	27.6	43.4	14.5	18.6	18.8	8.5	17.2	24.0	20.2	22.7	22.0
20	TRANSALTA ARDENVILLE WIND FARM	ARD1		Wind	27.4	23.7	37.2	5.1	19.9	19.5	7.1	11.4	18.1	27.1	23.1	24.6
21	COWLEY EXPANSION 1	CRE1		Wind	0.0	0.0	0.1	0.1	0.2	0.1	0.2	0.1	0.1	0.3	0.2	0.1
22	COWLEY EXPANSION 2	CRE2		Wind	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.2	0.1	0.1
23	COWLEY NORTH	CRE3		Wind	4.4	6.0	9.1	1.0	4.5	3.0	4.4	2.3	2.0	6.7	5.7	5.1
24	COWLEY RIDGE WIND POWER PHASE1	PKNE		Wind	0.6	0.8	1.0	0.4	1.6	1.1	2.0	0.9	0.8	2.5	2.0	1.8
25	COWLEY RIDGE WIND POWER PHASE2	CRWD		Wind	0.8	1.1	1.5	0.5	1.8	1.3	2.0	0.9	0.7	2.6	2.0	1.8
26	SUNCOR WINTERING HILLS WIND ENERGY PROJECT	SCR4		Wind	48.3	40.5	52.7	18.3	26.9	30.5	16.5	24.8	28.8	35.6	33.2	33.1
27	CAPITAL POWER HALKIRK WIND PROJECT	HAL1		Wind	48.1	65.8	98.0	26.4	44.6	36.6	21.2	32.6	54.1	51.7	58.7	61.3
28	WESGEN	WST1		Bio-mass	14.2	12.6	12.6	6.3	11.7	13.4	10.4	12.5	14.5	14.9	13.4	13.1
29	WHITE COURT	EAGL		Bio-mass	23.8	23.6	23.0	22.9	21.1	22.1	24.2	23.6	22.3	23.7	22.4	21.7
30	NORTHSTONE ELMWORTH	NPC1		Co-gen	4.4	4.4	4.4	5.0	4.6	4.4	5.1	4.4	4.4	4.5	4.5	4.4
31	GRANDE PRAIRIE ECOPOWER CENTRE	GPEC		Co-gen	7.9	7.5	9.2	7.9	7.6	6.5	7.5	8.4	10.8	7.3	7.3	7.7
32	P&G WEYERHAUSER	WEY1		Co-gen	0.4	0.8	0.6	0.3	0.6	0.5	0.6	0.6	0.4	0.9	1.3	0.8
33	BEAR CREEK G2	BCR2		Co-Cycle	19.2	16.7	15.4	15.7	12.0	16.7	21.0	19.4	17.1	17.7	17.3	17.1
34	DIASHOWA	DAI1	1	Co-gen	14.2	11.1	9.8	10.3	8.8	8.1	19.0	11.7	8.4	12.6	12.4	10.2

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35	CARSELAND	TC01		Co-gen	71.2	63.1	61.9	62.5	56.0	52.5	54.6	52.3	43.2	57.8	47.2	44.2
36	FORTISALBERTA AL-PAC PULP MILL	AFG1TX	1	Gas	16.9	8.2	5.1	4.2	6.5	9.8	18.5	12.6	10.6	5.7	8.1	6.8
37	BALZAC	NX01	1	Co-Cycle	53.7	32.0	12.7	34.6	13.1	10.5	46.3	31.1	10.8	32.7	32.5	22.0
38	HARMATTAN GAS PLANT DG	0000025611		Gas	1.1	1.1	0.9	1.5	1.9	2.4	3.6	5.6	4.4	2.0	3.2	4.8
39	ENMAX CALGARY ENERGY CENTRE CTG	CES1	1	Co-Cycle	121.5	76.9	38.0	91.5	43.6	15.9	95.1	60.4	53.7	32.5	38.3	28.4
40	ENMAX CALGARY ENERGY CENTRE STG	CES2	1	Co-Cycle	76.3	42.2	23.5	49.1	26.4	10.3	66.3	38.3	34.9	18.0	23.7	18.2
41	ALTAGAS PARKLAND	0000034911		Gas, DG	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
42	SHELL CAROLINE	SHCG		Co-gen	0.0	0.3	0.5	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43	PRIMROSE	PR1		Co-gen	2.6	3.3	1.9	8.3	7.7	9.6	1.6	2.6	2.2	3.4	1.9	2.2
44	ENMAX SHEPARD ENERGY CENTRE	EGC1		Co-Cycle	250.0	250.0	250.0	800.0	200.0	0.0	800.0	200.0	0.0	800.0	200.0	0.0
45	NOVA JOFFRE	NOVAGEN15M	1	Co-gen	153.9	109.9	82.8	127.3	71.0	47.1	126.3	85.0	67.8	101.6	91.1	75.6
46	CITY OF MEDICINE HAT	CMH1	1	Gas	36.3	20.4	11.3	17.8	11.9	8.9	23.4	28.3	29.1	18.0	21.4	15.6
47	CAVAILIER	EC01	1	Co-Cycle	59.2	43.2	19.6	52.0	23.6	13.7	63.7	51.6	40.6	46.9	47.8	36.9
48	FOSTER CREEK G1	EC04		Co-gen	35.6	33.2	29.5	31.6	26.8	25.0	5.0	11.1	0.7	34.4	24.5	22.7
49	BUCK LAKE	0000045411		Co-gen, DG	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50	MEG ENERGY	MEG1		Co-gen	144.7	149.2	142.4	152.5	132.1	131.2	118.6	122.2	122.9	106.5	83.2	74.2
51	REDWATER	TC02		Co-gen	12.2	11.4	12.7	9.6	9.3	7.5	9.4	12.7	16.0	12.6	11.5	10.7
52	NEXEN OPTI	NX02		Co-gen	31.6	42.9	46.7	21.7	28.8	22.8	29.3	28.7	26.3	43.1	33.1	32.5
53	CNRL HORIZON	CNR5		Co-gen	0.0	0.0	0.2	0.0	0.0	0.1	0.5	0.7	0.6	0.0	0.5	0.6
54	SHELL SCOTFORD	SCTG		Co-gen	0.9	0.1	0.0	0.4	0.0	0.0	0.1	0.6	0.2	0.0	13.6	8.5
55	MUSKEG	MKR1	1	Co-gen	44.2	42.7	30.9	57.1	35.2	35.2	13.4	23.3	42.7	30.6	25.9	21.5
56	MCKAY RIVER	MKRC		Co-gen	153.7	130.7	150.9	182.9	170.3	163.9	128.5	146.8	102.5	176.9	144.0	137.9
57	SYNCRUDE	SCL1		Co-gen	34.1	26.0	18.5	65.4	42.0	37.7	30.3	40.6	41.7	50.3	37.9	31.5
58	DOW GTG	DOWGEN15M	1	Co-gen	86.0	54.0	31.7	64.7	34.0	4.4	59.2	51.8	47.0	65.8	41.7	27.7
59	MAHKESES COLD LAKE	IOR1		Co-gen	42.3	41.3	36.2	45.9	29.2	42.2	25.6	35.0	40.4	39.7	37.7	38.4
60	SUNCOR MILLENIUM	SCR1		Co-gen	396.5	390.7	357.0	466.3	400.3	344.5	349.8	353.6	337.9	399.6	384.7	384.1
61	CASCADE	CAS		Hydro	17.7	13.0	10.0	13.8	7.2	0.2	0.0	0.7	2.6	13.7	2.6	0.6
62	BEARSPAW	BPW		Hydro	5.5	6.1	6.7	5.3	7.5	10.1	5.4	8.9	10.7	6.4	7.8	8.7
63	BARRIER	BAR		Hydro	0.0	0.0	0.0	0.0	0.2	0.4	0.0	1.9	5.8	0.0	0.0	0.0
64	GHOST	GHO		Hydro	32.4	14.0	4.1	13.8	17.0	14.9	32.9	32.7	30.5	22.1	11.4	7.3
65	THREE SISTERS	THS		Hydro	0.8	0.7	0.5	0.0	0.0	0.0	0.2	0.1	0.0	0.9	0.7	0.2
66	KANANASKIS	KAN		Hydro	7.6	8.2	9.2	6.2	9.0	12.1	6.9	8.6	11.8	8.1	5.6	5.4
67	HORSESHOE	HSH		Hydro	4.6	6.8	7.9	5.8	7.9	9.2	9.6	10.5	9.9	5.9	7.7	8.8
68	SPRAY	SPR		Hydro	30.0	33.0	17.2	34.6	22.5	1.8	63.5	51.9	20.9	30.6	28.8	11.1
69	RUNDLE	RUN		Hydro	7.2	7.1	3.4	7.6	5.2	0.5	16.0	14.3	4.4	7.7	6.8	1.6
70	POCATERRA	POC		Hydro	10.6	2.8	0.0	4.5	4.8	0.2	9.9	5.6	2.6	9.5	4.7	0.1
71	BRAZEAU	BRA	1	Hydro	41.0	29.7	2.4	32.8	31.6	22.6	141.2	104.6	136.7	36.1	26.7	3.9

New GSO Number	Name	MPID	Gen with 2nd Block	Generation Type	Winter Peak Capacity (MW)	Winter Med Capacity (MW)	Winter Low Capacity (MW)	Spring Peak Capacity (MW)	Spring Med Capacity (MW)	Spring Low Capacity (MW)	Summer Peak Capacity (MW)	Summer Med Capacity (MW)	Summer Low Capacity (MW)	Fall Peak Capacity (MW)	Fall Med Capacity (MW)	Fall low Capacity (MW)
72	STIRLING	0000006711		Hydro, DG	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.1	0.8	0.0	0.0	0.1
73	INTERLAKES	INT		Hydro	4.3	1.5	0.0	1.4	0.9	0.0	3.1	1.5	0.6	3.2	1.7	0.1
74	SPRING COULEE	0000038511		Hydro, DG	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75	CHIN CHUTE	CHIN		Hydro	0.0	0.0	0.0	0.0	2.5	6.7	6.6	7.1	7.3	0.3	2.8	3.9
76	OLDMAN	OMRH		Hydro	5.4	4.7	5.2	3.8	17.5	26.0	28.9	28.7	30.4	9.6	13.2	14.5
77	TAYLOR HYDRO	TAY1		Hydro	0.0	0.0	0.0	0.0	1.2	3.7	10.9	9.9	5.4	0.4	3.3	4.5
78	RAYMOND RESERVOIR	RYMD		Hydro	0.0	0.0	0.0	0.0	2.4	6.5	13.6	13.0	11.7	0.5	4.0	5.5
79	BIGHORN	BIG	1	Hydro	51.5	36.7	30.1	54.7	49.5	33.3	78.9	62.6	37.8	63.8	61.1	57.2
80	HR MILNER	HRM	1	Coal	94.4	78.3	53.6	91.7	70.6	72.6	74.2	58.0	23.2	87.2	61.8	47.5
81	SUNDANCE #4	SD4	1	Coal	296.0	275.5	278.8	265.6	241.1	170.8	295.3	271.4	183.1	300.3	298.8	295.7
82	SUNDANCE #5	SD5	1	Coal	266.6	249.2	248.4	303.6	261.8	212.3	268.3	256.6	176.7	271.3	265.2	260.1
83	SUNDANCE #6	SD6	1	Coal	224.6	240.2	245.1	254.3	171.9	113.1	149.7	160.2	233.7	238.5	178.8	168.1
84	SUNDANCE #3	SD3	1	Coal	303.1	244.6	195.7	253.7	239.2	189.7	307.1	297.4	255.4	315.4	294.7	282.9
85	SUNDANCE #1	SD1	1	Coal	154.1	185.4	184.5	201.3	179.4	105.9	190.4	183.5	180.5	186.6	169.2	148.1
86	SUNDANCE #2	SD2	1	Coal	144.7	149.0	148.1	185.7	166.5	159.5	135.3	95.3	75.7	152.3	105.5	74.0
87	KEEPHILLS #3	KH3	1	Coal	157.9	211.5	222.6	170.4	193.1	192.2	250.0	181.9	26.5	153.3	230.5	249.2
88	GENESEE 1	GN1	1	Coal	199.2	190.9	186.8	203.7	201.2	192.8	221.5	191.3	153.5	220.9	220.9	208.3
89	GENESEE 2	GN2	1	Coal	209.8	207.0	194.8	207.1	141.5	94.0	203.9	181.3	100.4	205.1	194.5	182.1
90	GENESEE 3	GN3	1	Coal	208.6	220.4	220.3	202.0	196.3	166.3	221.1	224.7	223.3	227.7	211.2	208.8
91	SHEERNESS #1	SH1	1	Coal	182.7	187.9	141.1	203.7	186.7	132.5	200.3	188.0	178.7	203.7	169.9	135.4
92	SHEERNESS #2	SH2	1	Coal	188.4	181.3	140.2	199.3	182.8	139.8	174.3	160.2	171.7	189.1	108.6	63.2
93	KEEPHILLS #1	KH1	1	Coal	342.4	327.5	307.9	340.2	296.7	295.0	0.0	0.0	0.0	321.9	189.2	129.3
94	KEEPHILLS #2	KH2	1	Coal	276.7	221.3	268.4	79.2	270.0	291.5	319.7	310.5	246.5	329.2	308.3	295.6
95	BATTLE RIVER #5	BR5	1	Coal	190.9	169.9	126.5	192.7	140.7	88.6	175.9	155.6	111.1	182.1	154.7	99.6
96	BATTLE RIVER #3	BR3	1	Coal	76.5	61.5	48.3	52.5	52.7	31.8	54.5	42.1	22.0	71.8	65.2	44.8
97	BATTLE RIVER #4	BR4	1	Coal	7.2	44.7	40.1	71.8	50.8	30.5	73.6	59.9	46.9	3.5	32.8	27.6
98	HR MILNER	HRM	2	Coal	13.0	10.7	7.4	12.6	9.7	10.0	10.2	8.0	3.2	12.0	8.5	6.5
99	SUNDANCE #6	SD6	2	Coal	99.2	106.1	108.2	112.3	75.9	49.9	66.1	70.7	103.2	105.3	79.0	74.2
100	SUNDANCE #5	SD5	2	Coal	78.2	73.2	72.9	89.1	76.8	62.3	78.8	75.3	51.9	79.6	77.9	76.4
101	SUNDANCE #2	SD2	2	Coal	34.3	35.3	35.1	44.1	39.5	37.8	32.1	22.6	17.9	36.1	25.0	17.6
102	SUNDANCE #1	SD1	2	Coal	28.0	33.7	33.5	36.6	32.6	19.2	34.6	33.4	32.8	33.9	30.7	26.9
103	SUNDANCE #4	SD4	2	Coal	52.7	49.1	49.7	47.3	42.9	30.4	52.6	48.3	32.6	53.5	53.2	52.7
104	SUNDANCE #3	SD3	2	Coal	35.0	28.3	22.6	29.3	27.6	21.9	35.5	34.4	29.5	36.5	34.1	32.7
105	KEEPHILLS #3	KH3	2	Coal	121.1	162.2	170.7	130.7	148.1	147.4	191.8	139.6	20.3	117.6	176.8	191.1
106	GENESEE 2	GN2	2	Coal	183.6	181.1	170.4	181.2	123.9	82.2	178.5	158.7	87.9	179.5	170.2	159.3
107	GENESEE 1	GN1	2	Coal	145.8	139.8	136.7	149.1	147.2	141.1	162.1	140.0	112.4	161.7	161.7	152.5
108	GENESEE 3	GN3	2	Coal	208.4	220.2	220.0	201.7	196.0	166.1	220.8	224.5	223.0	227.4	211.0	208.5

New GSO Number	Name	MPID	Gen with 2nd Block	Generation Type	Winter Peak Capacity (MW)	Winter Med Capacity (MW)	Winter Low Capacity (MW)	Spring Peak Capacity (MW)	Spring Med Capacity (MW)	Spring Low Capacity (MW)	Summer Peak Capacity (MW)	Summer Med Capacity (MW)	Summer Low Capacity (MW)	Fall Peak Capacity (MW)	Fall Med Capacity (MW)	Fall low Capacity (MW)
109	SHEERNESS #2	SH2	2	Coal	121.5	116.9	90.4	128.5	117.9	90.2	112.4	103.3	110.7	121.9	70.0	40.8
110	SHEERNESS #1	SH1	2	Coal	107.9	111.0	83.3	120.3	110.2	78.2	118.3	111.0	105.5	120.3	100.3	80.0
111	KEEPHILLS #2	KH2	2	Coal	29.8	23.8	28.9	8.5	29.0	31.4	34.4	33.4	26.5	35.4	33.2	31.8
112	KEEPHILLS #1	KH1	2	Coal	49.7	47.6	44.7	49.4	43.1	42.9	0.0	0.0	0.0	46.8	27.5	18.8
113	BATTLE RIVER #5	BR5	2	Coal	166.3	148.0	110.2	167.8	122.5	77.2	153.2	135.5	96.8	158.6	134.7	86.7
114	BATTLE RIVER #3	BR3	2	Coal	52.6	42.3	33.2	36.1	36.2	21.9	37.5	28.9	15.1	49.3	44.8	30.8
115	BATTLE RIVER #4	BR4	2	Coal	6.4	39.5	35.4	63.4	44.8	27.0	65.0	52.9	41.4	3.1	29.0	24.4
116	BRAZEAU	BRA	2	Hydro	1.4	1.0	0.1	1.1	1.1	0.8	4.7	3.5	4.6	1.2	0.9	0.1
117	BIGHORN	BIG	2	Hydro	1.7	1.2	1.0	1.8	1.6	1.1	2.5	2.0	1.2	2.1	2.0	1.8
118	TransAlta Spray 1 Life Extension	SPR		Hydro	0.0	0.0	0.0	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
119	BC IMPORT	BCHIMP		Import	397.6	147.5	0.0	410.7	187.7	181.5	473.8	186.5	148.5	274.9	132.9	0.0
120	SASKATCHEWAN IMPORT	SPCIMP		Import	34.8	0.0	0.0	0.0	0.0	18.3	100.3	84.0	116.4	33.6	36.6	23.6
121	MONTANA TIE LINE	MATLIMP		Import	140.1	92.9	70.9	160.1	120.7	93.8	172.9	172.9	172.9	92.1	34.9	13.5
122	NORTHERN PRAIRIE POWER PROJECT	NPP1	1	Gas	37.6	12.9	0.0	32.6	6.3	0.0	45.3	16.3	0.3	10.4	17.6	0.8
123	TransCanada Bear Creek Generator	BCRK		Co-Cycle	2.8	3.8	0.0	0.0	11.6	9.7	15.9	11.3	7.2	7.7	6.5	6.1
124	RAINBOW 1	RB1		Gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
125	RAINBOW 5	RB5	1	Gas	23.9	7.3	1.5	10.0	1.6	0.0	20.8	9.2	1.8	12.2	10.6	3.0
126	RAINBOW 4	RL1		Co-gen Gas	45.7	44.7	43.8	42.7	32.7	17.9	36.3	37.7	40.4	43.4	30.8	28.6
127	RAINBOW 3	RB3		Gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
128	FORT NELSON	FNG1	1	Gas	30.0	11.9	0.5	12.2	4.1	2.5	30.1	13.4	3.1	7.4	10.3	5.6
129	RAINBOW 2	RB2		Gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
130	STURGEON 1	ST1		Gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
131	STURGEON 2	ST2		Gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
132	ATCO VALLEY VIEW 2	VVW2		Gas	6.1	0.3	0.0	0.7	0.7	0.0	4.9	0.8	0.0	0.5	1.2	0.0
133	FORTIS GENALTA CARSON CREEK GENERATOR	0000065911		Gas	9.6	9.6	9.6	0.2	0.1	0.0	9.6	9.6	9.6	9.6	9.6	9.6
134	NRGREEN WINDFALL POWER GENERATING STATION	NRG3		Gas	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0
135	FORTIS ANC (ALBERTA NEWSPRINT COMPANY) - GEN	ANC1		Gas	51.1	51.1	51.1	51.1	51.1	51.1	51.1	51.1	51.1	51.1	51.1	51.1
136	ENMAX CROSSFIELD ENERGY CENTER	CRS3	1	Gas	24.9	5.7	0.0	11.4	1.2	0.0	20.6	4.6	0.2	6.4	7.2	0.2
137	ENMAX CROSSFIELD ENERGY CENTER	CRS1	1	Gas	29.1	7.9	0.3	12.8	1.5	0.0	24.6	6.5	0.0	9.0	7.2	0.3
138	ENMAX CROSSFIELD ENERGY CENTER	CRS2	1	Gas	26.1	6.4	0.2	11.0	1.4	0.0	21.2	4.8	0.0	6.3	6.7	0.2
139	CLOVER BAR 1	ENC1		Gas	25.1	6.8	0.6	22.0	2.3	0.0	7.3	3.6	1.8	5.8	2.8	0.4
140	CLOVER BAR 2	ENC2	1	Gas	42.6	19.3	0.0	29.7	11.3	0.0	14.2	5.3	0.7	27.3	9.3	0.6
141	CLOVER BAR 3	ENC3	1	Gas	42.3	13.4	0.0	29.5	8.4	0.0	24.4	11.1	1.6	17.5	8.0	1.7
142	DRYWOOD 1	DRW1		Gas	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.1	0.0	0.0
143	DIASHOWA	DAI1	2	Co-gen	1.2	0.9	0.8	0.9	0.7	0.7	1.6	1.0	0.7	1.1	1.0	0.9
144	FORTISALBERTA AL-PAC PULP MILL	AFG1TX	2	Gas	4.2	2.1	1.3	1.1	1.6	2.5	4.7	3.2	2.7	1.4	2.1	1.7
145	BALZAC	NX01	2	Co-Cycle	54.4	32.4	12.8	35.0	13.3	10.6	46.8	31.4	10.9	33.0	32.9	22.3

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146	ENMAX CALGARY ENERGY CENTRE CTG	CES1	2	Co-Cycle	55.1	34.9	17.3	41.5	19.8	7.2	43.1	27.4	24.4	14.8	17.4	12.9
147	ENMAX CALGARY ENERGY CENTRE STG	CES2	2	Co-Cycle	34.6	19.2	10.6	22.3	12.0	4.7	30.1	17.4	15.9	8.2	10.8	8.3
148	NOVA JOFFRE	NOVAGEN15M	2	Co-gen	43.8	31.2	23.5	36.2	20.2	13.4	35.9	24.2	19.3	28.9	25.9	21.5
149	CITY OF MEDICINE HAT	CMH1	2	Gas	10.8	6.1	3.4	5.3	3.5	2.6	6.9	8.4	8.6	5.3	6.3	4.6
150	CAVAILIER	EC01	2	Co-Cycle	31.2	22.8	10.4	27.4	12.5	7.2	33.6	27.2	21.4	24.8	25.2	19.5
151	MUSKEG	MKR1	2	Co-gen	1.3	1.3	0.9	1.7	1.0	1.0	0.4	0.7	1.3	0.9	0.8	0.6
152	DOW GTG	DOWGEN15M	2	Co-gen	14.3	9.0	5.3	10.8	5.7	0.7	9.9	8.6	7.8	11.0	7.0	4.6
153	IMPERIAL OIL COLD LAKE EXPANSION NABIYE PLANT	IOR1		Co-gen	155.2	155.2	155.2	155.2	155.2	155.2	155.2	155.2	155.2	155.2	155.2	155.2
154	POPLAR HILL	PH1	2	Gas	8.8	0.7	0.2	1.0	0.3	0.0	4.2	0.8	0.0	4.2	2.4	0.2
155	NORTHERN PRAIRIE POWER PROJECT	NPP1	2	Gas	20.3	7.0	0.0	17.6	3.4	0.0	24.5	8.8	0.2	5.6	9.5	0.4
156	RAINBOW 5	RB5	2	Gas	16.5	5.0	1.0	6.9	1.1	0.0	14.4	6.3	1.2	8.4	7.3	2.0
157	FORT NELSON	FNG1	2	Gas	0.4	0.2	0.0	0.2	0.1	0.0	0.4	0.2	0.0	0.1	0.1	0.1
158	VALLEYVIEW	VVW1	2	Gas	7.7	0.3	0.0	0.7	0.3	0.0	4.8	1.0	1.2	0.6	1.6	0.1
159	ENMAX CROSSFIELD ENERGY CENTER	CRS1	2	Gas	6.8	1.8	0.1	3.0	0.3	0.0	5.7	1.5	0.0	2.1	1.7	0.1
160	ENMAX CROSSFIELD ENERGY CENTER	CRS2	2	Gas	7.3	1.8	0.1	3.1	0.4	0.0	6.0	1.3	0.0	1.8	1.9	0.0
161	ENMAX CROSSFIELD ENERGY CENTER	CRS3	2	Gas	5.6	1.3	0.0	2.6	0.3	0.0	4.7	1.1	0.0	1.4	1.6	0.0
162	CLOVER BAR 3	ENC3	2	Gas	16.3	5.1	0.0	11.4	3.2	0.0	9.4	4.3	0.6	6.7	3.1	0.6
163	CLOVER BAR 2	ENC2	2	Gas	19.5	8.8	0.0	13.6	5.2	0.0	6.5	2.4	0.3	12.5	4.3	0.3
164	ATCO Genalta Cadotte Generator Increase	Project1523_1_GN		Gas	16.4	16.4	16.4	16.4	16.4	16.4	16.4	16.4	16.4	16.4	16.4	16.4
165	Fortis Genalta Bellshill DG	Project1472_1_GN		Gas	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.6	0.6	0.6	0.6	0.6
166	Cenovus Sunday Creek BTF	Project1245_1_GN		Gas	0.0	0.0	0.0	0.0	0.0	0.0	17.5	17.5	17.5	17.5	17.5	17.5