



2011 Generic Stacking Order Loss Factors

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	Name	Signature	Date
Prepared by:	Ryan Fehr, EIT.		Sept 13, 2010
Approved by:	Ashikur Bhuiya, P.Eng.		Sep 13, 2010
Approved by:	John Esaiw,		Sep 13 2010

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1.0 Purpose

The purpose of this document is to describe the 2011 Generic Stacking Order as the order applies to the loss factor calculation.

2.0 Introduction

The Generic Stacking Order (GSO) is a key component in the loss factor calculation, operational forecasts, planning studies, and General Tariff Application process. 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 cases¹ (four seasons and three load levels as defined below) for all generators, and

Season	Timeframe	Scenario
Winter	December, 2010 – February, 2011	High
		Medium
		Low
Spring	March, 2011 – May, 2011	High
		Medium
		Low
Summer	June, 2011 – August, 2011	High
		Medium
		Low
Fall	September, 2011 – November, 2011	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 & Procedures > ISO Rules > Current Rules. In summary, the generation supply levels are determined using

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

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 provided by the owner or the supply levels are estimated by the Incapability Factors or by a combination of actual data and the Incapability Factors. To determine 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 4.0. 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 TMR requirement (please refer to www.aeso.ca > Rules and Procedures >Current Operating Policies and Procedures > ISO Operating Policies and Procedures for details) supersedes all other operational criteria and hence TMR generators are dispatched first on the list when required to fulfill the reliability criteria.

3.0 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 Transmission Regulation. The regulation AR 86/2007 with amendments up to and including AR 255/2007 indicates loss factors must be calculated from the average impact of generators on the Alberta Interconnected Electric System (AIES). The regulation directed the AESO to implement a new methodology to meet these requirements. The AESO has consulted with stakeholders in the development of the loss factor methodology including the development of rules for the preparation of the GSO.

Prior to 2006, GSO's used generators STS contract levels as capacity amounts. Moving to a one year historical generation basis as was done in 2006 has several advantages, including;

- ◆ Amounts of actual generator energy market dispatch representative for the previous year
- ◆ Addresses the issue of confidentiality of maintenance data by including actual maintenance and forced outages from the previous period
- ◆ Treats all facilities on the same basis
- ◆ Reduces necessity for the AESO to forecast generator / pool price relationships

4.0 2011 GSO Key Features

The highlights of the 2011 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 are provided an opportunity to comment on and suggest revisions to the GSO capacities 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, and Saskatchewan) 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 2nd 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 Appendix 6 of the AESO Rules).
6. No maintenance or outage data is used in the 2011 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 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. New generators expected to be connected in the forecast year will be included in the GSO. These are generators with signed contracts to connect or who have made significant financial commitments to connect. Generators who have filed decommissioning plans with the AESO will be removed accordingly.

AESO typically relies on an operating profile submitted by the generator owner. 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 (ICBF) to calculate the power available to the AIES. (1- ICBF) has been considered as equivalent to Available Capacity Factors (ACF).

10. The 2011 GSO considers the NTG amount at the point of supply (POS). Since any given loss factor is primarily the function of net to grid amount of generation, the 2011 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. The GSO contains a column with bus numbers for corresponding MPIDs.

11. An energy stacking order is created for all generation units based on lowest operating cost for units of the same fuel type using the current unit's loss factor. 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 months period. The generation unit is then divided into two blocks. Two blocks are chosen to avoid additional complexity for limited modeling improvement. A statistical analysis is applied to define the first and second blocks from its multi-block stacking order. A low end price with the highest occurring percentage in the 12 months period is selected as the first block. Its block size is defined as the average size based on occurrence. Generation volumes above the first block size belong to the second block. This block price is defined by using weighted average of all the prices above the first block. The weighted factor is generation MW changes at each price and its percentage in history. The second block size is calculated by averaging of all blocks above the first block. However, not all generators have a 2nd block. The statistical analysis shows that some generators have an insignificant amount of generation in the 2nd 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 weighted average is equal to or more than 5 MW. In some cases the second block is not assigned to a generator even though the weighted average is more than 5 MW such as for SPR&D or Wind generators.

The price response analysis used to construct the GSO is consistent with the losses forecast as filed with the AESO's General Tariff Application.

The 2011 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 (two 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)

4.1 2010 Important Generator Retirements

1. Wabamum 4 retired on March 31, 2010.

5.0 2011 Generic Stacking Order

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

- 1) **Transmission Must Run (TMR) 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 AESO OPPs 501, 510 and 521. TMR is required in specific areas of the AIES to meet reliability criteria. The total net-to-grid (NTG) amount assigned to the TMR generators in the 2011 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 2009 to May 31 2010). 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 2009 to May 31 2010). 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 to the AESO.

- 2) **Data** – Most of the data used in 2011 GSO such as Alberta system load, hourly pool price and generation amount at each POS are historical and taken from the most recent 12 months' data found in the AESO's billing system. The data extraction period is June 1, 2009 to May 31, 2010.
- 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 2nd 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 2010 GSO. SPR&D generators are exempt by law from paying for losses.
- 6) **Distribution Connected Generation** – consists of distribution connected generators with STS contracts who occasionally supplies power to the AIES. Several prime movers may exist at a distribution generation location. The placement of the distribution generation in the stacking order is determined mainly by the predominant source of

generation at the STS location and ranked by historical hourly pool price.

- 7) **Preliminary Generation** – consists of the generators with preliminary status 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 supply component of the system.

2011 Generic Stacking Order Version 1 - September 13, 2010

New GSO Number	Name	MP_ID	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	RAINBOW 4	RL1	1	Co-gen	32.7	38.7	40.3	27.4	32.8	30.4	21.9	25.6	27.2	18.9	30.8	33.5
2	RAINBOW 5	RB5	1	Gas	24.9	20.1	14.7	14.2	14.3	12.3	17.2	14.9	10.9	17.0	16.3	12.3
3	POPLAR HILL	PH1	1	Gas	1.4	1.3	0.3	0.6	0.1	0.1	3.3	1.4	0.0	2.0	1.2	0.0
4	VALLEYVIEW	VVV1	1	Gas	1.5	1.1	0.3	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0
5	FORT NELSON	FNG1	1	Gas	31.8	34.5	35.7	21.9	26.7	30.7	8.3	31.7	37.1	18.5	31.2	35.4
6	BEAR CREEK G1	BCRK	1	Co-Cycle	19.3	10.0	1.3	1.0	1.3	0.5	0.0	0.4	0.0	6.5	0.5	0.0
7	RAINBOW 2	RB2	1	Gas	1.6	0.6	0.5	1.0	1.3	1.4	5.6	3.5	0.5	0.6	1.0	1.0
8	RAINBOW 1	RB1	1	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
9	BEAR CREEK G2	BCR2	1	Co-Cycle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	NORTHSTONE ELMWORTH	NPC1	1	Co-gen	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	RAINBOW 3	RB3	1	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
12	GRANDE PRAIRIE ECOPOWER CENTRE	GPEC	1	Co-gen	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	TABER WIND	TAB1		Wind	17.1	19.7	23.4	25.9	30.4	32.1	3.3	15.9	21.3	35.9	32.7	35.5
14	SUNCOR HILLRIDGE WIND FARM	SCR3		Wind	6.5	9.0	10.2	12.1	12.7	14.0	1.7	7.3	7.7	15.8	14.1	15.1
15	FT MACLEOD	000001511		Wind, DG	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
16	SUNCOR MAGRATH	SCR2		Wind	6.7	9.6	9.3	8.5	11.7	11.5	2.5	6.0	7.0	15.1	13.1	13.2
17	GLENWOOD	0000022911		Wind, DG	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.5	0.0	0.1	0.3
18	TAYLOR WIND PLANT	TAY2		Wind	0.6	0.7	0.6	0.4	0.8	0.6	0.2	0.3	0.3	0.9	0.9	0.7
19	BLUE TRAIL WIND FARM	BTR1		Wind	12.1	16.6	17.5	10.1	20.1	19.8	0.0	0.0	0.0	26.3	16.7	13.1
20	McBRIDE	AKE1		Wind	17.7	24.2	23.3	21.4	27.4	24.6	6.1	13.4	15.5	38.2	33.3	29.9
21	SODERGLEN	GWV1		Wind	17.6	24.7	23.8	18.4	26.9	25.2	7.9	15.1	17.9	37.2	33.0	31.2
22	PINCHER CREEK	0000039611		Wind, DG	0.7	1.2	1.4	0.7	1.5	1.4	0.2	0.5	0.6	1.5	1.8	2.0
23	CASTLE RIVER	CR1		Wind	7.9	12.4	10.8	7.8	12.3	9.5	4.9	4.8	2.3	17.4	16.6	13.6
24	KETTLES HILL WIND ENERGY PHASE 2	KHW1		Wind	14.6	21.4	20.5	15.5	22.9	18.9	7.6	11.2	10.7	29.0	28.8	24.0
25	SUMMERVIEW 1	IEW1		Wind	14.1	22.4	20.5	15.6	20.5	19.2	6.6	10.5	11.3	32.3	27.5	21.1
26	COWLEY EXPANSION 1	CRE1		Wind	0.1	0.2	0.2	0.1	0.2	0.2	0.1	0.1	0.0	0.4	0.3	0.2
27	COWLEY EXPANSION 2	CRE2		Wind	0.2	0.3	0.3	0.2	0.3	0.3	0.2	0.1	0.1	0.5	0.5	0.4
28	COWLEY NORTH	CRE3		Wind	4.6	5.8	5.3	4.5	5.8	4.7	2.5	2.8	1.4	8.6	8.0	6.4
29	COWLEY RIDGE WIND POWER PHASE1	PKNE		Wind	2.1	3.3	2.8	2.2	3.3	2.7	1.4	1.5	1.0	5.0	4.4	3.6
30	COWLEY RIDGE WIND POWER PHASE2	CRWD		Wind	1.8	2.9	2.5	1.8	2.8	2.3	1.2	1.2	0.7	4.4	3.8	3.0
31	SUMMERVIEW 2	IEW2		Wind	28.4	28.4	28.4	9.9	14.7	12.5	16.1	16.1	16.1	24.0	24.0	24.0
32	TRANSALTA ARDENVILLE WIND FARM	Project854_1_GEN		Wind	29.7	29.7	29.7	22.7	22.7	22.7	16.9	16.9	16.9	25.1	25.1	25.1
33	GHOST PINE WIND FARM	Project518_1_SUP		Wind	33.8	33.8	33.8	25.8	25.8	25.8	19.2	19.2	19.2	28.6	28.6	28.6
34	ENEL ALBERTA CASTLE ROCK WIND FARM	Project462_1_SUP		Wind	0.0	0.0	0.0	0.0	0.0	0.0	28.7	28.7	28.7	42.7	42.7	42.7
35	GREENGATE HALKIRK WIND PROJECT	Project723_1_SUP		Wind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	57.2	57.2	57.2
36	WESGEN	WST1		Bio-mass	11.7	12.9	13.3	12.0	13.7	13.9	11.7	10.8	11.7	13.1	11.5	10.6
37	WHITE COURT	EAGL		Bio-mass	23.6	23.2	23.0	23.1	22.1	22.9	11.9	10.8	14.8	23.8	23.9	24.0
38	BRIDGE CREEK	GOC1		Gas-decomp	2.7	3.3	3.4	3.6	3.7	4.0	1.5	2.2	2.8	2.4	3.1	3.0
39	DRAYTON VALLEY PL IPP	DV1		Bio-mass	8.5	8.0	8.2	8.4	8.5	8.8	8.9	9.1	9.2	8.9	8.8	8.8
40	BELLY RIVER IPP	BLYR		Hydro	0.0	0.0	0.0	0.5	0.5	0.7	2.8	2.8	2.8	0.9	1.0	1.4
41	CHIN CHUTE	CHIN		Hydro	0.0	0.0	0.0	0.8	1.5	2.1	7.1	8.8	10.3	2.0	3.4	4.2
42	DICKSON DAM 1	DKSN		Hydro	4.8	4.7	4.6	4.0	3.9	4.0	8.7	10.2	12.0	6.2	5.3	5.9
43	WATER IPP	WTRN		Hydro	2.1	1.9	1.9	1.5	1.5	1.6	1.8	1.9	1.8	2.0	1.4	1.4
44	ST MARY IPP	STMY		Hydro	1.2	1.5	1.5	1.7	1.7	1.8	2.3	2.3	2.3	1.4	1.4	1.5
45	RAYMOND RESERVOIR	RYMD		Hydro	0.0	0.0	0.0	1.1	1.5	2.2	16.5	16.6	17.5	3.9	5.6	7.4
46	P&G WEYERHAUSER	WEY1		Co-gen	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
47	DIASHOWA	DAI1		Co-gen	3.0	3.1	3.1	2.6	2.9	2.7	2.0	2.1	1.6	2.5	1.7	1.4
48	CAVAILLER	ECO1	1	Co-Cycle	9.8	7.4	3.6	10.6	9.5	5.9	12.7	6.3	2.4	11.0	8.1	2.9
49	CARSELAND	TCO1	1	Co-gen	42.2	41.3	39.4	42.6	41.0	40.7	40.5	40.7	41.9	39.7	38.9	38.9
50	BALZAC	NX01	1	Co-Cycle	42.1	36.1	31.1	51.5	44.8	32.8	57.7	35.3	20.2	54.4	42.6	28.2
51	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
52	ENMAX CALGARY ENERGY CENTRE CTG	CE51	1	Co-Cycle	7.3	6.9	1.6	8.9	11.0	5.0	21.4	8.3	1.2	25.0	18.7	13.9
53	ENMAX CALGARY ENERGY CENTRE STG	CE52	1	Co-Cycle	16.4	15.3	3.3	23.3	27.0	11.5	52.0	20.6	3.0	64.0	45.1	33.1
54	CITY OF MEDICINE HAT	CMH1	1	Gas	9.2	6.2	1.4	6.7	8.6	5.8	5.8	4.8	0.4	8.4	7.4	1.6
55	NOVA JOFFRE	NOVAGEN15M	1	Co-gen	77.1	48.5	25.0	84.8	68.6	52.4	72.2	60.0	33.3	86.1	59.1	44.9
56	WAUPISOO	0000040511		Co-gen, DG	2.7	2.6	2.3	3.0	2.9	2.9	0.0	0.0	0.0	2.5	1.4	1.0
57	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
58	SHELL SCOTFORD	SCTG		Co-gen	0.3	0.2	0.1	4.2	7.7	6.5	0.0	0.0	0.0	3.3	8.7	5.7
59	REDWATER	TCO2	1	Co-gen	13.7	12.8	12.0	11.3	11.1	11.2	10.6	11.4	12.1	11.9	12.0	12.2
60	DOW GTG	DOWGEN15M	1	Co-gen	35.2	26.6	12.4	31.4	26.8	15.4	23.7	17.7	10.1	30.3	24.3	11.0
61	PRIMROSE	PR1	1	Co-gen	14.9	14.8	14.3	12.2	11.3	11.1	10.6	14.7	16.7	10.8	11.6	10.8
62	NEXEN OPTI	NX02		Co-gen	59.3	65.9	64.0	71.1	47.2	45.2	35.9	43.1	39.1	47.8	25.7	23.2

New GSO Number	Name	MP_ID	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*
63	SYNCRUDE	SCL1		Co-gen	32.3	17.0	19.8	33.5	38.2	37.9	7.5	14.9	11.4	41.2	30.8	29.3
64	MCKAY RIVER	MKRC	1	Co-gen	164.2	149.2	149.6	128.5	141.6	144.1	140.0	137.1	128.2	139.7	132.2	124.5
65	SUNCOR MILLENIUM	SCR1	1	Co-gen	107.3	115.2	104.9	111.9	96.3	90.7	81.4	63.7	50.1	82.3	80.1	62.4
66	FOSTER CREEK G1	ECO4	1	Co-gen	36.3	37.4	38.1	32.0	35.5	37.8	30.4	24.4	31.6	16.0	28.6	31.6
67	MUSKEG	MKR1	1	Co-gen	66.3	60.3	43.2	50.8	43.9	36.8	51.6	43.5	31.9	60.1	55.7	41.9
68	CNRL HORIZON	CNR5		Co-gen	15.1	12.2	12.2	3.8	2.8	1.7	10.8	11.0	17.0	8.3	13.1	12.0
69	MAHKESES COLD LAKE	IOR1		Co-gen	50.1	48.2	47.2	34.7	35.9	39.5	37.0	39.1	43.7	39.9	49.0	50.1
70	CASCADE	CAS	1	Hydro	14.4	10.1	1.8	6.8	5.2	0.6	0.8	0.3	0.0	11.1	5.6	0.7
71	SPRAY	SPR	1	Hydro	34.5	29.2	8.5	28.3	21.0	3.9	17.8	12.6	3.2	32.4	21.5	4.7
72	RUNDLE	RUN	1	Hydro	8.7	8.3	2.9	10.5	7.5	1.4	6.4	4.7	1.1	9.7	7.1	1.6
73	THREE SISTERS	THS		Hydro	0.9	0.6	0.3	0.0	0.0	0.0	0.6	0.2	0.0	1.0	0.8	0.3
74	BARRIER	BAR		Hydro	9.1	7.5	0.7	8.0	6.7	0.6	8.1	3.9	0.0	6.3	5.5	0.7
75	GHOST	GHO	1	Hydro	18.0	11.5	4.3	12.5	11.1	4.1	25.1	18.3	8.5	19.1	13.6	4.2
76	HORSESHOE	HSH	1	Hydro	8.9	7.1	5.6	6.6	5.3	4.7	10.3	10.1	10.4	8.5	7.2	6.5
77	KANANASKIS	KAN	1	Hydro	9.0	7.3	5.5	8.1	7.0	5.6	14.3	13.7	12.9	8.8	7.5	6.8
78	POCATERRA	POC		Hydro	11.6	8.1	0.6	9.4	5.1	0.2	3.1	0.5	0.0	10.6	4.6	0.2
79	BEARSPAW	BPW	1	Hydro	4.4	4.5	4.6	4.4	4.7	4.9	8.7	9.5	10.0	4.5	4.3	4.7
80	INTERLAKES	INT		Hydro	4.0	2.9	0.3	2.0	0.9	0.0	1.2	0.4	0.0	3.9	2.2	0.0
81	STIRLING	000006711		Hydro, DG	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	1.6	0.0	0.1	0.4
82	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
83	TAYLOR HYDRO	TAY1		Hydro	0.0	0.0	0.0	1.0	0.9	1.2	12.4	11.9	12.8	3.1	4.4	5.8
84	BRAZEAU	BRA	1	Hydro	7.0	3.6	0.8	3.7	3.3	0.5	4.6	3.1	0.4	4.9	3.2	0.4
85	BIGHORN	BIG	1	Hydro	35.8	30.3	23.0	30.1	26.0	21.3	32.0	23.2	19.0	43.3	33.6	26.7
86	OLDMAN	OMRH		Hydro	3.3	3.2	3.3	8.6	10.6	12.8	25.7	27.4	28.1	12.1	11.2	12.3
87	HR MILNER	HRM	1	Coal	110.4	101.5	90.6	107.5	97.4	85.3	113.3	105.8	98.7	115.5	108.2	88.0
88	SHEERNESS #1	SH1	1	Coal	199.0	152.3	135.7	179.8	172.4	146.7	202.5	156.6	96.5	233.9	207.3	162.9
89	SHEERNESS #2	SH2	1	Coal	188.4	190.2	160.6	95.8	117.9	114.9	169.7	131.6	93.5	191.0	165.6	127.7
90	BATTLE RIVER #5	BR5	1	Coal	190.0	178.0	167.4	170.6	155.7	144.6	181.4	156.9	117.0	189.5	176.6	145.9
91	BATTLE RIVER #3	BR3	1	Coal	73.0	70.0	66.2	68.4	66.8	55.6	73.4	64.6	51.8	66.4	70.0	61.1
92	BATTLE RIVER #4	BR4	1	Coal	86.9	87.2	82.6	79.0	78.6	71.2	85.0	73.1	59.5	68.2	71.3	61.4
93	GENESEE 1	GN1	1	Coal	190.2	191.1	182.7	202.3	190.1	187.1	197.0	196.1	188.9	199.3	147.2	155.3
94	GENESEE 2	GN2	1	Coal	197.9	198.3	197.7	157.6	149.0	127.0	192.6	192.5	178.9	185.0	187.1	189.9
95	GENESEE 3	GN3	1	Coal	206.6	206.2	205.9	211.4	190.2	188.5	209.6	200.5	172.2	203.7	208.4	207.5
96	KEEPHILLS #1	KH1	1	Coal	314.1	319.2	313.8	305.6	281.9	273.1	316.0	300.0	296.8	318.5	317.1	311.5
97	KEEPHILLS #2	KH2	1	Coal	315.2	307.6	299.6	324.7	303.8	293.6	326.6	322.6	305.0	267.3	288.7	288.6
98	SUNDANCE #1	SD1	1	Coal	225.0	222.5	202.2	197.5	202.2	188.8	217.5	205.7	183.9	188.2	177.8	171.0
99	SUNDANCE #2	SD2	1	Coal	151.2	161.9	157.3	186.4	172.7	163.2	171.9	160.2	148.7	185.0	178.3	177.4
100	SUNDANCE #3	SD3	1	Coal	235.6	235.7	230.2	195.1	178.4	138.3	143.8	106.3	93.1	222.5	221.6	202.4
101	SUNDANCE #4	SD4	1	Coal	324.1	307.4	291.4	194.1	142.8	130.9	347.9	250.6	184.9	225.7	254.0	234.5
102	SUNDANCE #5	SD5	1	Coal	283.2	275.6	272.2	306.9	297.5	297.7	150.5	156.4	149.4	108.0	53.6	40.8
103	SUNDANCE #6	SD6	1	Coal	288.3	287.3	287.8	219.9	256.6	254.4	242.7	228.2	223.9	289.2	293.9	273.8
104	HR MILNER	HRM	2	Coal	19.7	18.1	16.1	19.2	17.4	15.2	20.2	18.9	17.6	20.6	19.3	15.7
105	SHEERNESS #1	SH1	2	Coal	109.3	83.6	74.5	98.7	94.7	80.6	111.2	86.0	53.0	128.5	113.8	89.5
106	SHEERNESS #2	SH2	2	Coal	156.0	157.5	133.0	79.4	97.7	95.2	140.5	109.0	77.5	158.2	137.1	105.8
107	BATTLE RIVER #5	BR5	2	Coal	177.7	166.5	156.7	159.7	145.7	135.3	169.7	146.8	109.4	177.3	165.2	136.5
108	BATTLE RIVER #3	BR3	2	Coal	73.4	70.5	66.6	68.9	67.3	56.0	73.9	65.1	52.2	66.8	70.5	61.5
109	BATTLE RIVER #4	BR4	2	Coal	65.4	65.6	62.1	59.5	59.2	53.6	63.9	55.0	44.8	51.3	53.6	46.2
110	GENESEE 1	GN1	2	Coal	177.5	178.3	170.5	188.7	177.4	174.6	183.8	182.9	176.3	130.0	137.4	144.9
111	GENESEE 2	GN2	2	Coal	185.0	185.4	184.8	147.3	139.3	118.7	180.1	180.0	167.2	172.9	174.9	176.6
112	GENESEE 3	GN3	2	Coal	233.5	233.0	232.7	238.9	214.9	213.1	236.9	226.7	194.6	230.3	235.5	234.5
113	KEEPHILLS #1	KH1	2	Coal	59.9	60.8	59.8	58.2	53.7	52.1	60.2	57.2	56.6	60.7	60.4	59.4
114	KEEPHILLS #2	KH2	2	Coal	50.2	49.0	47.7	51.7	48.4	46.7	52.0	51.3	48.6	42.6	46.0	45.9
115	SUNDANCE #1	SD1	2	Coal	27.1	26.7	24.3	23.7	24.3	22.7	26.2	24.7	22.1	22.6	21.4	20.6
116	SUNDANCE #2	SD2	2	Coal	48.1	51.5	50.0	59.3	54.9	51.9	54.7	50.9	47.3	58.8	56.7	56.4
117	SUNDANCE #3	SD3	2	Coal	69.5	69.5	67.9	57.6	52.6	40.8	42.4	31.4	27.5	65.6	65.4	59.7
118	SUNDANCE #4	SD4	2	Coal	14.3	13.6	12.9	8.6	6.3	5.8	15.4	11.1	8.2	10.0	11.2	10.3
119	SUNDANCE #5	SD5	2	Coal	78.5	76.3	75.4	85.0	82.4	82.5	41.7	43.3	41.4	29.9	14.8	11.3
120	SUNDANCE #6	SD6	2	Coal	63.5	63.2	63.4	48.4	56.5	56.0	53.4	50.2	49.3	63.7	64.7	60.3
121	SUNDANCE 5 UPGRADE	SD5		Coal	0.0	0.0	0.0	0.0	0.0	0.0	47.7	47.7	47.7	47.7	47.7	47.7
122	KEEPHILLS #3	Project_500_1		Coal	182.6	182.6	182.6	182.6	182.6	182.6	386.0	386.0	386.0	386.0	386.0	386.0
123	CASCADE	CAS	2	Hydro	4.8	3.4	0.6	2.3	1.8	0.2	0.3	0.1	0.0	3.8	1.9	0.2
124	SPRAY	SPR	2	Hydro	11.0	9.3	2.7	9.1	6.7	1.2	5.7	4.0	1.0	10.3	6.9	1.5
125	RUNDLE	RUN	2	Hydro	1.7	1.6	0.6	2.1	1.5	0.3	1.3	0.9	0.2	1.9	1.4	0.3

New GSO Number	Name	MP_ID	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*
126	GHOST	GHO	2	Hydro	9.1	5.8	2.2	6.3	5.6	2.1	12.6	9.2	4.3	9.6	6.8	2.1
127	HORSESHOE	HSH	2	Hydro	1.4	1.1	0.9	1.0	0.8	0.7	1.6	1.6	1.6	1.3	1.1	1.0
128	KANANASKIS	KAN	2	Hydro	1.7	1.4	1.0	1.5	1.3	1.0	2.7	2.5	2.4	1.6	1.4	1.3
129	BEARSPAW	BPW	2	Hydro	1.1	1.2	1.2	1.1	1.2	1.3	2.2	2.4	2.6	1.2	1.1	1.2
130	BRAZEAU	BRA	2	Hydro	61.8	31.9	7.3	33.0	29.0	4.8	40.7	27.3	3.7	43.2	28.1	3.4
131	BIGHORN	BIG	2	Hydro	14.9	12.6	9.6	12.5	10.8	8.9	13.3	9.7	7.9	18.0	14.0	11.1
132	BC IMPORT	BCHIMP		Import	398.0	187.1	0.0	371.6	245.9	51.9	385.2	94.7	0.0	230.0	106.0	0.0
133	ISASKATCHEWAN IMPORT	SPCIMP		Import	69.9	53.6	56.3	20.4	6.6	11.9	129.1	87.1	116.2	121.7	71.7	74.3
134	NORTHERN PRAIRIE POWER PROJECT	NPP1		Gas	20.9	4.3	0.4	12.0	6.9	4.0	37.8	8.8	1.6	43.6	10.9	1.2
135	GRANDE PRAIRIE ECOPOWER CENTRE	GPEC	2	Co-gen	17.8	16.5	16.8	14.2	17.4	17.0	7.0	11.5	6.8	14.7	17.6	17.7
136	SHELL CAROLINE	SHCG		Co-gen	0.3	0.6	0.6	1.2	1.3	1.1	0.2	0.7	0.8	0.0	0.0	0.0
137	CAVAILLER	EC01	2	Co-Cycle	63.9	48.4	23.4	69.2	62.1	38.3	83.1	41.3	15.5	72.0	52.8	18.7
138	CARSELAND	TC01	2	Co-gen	22.4	21.9	20.9	22.6	21.8	21.6	21.4	21.6	22.2	21.0	20.6	20.6
139	BALZAC	NX01	2	Co-Cycle	21.2	18.2	15.7	26.0	22.6	16.6	29.1	17.8	10.2	27.5	21.5	14.2
140	ENMAX CALGARY ENERGY CENTRE CTG	CE51	2	Co-Cycle	34.2	32.6	7.7	42.0	51.8	23.5	100.9	39.2	5.7	117.7	88.0	65.6
141	ENMAX CALGARY ENERGY CENTRE STG	CE52	2	Co-Cycle	8.5	7.9	1.7	12.0	13.9	5.9	26.8	10.6	1.6	33.0	23.2	17.0
142	CITY OF MEDICINE HAT	CMH1	2	Gas	16.8	11.4	2.6	12.4	15.9	10.7	10.6	8.7	0.8	15.5	13.5	2.9
143	ATCO VALLEY VIEW 2	VVW2		Gas	0.4	0.2	0.1	3.2	0.6	0.0	0.0	0.0	0.0	2.1	0.7	0.1
144	SUMMIT CROSSFIELD ENERGY CENTRE	CRS1		Gas	17.3	6.3	0.4	12.8	8.9	1.2	39.3	39.3	12.1	4.1	1.7	0.3
145	SUMMIT CROSSFIELD ENERGY CENTRE	CRS2		Gas	12.6	6.9	0.5	16.3	9.6	1.5	39.3	39.3	12.1	4.2	1.6	0.4
146	SUMMIT CROSSFIELD ENERGY CENTRE	CRS3		Gas	8.4	5.0	0.9	22.1	11.8	2.1	39.3	39.3	12.1	0.0	0.0	0.0
147	NOVA JOFFRE	NOVAGEN15M	2	Co-gen	43.4	27.3	14.1	47.8	38.6	29.5	40.7	33.8	18.8	48.4	33.3	25.3
148	REDWATER	TC02	2	Co-gen	5.2	4.9	4.6	4.3	4.2	4.3	4.1	4.4	4.6	4.6	4.6	4.7
149	DOW GTG	DOWGEN15M	2	Co-gen	60.8	45.9	21.4	54.2	46.2	26.6	40.9	30.5	17.4	52.3	42.0	19.0
150	CLOVER BAR 1	ENC1		Gas	4.4	2.3	0.3	16.5	12.9	4.3	4.0	1.4	0.0	6.5	2.7	0.4
151	CLOVER BAR 2	ENC2		Gas	18.5	10.2	1.3	1.7	0.1	0.0	2.5	3.9	0.0	20.1	11.8	0.3
152	CLOVER BAR 3	ENC3		Gas	11.1	10.3	1.1	50.3	53.9	16.9	70.7	70.7	70.7	3.9	5.5	0.1
153	PRIMROSE	PR1	2	Co-gen	1.7	1.7	1.6	1.4	1.3	1.3	1.2	1.7	1.9	1.2	1.3	1.2
154	MEG ENERGY	MEG1		Co-gen	55.5	73.1	75.9	72.2	69.2	71.1	65.6	65.6	65.6	23.9	25.4	20.7
155	MCKAY RIVER	MKRC	2	Co-gen	2.7	2.4	2.4	2.1	2.3	2.3	2.3	2.2	2.1	2.3	2.1	2.0
156	SUNCOR MILLENIUM	SCR1	2	Co-gen	40.7	43.6	39.7	42.4	36.5	34.4	30.8	24.1	19.0	31.2	30.4	23.6
157	FOSTER CREEK G1	EC04	2	Co-gen	3.2	3.3	3.4	2.8	3.1	3.4	2.7	2.2	2.8	1.4	2.5	2.8
158	MUSKEG	MKR1	2	Co-gen	29.6	27.0	19.3	22.7	19.6	16.4	23.1	19.5	14.3	26.9	24.9	18.7
159	FORTISALBERTA AL-PAC PULP MILL	Project837_1_GEN		Gas	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
160	POPLAR HILL	PH1	2	Gas	0.0	0.0	0.0	3.1	1.1	0.1	0.2	0.7	0.0	1.9	0.1	0.0
161	NORTHSTONE ELMWORTH	NPC1	2	Co-gen	1.3	0.4	0.0	1.6	1.3	0.3	3.5	0.4	0.0	2.9	0.6	0.0
162	BEAR CREEK G1	BCR1	2	Co-Cycle	5.5	2.7	1.0	8.6	7.1	3.8	8.2	1.4	0.0	7.3	2.0	0.0
163	BEAR CREEK G2	BCR2	2	Co-Cycle	15.0	13.5	12.6	15.3	12.4	12.0	16.9	14.4	14.2	11.7	12.3	11.6
164	VALLEYVIEW	VVW1	2	Gas	0.0	0.2	0.1	3.6	0.6	0.2	0.0	0.0	0.0	0.6	0.9	0.1
165	RAINBOW 5	RB5	2	Gas	0.3	0.3	0.3	2.4	0.7	0.5	3.8	0.4	0.2	6.3	1.4	0.3
166	RAINBOW 1	RB1	2	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
167	RAINBOW 2	RB2	2	Gas	0.1	0.0	0.0	4.6	0.5	0.2	0.3	0.2	0.0	2.1	0.3	0.1
168	RAINBOW 3	RB3	2	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
169	RAINBOW 4	RL1	2	Gas	7.4	2.8	0.9	9.6	3.6	2.4	1.8	1.6	3.3	22.3	8.6	2.0
170	FORT NELSON	FNG1	2	Gas	8.4	4.9	4.0	11.1	9.7	5.7	20.3	3.4	0.1	15.1	3.7	0.5
171	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
172	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
173	DRYWOOD 1	DRW1		Gas	0.3	0.1	0.0	1.3	1.0	0.2	1.3	0.3	0.0	1.2	0.5	0.0

* Capacity is determined as per AESO rules for the periods defined.