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ALBERTA ELECTRIC SYSTEM OPERATOR

2010 Loss Factors

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1.0 Purpose

The purpose of this document is to present the 2010 loss factors along with a brief explanation of the results or changes compared to 2009. A loss factor map is included. The loss factors published in this document will be effective from January 01, 2010 to December 31, 2010.

2.0 Introduction

The AESO has completed the final analysis of 2010 loss factors and the results are attached. The analysis includes the application of the 2010 Generic Stacking Order (GSO) results published earlier this summer and the 2010 Base Cases published in October on the AESO web site. Both the GSO and the Base Cases have been updated based on stakeholder input or more current information during the course of the final calculations and reposted. The requirements of the 2007 Transmission Regulation are included.

The loss factor calculation uses four key inputs; –

1. 2010 Generic Stacking Order (GSO)
2. New project data
3. Loss factor base cases based on 2010 GSO, load forecast and topology
4. Annual energy and loss volume forecast

The Rule governing the determination of the loss factors is located at **www.aeso.ca** > Rules & Procedures > ISO Rules > Current Rules. To summarize, loss factors for generators are calculated using the "50% Area Load Methodology Using Corrected Loss Matrix" methodology developed in 2005 with stakeholders and originally based on the 2004 Transmission Regulation. Loss factors for opportunity services (demand and tie line) are based on their total impact on losses.

3.0 2010 Loss Factors

Table 1 shows the 2010 loss factors and Table 2 shows settlement loss factors of the tie lines, respectively.

Table 1 – 2010 Final Loss Factors

2010 Alberta Loss Factors - 2009-11-02, Final

MP-ID*	Facility Name	PSS/E Bus	Normalized and Compressed Loss Factor (%)	Loss Factor Asset	Difference % in Loss Factor to System Average
0000034911	ALTAGAS PARKLAND	4235	**0.11**	Gen	-4.31
0000016301	AMOCO EMPRESS (163S)	262	**0.52**	DOS	-3.90
0000079301	ANG COCHRANE (793S)	191	**3.44**	DOS	-0.98
NX01	BALZAC	290	**0.06**	Gen	-4.36
BAR	BARRIER	216	**-1.17**	Gen	-5.59
BR3	BATTLE RIVER #3	1491	**5.13**	Gen	0.71
BR4	BATTLE RIVER #4	1491	**5.13**	Gen	0.71
BR5	BATTLE RIVER #5	1469	**4.35**	Gen	-0.07
BCRK	BEAR CREEK G1	10142	**-1.90**	Gen	-6.32
BCR2	BEAR CREEK G2	10142	**-1.90**	Gen	-6.32
BPW	BEARSPAW	183	**-0.74**	Gen	-5.16
BLYR	BELLY RIVER IPP	447	**0.00**	Gen	-4.42
BIG	BIGHORN	103	**2.00**	Gen	-2.42
BTR1	BLUE TRAIL WIND FARM	328	**1.81**	Gen	-2.61
BRA	BRAZEAU	56153	**1.94**	Gen	-2.48
GOC1	BRIDGE CREEK	19145	**0.00**	Gen	-4.42
0000045411	BUCK LAKE	80	**2.86**	Gen	-1.56
TC01	CARSELAND	5251	**0.03**	Gen	-4.39
CAS	CASCADE	175	**-1.88**	Gen	-6.30
CR1	CASTLE RIVER	234	**2.51**	Gen	-1.91
EC01	CAVAILIER	247	**-0.17**	Gen	-4.59
CHIN	CHIN CHUTE	406	**0.00**	Gen	-4.42
CMH1	CITY OF MEDICINE HAT	680	**0.36**	Gen	-4.06
ENC1	CLOVER BAR 1	516	**4.16**	Gen	-0.26
ENC2	CLOVER BAR 2	516	**4.16**	Gen	-0.26
ENC3	CLOVER BAR 3	516	**4.16**	Gen	-0.26
CNR5	CNRL HORIZON	1263	**6.61**	Gen	2.19
CRE1	COWLEY EXPANSION 1	264	**4.49**	Gen	0.07
CRE2	COWLEY EXPANSION 2	264	**4.49**	Gen	0.07
CRE3	COWLEY NORTH	264	**4.49**	Gen	0.07
PKNE	COWLEY RIDGE WIND POWER PHASE1	264	**4.49**	Gen	0.07
CRWD	COWLEY RIDGE WIND POWER PHASE2	264	**4.49**	Gen	0.07
Project692_1_SUP	DAPP POWER WESTLOCK EXPANSION	99921	**4.28**	Gen	-0.14
DAI1	DIASHOWA	1088	**-0.38**	Gen	-4.80
DKSN	DICKSON DAM 1	4006	**0.00**	Gen	-4.42
DOWGEN15M	DOW GTG	61	**4.01**	Gen	-0.41
DV1	DRAYTON VALLEY PL IPP	4332	**0.00**	Gen	-4.42
DRW1	DRYWOOD 1	4226	**1.74**	Gen	-2.68
CES1	ENMAX CALGARY ENERGY CENTRE CTG	187	**0.13**	Gen	-4.29
CES2	ENMAX CALGARY ENERGY CENTRE STG	187	**0.13**	Gen	-4.29
FNG1	FORT NELSON	1016	**9.85**	Gen	5.43
EC04	FOSTER CREEK G1	1301	**6.33**	Gen	1.91
0000001511	FT MACLEOD	4237	**0.94**	Gen	-3.48
GN1	GENESEE 1	525	**5.33**	Gen	0.91
GN2	GENESEE 2	525	**5.33**	Gen	0.91
GN3	GENESEE 3	525	**5.33**	Gen	0.91
GHO	GHOST	180	**-1.13**	Gen	-5.55
0000022911	GLENWOOD	4245	**1.38**	Gen	-3.04
GPEC	GRANDE PRAIRIE ECOPOWER CENTRE	1101	**-2.10**	Gen	-6.52
Project723_1_SUP	GREENGATE HALKIRK WIND PROJECT	1435	**5.64**	Gen	1.22
HSH	HORSESHOE	171	**-1.09**	Gen	-5.51
HRM	HR MILNER	1147	**1.49**	Gen	-2.93
INT	INTERLAKES	376	**-0.30**	Gen	-4.72
KAN	KANANASKIS	193	**-1.02**	Gen	-5.44
KH1	KEEPHILLS #1	420	**5.36**	Gen	0.94
KH2	KEEPHILLS #2	420	**5.36**	Gen	0.94
Project_500_1	KEEPHILLS #3	610	**4.10**	Gen	-0.32
KHW1	KETTLES HILL WIND ENERGY PHASE 2	402	**2.57**	Gen	-1.85
IOR1	MAHKESES COLD LAKE	56789	**6.63**	Gen	2.21
AKE1	McBRIDE	901	**1.91**	Gen	-2.51
MKRC	McKAY RIVER	1274	**6.07**	Gen	1.65
MEG1	MEG ENERGY	405	**5.33**	Gen	0.91
MKR1	MUSKEG	1236	**6.44**	Gen	2.02
NX02	NEXEN OPTI	1241	**5.62**	Gen	1.20
NPP1	NORTHERN PRAIRIE POWER PROJECT	1120	**-4.37**	Gen	-8.79
NPC1	NORTHSTONE ELMWORTH	19134	**-4.39**	Gen	-8.81
NOVAGEN15M	NOVA JOFFRE	383	**1.41**	Gen	-3.01
Project519_1_SUP	OLD MAN RIVER WIND FARM	543	**2.81**	Gen	-1.61
OMRH	OLDMAN	230	**2.05**	Gen	-2.37
WEY1	P&G WEYERHAUSER	1141	**-1.63**	Gen	-6.05
Project513_1_SUP	PEACE BUTTE WIND FARM	294	**2.40**	Gen	-2.02
0000039611	PINCHER CREEK	4224	**2.48**	Gen	-1.94

2010 Loss Factors

MP-ID*	Facility Name	PSS/E Bus	Normalized and Compressed Loss Factor (%)	Loss Factor Asset	Difference % in Loss Factor to System Average
POC	POCATERRA	214	**-0.77**	Gen	-5.19
PH1	POPLAR HILL	1118	**-4.77**	Gen	-9.19
PR1	PRIMROSE	1302	**5.18**	Gen	0.76
RB1	RAINBOW 1	1031	**5.36**	Gen	0.94
RB2	RAINBOW 2	1032	**5.39**	Gen	0.97
RB3	RAINBOW 3	1033	**5.50**	Gen	1.08
RL1	RAINBOW 4	1035	**5.76**	Gen	1.34
RB5	RAINBOW 5	1037	**5.32**	Gen	0.90
RYMD	RAYMOND RESERVOIR	413	**0.00**	Gen	-4.42
TC02	REDWATER	50	**3.95**	Gen	-0.47
RUN	RUNDLE	56197	**-1.31**	Gen	-5.73
SH1	SHEERNESS #1	1484	**4.03**	Gen	-0.39
SH2	SHEERNESS #2	1484	**4.03**	Gen	-0.39
SHCG	SHELL CAROLINE	3370	**-0.71**	Gen	-5.13
SCTG	SHELL SCOTFORD	43	**3.75**	Gen	-0.67
GWW1	SODERGLEN	358	**2.30**	Gen	-2.12
SPR	SPRAY	310	**-1.37**	Gen	-5.79
0000038511	SPRING COULEE	4246	**0.91**	Gen	-3.51
STMY	ST MARY IPP	3448	**0.00**	Gen	-4.42
0000006711	STIRLING	4280	**-0.06**	Gen	-4.48
ST1	STURGEON 1	1166	**0.17**	Gen	-4.25
ST2	STURGEON 2	1166	**0.17**	Gen	-4.25
IEW1	SUMMERVIEW 1	336	**3.34**	Gen	-1.08
Project_393_2	SUMMERVIEW 2	336	**3.34**	Gen	-1.08
CRS1	SUMMIT CROSSFIELD ENERGY CENTRE	503	**1.02**	Gen	-3.40
CRS2	SUMMIT CROSSFIELD ENERGY CENTRE	503	**1.02**	Gen	-3.40
CRS3	SUMMIT CROSSFIELD ENERGY CENTRE	503	**1.02**	Gen	-3.40
SCR3	SUNCOR HILLRIDGE WIND FARM	389	**0.33**	Gen	-4.09
SCR2	SUNCOR MAGRATH	251	**1.06**	Gen	-3.36
SCR1	SUNCOR MILLENIUM	1208	**6.21**	Gen	1.79
SD1	SUNDANCE #1	135	**5.79**	Gen	1.37
SD2	SUNDANCE #2	135	**5.79**	Gen	1.37
SD3	SUNDANCE #3	135	**5.79**	Gen	1.37
SD4	SUNDANCE #4	135	**5.79**	Gen	1.37
SD5	SUNDANCE #5	135	**5.79**	Gen	1.37
SD6	SUNDANCE #6	135	**5.79**	Gen	1.37
SCL1	SYNCRUDE	1205	**6.03**	Gen	1.61
341S025	SYNCRUDE STANDBY (848S)	1200	**-3.80**	DOS	-8.22
TAB1	TABER WIND	343	**-0.10**	Gen	-4.52
TAY1	TAYLOR HYDRO	670	**1.68**	Gen	-2.74
TAY2	TAYLOR WIND PLANT	670	**1.68**	Gen	-2.74
THS	THREE SISTERS	379	**-1.21**	Gen	-5.63
VVW2	VALLEYVIEW 2	1172	**0.65**	Gen	-3.77
VVW1	VALLEYVIEW 1	1171	**0.68**	Gen	-3.74
WB4	WABAMUN #4	133	**5.03**	Gen	0.61
WTRN	WATER IPP	3449	**0.00**	Gen	-4.42
0000040511	WAUPISOO	2417	**2.46**	Gen	-1.96
WST1	WESGEN	14	**0.00**	Gen	-4.42
EAGL	WHITE COURT	410	**0.00**	Gen	-4.42

Notes:
* MP-ID - point where loss factors assessed
For loss factors, "-" means credit, "+" means charge
Loss factors effective from January 01, 2010 to December 31 2010.
System Average Losses, %: 4.42
For more information, please visit www.aeso.ca

Table 2 – 2010 Tie Loss Factors

Tie	Transaction Type	Loss Factor (%)	Average Loss Charge (%)	Settlement LF (%)
BC	**Import**	0.19	0.90	1.09
	Export	-	0.95	0.95
SK	**Import**	1.78	2.50	4.28
	Export	-	2.30	2.30
MATL	**Import**	1.26	-	1.26
	Export	-	-	-

4.0 2010 and 2009 Loss Factors Calculation

The following items illustrate the similarities and major differences between the 2010 and 2009 loss factors:

1. Load Treatment in the Loss Factor Software – Again in the 2010 loss factor calculation, only transmission loads were unassigned and were not included in the calculation to be consistent with our methodology. This refinement continues to represent the most appropriate load assignment process. The loss factors are based on generation less the behind the fence load levels at all relevant Generation Buses while maintaining the appropriate GSO level at the MPID bus.

2. Generation & Load Levels – The 2009 Generic Stacking Order was used to populate the loss factor base cases for the 2009 loss factor calculation. The 2010 GSO has been utilized in the same way for the 2010 Cases. The 2010 and 2009 loss factors use actual average generation levels to determine loss factors based on the AESO Rule. Please refer to Appendix-I for a sample comparison. In general, the total gross generation level is higher in the 2010 cases as behind-the-fence loads are added. The addition of behind-the-fence loads has no impact on the loss factor calculation. The load is scaled down in six out of twelve 2010 cases to meet the total GSO capacity. The seasonal load duration curves are included in Appendix II.

3. Additions and Decommissioning of Generation – Changes in the existing generators' net to grid (NTG) output include an overall reduction in output for the province's coal units. The reduction in generation is in part due to scheduled outages, forced outages, and overall flattening of Alberta demand due mainly to the recent recession. There are a number of new generators in the new 2010 loss factor base cases. The most significant addition is Keephills 3 (KH3), added in the fall cases, but due to its commissioning it will not be at its maximum capacity for some time. Other additions include south wind generation projects added according to their

in-service-date. The only major generator decommissioning is Wabamum 4 which is out of service for all but the winter cases.

4. ISD Equivalents – The Industrial System Designations (ISD's) are modeled in the same way as they were modeled in the 2009 cases. The total ISD load and generations are modeled at the ISD interface bus with the rest of the AIES.

5. Inter Tie Flows –The 2007 Transmission Regulation directs the use of same loss factor calculation methodology (average impact on system losses) for all loss factor customers. The Regulation now include using the historical average net flow on the tie lines in the 2010 base cases. The 2010 import loss factors are higher in 2010 because of higher import from BC compared to 2009 and higher generation in the south area.

6. Topology – In the 2010 cases, additions during 2009 and expected additions in 2010 have been added. The major 2009 transmission change is the conversion from 240 kV to 500 kV on the KEG loop. The KEG 500 kV addition reduces system losses. The major 2010 transmission change is the Brintnell-Wesley Creek 240 kV. All other 2010 system additions (such as the Little Smoky SVC addition, et al) have been modeled in the 2010 cases.

7. Average System Losses and Shift Factor – the annual loss forecast for 2010 is 2.64 TWH or 4.42% while average system loss forecast was 4.55% for 2009. Please refer to Table 3 to see the effects of the change in average losses.

Table 3 – 2010 vs. 2009 Final Loss Factors

	2009	2010
System average loss	**4.55%**	**4.42%**
Shift Factor	**0.82%**	**1.05%**
Loss recovered by Raw Loss Factor	**3.73%**	**3.37%**

8. Weighting Factor – In a continuing effort to enhance accuracy, the AESO has applied unequal weighting factors to the raw loss factors based on historical load levels. Please see Table 4 for the 2010 weighting factors used in the loss factor calculation.

Table 4 – 2010 Weighting Factors

	Winter		Spring		Summer		Fall	
	Duraion	Weight	Duraion	Weight	Duraion	Weight	Duraion	Weight
High	150	6.9%	50	2.3%	100	4.5%	75	3.4%
Medium	1075	49.8%	1350	61.2%	1225	55.5%	1275	58.4%
Low	935	43.3%	807	36.6%	883	40.0%	835	38.2%

5.0 2010 Overall Loss Factor Results

The 2010 loss factors are similar to the 2009 loss factors with some minor changes reflecting the results of load scaling, dispatched generation, load and transmission projects. The high level results are summarized below:

1. The Rainbow area has less credit or more charges than in the 2009 Loss Factors. These results are primarily due to the addition of a 240 kV line between Brintnell-Wesley Creek. In addition the flow out of Rainbow area has increased. The Rainbow area loss factors are historically sensitive to load and generation changes. A small deviation in the Rainbow Area net flow can result in a swing in the loss factors on the generators. The loss factor sensitivity in the area is consistent with previous years' findings.

2. The South area receives less credit/more charges compared to 2009. Higher net generation, higher import from BC and new generation projects have resulted in these changes to loss factors in 2010.

3. The Lake Wabamun area loss factors are lower relative to the 2009 loss factors. The changes are primarily due to lower generation and higher load in the area.

4. Sheerness and Battle River loss factors are higher in 2010. Sheerness' increase is due to a larger shift factor for 2010 combined with additional generation online for the fall cases. Battle River's load and generation

both increased for 2010; however the increase in generation is greater than the increase in local area load resulting in an increased net out flow.

5. The Fort McMurray area loss factors are generally lower in 2010 due to the new 240 kV Brintnell-Wesley Creek line even with higher generation dispatches occurring in the area. The higher dispatches have resulted in higher net flow out of the area in the cases but the additional transmission path to Edmonton helps to lower the losses.

6.0 Loss Factor Map

The AESO has provided a loss factor map (Figure #1) showing the maximum and minimum loss factors in each area. The tie lines and DOS loss factors are also shown. Each facility with a loss factor is shown in the designated area. Average historical flows (January 01, 2009 – September 30, 2009), in response to stakeholder requests, are included.

7.0 Conclusion

The AESO has published the 2010 loss factors as per the Loss Factor Rule, and has made the calculation and provided results using the best information available. The data process includes gathering data from the billing system, new customer facilities, and system load and topology features. The loss factor software was updated to reflect the 2007 Transmission Regulation changes. The AESO performs the loss factor calculation process initially and has the results independently run for comparison purposes. Again, the independent test for 2010 has yielded the same final results.

The AESO published the draft values on October 21, 2009 for stakeholders' review. The AESO has made some minor changes in the base cases and this information has been updated on the AESO web site. The 2010 loss factors will be applicable from January 01 to December 31 2010.

APPENDIX I. Case Comparison - AIL

Winter Peak Case

	Generation (MW)	Load (MW)			Loss (MW)		Import (MW)	Export (MW)
		Static	Motor	Total	Shunt	Transmission		
2010		9253.1	246.0	9499.1	21.4	308.5	459.9	-
2009		8691.8	520.4	9212.2	20.4	340.6	456.7	-
2010 - 2009		**561.3**	**-274.4**	**286.9**	**1.0**	**-32.1**		

Winter Medium Case

	Generation (MW)	Load (MW)			Loss (MW)		Import (MW)	Export (MW)
		Static	Motor	Total	Shunt	Transmission		
2010		8888.3	227.3	9115.6	21.5	276.9	209.1	-
2009		7713.3	515.8	8229.1	20.7	300.9	37.8	-
2010 - 2009		**1175.0**	**-288.5**	**886.5**	**0.8**	**-24.0**		

Winter Low Case

	Generation (MW)	Load (MW)			Loss (MW)		Import (MW)	Export (MW)
		Static	Motor	Total	Shunt	Transmission		
2010		7811.4	357.6	8169.0	21.5	265.8	-	155.3
2009		6776.7	571.6	7348.3	21.0	288.1	-	317.2
2010 - 2009		**1034.7**	**-214.0**	**820.8**	**0.5**	**-22.3**		

Spring Peak Case

	Generation (MW)	Load (MW)			Loss (MW)		Import (MW)	Export (MW)
		Static	Motor	Total	Shunt	Transmission		
2009		8688.5	230.3	8918.8	21.5	258.4	402.8	-
2009		8163.9	587.0	8750.9	20.4	327.9	258.3	-
2010 - 2009		**524.5**	**-356.7**	**167.8**	**1.1**	**-69.5**		

Spring Medium Case

	Generation (MW)	Load (MW)			Loss (MW)		Import (MW)	Export (MW)
		Static	Motor	Total	Shunt	Transmission		
2010		8132.6	215.7	8348.3	21.5	232.5	173.3	-
2009		7377.1	528.4	7905.5	20.8	255.5	113.8	-
2010 - 2009		**755.5**	**-312.7**	**442.8**	**0.7**	**-23.0**		

Spring Low Case

	Generation (MW)	Load (MW)			Loss (MW)		Import (MW)	Export (MW)
		Static	Motor	Total	Shunt	Transmission		
2010		7368.2	214.4	7582.6	21.3	201.8	-	20.2
2009		6509.8	437.1	6946.9	20.6	221.3	-	25.7
2010 - 2009		**858.5**	**-222.7**	**635.7**	**0.7**	**-19.5**		

Summer Peak Case

	Generation (MW)	Load (MW)			Loss (MW)		Import (MW)	Export (MW)
		Static	Motor	Total	Shunt	Transmission		
2010		9010.3	227.6	9237.9	21.5	273.8	408.4	-
2009		8550.7	586.4	9137.1	20.7	294.1	397.2	-
2010 - 2009		**459.6**	**-358.8**	**100.8**	**0.8**	**-20.3**		

Summer Medium Case

	Generation (MW)	Load (MW)			Loss (MW)		Import (MW)	Export (MW)
		Static	Motor	Total	Shunt	Transmission		
2010		8256.3	251.7	8508.0	21.5	229.7	147.6	-
2009		7364.2	578.5	7942.7	20.8	246.8	72.5	-
2010 - 2009		**892.2**	**-326.8**	**565.4**	**0.7**	**-17.1**		

Summer Low Case

	Generation (MW)	Load (MW)			Loss (MW)		Import (MW)	Export (MW)
		Static	Motor	Total	Shunt	Transmission		
2010		7227.4	242.4	7469.8	21.7	174.9	185.4	-
2009		6477.7	549.8	7027.5	20.7	216.4	-	179.7
2010 - 2009		**749.7**	**-307.4**	**442.3**	**1.0**	**-41.5**		

Fall Peak Case

	Generation (MW)	Load (MW)			Loss (MW)		Import (MW)	Export (MW)
		Static	Motor	Total	Shunt	Transmission		
2010		9249.1	266.4	9515.5	21.7	295.7	359	-
2009		8515.0	520.4	9035.4	20.4	340.9	146.5	-
2010 - 2009		**734.2**	**-254.0**	**480.2**	**1.3**	**-45.2**		

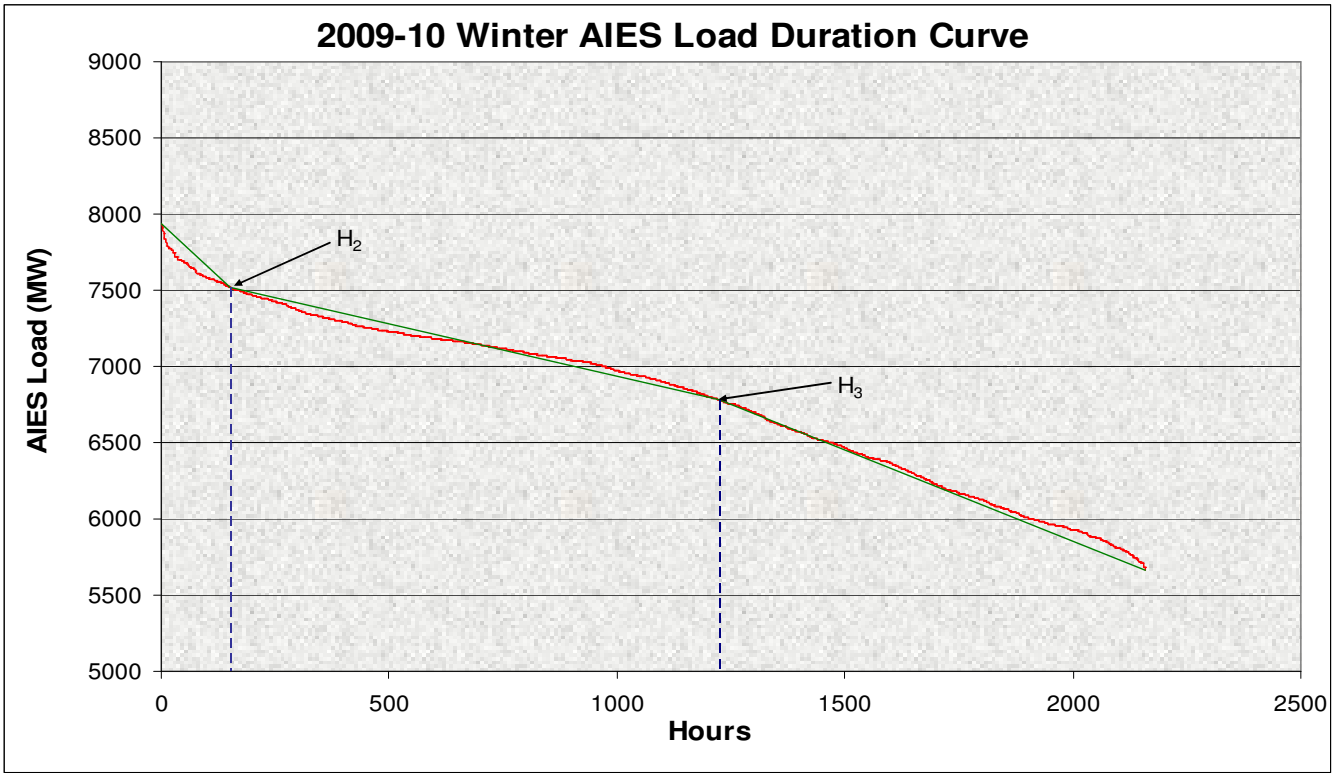
Fall Medium Case

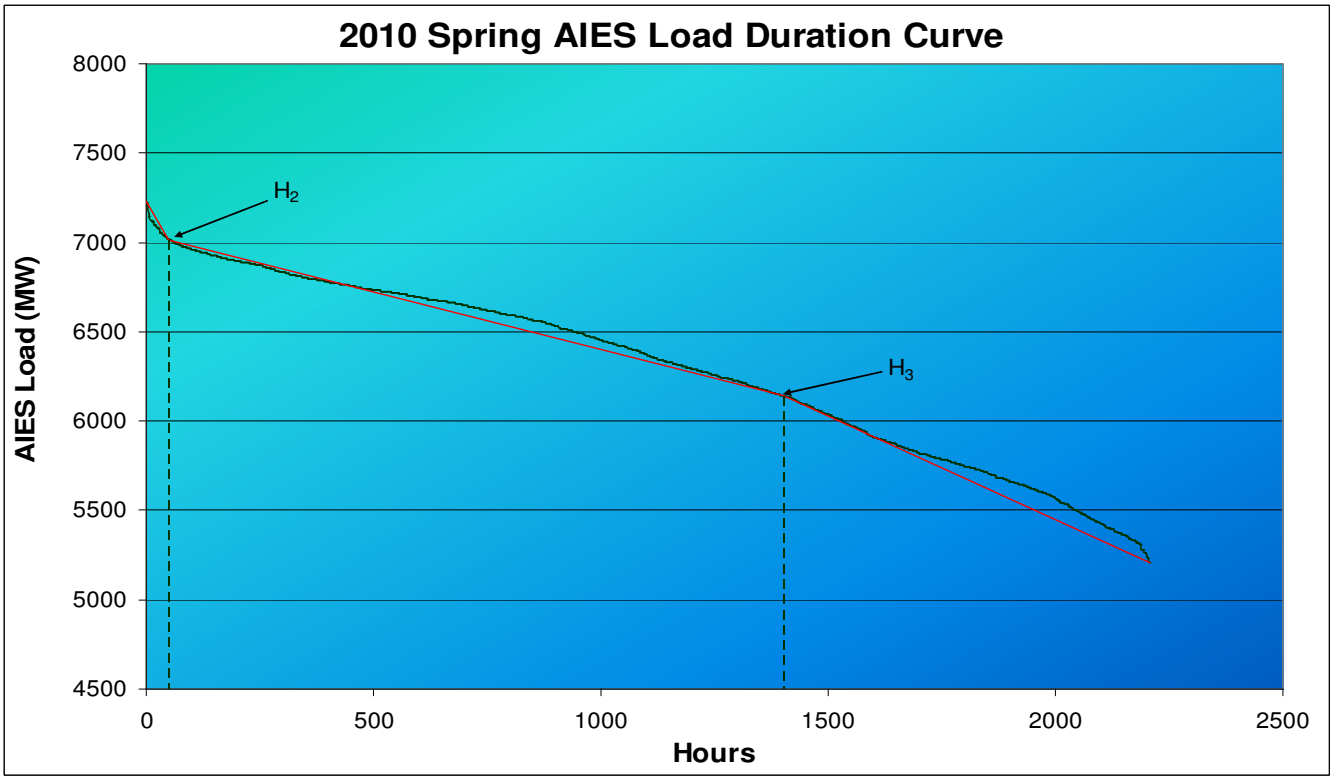
	Generation (MW)	Load (MW)			Loss (MW)		Import (MW)	Export (MW)
		Static	Motor	Total	Shunt	Transmission		
2010		8529.7	252.8	8782.5	21.7	262.2	267.4	-
2009		7781.0	548.8	8329.8	20.4	291.8	53.9	-
2010 - 2009		**748.7**	**-296.0**	**452.7**	**1.3**	**-29.6**		

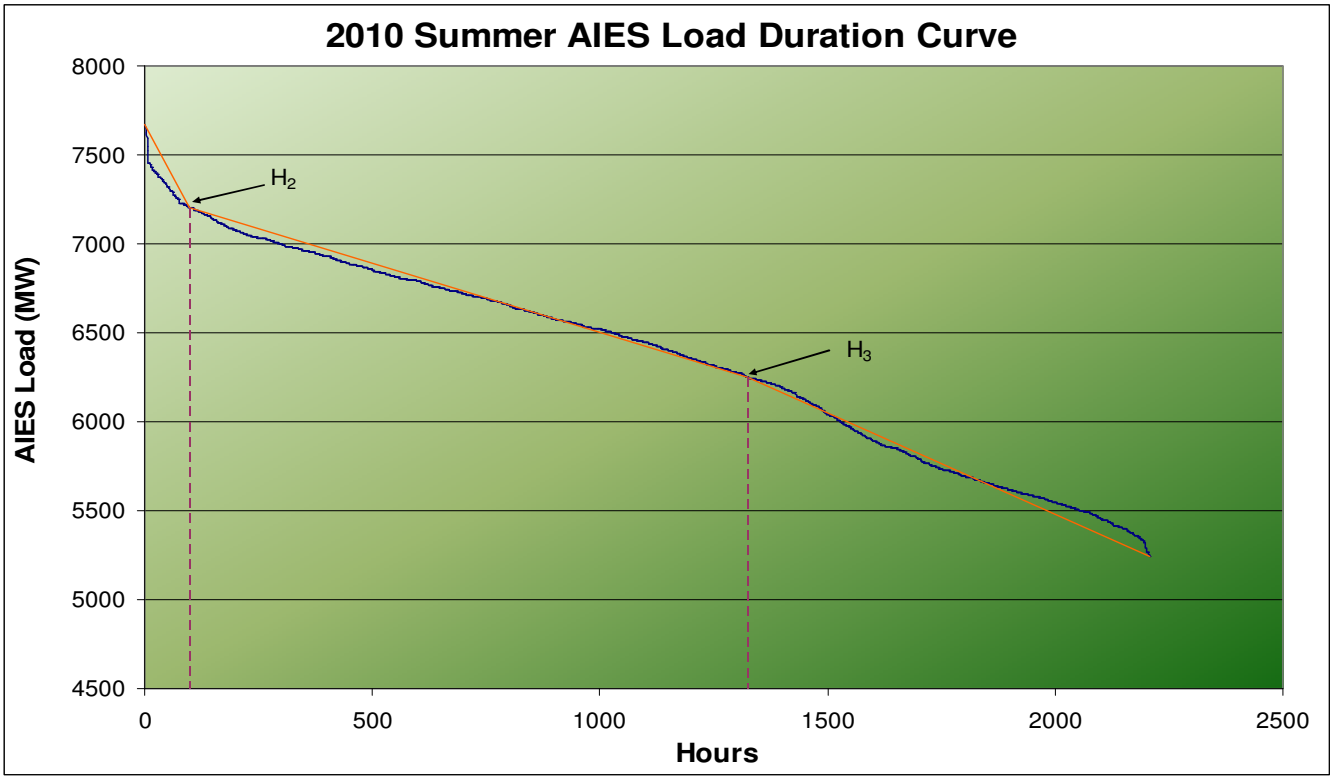
Fall Low Case

	Generation (MW)	Load (MW)			Loss (MW)		Import (MW)	Export (MW)
		Static	Motor	Total	Shunt	Transmission		
2010		7500.0	274.7	7774.7	21.9	220.1	-	67.7
2009		7055.2	524.0	7579.1	20.4	266.3	-	246.0
2010 - 2009		**444.8**	**-249.3**	**195.5**	**1.5**	**-46.2**		

APPENDIX II. Load Duration Curves






2010 Summer AIES Load Duration Curve
AIES Load (MW)
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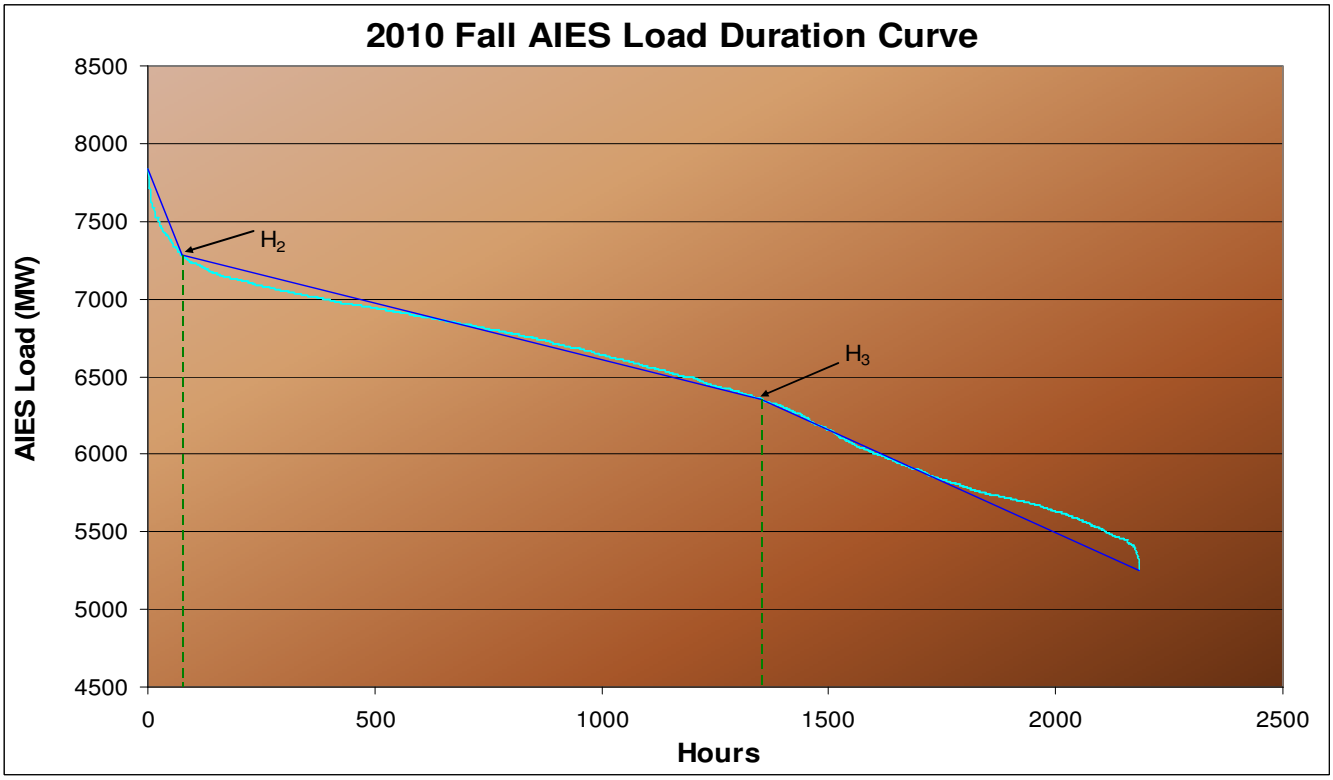
7500
7000
6500
6000
5500
5000
4500
0
500
1000
1500
2000
2500
Hours
H2
H3


2010 Fall AIES Load Duration Curve
AIES Load (MW)
8500
8000
7500
7000
6500
6000
5500
5000
4500
0
500
1000
1500
2000
2500
Hours
H2
H3

2010 Loss Factor Map Version 1 Nov 5, 2009

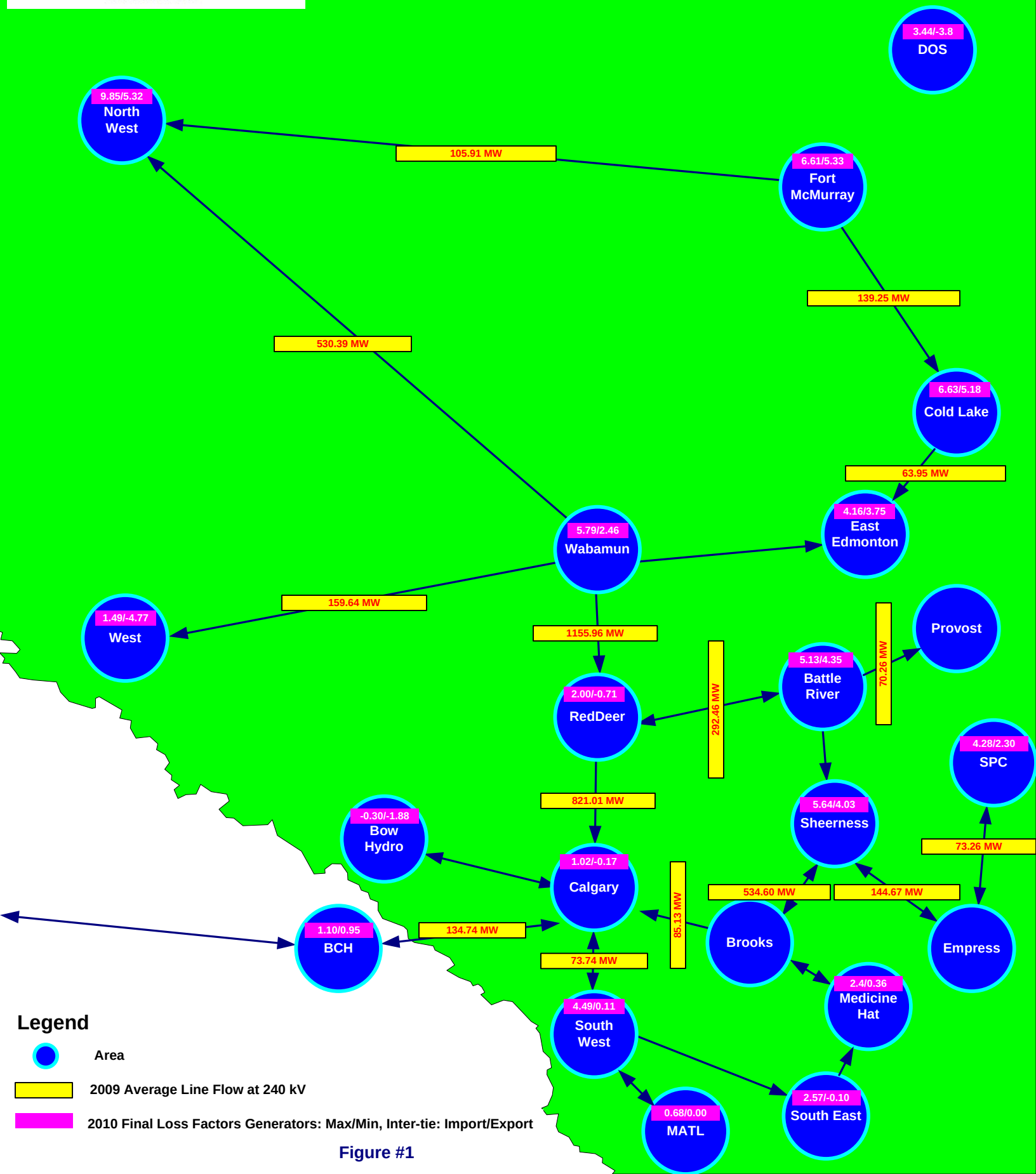


Figure #1

Location	MPID	Loss Factor(%)	Gen Name
North West	RB1	5.36	RAINBOW 1
	RB2	5.39	RAINBOW 2
	RB3	5.50	RAINBOW 3
	RL1	5.76	RAINBOW 4
	RB5	5.32	RAINBOW 5
	FNG1	9.85	FORT NELSON
West	HRM	1.49	HR MILNER
	PH1	-4.77	POPLAR HILL
	NPC1	-4.39	NORTHSTONE ELMWORTH
	DAI1	-0.38	DIASHOWA
	BCR2	-1.90	BEAR CREEK G2
	BCRK	-1.90	BEAR CREEK G1
	GPEC	-2.10	GRANDE PRAIRIE ECOPOWER CENTRE
	ST1	0.17	STURGEON 1
	ST2	0.17	STURGEON 2
	VVW1	0.68	VALLEYVIEW 1
	VVW2	0.65	VALLEYVIEW 2
	WEY1	-1.63	P&G WEYERHAUSER
	NPP1	-4.37	NORTHERN PRAIRIE POWER PROJECT
Fort McMurray	MKR1	6.44	MUSKEG
	MKRC	6.07	McKAY RIVER
	SCL1	6.03	SYNCRUDE
	SCR1	6.21	SUNCOR MILLENIUM
	NX02	5.62	NEXEN OPTI
	MEG1	5.33	MEG ENERGY
	CNR5	6.61	CNRL HORIZON
Wabamun	GN1	5.33	GENESEE 1
	GN2	5.33	GENESEE 2
	GN3	5.33	GENESEE 3
	KH1	5.36	KEEPHILLS #1
	KH2	5.36	KEEPHILLS #2
	Project_500_1	4.10	KEEPHILLS #3
	SD1	5.79	SUNDANCE #1
	SD2	5.79	SUNDANCE #2
	SD3	5.79	SUNDANCE #3
	SD4	5.79	SUNDANCE #4
	SD5	5.79	SUNDANCE #5
	SD6	5.79	SUNDANCE #6
	WB4	5.03	WABAMUN #4
	0000045411	2.86	BUCK LAKE
	Project692_1_SUP	4.28	DAPP POWER WESTLOCK EXPANSION

	0000040511	2.46	WAUPISOO
Cold Lake	IOR1	6.63	MAHKESES COLD LAKE
	PR1	5.18	PRIMROSE
	EC04	6.33	FOSTER CREEK G1
East Edmonton	SCTG	3.75	SHELL SCOTFORD
	TC02	3.95	REDWATER
	ENC1	4.16	CLOVER BAR 1
	ENC2	4.16	CLOVER BAR 2
	ENC3	4.16	CLOVER BAR 3
	DOWGEN15M	4.01	DOW GTG
Red Deer	NOVAGEN15M	1.41	NOVA JOFFRE
	BIG	2.00	BIGHORN
	BRA	1.94	BRAZEAU
	SHCG	-0.71	SHELL CAROLINE
Calgary	CES1	0.13	ENMAX CALGARY ENERGY CENTRE CTG
	CES2	0.13	ENMAX CALGARY ENERGY CENTRE STG
	TC01	0.03	CARSELAND
	EC01	-0.17	CAVAILIER
	NX01	0.06	BALZAC
	CRS1	1.02	SUMMIT CROSSFIELD ENERGY CENTRE
	CRS2	1.02	SUMMIT CROSSFIELD ENERGY CENTRE
	CRS3	1.02	SUMMIT CROSSFIELD ENERGY CENTRE
Bow Hydro	BAR	-1.17	BARRIER
	BPW	-0.74	BEARSPAW
	CAS	-1.88	CASCADE
	GHO	-1.13	GHOST
	HSH	-1.09	HORSESHOE
	KAN	-1.02	KANANASKIS
	POC	-0.77	POCATERRA
	INT	-0.30	INTERLAKES
	RUN	-1.31	RUNDLE
	THS	-1.21	THREE SISTERS
	SPR	-1.37	SPRAY
South East	SCR2	1.06	SUNCOR MAGRATH
	TAY1	1.68	TAYLOR HYDRO
	TAY2	1.68	TAYLOR WIND PLANT
	0000006711	-0.06	STIRLING
	SCR3	0.33	SUNCOR HILLRIDGE WIND FARM
	TAB1	-0.10	TABER WIND
	KHW1	2.57	KETTLES HILL WIND ENERGY PHASE 2
Battle River	BR3	5.13	BATTLE RIVER #3
	BR4	5.13	BATTLE RIVER #4

	BR5	4.35	BATTLE RIVER #5
Medicine Hat	CMH1	0.36	CITY OF MEDICINE HAT
	Project513_1_SUP	2.40	PEACE BUTTE WIND FARM
Sheerness	SH1	4.03	SHEERNESS #1
	SH2	4.03	SHEERNESS #2
	Project723_1_SUP	5.64	GREENGATE HALKIRK WIND PROJECT
South West	AKE1	1.91	McBRIDE
	DRW1	1.74	DRYWOOD 1
	IEW1	3.34	SUMMERVIEW 1
	CR1	2.51	CASTLE RIVER
	OMRH	2.05	OLDMAN
	0000022911	1.38	GLENWOOD
	0000039611	2.48	PINCHER CREEK
	0000038511	0.91	SPRING COULEE
	CRE1	4.49	COWLEY EXPANSION 1
	CRE2	4.49	COWLEY EXPANSION 2
	CRE3	4.49	COWLEY NORTH
	CRWD	4.49	COWLEY RIDGE WIND POWER PHASE2
	0000001511	0.94	FT MACLEOD
	PKNE	4.49	COWLEY RIDGE WIND POWER PHASE1
	GWW1	2.30	SODERGLEN
	0000034911	0.11	ALTAGAS PARKLAND
	BTR1	1.81	BLUE TRAIL WIND FARM
	Project_393_2	3.34	SUMMERVIEW 2
	Project519_1_SUP	2.81	OLD MAN RIVER WIND FARM
BCH	BCHIMP	1.10	BCHIMP
	BCHEXP	0.95	BCHEXP
SPC	SPCIMP	4.28	SPCIMP
	SPCEXP	2.30	SPCEXP
MATL	MATLIMP	0.68	MATLIMP
	MATLEXP	0.00	MATLEXP
DOS	0000016301	0.52	AMOCO EMPRESS (163S)
	0000079301	3.44	ANG COCHRANE (793S)
	341S025	-3.80	SYNCRUDE STANDBY (848S)