

Information documents are not authoritative. Information documents are provided for information purposes only and are intended to provide guidance. If there is a discrepancy between an information document and any authoritative document¹ in effect, the authoritative document governs.

1 Purpose

This information document relates to the following authoritative document:

- Section 302.1 of the ISO rules, *Real Time Transmission Constraint Management* (“Section 302.1”)

The purpose of this information document is to provide information regarding the unique operating characteristics and resulting constraint conditions and limits in the south area of the interconnected electric system. In this information document, the AESO defines the south area as the area illustrated by maps presented.

Section 302.1 sets out the general transmission constraint management protocol steps the AESO uses to manage transmission constraints in real time on the interconnected electric system. These steps are referenced in Table 1 of this information document as they are applied to the south area.

2 General

The transmission and generation facilities in the south area are shown in a geographical map in Appendix 2. For schematic single line diagrams of the south area, see Appendix 3A and Appendix 3B.

Several remedial action schemes are in place in the south area to ensure system reliability. The remedial action schemes for the south area are provided in the list of Alberta Remedial Action Schemes which is available on the AESO website.

3 Constraint Conditions and Limits

When managing a transmission constraint in the south area, the AESO ensures that transmission line flows out of the area are managed in accordance with transmission line ratings. These ratings are established by the legal owner of the transmission facility to protect transmission facilities, ensuring the continued reliable operation of the interconnected electric system. The existing remedial action schemes are designed to ensure line flows are managed to safely maintain emergency transmission line ratings.

The AESO monitors the remedial action schemes in the south to ensure that the remedial action schemes are available when required. If a remedial action scheme is not available or partially inoperable, the AESO may proactively curtail generation in anticipation of contingencies in order to ensure safe, reliable operation of the system. South area remedial action schemes are outlined in the list of Alberta Remedial Action Schemes.

The AESO uses wind power management tools to curtail during constraints. Wind power management does not apply to any wind aggregated facilities that have been constrained down for a local area constraint. Once the transmission constraint management directive is cancelled, wind power management is again applied to the asset.

¹ “Authoritative document” is the general name given by the AESO to categories of documents made by the AESO under the authority of the *Electric Utilities Act* and regulations, and that contain binding legal requirements for either market participants or the AESO, or both. Authoritative documents include: the ISO rules, the reliability standards, and the ISO tariff.

3.1 Non-Studied Constraints and Limits

The AESO uses energy management system tools and dynamic stability tools to assess unstudied system operating limits in real time, for system conditions that are not pre-studied.

Real time system conditions and area transmission element outages not identified through engineering studies, may require the use of any of the effective assets listed in Appendix 1 for constraint mitigation.

3.2 Studied Constraints and Limits

System studies have identified potential thermal and voltage violations under certain system conditions in the south area. The identified constraints and the affected pool assets are listed in Appendix 4A and 4B.

Additionally, constraints may occur under normal operating conditions when there are high levels of wind production as well as high inertia flows. Remedial action schemes are utilized to manage several identified constraints in the south area. For more information on south area remedial action schemes, refer to the list of Alberta Remedial Action Schemes.

4 Application of Transmission Constraint Management Procedures

The AESO manages transmission constraints in all areas of Alberta in accordance with the provisions of Section 302.1. However, not all of those provisions are effective in the south area due to certain operating conditions that exist in the area. This information document represents the application of the general provisions of Section 302.1 to the south area, and provides additional clarifying steps as required to effectively manage transmission constraints in that area before and after the activation of a remedial action scheme. The protocol steps which are effective in managing transmission constraints are outlined in Table 1 below.

Table 1
Transmission Constraint Management
Sequential Procedures for South Area

Subsection 2(1) of Section 302.1, protocol steps	Is the procedure applicable to the south area?
(a) Determine effective pool assets	Yes
(b) Ensure maximum capability not exceeded	Yes
(c) Curtail effective downstream constraint side export service and upstream constraint side import service	Yes
(d) Curtail effective demand opportunity service on the downstream constraint side	No
(e)(i) Issue a dispatch for effective contracted transmission must-run	No
(e)(ii) Issue a directive for effective non-contracted transmission must-run	No
(f) Curtail effective pool assets in reverse energy market merit order followed by pro-rata curtailment	Yes
(g) Curtail effective loads with bids in reverse energy market merit order followed by pro-rata load curtailment	No

Applicable Protocol Steps

The first step in managing constraints is to identify those pool assets, both generating units and loads, which are effective in managing constraints. A list of those effective generating pool are identified in Appendix 1. As per subsection 2(4) of Section 302.1, when a transmission constraint has been or is expected by the AESO to activate a remedial action scheme, the AESO recommences the procedural sequence in Table 1 (above) once the AESO has ensured that the system is operating in a safe and reliable mode.

Step (a) in Table 1

The effective pool assets are as shown in Appendix 1.

Step (b) in Table 1

Ensuring maximum capability levels are not exceeded is effective in managing south area transmission constraints. The effective pool assets that the AESO may curtail are listed in Appendix 1.

Step (c) in Table 1

There may be situations where curtailment of import flows is effective in managing a transmission constraint in the south area.

Step (d) in Table 1

Curtailing effective demand opportunity service on the downstream constraint side is not effective in managing south area constraints because there is no demand opportunity service in the area.

Step (e) in Table 1

With respect to steps (e)(i) and (ii), there are no transmission must-run contracts in the south area and using transmission must-run is not effective in managing a transmission constraint.

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Step (f) in Table 1

Curtailing effective generating units in reverse energy market merit order followed by pro-rata curtailment is effective in managing south area transmission constraints. The effective pool assets that the AESO may curtail are listed in Appendix 1.

Step (g) in Table 1

Because of the configuration of the interconnected electrical system, curtailing load on the upstream side is not effective in managing south area constraints.

5 Project Updates

As necessary, the AESO intends to provide information in this section about projects underway in the south area that are known to have an impact on the information contained in this information document.

6 Appendices

Appendix 1 – *Effective Pool Assets*

Appendix 2 – *Geographical Map of the South Area*

Appendix 3A – *South West Area Single Line Diagram*

Appendix 3B – *South East Area Single Line Diagram*

Appendix 4A - *South West Area Constraints*

Appendix 4B - *South East Area Constraints*

Revision History

Posting Date	Description of Changes
2022-03-30	Amended Appendix 3 to include Appendix 3A South West Area Single Line Diagram and Appendix 3B South East Area Single Line Diagram. Amended to include Appendix 4A South West Area Constraints and Appendix 4B South East Area Constraints. Updated Appendix 4A South West Area Constraints and Appendix 4B South East Area Constraints with area transmission constraints and effective generators.
2021-10-27	Updated Appendix 1 with effective generators Updated Appendix 2 and 3 Maps Added Appendix 5 Taber/Medicine Hat Area Constraints
2021-05-07	Updated Appendix 1-3 with effective generators Added Appendix 4 South Area Constraints Added reference to Alberta RAS List Minor editorial improvements made throughout to improve clarity and align to current AESO drafting principles
2015-08-20	With energization of components of Southern Area Transmission Reinforcement (SATR) and Foothills Area Transmission Development (FATD), changes to the description of constraints and removal of four Remedial Action schemes.

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Posting Date	Description of Changes
2014-06-26	Appendix 3 amended to include Fidler Substation with associated line amendments and Appendix 4 amended to renumber and add note concerning Remedial Action Scheme at 103S Goose Lake 893L.
2014-05-29	Appendix 1 through 3 amended to include Old Man River Wind 112S (OWF1).
2014-04-08	Appendix 1 through 3 amended to include pool asset BSR1
2014-02-27	Initial Release

Appendix 1 – Effective Pool Assets

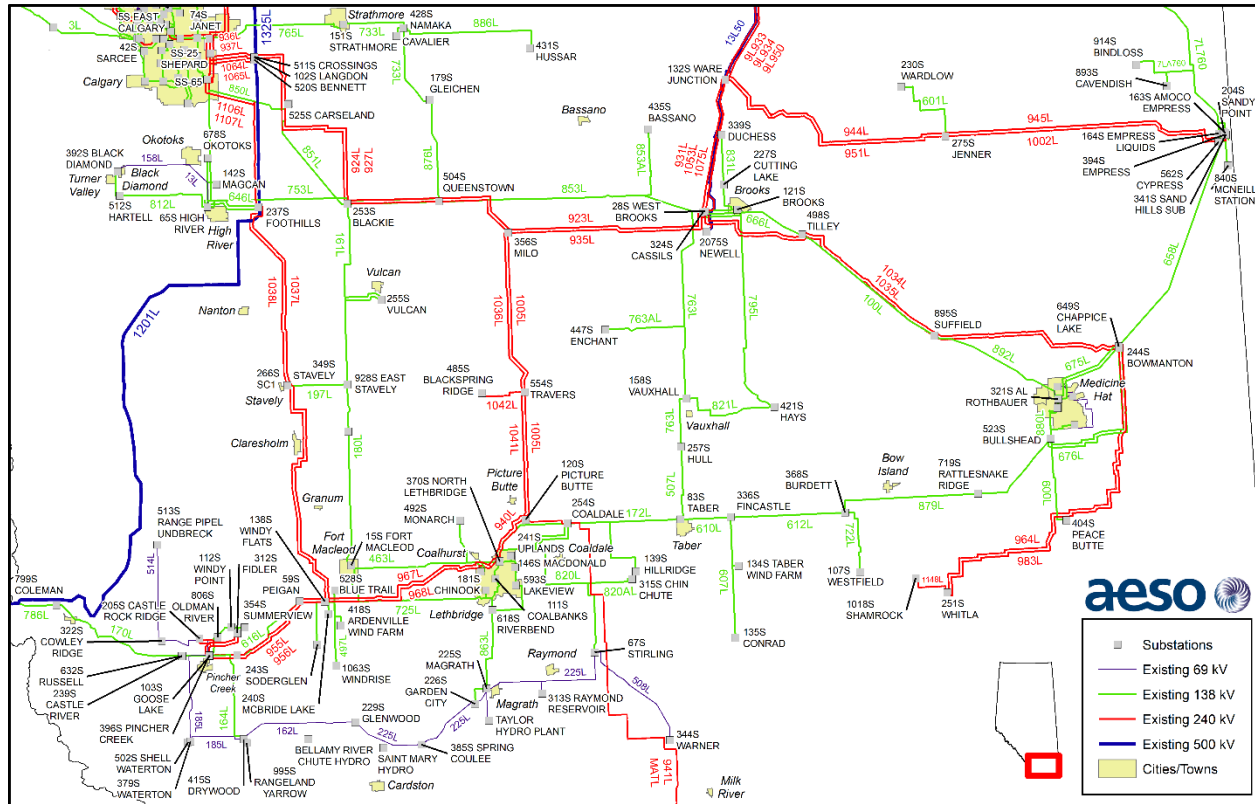
The effective pool assets for the south area, listed alphabetically by their asset IDs, are:

AKE1	ICP1
ARD1	IEW1
ALP1	IEW2
ALP2	JER1
BLYR	KHW1
BRD1	NAT1
BSC1	OMRH
BSR1	OWF1
BTR1	RIV1
BUR1	RTL1
CHIN	RYMD
CLR1	SCR2
CLR2	SCR3
COD1	SUF1
COL1	STMY
CRE3	TAB1
CR1	TAY1
CRR1	TVS1
CRR2	VXH1
CRWD	WEF1
DRW1	WHT1
GWW1	WHT2
HUL1	WRW1
HYS1	

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Appendix 2 – Geographical Map of the South Area



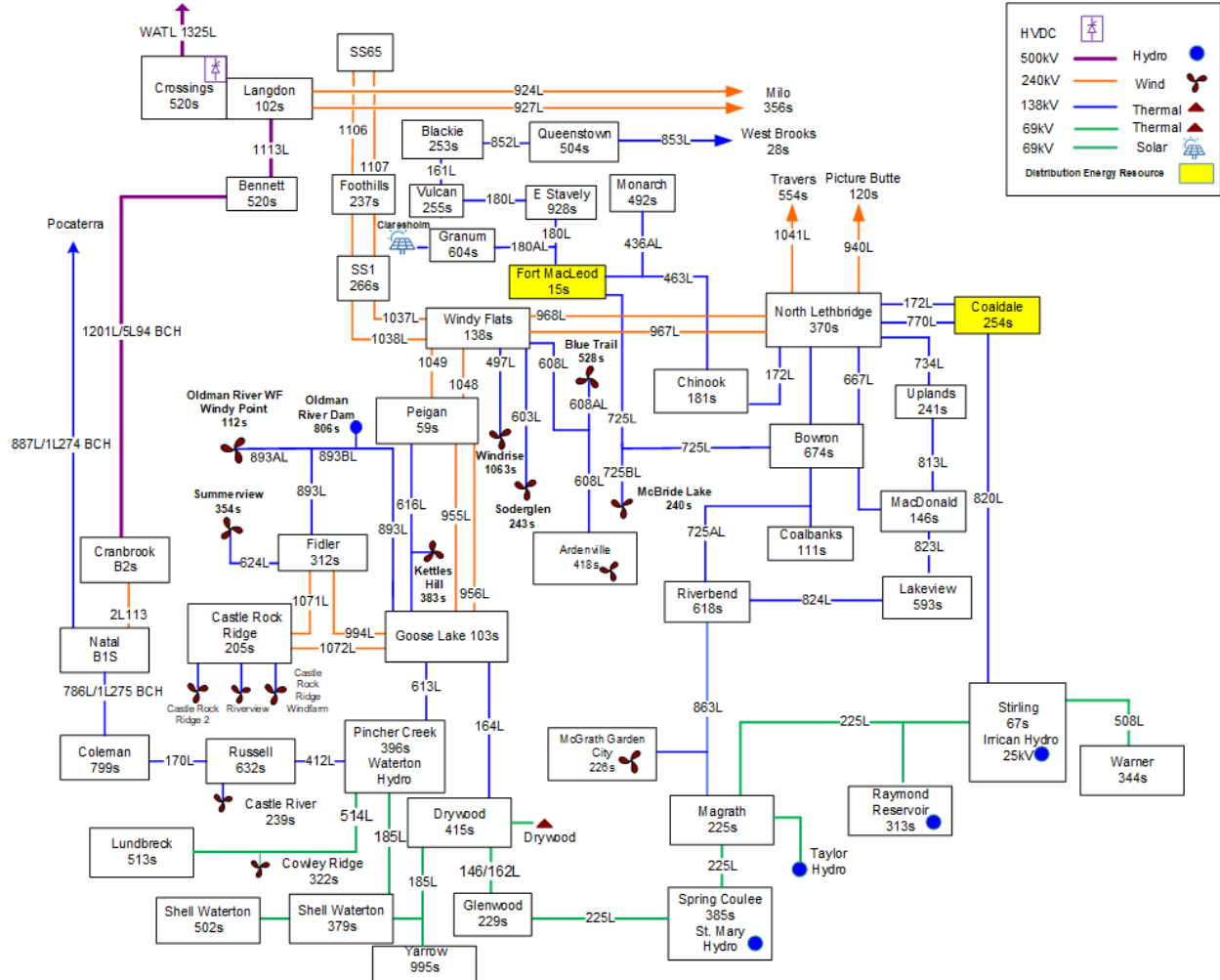
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Appendix 3A – South West Area Single Line Diagram



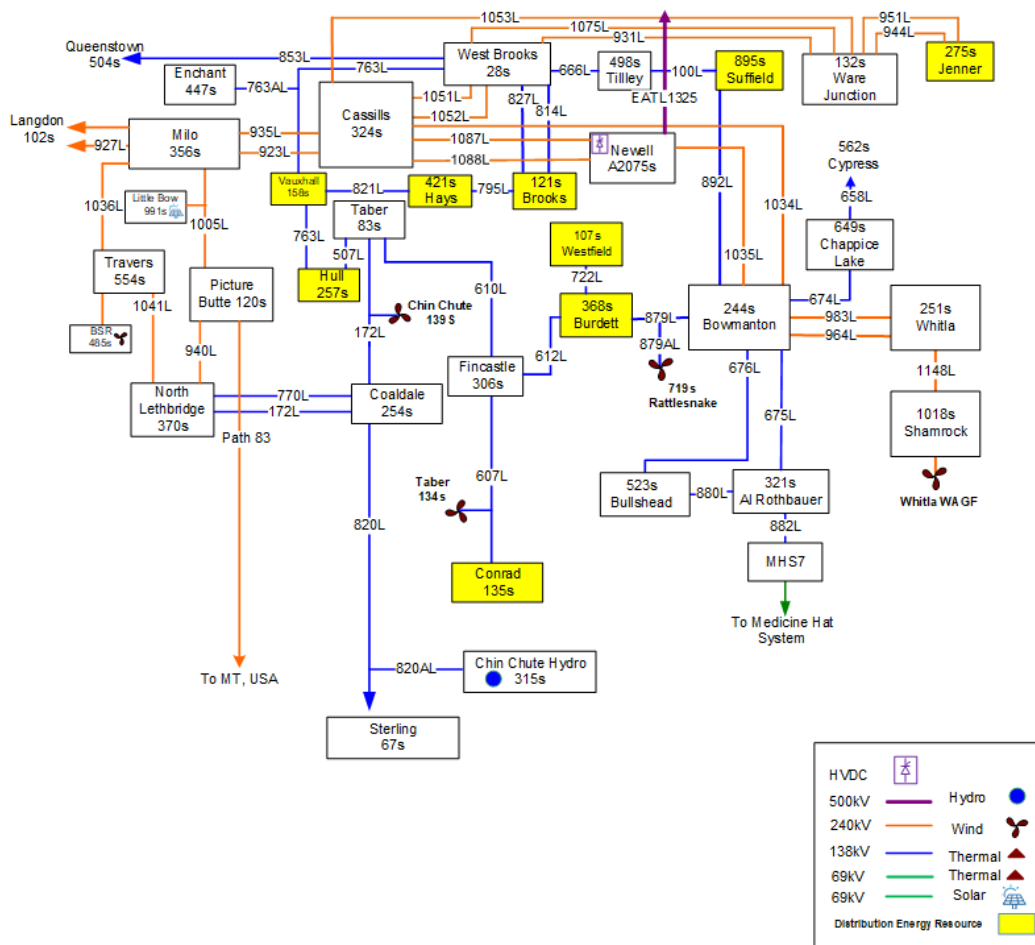
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Appendix 3B – South East Area Single Line Diagram



South Area Constraints and Effective Assets

AESO engineering studies have identified potential thermal constraints in the south area. Constraints in the south west area are listed in Table 1 [Appendix 4A] with effective assets in Table 2 [Appendix 4A]. Constraints in the south east area are listed in Table 1 [Appendix 4B] and effective assets in the Table 2 [Appendix 4B].

Appendix 4A: South West Area Constraints

AESO engineering studies have identified potential constraints in the south west area, with effective assets shown in Table [2].

Table [1]: Bulk electric system element outages contributing to thermal-related constraints

Transmission lines	
180L (East Stavely 928S substation - Fort McLeod 15S substation)	180L (East Stavely 928S substation – Vulcan 255S substation)
725L (Bowron L674S substation – 725BL tap)	725L (Bowron L674S substation – 725AL tap)
172L (North Lethbridge 370S substation – Chinook 181S substation)	463L (Fort Macleod 15S substation – Chinook 181S substation) any transmission line section
1036L (365s Milo substation–Travers 554s substation)	--
Transformers	
59sT1 (59s Peigan)	103sT1 (103s Goose Lake)

Table [2]: Identified effective assets for thermal related constraint mitigation

Effective assets (by asset ID)					
CLR1	CLR2	AKE1	MON1	ALP2	VCN1

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Appendix 4B: South East Area Constraints AESO engineering studies have identified potential constraints in the south east area, with effective assets shown in Table [2].

Table [1]: Bulk electric system element outages contributing to thermal-related constraints

Transmission lines	
879L Bowmanton 244S substation - Rattlesnake Ridge 879AL tap	879L Burdett 368S substation - Rattlesnake Ridge 879AL tap
100L 895S Suffield substation - Tilley 498S substation	1034L Bowmanton 244S substation - Cassils 324S substation
610L Taber 83S substation - Fincastle 336S substation	172L Coaldale 254S substation - Hillridge 139S tap
763L Vauxhall 158S substation - Hull 257S substation	763L Vauxhall 158S substation - Enchant 763AL tap
658L/674L Bowmanton 244S substation - Cypress 562S substation	892L Suffield 895S substation – Bowmanton 244S substation
1035L Bowmanton 244S substation - Newell A2075S substation	612L 336S Fincastle substation - 368S Burdett substation
172L Taber 83S substation - Hillridge 139S substation tap	507L Taber83S substation - Hull 257S substation
763L West Brooks 28S substation - 763AL Enchant tap	795L Brooks 121S substation - Hays 421S substation
666L West Brook 28s substation - Tilley 498s substation	821L Vauxhall 158s substation - Hays 421s substation

Table [2]: Identified effective assets for thermal-related constraint mitigation

Effective assets (by asset ID)				
RTL1	ME03	TAB1	ME02	WEF1
COL1	VXH1	HYS1	HUL1	ME04
SCR3	BRD1	CRD1	CRD2	BUR1
MATL Import Assets				