Generator System Contribution Policy

System Contribution Values For 2010-2011

February 11, 2009

Contents

Summary

The Transmission Regulation (AR 86/2007) requires that contributions be paid by new generators interconnecting to the Alberta Interconnected Electric System ("AIES").

The Alberta Electric System Operator ("AESO") prepares "System Contribution" values every other year. The values apply for the two subsequent years. The previous version of System Contribution values for the years 2008-2009 was prepared on August 16, 2007 and updated on June 25, 2008 to reflect the changes in the Transmission Regulation. This version continues to follow the same methodology and updates the values for the years 2010-2011.

For 2010-2011 System Contribution purposes, Alberta is divided in to six planning regions ("Regions"). Each Region is made up of planning areas ("Areas"). The System Contribution amounts for each Region for the years 2010-2011 are as follows:

System Contribution Amounts for 2010-2011

Region	System Contribution Factor	Regional Contribution $/MW	Base Contribution $/MW	System Contribution $/MW
South	0.3756	15,000	10,000	25,000
Calgary	0.0000	0	10,000	10,000
Central	0.3091	12,400	10,000	22,400
Edmonton	0.5615	22,500	10,000	32,500
Northeast	1.0000	40,000	10,000	50,000
Northwest	0.0000	0	10,000	10,000

System Contributions are determined and refunded under Articles 9.11 and 9.12 of the AESO's Terms and Conditions of Service. Satisfactory annual performance of generators is assessed under Independent System Operator ("ISO") Rule 9.5.

Introduction

The Transmission Regulation outlines a number of provisions regarding transmission development for Alberta including details on contributions to be paid by new generators interconnecting to the AIES. The System Contribution policy described in this document reflects the intent of Part 5 (Sections 28 to 30) of the Transmission Regulation.

Owners of generating units pay the following costs when connecting to the transmission system:

1. "Local Contribution" being the local connection costs as defined by the ISO, plus
2. "System Contribution" being the sum of the following:
   (a) $10,000/MW for upgrades to existing transmission facilities;
   (b) $0 to $40,000/MW payable by generators that locate in a Region of the transmission system where generation exceeds load. The amount of the charge is to be determined based on the location of the generating unit relative to load.

The System Contribution, 2 (a) and (b), is refunded over not more than 10 years from the date the generating unit begins to generate electric energy for commercial purposes, subject to satisfactory operation of the generating unit determined under ISO Rules.

The System Contribution policy framework provided by the Transmission Regulation does not apply to generators connected to the transmission system before January 1, 2006, or to a generating unit that has a capacity of 1 MW or less.

Generators connecting behind a Distribution Point-of-Connection ("POC") are not required to pay the AESO a System Contribution. The Distribution Facility Owner ("DFO") who has a System Access Service Agreement ("SASA") with the AESO may be required to pay a System Contribution if it requires Supply Transmission Service ("STS") at the POC.

The Alberta Utilities Commission or "AUC" (previously the Alberta Energy and Utilities Board or "EUB") has approved Articles 9.11 and 9.12 of the Terms and Conditions of Service in the AESO's Tariff to reflect the requirements of the Transmission Regulation. As well, ISO Rule 9.5.2 was updated on November 13, 2008 to align with changes to the Electric Utilities Act and Transmission Regulation.

The previous version of System Contribution values for 2008-2009 was issued on August 16, 2007 and subsequently updated on June 25, 2008. The 2008-2009 System Contribution values reflect changes to the AIES up till the values were prepared. The zonal and inter-zonal calculations, principles used to define the contribution zones, data requirements, and application provisions continue to adhere to the methodology discussed during the AESO's 2005/2006 General Tariff Application ("GTA"). To ensure the System Contribution observes the previously discussed principles, the AESO has changed the number of System Contribution zones from five to six for 2010-2011. The following sections reflect recent revisions to the Terms and Conditions of Service, and outline the rationale for the methodology, along with the System Contribution values for 2010-2011.

System Contribution Zones

In preparing the 2010-2011 System Contribution values, the AESO reviewed the principles used to define the original System Contribution zones to ensure consistency with those principles and the intent stated in the Transmission Regulation.

The “Area Definition” principles that assisted in the development of the original System Contribution “area” boundaries stated that zones should:

1. reflect current and emerging generation basins;
2. reflect current and emerging load centres;
3. reflect, as much as possible, how the AESO will study and plan for transmission system development; and
4. be geographically broad.

The AESO also relied on its 10-Year Transmission System Plan (“10-Year Plan”), currently being prepared and expected to be published later in 2009.

Of note is that some of the principles and planning considerations discussed in the earlier 10-Year Plan for 2007-2016 have changed in the new plan. To ensure the System Contribution policy adheres to the principle of reflecting how the AESO will study and plan for transmission system development, revisions to the System Contribution zones established in 2008 were required.

The information and forecasts from the 10-Year Plan support the System Contribution zone determination and related contribution calculation. For further information please refer to the AESO’s 10-Year Plan which can be found on the AESO’s website at www.aeso.ca by following the path Transmission ► Planning ► Long-Term Planning ► 10-Year Plan.

10-Year Plan Cut-Plane Summary

The 10-Year Plan outlines proposed transmission developments for the AIES along with the supporting rationale. The 10-Year Plan also discusses planning considerations from both a bulk system and a regional perspective. The bulk system is the integrated system of transmission lines and substations that delivers electric power from major generating stations to load centres. The bulk transmission system may be thought of as moving power from generation surplus regions in Alberta to load regions. The bulk system also provides support between the regions during various contingencies and special operating conditions.

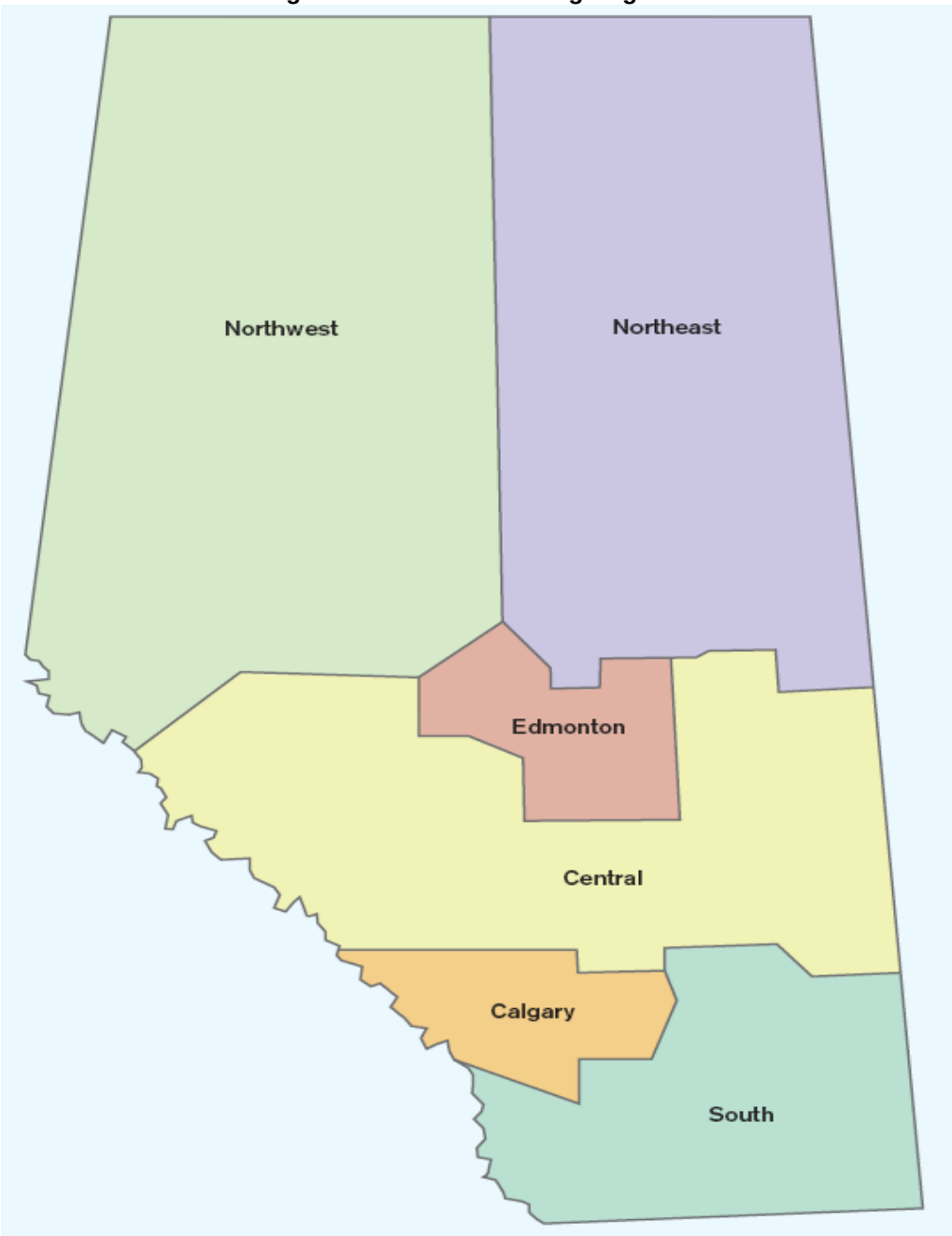
The bulk system is studied using several transmission “cut-planes”. These cut-planes combine the loading on groups of transmission lines that connect two areas within the bulk system. Transmission system adequacy is tested by evaluating the impact of various system conditions and contingencies on these cut-planes. This adequacy is then evaluated based on these cut-planes under the loading conditions which most stress these circuits.

Figure 1 identifies major transmission lines and four Alberta cut-planes associated with the bulk transmission system. Figure 1 also includes the two Western Electricity Coordinating Council (“WECC”) cut-planes for transmission lines to British Columbia and Saskatchewan but these two cut-planes are not relevant to the determination of the System Contribution values.

Figure 1: Bulk System Cut-planes

In studying the bulk transmission system and its internal cut-planes, AESO planners divide the AIES into six major Regions. Figure 2 identifies the six Regions used in the 10-Year Plan and for the 2010-2011 System Contribution values.

Figure 2 - The Six Planning Regions



A description of the Regions associated with the bulk transmission system plan and corresponding map of Alberta are provided in Appendices A and B.

The bulk system cut-planes in Figure 1 reflect the transfer of power between generating stations and load centres, while the six Regions in Figure 2 represent geographical areas that are

convenient for analyzing the physical transmission system in Alberta. For determination of System Contribution values, the six Regions were considered more relevant to the consideration of "the location of the generating unit relative to load" as required by the Transmission Regulation.

Areas Where Generation Exceeds Load

The Regional Contribution applies to a given Region where "owners of generating units…locate in an area of the transmission system where generation exceeds load."[1] The determination of whether generation exceeds load should be based on the following principles.

It should:

1. be calculated in a simple and transparent manner;
2. be stable and predictable;
3. be based on the generation installed and committed to be installed (net to grid) in the area and the forecast load developments (net from grid) in an area over a reasonable timeframe;
4. reasonably account for a range of operational patterns; and
5. reasonably account for the transition of an area from net import to net export.

Given these principles, the AESO included generation capacity based on current STS contracts, with adjustments for capacity additions, generator upgrades, and retirements over the next five years, through to 2013 based on Construction Commitment Agreements ("CCAs"). Where these values are greater than the coincident Regional peak load forecasts (non-coincident with system peak) within each Region, the Region is defined as demonstrating generation in excess of load.

Zonal and Inter-Zonal Calculation

In order to recognize that an area may evolve from being a net importer of electricity to a net exporter, the AESO applies a zonal factor as part of the derivation of the Regional Contribution. Additionally, an inter-zonal factor was developed to approximate the relative magnitude of transporting energy from the generation area to the net load areas.

The Regional Contributions are meant to vary based on generator's location in Alberta. The sum of the specific zonal and inter-zonal factors is multiplied by the $40,000/MW threshold (specified in the Transmission Regulation) to arrive at Regional Contribution. The following information was used to derive the zonal and inter-zonal factors.

The calculation of zonal and inter-zonal factors is consistent with the methodology discussed in the "Generator System Contribution Policy Recommendations" included in the AESO's 2006 GTA which can be found on the AESO's website at www.aeso.ca by following the path Tariff ► Previous Applications ► 2006 Tariff Application ►2005-01-31 Appendix D – Generator Contribution Policy),

Zonal factor

Zonal factors are calculated by dividing the committed generation in each zone by the forecast peak load for each zone. A generator is considered committed when it signs either a STS agreement or a CCA. A zonal factor of zero is applied where generation is less than or equal to

[1] Transmission Regulation, Section 29(2)(b).

load in a Region, a factor of zero to 0.33, on a linear basis, where generation is greater than load in a Region up to twice the load, and a factor of 0.33 where generation is greater than twice the load in a Region. These factors recognize that an area once intended to serve load can generally absorb enough generation in the area to match the load up to 100% before improvements may be required to the transmission system to accommodate exporting energy out of the area.

Zone/Region	Peak Load*	Committed Generation	Generation ÷ Load	Zonal Factor
South	1001 MW	1699 MW	1.70	0.2325
Calgary	2473 MW	0 MW	0	0.0000
Central	1693 MW	2659 MW	1.57	0.1901
Edmonton	2831 MW	4886 MW	1.73	0.2419
Northeast	1296 MW	3192 MW	2.46	0.3333
Northwest	1215 MW	782 MW	0.64	0.0000
TOTAL	**10509 MW**	**13218 MW**		

* Forecast 2013 Peak Load

Inter-zonal factor

The inter-zonal factor is determined using a number of variables. The calculation considers load growth in a Region, distance between Regions, and path adjustments.

Significant load centres

The AESO acknowledges the capability of the existing transmission system by using forecast load growth in establishing “generation location relative to load”. Similar to the Transmission Development Policy Paper of November 2003, the AESO uses physical distance from a central point in each Region to determine the relative impact in respect of load growth in net load Regions. The central point in each Region is a location nearest the major load centres in the Region. The proposed central points are identified in the table below:

Region	Load Centre	Explanation
South	Lethbridge	Lethbridge is the most significant load centre in the Region
Calgary	Calgary	Calgary is the most significant load centre in the Region
Central	Red Deer	Red Deer is the most significant load centre in the Region
Edmonton	East Edmonton	Edmonton is the most significant load centre in the Region
Northeast	Fort McMurray	Fort McMurray is the most significant load centre in the Region
Northwest	Valleyview	Valleyview is roughly equidistant between the major load centres in Swan Hills

Physical distances

The physical distance is the distance in kilometres between each of the central points identified above.

Forecast peak load growth
The forecast for the 5-year period is used to determine net peak load growth in each Region.

Dominant path adjustments
Dominant path adjustments are applied, in order to broadly account for the impact that generation development in an area has on system flows. Dominant path flows are recognized in the distance component of the System Contribution calculation.

A qualitative assessment was performed to recognize dominant path flows in the distance component of the System Contribution calculation. The rules in making adjustments to dominant path flows are:

1. Load growth in net load areas will be considered in distance calculations.
2. Net load areas adjacent to a specific net generation area will be considered in distance calculations.
3. Net load areas not adjacent to specific net generation areas will be considered in distance calculations where the flow from the area is concurrent with a dominant path flow.

Load growth in net generation areas has not been considered in the distance calculations in order to simplify the calculations and avoid the need for a more sophisticated analysis.

Each load Region in respect of each generation Region is assigned a "Dominant Path Adjustment" value of one ("1") where all three rules have been met and zero ("0") where one or more are not met. A dominant path adjustment table is provided in Appendix C and the associated chart illustrating the dominant power flows between Regions is provided in Appendix D.

Inter-zonal factor calculation
The inter-zonal factor for each Region is calculated considering each of the above variables. It is determined by multiplying the physical distance of each Region by the forecast peak load growth, and then multiplied by the dominant path adjustment. Inter-zonal factors are then scaled to a range of zero to 0.67. The calculations for the inter-zonal factors are provided in Appendix C.

System Contribution Values

The values calculated for the zonal and inter-zonal factors for each Region are used to determine System Contribution values for each Region. The System Contribution is the sum of $10,000/MW ("Base Contribution" amount) for upgrades to existing transmission facilities and $0/MW to $40,000/MW (Regional Contribution amount) payable in Regions where generation exceeds load. The detailed calculations of the factors and System Contribution values are provided in Appendix C.

The System Contribution factors will be in effect for two-year periods. The System Contribution factors provided below apply for years 2010-2011.

System Contribution Amounts for 2010-2011

Region	System Contribution Factor	Regional Contribution $/MW	Base Contribution $/MW	System Contribution $/MW
South	0.3756	15,000	10,000	25,000
Calgary	0.0000	0	10,000	10,000
Central	0.3091	12,400	10,000	22,400
Edmonton	0.5615	22,500	10,000	32,500
Northeast	1.0000	40,000	10,000	50,000
Northwest	0.0000	0	10,000	10,000

For comparison, the System Contribution amounts for 2008-2009 and 2006-2007 are provided in Appendix E and Appendix F respectively. The applicable System Contribution amount is based on the factors that are in effect when the transmission facilities required to connect the generator to the AIES receives permit and license from the AUC.

The Regional Contribution — the first component of the System Contribution — is simply $40,000/MW multiplied by the System Contribution factor, which is greater than zero only in Regions where generation exceeds load and which varies based on the location of generation with respect to load. The Base Contribution — the second component of the System Contribution — is the $10,000/MW amount specified by section 29(2)(a) of the Transmission Regulation.

The following table demonstrates the resulting System Contributions for two generators with different capacities, for each area:

Region	System Contribution	180 MW generator	400 MW generator
South	$ 25,000/MW	$ 4.50 m	$ 10.00 m
Calgary	$ 10,000/MW	$ 1.80 m	$ 4.00 m
Central	$ 22,400/MW	$ 4.03 m	$ 8.96 m
Edmonton	$ 32,500/MW	$ 5.85 m	$ 13.00 m
Northeast	$ 50,000/MW	$ 9.00 m	$ 20.00 m
Northwest	$ 10,000/MW	$ 1.80 m	$ 4.00 m

Payment of Contribution

In Decision 2005-096, the EUB (now the AUC) indicated that:

> *"…all costs, either customer contribution or System Contribution, should be paid prior to the start of the commencement of activities related to the construction of any new transmission facilities necessary to provide the requested service."*

In February 2008, the AESO implemented the Interconnection Queue Business Practice, which identifies the milestones that a project is required to meet in order to maintain queue position. More information on milestone obligations can be found on the AESO's web-site at www.aeso.ca by following the path Transmission ► Connecting to the Grid ► Customer Interconnections ► Project Milestone Obligations.

Payment of the System Contribution represents a project milestone obligation. The System Contribution payment is due to the AESO in respect of the generator upon AUC issuance of permit and license for the local interconnection facilities. Where no new or additional local facilities are required to serve a new generating unit, the System Contribution payment will be due upon execution of the SASA. The SASA will be executed once it has been determined by the AESO that there is sufficient transmission capacity to accommodate the request, as per Article 13 of the AESO Terms and Conditions of Service.

The System Contribution must be paid within 90 days of issue of the permit and license for the local interconnection (or within 90 days of SASA execution where additional local facilities are not required to accommodate the capacity increase request). In situations where the System Contribution is not paid within the 90-day period, the AESO may deem it appropriate to allow other customer projects to proceed ahead of the customer that has not met its System Contribution obligation. Where local facilities are required, construction will not commence until the System Contribution has been paid.

Where an interconnection project involves sub-projects (that is, capacity will be added in multiple phases), the System Contribution associated with facilitating the primary interconnection is due prior to construction. Where a customer wishes to add capacity at a second or subsequent phase, an additional System Contribution amount will be incurred for each phase based on the capacity being added in that phase. The contracted amounts for each stage of capacity addition will be considered individually, to facilitate the monitoring of performance and subsequent refund eligibility.

Generally, the System Contribution is paid to the AESO while any Customer Contribution associated with the local interconnection is paid to the Transmission Facility Owner ("TFO"). If both the Customer Contribution and the System Contribution is paid to the AESO then the AESO will retain the System Contribution and forward the Customer Contribution to the TFO.

Other Considerations

Section 29(4) of the Transmission Regulation provides for the refund of the System Contribution over a period of not more than 10 years from the date the generating unit begins to generate electric energy for the purpose of exchange but not for the purpose of testing or commissioning the unit, subject to satisfactory operation of the generating unit.

(4) The ISO tariff must include terms and conditions providing for the following:
- *(a) the refund of money paid under this section, to the owner who paid it, over a period of not more than 10 years from the date the generating unit begins to generate electric energy for the purpose of exchange but not for the purpose of testing or commissioning the unit, subject to satisfactory operation of the generating unit determined under rules made under subsection (5), where satisfactory operation may vary by generation type;*
- *(b) forfeiture to the ISO of money paid under this section, or suspension of the refunds, if the generating unit is not operated satisfactorily;*
- *(c) the means and times at which the refunds are to be made;*
- *(d) the prudent administration, management and investment of money held by the ISO under this section and for the accounting for those funds;*
- *(e) the disbursement of money earned on investments.*

The AESO will administer the refund of System Contributions on a calendar year basis. Refund periods begin on January 1 following the generators Commercial Operation Date ("COD"). The refund process is described in Article 9.12 of the AESO Terms and Conditions of Service.

To illustrate the application of Article 9.12, the AESO provides the following example which indicates the refund of a System Contribution of $1,000,000 to a generator. In the table, a status of "On" indicates the generator met the ISO Rules regarding satisfactory annual performance, and a status of "Off" indicates the generator did not meet the performance criteria. The refund period for the generator is nine years starting January 1 of the calendar year following the unit's COD.

The generator pays the System Contribution on July 1, 2010, prior to construction, and has a COD of July 1, 2011. The generator maintains satisfactory annual performance over the next three years (2012-2014) but does not meet the ISO Rules for satisfactory annual performance in 2015 and 2016, and then continues satisfactory annual performance over the next four years (2017-2020). The generator accordingly forfeits refunds of $56,000 and $112,000, which it otherwise would have received for 2015 and 2016 respectively.

Illustrative Example of Refund of System Contribution of $1,000,000

Generator System Contribution paid:	July 1, 2010
COD:	July 1, 2011
Refund period:	January 1, 2012 to December 31, 2020

Year	Status	Refund Amount	Report Due	Refund Issued
2010	pre-COD	NA	NA	NA
2011	pre-COD	NA	NA	NA
2012	On	$56,000	January 31, 2013	February 28, 2013
2013	On	$56,000	January 31, 2014	February 28, 2014
2014	On	$56,000	January 31, 2015	February 28, 2015
2015	**Off**	$0	January 31, 2016	NA
2016	**Off**	$0	January 31, 2017	NA
2017	On	$166,000	January 31, 2018	February 28, 2018
2018	On	$166,000	January 31, 2019	February 28, 2019
2019	On	$166,000	January 31, 2020	February 28, 2020
2020	On	$166,000	January 31, 2021	February 28, 2021
2021	NA	NA	NA	NA
Total		$832,000		

The AESO will include any forfeited System Contribution amounts in a deferral account to be considered as an offset to revenue in a subsequent GTA.

The AESO Terms and Conditions of Service for System Access Service do not provide for the payment of interest on any refund amounts.

Performance Measures

Section 29(5) of the Transmission Regulation requires the AESO to make rules to be used to assess satisfactory performance of a generating unit.

> *(5) The ISO must make rules to be used to assess the satisfactory performance of a generating unit by generating unit type.*

A summary of the three components of ISO Rule 9.5, "Annual Performance Criteria for Refund of System Contribution" is provided below. The complete rule is included in the ISO Rules on the AESO's website at www.aeso.ca, available by following the path Rules & Procedures ▶ ISO Rules ▶ Current Rules.

9.5.2 (a) Commercial operation date

The first performance measure is for the generator to reach its COD. No refunds will be provided unless the generator reaches COD. The generating unit must reach COD in the year prior to the beginning of the refund period.

9.5.2 (b) STS contract capacity use

The second performance measure is for the generator to use the STS contract capacity provided by the AESO each year following commercial operation. The generator's average capacity factor must meet or exceed the following levels for each year:

Performance Standard for System Contribution Refunds

Resource Type	Annual Capacity Factor
Coal	75%
Natural Gas — Base Load	50%
Natural Gas — Peaking	10%
Hydro	20%
Wind	20%
Biomass & Waste	75%
Other Generating Unit Type, not listed above	As determined by the ISO, not less than 10%

No refund will be provided unless the generator meets or exceeds the annual capacity factor for its resource type.

9.5.2 (c) Under contracting penalty

To ensure that a customer does not have an incentive to under contract for their STS requirements to reduce their System Contribution, the AESO will apply an Under Contracting Penalty to the annual refund amount. The Under Contracting Penalty will reduce the annual refund on a straight-line basis from 100% refund when maximum metered generation is 110% or less of STS capacity, to 0% refund when maximum metered generation is 125% or more of STS capacity.

9.5.3 (c) Exceeding STS capacity

There may be circumstances where a generator is able to operate beyond its normal STS contract capacity (e.g. on-site load is lower than normal, on-site heat balance allows for more steam for electricity production, or lower than normal ambient temperatures allow for increased output). To facilitate these circumstances and optimal establishment of STS contract levels, hours where STS contract capacity exceeds 110% will be excluded from the Under Contracting Penalty calculation where the generator has requested and received authorization from the AESO in accordance with Article 13.5 of the AESO's Tariff.

9.5.4 (a) Reporting requirements

The generating facility owner must provide the AESO a calendar year performance report for each calendar year in the refund period by January 31 following the calendar year outlining its compliance with the above mentioned criteria. If the generator facility owner does not provide all of the required information by January 31, then the AESO will notify the generating facility owner of the deficiency and the generating facility owner will have 10 business days from the date of such notice to correct such deficiency. For each deficiency notice provided by the ISO to a generating facility owner, the owner will be obligated to pay to the AESO a fee of $1000, which amount the ISO may obtain by reducing and retaining the annual amount of the System Contribution for the generating asset for such year.

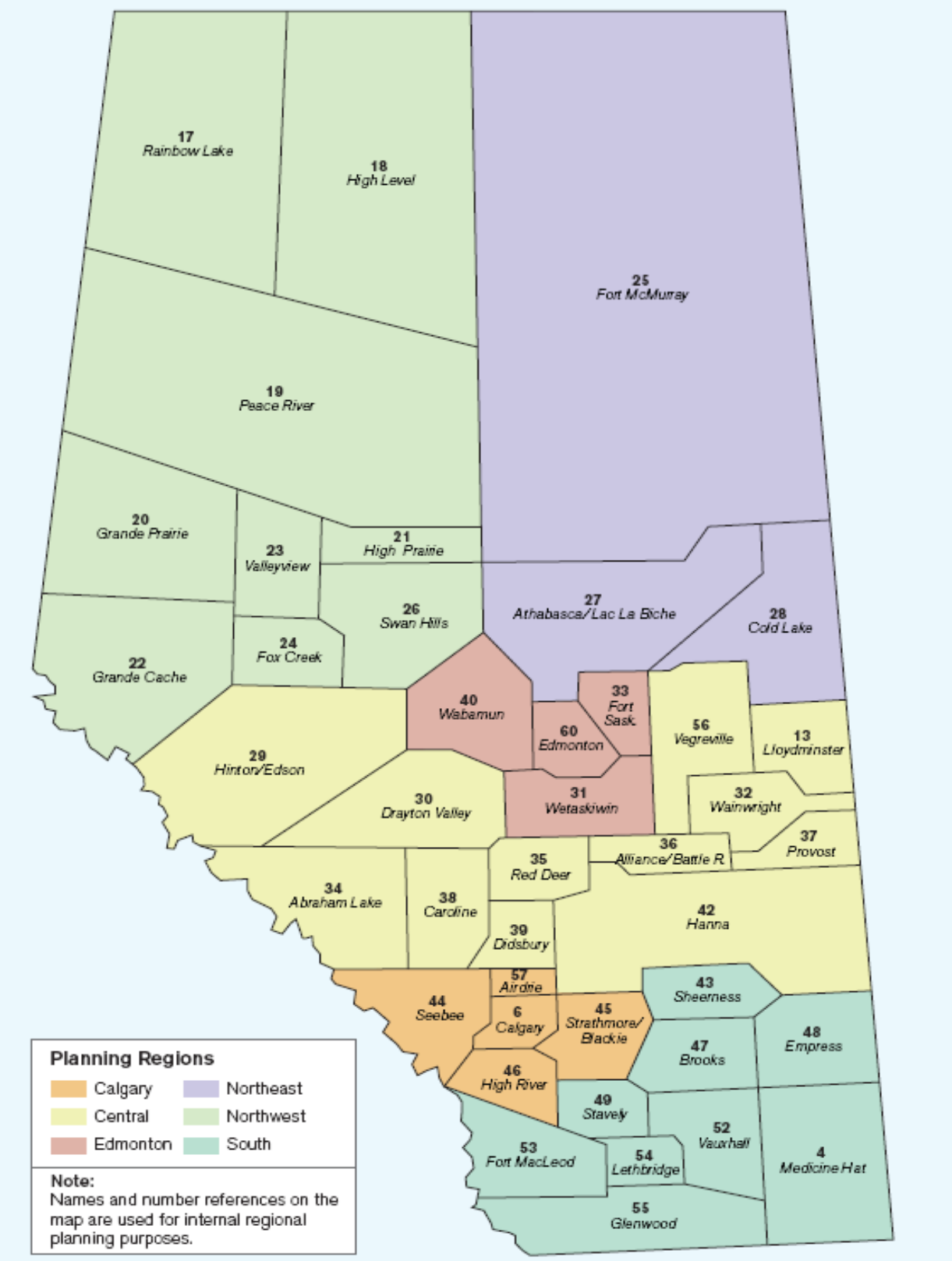
Upon further review by the AESO and compliance with the performance measures, refunds for the calendar year will be issued by February 28 following the calendar year. For example, if a generator reaches COD in 2009, then the refund period begins in 2010, the performance report for calendar year 2010 is due by January 31, 2011, and the resulting refund (if any) will be issued by February 28, 2011.

Appendix A – System Contribution Region Definitions

Region	Region Description	Area #	Area
South	This Region borders High River, Strathmore and Hanna to the north, Montana to the south, British Columbia to the west and Saskatchewan to the east. This Region is dependent on the output of wind generation and imports.	4	Medicine Hat
		43	Sheerness
		47	Brooks
		48	Empress
		52	Vauxhall
		53	Fort MacLeod
		54	Lethbridge
		55	Glenwood
Calgary	This Region borders Abraham Lake, Caroline, Didsbury and Hanna to the north, Fort MacLeod and Stavely to the south, British Columbia to the west and Brooks and Sheerness to the east. This Region is highly dependent on its connections to the grid to meet current demand.	6	Calgary
		44	Seebe
		45	Strathmore/Blackie
		46	High River
		57	Airdrie
Central	This Region region borders Grande Cache, Fox Creek, Swan Hills, Wabamun, Wetaskiwin and Cold Lake to the north, British Columbia to the west, Saskatchewan to the east and Seebee, Airdrie, Strathmore, Sheerness and Empress to the south.	13	Llyodminster
		29	Hinton/Edson
		30	Drayton Valley
		32	Wainwright
		34	Abraham Lake
		35	Red Deer
		36	Alliance/Battle R.
		37	Provost
		38	Caroline
		39	Didsbury
		42	Hanna
		56	Vegreville
Edmonton	This Region borders Swan Hills and Athabasca areas to the north, Hinton and Dayton Valley to the west, Red Deer and Alliance to the south and Vegreville to the east. This Region is the generation centre and it sends a significant amount of power to the rest of the Regions of the province.	31	Wetaskiwin
		33	Fort Sask.
		40	Lake Wabamun
		60	Edmonton
Northeast	This Region borders High Level, Peace River, High Prairie, Swan Hills and Wabamun areas to the west, Edmonton, Fort Sask., Vegreville and Lloydminster areas to the south, Northwest Territories to the north and Saskatchewan to the east. The continued development of the oils sands in this Region will create high demand from the system through the Edmonton-Northeast path.	25	Fort McMurray
		27	Athabasca/Lac La Biche
		28	Cold Lake

Region	Region Description	Area #	Area
Northwest	This Region borders Fort McMurray and Athabasca to the east, Wabamun and Hinton to the south, British Columbia to the west and the Northwest Territories to the north. This Region continues to be generation deficient and relies heavily on imports from the Edmonton–Northwest and Ft. McMurray–Northwest paths.	17	Rainbow Lake
		18	High Level
		19	Peace River
		20	Grande Prairie
		21	High Prairie
		22	Grande Cache
		23	Valleyview
		24	Fox Creek
		26	Swan Hills

Appendix B – Bulk System Areas



Appendix C – 2010-2011 System Contribution Calculations

System Contribution Calculation

Transition Factor (TF)

	Peak Load*	Committed Generation	Generation ÷ Load	Transition Factor
South	1,001	1,699	1.70	0.2325
Calgary	2,473	-	-	-
Central	1,693	2,659	1.57	0.1901
Edmonton	2,831	4,886	1.73	0.2419
Northeast	1,296	3,192	2.46	0.3333
Northwest	1,215	782	0.64	-
	10,509	13,218		

* Forecast 2013 Peak Load

Location Factor (LF)

Forecast Peak Load Growth 2008 to 2013

	South	Calgary	Central	Edmonton	Northeast	Northwest	Total
Average growth by Area	88	446	181	504	750	143	2,113
Net Load Distribution	4%	21%	9%	24%	35%	7%	

Physical Distances between Regions

	To Load					
From Generation	South	Calgary	Central	Edmonton	Northeast	Northwest
South (Lethbridge)	-	166	286	428	772	640
Calgary (Calgary)	166	-	138	280	643	474
Central (Red Deer)	286	138	-	195	508	360
Edmonton (East Edmonton)	428	280	195	-	366	283
Northeast (Fort McMurray)	772	643	508	366	-	406
Northwest (Valleyview)	640	474	360	283	406	-

Dominant Path Adjustment

	To Load					
From Generation	South	Calgary	Central	Edmonton	Northeast	Northwest
South		1				
Calgary						
Central		1				
Edmonton		1				1
Northeast		1				1
Northwest						

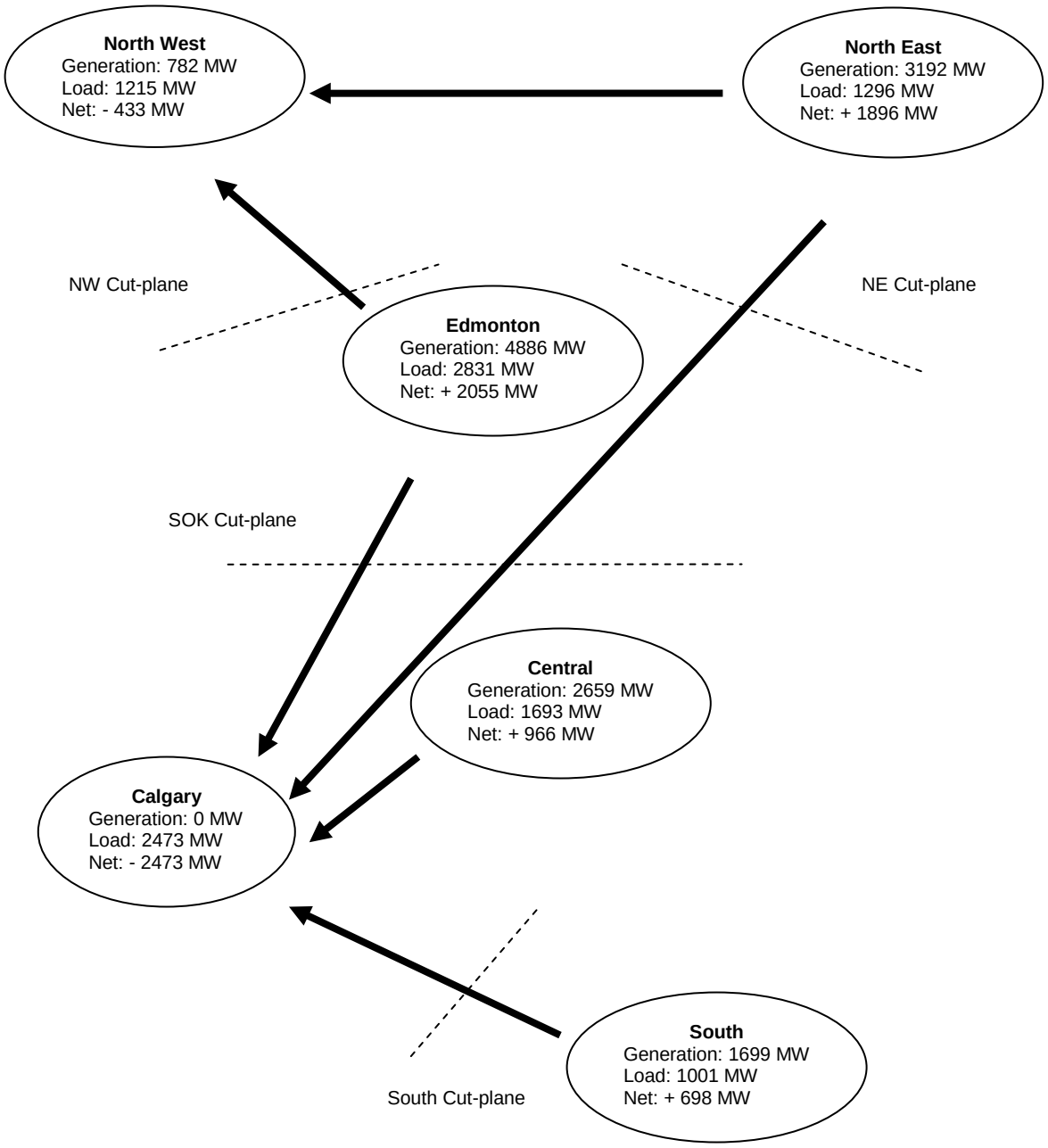
Location Factor (Physical Distance x Forecast Peak Load Growth x Dominant Path Adjustment)

	To Load							
From Generation	South	Calgary	Central	Edmonton	Northeast	Northwest	Total	LF
South	-	74,111	-	-	-	-	74,111	0.14
Calgary	-	-	-	-	-	-	-	-
Central	-	61,611	-	-	-	-	61,611	0.12
Edmonton	-	125,007	-	-	-	40,456	165,463	0.32
Northeast	-	287,069	-	-	-	58,039	345,108	0.67
Northwest	-	-	-	-	-	-	-	-
						Maximum	345,108	

System Contribution Calculation

Generation Area	Transition Factor	Location Factor	Regional Factor (TF + LF)	Regional Contribution	Base Contribution	System Contribution
South	0.2325	0.1432	0.3756	$ 15,000/MW	$ 10,000/MW	**$ 25,000/MW**
Calgary	-	-	-	-	$ 10,000/MW	**$ 10,000/MW**
Central	0.1901	0.1190	0.3091	$ 12,400/MW	$ 10,000/MW	**$ 22,400/MW**
Edmonton	0.2419	0.3196	0.5615	$ 22,500/MW	$ 10,000/MW	**$ 32,500/MW**
Northeast	0.3333	0.6667	1.0000	$ 40,000/MW	$ 10,000/MW	**$ 50,000/MW**
Northwest	-	-	-	-	$ 10,000/MW	**$ 10,000/MW**

Appendix D – Dominant Power Flow Between Regions

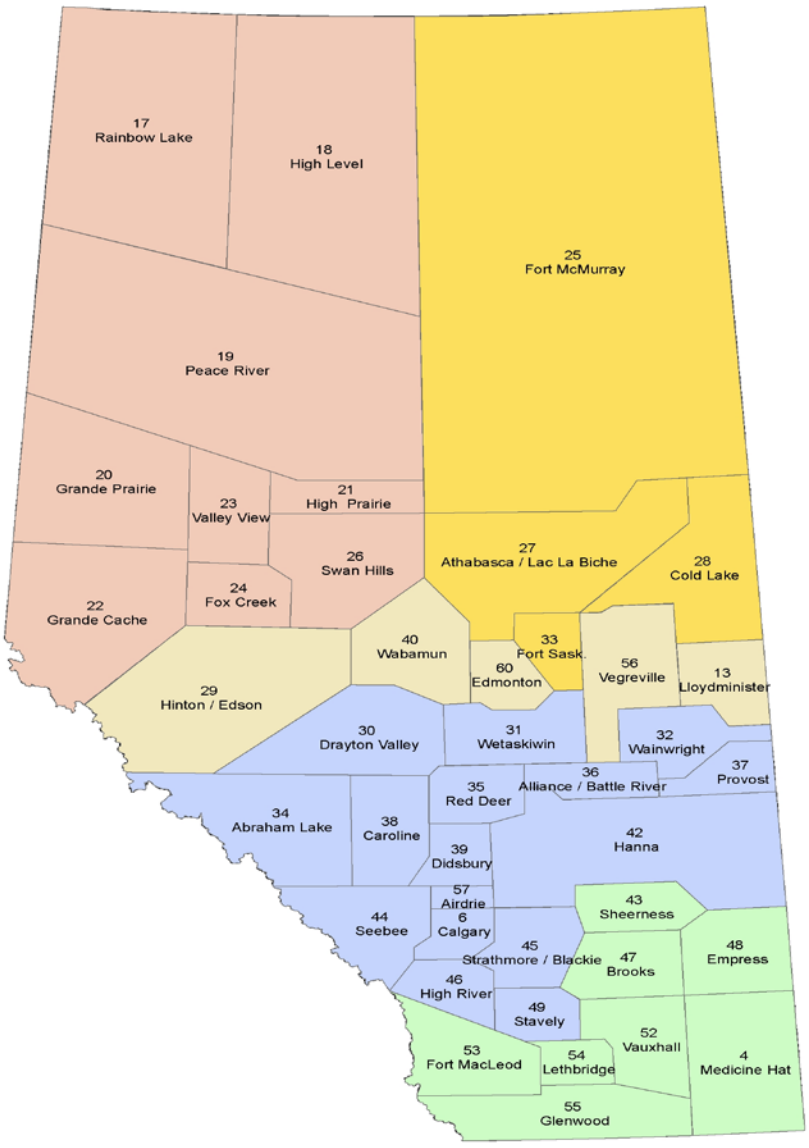


Appendix E – 2008-2009 Generator System Contribution Values

System Contribution Amounts for 2008-2009

Region	System Contribution Factor	Regional Contribution $/MW	Base Contribution $/MW	System Contribution $/MW
Northwest	0.0000	0	$10,000	**$10,000**
Northeast	1.0000	40,000	10,000	**50,000**
Edmonton	0.5619	22,500	10,000	**32,500**
Calgary	0.0000	0	10,000	**10,000**
South	0.4522	18,100	10,000	**28,100**

2008-2009 Regional Planning Map



Appendix F – 2006-2007 Generator System Contribution Values

System Contribution Amounts for 2006-2007

Region	System Contribution Factor	Regional Contribution $/MW	Base Contribution $/MW	System Contribution $/MW
Northwest	0.0000	$ 0	$10,000	**$10,000**
Northeast	1.0000	40,000	10,000	**50,000**
Edmonton	0.5333	21,300	10,000	**31,300**
Central	0.0000	0	10,000	**10,000**
East	0.2558	10,200	10,000	**20,200**
Calgary	0.0000	0	10,000	**10,000**
Southwest	0.2517	10,100	10,000	**20,100**

2006-2007 Regional Planning Map