




# AESO Transmission Capability Map 2023 Assessment

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## Table of Contents

<b>1. Introduction</b>	<b>1</b>
1.1 Study Objectives	1
1.2 Application of the Results	1
1.3 Capability Map Disclaimer	1
<b>2. Study Scope</b>	<b>2</b>
2.1 Study Period	2
2.2 Connection Type	2
2.3 Study Area	2
2.4 Study Location	2
<b>3. Study Assumptions and Criteria</b>	<b>2</b>
3.1 Capability Map Assumptions	2
3.1.1 Study Year	2
3.1.2 Transmission System Model	3
3.1.3 Transmission Facility Ratings	3
3.1.4 Demand	3
3.1.5 Merit Order	3
3.1.6 Interties	3
3.1.7 HVDC Power Order	3
3.1.8 Project Inclusion	3
3.2 Criteria	3
<b>4. Methodology</b>	<b>4</b>
4.1 DC Power Flow Solver	4
4.2 Process Overview	4
4.2.1 Create Power Flow Cases	4
4.2.2 Calculate Capabilities	5
4.2.3 Summarize Capability	5
<b>5. Transmission Capability Results</b>	<b>5</b>
<b>6. Conclusions</b>	<b>6</b>
<b>Attachment A – Substation Capability</b>	<b>7</b>
<b>Attachment B – Transmission Line Capability</b>	<b>12</b>

# 1. Introduction

This 2023 Assessment calculated the transmission capability values published in the AESO Transmission Capability Map.

## 1.1 Study Objectives

The objectives of this assessment were to:

1. Estimate the additional generation capability that could be connected at different locations on the existing transmission system,
2. Indicate the level of complexity expected in the AESO Connection Process, and
3. Assist market participants in making informed business decisions for generation capacity and location siting in a way that facilitates transmission system optimization.

## 1.2 Application of the Results

The assessment is based on the existing transmission system with historical data and does not consider future load, generation, and transmission system developments and operations. Also, the capability values are based on category A thermal congestion and could be further limited by contingencies, other constraints, or other connection projects. Therefore, **the capability values are indicative and are not guaranteed in the AESO Connection Process**. The AESO Connection Process is the official process to facilitate market participants' requests for new or altered system access services on Alberta's transmission system.

Summarizing the study objectives, the capability estimation is an indication of the level of complexity to assist market participants. The level of complexity is indicated by comparing the project size to the estimated capability:

1. Locations with little capability or a capability smaller than the project size will likely result in a complex connection request, and
2. Locations with capabilities higher than the project size are the favorable locations to consider.

Given the study objectives and how the results should be applied; the results should not be used as an input into other engineering work products.

## 1.3 Capability Map Disclaimer

The AESO makes no representations, warranties, or guarantees, whether express or implied, as to the accuracy, reliability, completeness, currency, or non-infringement of the map and associated information, or its fitness for any particular purpose. While the AESO has made every attempt to ensure that the information is timely and accurate, the AESO is not responsible for any errors or omissions in the map and associated information. The AESO is not responsible for any losses or costs incurred by you or any other person as a result of the use, conversion, publication, transmission, installation, or improvements to the map and associated information, even if such losses or costs are foreseeable.

## 2. Study Scope

The scope of this assessment was selected based on the study objectives.

### 2.1 Study Period

This assessment was an historical assessment that studied the 2022 calendar year. It provides an indication of the transmission capability based on the existing system over the previous year.

### 2.2 Connection Type

This assessment studied generation capability.

### 2.3 Study Area

The assessment covered the South and Central East planning regions<sup>1</sup>. This includes the planning areas of Medicine Hat (4), Lloydminster (13), Wainwright (32), Alliance/Battle River (36), Provost (37), Hanna (42), Sheerness (43), Strathmore/Blackie (45), High River (46), Brooks (47), Empress (48), Stavely (49), Vauxhall (52), Fort Macleod (53), Lethbridge (54), Glenwood (55), and Vegreville (56). The study area was selected based on connection project interest – these planning areas have a significant portion of the active connection projects.

### 2.4 Study Location

This assessment studied the transmission capability for each substation and transmission line in the study area. For substations, it was studied at each transmission bus with a voltage equal to or greater than 69 kV. For transmission lines, it was studied at each terminal of the transmission line. The transmission line results are the same for either a t-tap or in-and-out configuration. The capability was calculated independently at each location and does not consider potential generating unit connections at other locations.

## 3. Study Assumptions and Criteria

This section discusses the study assumptions, system model, and reliability standards applied in the assessment. The information used in the assessment is based on the historical performance of the transmission system and will change over time. The AESO addresses this evolving system by regularly updating the assessment.

### 3.1 Capability Map Assumptions

The capability map was calculated using the following assumptions and historical data.

#### 3.1.1 Study Year

The transmission capability was calculated by studying each hour in the 2022 calendar year. The study used hourly historical data.

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<sup>1</sup> The AESO Planning Areas are available on the AESO website.

### **3.1.2 Transmission System Model**

The interconnected electric system was modelled as per the installed transmission system on December 31<sup>st</sup>, 2022. Connection and system projects energizing after December 31<sup>st</sup>, 2022 were not included in the model.

### **3.1.3 Transmission Facility Ratings**

The transmission facility ratings were provided by the respective Transmission Facility Owners (TFOs). The facility ratings as per December 31<sup>st</sup>, 2022 were used in the assessment.

### **3.1.4 Demand**

The demand was modelled using the hourly historical metered demand for each measurement point. The hourly historical demand was assigned to its corresponding buses in the transmission system model.

### **3.1.5 Merit Order**

The generating units were dispatched using hourly historical merit order data for each pool asset. The merit order determined the hourly pool asset dispatch, and the hourly dispatch was assigned to its corresponding generating units in the transmission system model. For some pool assets, the historical merit order data was modified to account for non-dispatchable generating units and generating units connected behind a measurement point.

### **3.1.6 Interties**

The Alberta Interconnected Electric System is connected to British Columbia via Western Electricity Coordinating Council (WECC) Path 1; to Saskatchewan via WECC Path 2; and to Montana via WECC Path 83. The interties were dispatched using the hourly historical schedule. In addition, the dispatches were constrained to each intertie's hourly historical available transfer capability.

### **3.1.7 HVDC Power Order**

The HVDC power orders on Western Alberta Transmission Line (WATL) and Eastern Alberta Transmission Line (EATL) were selected to minimize the hourly pool price. This assumption minimizes the transmission system losses while respecting transmission constraints.

### **3.1.8 Project Inclusion**

Since the transmission system was modelled as per December 31<sup>st</sup>, 2022, the transmission facilities for projects that energized during 2022 were modelled in every hour. However, since the demand and merit order use historical data, projects that energized during 2022 were effectively not included until they energized and had metered energy. Thus, their impact on a substation's capability may not be completely captured.

Connection and system projects energizing after December 31<sup>st</sup> were not included in the studies.

## **3.2 Criteria**

The Transmission Planning (TPL) Standards, which are part of the Alberta Reliability Standards<sup>2</sup>, ensure the transmission system is planned to meet specific performance requirements. Although this assessment

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<sup>2</sup> A complete description of the standards are [available](#) on the AESO website

was not completed to fulfil the requirements of the TPL Standards, the TPL Standards were used to inform the performance criteria.

The assessment utilized a DC power flow solver and therefore can assess thermal but not voltage and stability performance criteria. Studying only the thermal performance criteria was considered acceptable given the assessment's objective – to indicate the level of complexity expected in the AESO Connection Process and to assist market participants in making informed business decisions for generation capacity and location siting in a way that facilitates transmission system optimization.

Category A, also referred to as N-0, represents a normal system condition with all elements in service. For Category A, all equipment must be within its applicable thermal rating, electric supply to load cannot be interrupted, and generating units cannot be removed from service. The voltage criteria and stability criteria were not assessed.

Category B, C, and D were not considered in this assessment.

## 4. Methodology

This section details the methodology used in this assessment.

### 4.1 DC Power Flow Solver

The assessment uses a DC power flow solver. The DC power flow solver simplifies the power flow equations to enable large studies across many hours. The main assumptions of the DC power flow solver used in this assessment are: (i) bus voltages are 1.0 p.u.; and (ii) the power flow equations are linear.

### 4.2 Process Overview

The methodology for calculating transmission capability has three main steps:

1. **Create Power Flow Cases:** The first step is to create an historical hourly representation of the power system.
2. **Calculate Capabilities:** The second step is to calculate the hourly capability at each location using the hourly cases created in step one.
3. **Summarize Capabilities:** The final step is to convert the hourly, location specific capabilities calculated in step two into the location specific capability.

Each of these steps are explained in detail in following sections.

#### 4.2.1 Create Power Flow Cases

The first step was to create an historical hourly representation of the power system – a case was created for each hour (8760) in the study year. This step combined the historical data in Section 3, a model of the power system, and a cost minimization optimization problem.

The optimization problem:

1. Models the historical demand to its corresponding buses in the transmission system model.
2. Dispatches the most economical generating units using merit order data to minimize cost.
3. Optimizes the HVDC power order to minimize cost. Adjusting the HVDC power order to minimize losses reduces the dispatch on the marginal generating unit, which in turn minimizes the cost.

4. Solves the DC power flow equations (equality constraints) while respecting the continuous facility ratings (inequality constraints).
5. Allows the power flow results to influence the economic dispatch. The optimization redispatches the generating units or HVDC power order away from the minimum cost point to respect the continuous facility ratings in the most economical manner. This is the equivalent to constrained down generation or transmission must run.

#### 4.2.2 Calculate Capabilities

The second step was to calculate the hourly capability at each location using the hourly cases created in step one. A generation maximization optimization problem was solved for each location in each hour.

The optimization problem:

1. Maximizes the incremental generation at a specific location.
2. Balances supply and demand by adding incremental load across the Alberta Interconnected Electric System (AIES).
3. Solves the DC power flow equations and ensures that facilities rated 69kV and above do not exceed their continuous facility rating. However, the process relaxes the thermal limit constraints for facilities with a shift factor<sup>3</sup> is less than 3%.
4. Allows the power flow results to constrain the incremental generation.

#### 4.2.3 Summarize Capability

The final step is to convert the hourly, location specific capabilities calculated in step two into the location specific capability.

The capability varies hour-to-hour depending on the surrounding system. The hourly capability results can be sorted to create a duration curve. This curve illustrates the range and capability available as a percentage of time. A project applying for a value below the minimum capability observed on the curve would not introduce Category A (N-0) congestion into the historical system. However, a project applying for a value on the duration curve would expect congestion for the corresponding percentage of time.

The 0.5<sup>th</sup> percentile was selected as the capability. In other words, connecting a generating unit at this value would result in N-0 congestion for 0.5% of the historical hours. This provides an indication of the capability while planning for a congestion-free system.

## 5. Transmission Capability Results

Transmission capability was calculated for each transmission bus and each transmission line in the study area. The substation capability results are provided in Attachment A and the transmission line capability results are provided in Attachment B. Since the assessment did not consider Category B criteria, the transmission line capability results apply for both T-tap and In-and-Out configurations.

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<sup>3</sup> Shift Factors are the sensitivity of line flow to the change of power injection at a bus. A shift factor of 0.5 means for every 1 MW increase in power injection at a specific bus, the corresponding line flow increases by 0.5 MW. Shift factors can be used to measure the electrical distance from a bus/substation to a transmission facility.

## 6. Conclusions

The assessment estimated the additional generation capability that could be connected at different locations on the existing transmission system for substations and transmission lines in the South and Central East planning regions. The transmission capability can be used to indicate the level of complexity expected in the AESO Connection Process, and to assist market participants in making informed business decisions for generation capacity and location siting in a way that facilitates transmission system optimization.



## Attachment A – Substation Capability

Name	Facility Code	TFO	Planning Area	Bus Number	Voltage (kV)	Capability (MW)
Al Rothbauer	321S	AltaLink	04-Medicine Hat	976	138	220
Amoco Empress	163S	AltaLink	48-Empress	262	240	160
Amoco Empress	163S	AltaLink	48-Empress	267	138	125
Anderson	801S	ATCO	43-Sheerness	1484	240	1006
Anderson	801S	ATCO	43-Sheerness	1485	144	85
Ardenville Wind Farm	418S	AltaLink	53-Fort Macleod	739	138	41
Badlands	981S	ATCO	43-Sheerness	1632	138	56
Bassano	435S	AltaLink	47-Brooks	399	138	83
Battle River	757S	ATCO	36-Alliance/Battle River	1489	240	540
Battle River	757S	ATCO	36-Alliance/Battle River	1469	240	108
Battle River	757S	ATCO	36-Alliance/Battle River	1491	144	425
Battle River	757S	ATCO	36-Alliance/Battle River	1492	72	99
Battle Sands	594S	AltaLink	32-Wainwright	609	138	90
Bauer	918S	ATCO	13-Lloydminster	1113	144	108
Big Knife Creek	843S	ATCO	36-Alliance/Battle River	1401	72	59
Big Valley	778S	ATCO	42-Hanna	1442	72	8
Bigfoot	756S	ATCO	36-Alliance/Battle River	1498	72	49
Bindloss	914S	ATCO	48-Empress	1454	144	100
Black Diamond	392S	AltaLink	46-High River	238	138	34
Black Diamond	392S	AltaLink	46-High River	241	69	16
Blackie	253S	AltaLink	45-Strathmore/Blackie	253	138	14
Blackspring Ridge	485S	AltaLink	49-Stavely	736	240	197
Blue Trail	528S	AltaLink	53-Fort Macleod	328	138	40
Bowmanton	244S	AltaLink	04-Medicine Hat	669	240	1225
Bowmanton	244S	AltaLink	04-Medicine Hat	659	138	268
Bowmanton	244S	AltaLink	04-Medicine Hat	645	138	35
Bowron	674S	City of Lethbridge	54-Lethbridge	698	138	16
Briker	880S	ATCO	13-Lloydminster	1314	144	101
Brooks	121S	AltaLink	47-Brooks	256	138	325
Buffalo Bird	601S	ATCO	42-Hanna	996	138	182
Buffalo Creek	526S	AltaLink	32-Wainwright	79	138	131
Bullpound	803S	ATCO	43-Sheerness	1463	144	70
Bullshead	523S	AltaLink	04-Medicine Hat	271	138	214
Burdett	368S	AltaLink	52-Vauxhall	269	138	1
Carseland	525S	AltaLink	45-Strathmore/Blackie	252	138	20
Cassils	324S	AltaLink	47-Brooks	918	240	1121
Castle River	239S	AltaLink	53-Fort Macleod	234	138	70
Castle Rock Ridge	205S	AltaLink	53-Fort Macleod	221	240	431
Castor	759S	ATCO	42-Hanna	1404	72	55
Cavalier		AltaLink	45-Strathmore/Blackie	247	138	5
Cavendish	893S	ATCO	48-Empress	1456	144	100
Chappice Lake	649S	AltaLink	04-Medicine Hat	320	138	35
Chestermere	419S	AltaLink	6-Calgary	949	138	3
Chin Chute	315S	AltaLink	54-Lethbridge	406	138	8

Name	Facility Code	TFO	Planning Area	Bus Number	Voltage (kV)	Capability (MW)
Chinook	181S	City of Lethbridge	54-Lethbridge	367	138	15
Clipper	656S	AltaLink	32-Wainwright	484	138	84
Coalbanks	111S	City of Lethbridge	54-Lethbridge	679	138	15
Coaldale	254S	AltaLink	54-Lethbridge	690	138	8
Coleman	799S	AltaLink	53-Fort Macleod	232	138	133
Conrad	135S	AltaLink	52-Vauxhall	291	138	2
Cordel	755S	ATCO	36-Alliance/Battle River	1499	240	554
Coronation	773S	ATCO	42-Hanna	1465	72	15
Cowley Ridge	322S	AltaLink	53-Fort Macleod	264	69	7
Coyote Lake	963S	ATCO	43-Sheerness	1447	240	791
Coyote Lake	963S	ATCO	43-Sheerness	1421	144	347
Cutting Lake	227S	AltaLink	47-Brooks	445	138	90
Cypress	562S	AltaLink	48-Empress	677	240	159
Cypress	562S	AltaLink	48-Empress	674	138	121
Drywood	415S	AltaLink	55-Glenwood	233	138	122
Drywood	415S	AltaLink	55-Glenwood	226	69	82
Duchess	339S	AltaLink	47-Brooks	250	138	91
East Stavely	928S	AltaLink	49-Stavely	279	138	30
Edgerton	899S	AltaLink	37-Provost	362	138	171
Empress	394S	AltaLink	48-Empress	266	138	124
Empress Liquids	164S	AltaLink	48-Empress	263	138	78
Enchant	447S	AltaLink	52-Vauxhall	286	138	11
Excel	910S	ATCO	42-Hanna	1459	144	92
Fidler	312S	AltaLink	53-Fort Macleod	751	240	431
Fidler	312S	AltaLink	53-Fort Macleod	752	138	213
Fincastle	336S	AltaLink	52-Vauxhall	31	138	2
Foothills	237S	AltaLink	46-High River	617	240	337
Foothills	237S	AltaLink	46-High River	640	138	58
Fort Macleod	15S	AltaLink	53-Fort Macleod	237	138	18
Garden City	226S	AltaLink	55-Glenwood	251	138	15
Garden Plain	1045S	ATCO	42-Hanna	542002	240	478
Ghost Pine	114S	ATCO	42-Hanna	603	144	24
Gleichen	179S	AltaLink	45-Strathmore/Blackie	254	138	6
Glenwood	229S	AltaLink	55-Glenwood	245	69	21
Goose Lake	103S	AltaLink	53-Fort Macleod	346	240	429
Goose Lake	103S	AltaLink	53-Fort Macleod	296	138	306
Granlea	1024S	AltaLink	04-Medicine Hat	994	240	860
Granum	604S	AltaLink	49-Stavely	894	138	28
Grizzly Bear	708S	ATCO	13-Lloydminster	1308	138	134
Halkirk	615S	ATCO	42-Hanna	1435	240	233
Halsbury	306S	AltaLink	48-Empress	798	240	268
Hanna	763S	ATCO	42-Hanna	1408	72	32
Hansman Lake	650S	AltaLink	37-Provost	649	240	645
Hansman Lake	650S	AltaLink	37-Provost	648	138	451
Hardisty	377S	AltaLink	32-Wainwright	73	138	220
Hartell	512S	AltaLink	46-High River	243	138	34
Hays	421S	AltaLink	52-Vauxhall	401	138	11
Hayter	277S	AltaLink	37-Provost	220	138	187
Heatburg	948S	ATCO	42-Hanna	1429	144	69
Heisler	764S	ATCO	36-Alliance/Battle River	1464	144	129
Heisler	764S	ATCO	36-Alliance/Battle River	1400	72	42

Name	Facility Code	TFO	Planning Area	Bus Number	Voltage (kV)	Capability (MW)
High River	65S	AltaLink	46-High River	242	138	33
High River	65S	AltaLink	46-High River	236	69	21
Highland	572S	AltaLink	42-Hanna	549045	138	180
Hilda	662S	AltaLink	48-Empress	540004	138	60
Hill	751S	ATCO	13-Lloydminster	1393	144	183
Hillridge	139S	AltaLink	54-Lethbridge	389	138	5
HRT Express	329S	AltaLink	32-Wainwright	37	138	107
Hughenden	213S	AltaLink	37-Provost	75	138	137
Hull	257S	AltaLink	52-Vauxhall	2400	138	5
Hussar	431S	AltaLink	45-Strathmore/Blackie	315	138	5
Irish Creek	706S	ATCO	13-Lloydminster	1377	144	170
Jarrow	252S	AltaLink	32-Wainwright	72	138	94
Jenner	275S	AltaLink	48-Empress	260	240	271
Jenner	275S	AltaLink	48-Empress	292	138	104
Kettle's Hill	383S	AltaLink	53-Fort Macleod	402	138	111
Killarney Lake	267S	AltaLink	37-Provost	219	138	157
Kitscoty	705S	ATCO	13-Lloydminster	1387	144	161
Lakesend	508S	AltaLink	42-Hanna	716	138	87
Lakeview	593S	City of Lethbridge	54-Lethbridge	697	138	15
Lanfine	959S	ATCO	42-Hanna	1438	240	522
Lanfine	959S	ATCO	42-Hanna	19438	144	347
Little Bow	991S	AltaLink	49-Stavely	549026	240	84
Lloydminster	716S	ATCO	13-Lloydminster	1455	144	175
Loyalist	903S	ATCO	42-Hanna	1458	144	86
Lundbreck	513S	AltaLink	53-Fort Macleod	347	69	7
Macdonald	146S	City of Lethbridge	54-Lethbridge	696	138	15
Magcan	142S	AltaLink	46-High River	240	138	34
Magrath	225S	AltaLink	55-Glenwood	694	138	15
Magrath	225S	AltaLink	55-Glenwood	693	69	15
Mannix Mine	765S	ATCO	36-Alliance/Battle River	1488	72	58
Marion Lake	873S	ATCO	42-Hanna	1437	72	91
McBride Lake	240S	AltaLink	53-Fort Macleod	901	138	18
Metiskow	648S	AltaLink	37-Provost	87	240	392
Metiskow	648S	AltaLink	37-Provost	74	138	455
Michichi Creek	802S	ATCO	42-Hanna	1448	144	226
Michichi Creek	802S	ATCO	42-Hanna	1449	72	48
Milo	356S	AltaLink	47-Brooks	943	240	1327
Monarch	492S	AltaLink	54-Lethbridge	400	138	16
Monitor	774S	ATCO	42-Hanna	1471	144	235
Monitor	774S	ATCO	42-Hanna	1472	72	20
Namaka	428S	AltaLink	45-Strathmore/Blackie	340	138	5
Nevis	766S	ATCO	42-Hanna	1422	240	484
Nevis	766S	ATCO	42-Hanna	1423	144	77
Newell	2075S	AltaLink	47-Brooks	1012	240	1176
Nilrem	574S	AltaLink	32-Wainwright	1427	240	455
Nilrem	574S	AltaLink	32-Wainwright	19427	138	340
North Holden	395S	AltaLink	56-Vegreville	68	138	123
North Lethbridge	370S	AltaLink	54-Lethbridge	167	240	376
North Lethbridge	370S	AltaLink	54-Lethbridge	692	138	15
Oakland	946S	ATCO	43-Sheerness	1440	240	1019

Name	Facility Code	TFO	Planning Area	Bus Number	Voltage (kV)	Capability (MW)
Okotoks	678S	AltaLink	46-High River	239	138	34
Oldman River	806S	AltaLink	53-Fort Macleod	230	138	65
Oyen	767S	ATCO	42-Hanna	1474	144	134
Oyen	767S	ATCO	42-Hanna	1475	72	29
Paintearth Creek	863S	ATCO	36-Alliance/Battle River	1403	240	582
Peace Butte	404S	AltaLink	04-Medicine Hat	284	138	111
Peigan	59S	AltaLink	53-Fort Macleod	165	240	423
Peigan	59S	AltaLink	53-Fort Macleod	166	138	208
Pemukan	932S	ATCO	42-Hanna	1419	240	710
Pemukan	932S	ATCO	42-Hanna	19419	144	261
Picture Butte	120S	AltaLink	54-Lethbridge	451	240	311
Pincher Creek	396S	AltaLink	53-Fort Macleod	224	138	131
Pincher Creek	396S	AltaLink	53-Fort Macleod	223	69	60
Provost	545S	AltaLink	37-Provost	86	138	134
Queenstown	504S	AltaLink	45-Strathmore/Blackie	333	138	63
Rangeland Yarrow	995S	AltaLink	55-Glenwood	228	69	24
Rattlesnake Ridge	719S	AltaLink	04-Medicine Hat	873	138	1
Raymond Reservoir	313S	AltaLink	55-Glenwood	413	69	10
Ribstone Creek	892S	ATCO	42-Hanna	1477	144	103
Richdale	776S	ATCO	42-Hanna	1478	72	22
Riverbend	618S	AltaLink	54-Lethbridge	699	138	15
Rosyth	296S	AltaLink	32-Wainwright	373	138	77
Rowley	768S	ATCO	42-Hanna	1436	144	129
Russell	632S	AltaLink	53-Fort Macleod	656	138	131
Sand Hills Sub	341S	AltaLink	48-Empress	111	138	116
Sandy Point	204S	AltaLink	48-Empress	53	138	44
Sedalia	363S	ATCO	42-Hanna	831	240	395
Sedgewick	137S	AltaLink	32-Wainwright	78	138	97
Shamrock	1018S	AltaLink	04-Medicine Hat	990	240	156
Sheerness	807S	ATCO	43-Sheerness	1481	240	83
Sheerness	807S	ATCO	43-Sheerness	1486	240	65
Shell Waterton	502S	AltaLink	55-Glenwood	231	69	50
Soderghen	243S	AltaLink	53-Fort Macleod	358	138	43
Spring Coulee	385S	AltaLink	55-Glenwood	246	69	18
St. Paul	707S	ATCO	56-Vegreville	1372	144	170
Stavely	349S	AltaLink	49-Stavely	235	138	30
Stettler	769S	ATCO	42-Hanna	1428	144	84
Stettler	769S	ATCO	42-Hanna	1439	72	83
Stirling	67S	AltaLink	55-Glenwood	293	138	8
Stirling	67S	AltaLink	55-Glenwood	280	69	9
Strathmore	151S	AltaLink	45-Strathmore/Blackie	259	138	4
Strome	223S	AltaLink	56-Vegreville	76	138	136
Suffield	895S	AltaLink	04-Medicine Hat	270	138	63
Sullivan Lake	775S	ATCO	42-Hanna	1406	72	41
Summerview	354S	AltaLink	53-Fort Macleod	336	138	21
Sunken Lake	221S	AltaLink	37-Provost	112	138	84
Taber	83S	AltaLink	52-Vauxhall	272	138	3
Taber Wind Farm	134S	AltaLink	52-Vauxhall	343	138	2

Name	Facility Code	TFO	Planning Area	Bus Number	Voltage (kV)	Capability (MW)
<b>Taylor Hydro Plant</b>		AltaLink	55-Glenwood	670	69	15
<b>Three Hills</b>	770S	ATCO	42-Hanna	1433	144	87
<b>Tilley</b>	498S	AltaLink	47-Brooks	275	138	127
<b>Tinchebray</b>	972S	ATCO	36-Alliance/Battle River	1431	240	313
<b>Travers</b>	554S	AltaLink	49-Stavely	737	240	212
<b>Tucuman</b>	478S	AltaLink	32-Wainwright	483	138	303
<b>Uplands</b>	241S	City of Lethbridge	54-Lethbridge	691	138	15
<b>Vauxhall</b>	158S	AltaLink	52-Vauxhall	274	138	7
<b>Vegreville</b>	709S	ATCO	56-Vegreville	1367	144	173
<b>Vermilion</b>	710S	ATCO	13-Lloydminster	1383	144	300
<b>Veteran</b>	771S	ATCO	42-Hanna	1470	144	108
<b>Vilna</b>	777S	ATCO	56-Vegreville	1357	144	156
<b>Vulcan</b>	255S	AltaLink	49-Stavely	244	138	36
<b>Wainwright</b>	51S	AltaLink	32-Wainwright	297	138	120
<b>Wardlaw</b>	230S	AltaLink	48-Empress	344	138	87
<b>Ware Junction</b>	132S	AltaLink	47-Brooks	225	240	1125
<b>Warner</b>	344S	AltaLink	55-Glenwood	278	69	9
<b>Waterton</b>	379S	AltaLink	55-Glenwood	227	69	99
<b>Watt Lake</b>	956S	ATCO	56-Vegreville	1361	144	44
<b>West Brooks</b>	28S	AltaLink	47-Brooks	430	240	1106
<b>West Brooks</b>	28S	AltaLink	47-Brooks	276	138	562
<b>Westfield</b>	107S	AltaLink	52-Vauxhall	277	138	1
<b>Wheatland</b>	609S	ATCO	43-Sheerness	759	144	50
<b>Whitbylake</b>	819S	ATCO	56-Vegreville	1350	144	179
<b>Whitla</b>	251S	AltaLink	04-Medicine Hat	662	240	1281
<b>Windrise</b>	1063S	AltaLink	53-Fort Macleod	549031	138	43
<b>Windy Flats</b>	138S	AltaLink	53-Fort Macleod	746	240	418
<b>Windy Flats</b>	138S	AltaLink	53-Fort Macleod	654	138	219
<b>Windy Flats</b>	138S	AltaLink	53-Fort Macleod	745	138	204
<b>Windy Point</b>	112S	AltaLink	53-Fort Macleod	543	138	64
<b>Wintering Hills</b>	804S	ATCO	43-Sheerness	1460	144	50
<b>Woolchester</b>	1019S	AltaLink	04-Medicine Hat	549003	240	635
<b>Wyndham</b>	269S	AltaLink	45-Strathmore/Blackie	5251	138	20
<b>Youngstown</b>	772S	ATCO	42-Hanna	1476	72	24
<b>Youngstown Express</b>	2037S	ATCO	42-Hanna	1480	72	17

## Attachment B – Transmission Line Capability

Line Name	Voltage (kV)	Substation Name	Facility Code	Planning Area	TFO	Capability (MW) <sup>4</sup>
1002L	240	Amoco Empress	163S	48-Empress	AltaLink	158
1002L	240	Jenner	275S	48-Empress	AltaLink	265
1005AL	240	Little Bow	991S	49-Stavely	AltaLink	84
1005L	240	Picture Butte	120S	54-Lethbridge	AltaLink	311
1005L	240	Milo	356S	47-Brooks	AltaLink	117
100L	138	Tilley	498S	47-Brooks	AltaLink	58
100L	138	Suffield	895S	04-Medicine Hat	AltaLink	62
1011L	240	Amoco Empress	163S	48-Empress	AltaLink	158
1011L	240	Cypress	562S	48-Empress	AltaLink	158
1034L	240	Bowmanton	244S	04-Medicine Hat	AltaLink	466
1034L	240	Cassils	324S	47-Brooks	AltaLink	466
1035L	240	Newell	2075S	47-Brooks	AltaLink	466
1035L	240	Bowmanton	244S	04-Medicine Hat	AltaLink	466
1036L	240	Milo	356S	47-Brooks	AltaLink	142
1036L	240	Travers	554S	49-Stavely	AltaLink	212
1037L	240	Windy Flats	138S	53-Fort Macleod	AltaLink	418
1037L	240	Foothills	237S	46-High River	AltaLink	337
1038L	240	Windy Flats	138S	53-Fort Macleod	AltaLink	418
1038L	240	Foothills	237S	46-High River	AltaLink	337
1041L	240	North Lethbridge	370S	54-Lethbridge	AltaLink	359
1041L	240	Travers	554S	49-Stavely	AltaLink	212
1042L	240	Blackspring Ridge	485S	49-Stavely	AltaLink	197
1042L	240	Travers	554S	49-Stavely	AltaLink	197
1047L	240	Nilrem	574S	32-Wainwright	AltaLink	455
1047L	240	Hansman Lake	650S	37-Provost	AltaLink	466
1048L	240	Windy Flats	138S	53-Fort Macleod	AltaLink	384
1048L	240	Peigan	59S	53-Fort Macleod	AltaLink	423
1049L	240	Windy Flats	138S	53-Fort Macleod	AltaLink	385
1049L	240	Peigan	59S	53-Fort Macleod	AltaLink	423
1051L	240	West Brooks	28S	47-Brooks	AltaLink	466
1051L	240	Cassils	324S	47-Brooks	AltaLink	466
1052L	240	West Brooks	28S	47-Brooks	AltaLink	466
1052L	240	Cassils	324S	47-Brooks	AltaLink	466
1053L	240	Ware Junction	132S	47-Brooks	AltaLink	466
1053L	240	Cassils	324S	47-Brooks	AltaLink	466
1071L	240	Castle Rock Ridge	205S	53-Fort Macleod	AltaLink	431
1071L	240	Fidler	312S	53-Fort Macleod	AltaLink	431
1072L	240	Goose Lake	103S	53-Fort Macleod	AltaLink	429
1072L	240	Castle Rock Ridge	205S	53-Fort Macleod	AltaLink	431
1075L	240	Ware Junction	132S	47-Brooks	AltaLink	466
1075L	240	West Brooks	28S	47-Brooks	AltaLink	466
1087L	240	Newell	2075S	47-Brooks	AltaLink	466
1087L	240	Cassils	324S	47-Brooks	AltaLink	466
1088L	240	Newell	2075S	47-Brooks	AltaLink	466
1088L	240	Cassils	324S	47-Brooks	AltaLink	466
1106L	240	Foothills	237S	46-High River	AltaLink	337
1106L	240		SS-65	6-Calgary	Enmax	466
1107L	240	Foothills	237S	46-High River	AltaLink	337

<sup>4</sup> The T-tap connection capability for transmission lines will vary along the line depending on the T-tap location. As the T-tap location nears each substation, the T-tap capability approaches the MW value shown.



Line Name	Voltage (kV)	Substation Name	Facility Code	Planning Area	TFO	Capability (MW) <sup>4</sup>
1107L	240		SS-65	6-Calgary	Enmax	466
1148L	240	Shamrock	1018S	04-Medicine Hat	AltaLink	156
1148L	240	Whitla	251S	04-Medicine Hat	AltaLink	156
13L/158L	69	Black Diamond	392S	46-High River	AltaLink	16
13L/158L	69	High River	65S	46-High River	AltaLink	16
161L	138	Vulcan	255S	49-Stavely	AltaLink	36
161L	138	Queenstown	504S	45-Strathmore/Blackie	AltaLink	62
162L	69	Glenwood	229S	55-Glenwood	AltaLink	21
162L	69	Drywood	415S	55-Glenwood	AltaLink	37
164L	138	Goose Lake	103S	53-Fort Macleod	AltaLink	104
164L	138	Drywood	415S	55-Glenwood	AltaLink	122
170L	138	Coleman	799S	53-Fort Macleod	AltaLink	133
170L	138	Russell	632S	53-Fort Macleod	AltaLink	131
172EL	138	Hillridge	139S	54-Lethbridge	AltaLink	5
172L	138	Chinook	181S	54-Lethbridge	City of Lethbridge	15
172L	138	Coaldale	254S	54-Lethbridge	AltaLink	8
172L	138	Coaldale	254S	54-Lethbridge	AltaLink	8
172L	138	North Lethbridge	370S	54-Lethbridge	AltaLink	15
172L	138	North Lethbridge	370S	54-Lethbridge	AltaLink	15
172L	138	Taber	83S	52-Vauxhall	AltaLink	3
174L	138	Bardo	197S	31-Wetaskiwin	AltaLink	77
174L	138	North Holden	395S	56-Vegreville	AltaLink	89
180AL	138	Granum	604S	49-Stavely	AltaLink	28
180L	138	Fort Macleod	15S	53-Fort Macleod	AltaLink	17
180L	138	Vulcan	255S	49-Stavely	AltaLink	36
180L	138	East Stavely	928S	49-Stavely	AltaLink	30
180L	138	East Stavely	928S	49-Stavely	AltaLink	30
185AL	69	Drywood	415S	55-Glenwood	AltaLink	24
185AL	69	Rangeland Yarrow	995S	55-Glenwood	AltaLink	24
185L	69	Waterton	379S	55-Glenwood	AltaLink	93
185L	69	Waterton	379S	55-Glenwood	AltaLink	43
185L	69	Pincher Creek	396S	53-Fort Macleod	AltaLink	54
185L	69	Drywood	415S	55-Glenwood	AltaLink	74
197L	138	Stavely	349S	49-Stavely	AltaLink	30
197L	138	East Stavely	928S	49-Stavely	AltaLink	30
207L	138	Coalbanks	111S	54-Lethbridge	City of Lethbridge	15
207L	138	North Lethbridge	370S	54-Lethbridge	AltaLink	15
225AL	69	Raymond Reservoir	313S	55-Glenwood	AltaLink	10
225L	69	Magrath	225S	55-Glenwood	AltaLink	15
225L	69	Magrath	225S	55-Glenwood	AltaLink	11
225L	69	Glenwood	229S	55-Glenwood	AltaLink	21
225L	69	Spring Coulee	385S	55-Glenwood	AltaLink	18
225L	69	Spring Coulee	385S	55-Glenwood	AltaLink	18
225L	69	Stirling	67S	55-Glenwood	AltaLink	5
300L/725BL	138	McBride Lake	240S	53-Fort Macleod	AltaLink	18
398L	138	Hayter	277S	37-Provost	AltaLink	187
398L	138	Provost	545S	37-Provost	AltaLink	132
408L	138	Jarrow	252S	32-Wainwright	AltaLink	72
408L	138	Wainwright	51S	32-Wainwright	AltaLink	115
412L	138	Pincher Creek	396S	53-Fort Macleod	AltaLink	131
412L	138	Russell	632S	53-Fort Macleod	AltaLink	131
413L	138	Castle River	239S	53-Fort Macleod	AltaLink	70
413L	138	Russell	632S	53-Fort Macleod	AltaLink	70
434L	138	Foothills	237S	46-High River	AltaLink	58

Line Name	Voltage (kV)	Substation Name	Facility Code	Planning Area	TFO	Capability (MW) <sup>4</sup>
434L	138	High River	65S	46-High River	AltaLink	33
463AL	138	Monarch	492S	54-Lethbridge	AltaLink	16
463L	138	Fort Macleod	15S	53-Fort Macleod	AltaLink	18
463L	138	Chinook	181S	54-Lethbridge	City of Lethbridge	15
472AL	138	Sunken Lake	221S	37-Provost	AltaLink	84
472L	138	Hughenden	213S	37-Provost	AltaLink	137
472L	138	Metiskow	648S	37-Provost	AltaLink	138
491L	138	Jarrow	252S	32-Wainwright	AltaLink	94
497L	138	Windrise	1063S	53-Fort Macleod	AltaLink	43
497L	138	Windy Flats	138S	53-Fort Macleod	AltaLink	44
507L	138	Hull	257S	52-Vauxhall	AltaLink	5
507L	138	Taber	83S	52-Vauxhall	AltaLink	3
508L	69	Warner	344S	55-Glenwood	AltaLink	9
508L	69	Stirling	67S	55-Glenwood	AltaLink	9
514BL	69	Cowley Ridge	322S	53-Fort Macleod	AltaLink	7
514L	69	Pincher Creek	396S	53-Fort Macleod	AltaLink	7
514L	69	Lundbreck	513S	53-Fort Macleod	AltaLink	7
591L	69	Waterton	379S	55-Glenwood	AltaLink	50
591L	69	Shell Waterton	502S	55-Glenwood	AltaLink	50
600L	138	Peace Butte	404S	04-Medicine Hat	AltaLink	111
600L	138	Bullshead	523S	04-Medicine Hat	AltaLink	109
601L	138	Wardlow	230S	48-Empress	AltaLink	87
601L	138	Jenner	275S	48-Empress	AltaLink	86
603L	138	Windy Flats	138S	53-Fort Macleod	AltaLink	42
603L	138	Soderglen	243S	53-Fort Macleod	AltaLink	43
607AL	138	Taber Wind Farm	134S	52-Vauxhall	AltaLink	2
607L	138	Conrad	135S	52-Vauxhall	AltaLink	2
607L	138	Fincastle	336S	52-Vauxhall	AltaLink	2
608AL	138	Blue Trail	528S	53-Fort Macleod	AltaLink	40
608L	138	Windy Flats	138S	53-Fort Macleod	AltaLink	40
608L	138	Ardenville Wind Farm	418S	53-Fort Macleod	AltaLink	41
610L	138	Fincastle	336S	52-Vauxhall	AltaLink	2
610L	138	Taber	83S	52-Vauxhall	AltaLink	3
612L	138	Fincastle	336S	52-Vauxhall	AltaLink	2
612L	138	Burdett	368S	52-Vauxhall	AltaLink	1
613L	138	Goose Lake	103S	53-Fort Macleod	AltaLink	106
613L	138	Pincher Creek	396S	53-Fort Macleod	AltaLink	131
616AL	138	Kettle's Hill	383S	53-Fort Macleod	AltaLink	111
616L	138	Goose Lake	103S	53-Fort Macleod	AltaLink	137
616L	138	Peigan	59S	53-Fort Macleod	AltaLink	93
624L	138	Fidler	312S	53-Fort Macleod	AltaLink	21
624L	138	Summerview	354S	53-Fort Macleod	AltaLink	21
646L	138	Foothills	237S	46-High River	AltaLink	58
646L	138	Okotoks	678S	46-High River	AltaLink	34
658AL	138	Hilda	662S	48-Empress	AltaLink	60
658L	138	Cypress	562S	48-Empress	AltaLink	58
658L	138	Chappice Lake	649S	04-Medicine Hat	AltaLink	35
666L	138	West Brooks	28S	47-Brooks	AltaLink	109
666L	138	Tilley	498S	47-Brooks	AltaLink	127
667L	138	Macdonald	146S	54-Lethbridge	City of Lethbridge	15
667L	138	North Lethbridge	370S	54-Lethbridge	AltaLink	15
668L	138	Empress	394S	48-Empress	AltaLink	78
668L	138	Cypress	562S	48-Empress	AltaLink	120
669L	138	Amoco Empress	163S	48-Empress	AltaLink	124



Line Name	Voltage (kV)	Substation Name	Facility Code	Planning Area	TFO	Capability (MW) <sup>4</sup>
669L	138	Cypress	562S	48-Empress	AltaLink	120
674L	138	Bowmanton	244S	04-Medicine Hat	AltaLink	35
674L	138	Chappice Lake	649S	04-Medicine Hat	AltaLink	35
675L	138	Bowmanton	244S	04-Medicine Hat	AltaLink	267
675L	138	Al Rothbauer	321S	04-Medicine Hat	AltaLink	220
676L	138	Bowmanton	244S	04-Medicine Hat	AltaLink	268
676L	138	Bullshead	523S	04-Medicine Hat	AltaLink	214
679L	138	Tucuman	478S	32-Wainwright	AltaLink	165
679L	138	Nilrem	574S	32-Wainwright	AltaLink	224
680L	138	Tucuman	478S	32-Wainwright	AltaLink	165
680L	138	Nilrem	574S	32-Wainwright	AltaLink	224
681L	138	Hardisty	377S	32-Wainwright	AltaLink	220
681L	138	Tucuman	478S	32-Wainwright	AltaLink	211
691L	138	Chestermere	419S	6-Calgary	AltaLink	3
691L	138	Janet	74S	6-Calgary	AltaLink	2
696L/7L696	138	Lakesend	508S	42-Hanna	AltaLink	87
696L/7L696	138	Ribstone Creek	892S	42-Hanna	ATCO	85
6L02	69	Battle River	757S	36-Alliance/Battle River	ATCO	56
6L02	69	Mannix Mine	765S	36-Alliance/Battle River	ATCO	55
6L02	69	Mannix Mine	765S	36-Alliance/Battle River	ATCO	58
6L02	69	Stettler	769S	42-Hanna	ATCO	66
6L02	69	Marion Lake	873S	42-Hanna	ATCO	91
6L02	69	Marion Lake	873S	42-Hanna	ATCO	82
6L03	69	Battle River	757S	36-Alliance/Battle River	ATCO	53
6L03	69	Sullivan Lake	775S	42-Hanna	ATCO	41
6L05	69	Battle River	757S	36-Alliance/Battle River	ATCO	58
6L05	69	Heisler	764S	36-Alliance/Battle River	ATCO	42
6L05	69	Big Knife Creek	843S	36-Alliance/Battle River	ATCO	59
6L05	69	Big Knife Creek	843S	36-Alliance/Battle River	ATCO	46
6L08	69	Bigfoot	756S	36-Alliance/Battle River	ATCO	49
6L08	69	Battle River	757S	36-Alliance/Battle River	ATCO	48
6L09	69	Hanna	763S	42-Hanna	ATCO	18
6L09	69	Oyen	767S	42-Hanna	ATCO	19
6L09	69	Youngstown	772S	42-Hanna	ATCO	23
6L09	69	Youngstown	772S	42-Hanna	ATCO	23
6L09	69	Richdale	776S	42-Hanna	ATCO	22
6L09	69	Richdale	776S	42-Hanna	ATCO	20
6L12	69	Sullivan Lake	775S	42-Hanna	ATCO	14
6L15	69	Hanna	763S	42-Hanna	ATCO	20
6L15	69	Sullivan Lake	775S	42-Hanna	ATCO	16
6L17	69	Castor	759S	42-Hanna	ATCO	55
6L21	69	Youngstown Express	2037S	42-Hanna	ATCO	17
6L25	69	Coronation	773S	42-Hanna	ATCO	15
6L44	69	Stettler	769S	42-Hanna	ATCO	8
6L44	69	Big Valley	778S	42-Hanna	ATCO	8
6L56	69	Hanna	763S	42-Hanna	ATCO	22
6L56	69	Michichi Creek	802S	42-Hanna	ATCO	32
701L	138	Strome	223S	56-Vegreville	AltaLink	136
701L	138	North Holden	395S	56-Vegreville	AltaLink	81
701L/7L701	138	Strome	223S	56-Vegreville	AltaLink	135
702L	138	Sedgewick	137S	32-Wainwright	AltaLink	97
702L	138	Hardisty	377S	32-Wainwright	AltaLink	65
702L/7L702	138	Sedgewick	137S	32-Wainwright	AltaLink	97
702L/7L702	138	Battle River	757S	36-Alliance/Battle River	ATCO	114
703BL	138	HRT Express	329S	32-Wainwright	AltaLink	107
703L	138	Hughenden	213S	37-Provost	AltaLink	137

Line Name	Voltage (kV)	Substation Name	Facility Code	Planning Area	TFO	Capability (MW) <sup>4</sup>
703L	138	Hardisty	377S	32-Wainwright	AltaLink	105
704L	138	Tucuman	478S	32-Wainwright	AltaLink	86
704L	138	Wainwright	51S	32-Wainwright	AltaLink	77
715AL	138	Hansman Lake	650S	37-Provost	AltaLink	107
715L	138	Provost	545S	37-Provost	AltaLink	134
722L	138	Westfield	107S	52-Vauxhall	AltaLink	1
722L	138	Burdett	368S	52-Vauxhall	AltaLink	1
725AL	138	Riverbend	618S	54-Lethbridge	AltaLink	15
725L	138	Coalbanks	111S	54-Lethbridge	City of Lethbridge	15
725L	138	Fort Macleod	15S	53-Fort Macleod	AltaLink	18
725L	138	Bowron	674S	54-Lethbridge	City of Lethbridge	16
725L	138	Bowron	674S	54-Lethbridge	City of Lethbridge	16
727AL	138	Magcan	142S	46-High River	AltaLink	34
727L	138	High River	65S	46-High River	AltaLink	33
727L	138	Okotoks	678S	46-High River	AltaLink	34
733L	138	Strathmore	151S	45-Strathmore/Blackie	AltaLink	4
733L	138	Gleichen	179S	45-Strathmore/Blackie	AltaLink	6
733L	138	Namaka	428S	45-Strathmore/Blackie	AltaLink	5
733L	138	Namaka	428S	45-Strathmore/Blackie	AltaLink	5
734L	138	Uplands	241S	54-Lethbridge	City of Lethbridge	15
734L	138	North Lethbridge	370S	54-Lethbridge	AltaLink	15
748L	138	Killarney Lake	267S	37-Provost	AltaLink	134
748L	138	Hayter	277S	37-Provost	AltaLink	187
749AL	138	Killarney Lake	267S	37-Provost	AltaLink	157
749L	138	Metiskow	648S	37-Provost	AltaLink	143
749L	138	Edgerton	899S	37-Provost	AltaLink	171
749L/7L749	138	Edgerton	899S	37-Provost	AltaLink	159
753L	138	Blackie	253S	45-Strathmore/Blackie	AltaLink	14
753L	138	High River	65S	46-High River	AltaLink	33
760AL	138	Empress Liquids	164S	48-Empress	AltaLink	78
760L	138	Amoco Empress	163S	48-Empress	AltaLink	95
760L	138	Amoco Empress	163S	48-Empress	AltaLink	107
760L	138	Empress	394S	48-Empress	AltaLink	123
763AL	138	Enchant	447S	52-Vauxhall	AltaLink	11
763L	138	Vauxhall	158S	52-Vauxhall	AltaLink	7
763L	138	Vauxhall	158S	52-Vauxhall	AltaLink	7
763L	138	Hull	257S	52-Vauxhall	AltaLink	5
763L	138	West Brooks	28S	47-Brooks	AltaLink	70
765L	138	Strathmore	151S	45-Strathmore/Blackie	AltaLink	4
765L	138	Chestermere	419S	6-Calgary	AltaLink	3
769AL	138	Clipper	656S	32-Wainwright	AltaLink	84
769BL	138	Battle Sands	594S	32-Wainwright	AltaLink	90
769L	138	Rosyth	296S	32-Wainwright	AltaLink	77
769L	138	Hardisty	377S	32-Wainwright	AltaLink	90
770L	138	Coaldale	254S	54-Lethbridge	AltaLink	8
770L	138	North Lethbridge	370S	54-Lethbridge	AltaLink	15
782L	138	Wyndham	269S	45-Strathmore/Blackie	AltaLink	20
782L	138	Carseland	525S	45-Strathmore/Blackie	AltaLink	20
786L	138	Coleman	799S	53-Fort Macleod	AltaLink	99
794L/7L794	138	Lac La Biche	157S	27-Athabasca/Lac La Biche	AltaLink	96
794L/7L794	138	Whitbylake	819S	56-Vegreville	ATCO	95

Line Name	Voltage (kV)	Substation Name	Facility Code	Planning Area	TFO	Capability (MW) <sup>4</sup>
795L	138	Brooks	121S	47-Brooks	AltaLink	84
795L	138	Hays	421S	52-Vauxhall	AltaLink	11
7L110	138	Monitor	774S	42-Hanna	ATCO	86
7L110	138	Loyalist	903S	42-Hanna	ATCO	86
7L116	138	Excel	910S	42-Hanna	ATCO	92
7L116	138	Lanfine	959S	42-Hanna	ATCO	92
7L117	138	Irish Creek	706S	13-Lloydminster	ATCO	170
7L117	138	Vermilion	710S	13-Lloydminster	ATCO	111
7L127	138	Monitor	774S	42-Hanna	ATCO	235
7L127	138	Pemukan	932S	42-Hanna	ATCO	227
7L128	138	Michichi Creek	802S	42-Hanna	ATCO	222
7L128	138	Coyote Lake	963S	43-Sheerness	ATCO	204
7L129	138	Buffalo Creek	526S	32-Wainwright	AltaLink	131
7L129	138	Vermilion	710S	13-Lloydminster	ATCO	93
7L130	138	Kitscoty	705S	13-Lloydminster	ATCO	161
7L130	138	Vermilion	710S	13-Lloydminster	ATCO	122
7L132	138	Oyen	767S	42-Hanna	ATCO	134
7L132	138	Lanfine	959S	42-Hanna	ATCO	125
7L137	138	Rowley	768S	42-Hanna	ATCO	125
7L137	138	Three Hills	770S	42-Hanna	ATCO	87
7L139	138	St. Paul	707S	56-Vegreville	ATCO	147
7L139	138	Whitbylake	819S	56-Vegreville	ATCO	113
7L14	138	Kitscoty	705S	13-Lloydminster	ATCO	156
7L14	138	Hill	751S	13-Lloydminster	ATCO	172
7L143	138	Nevis	766S	42-Hanna	ATCO	77
7L143	138	Stettler	769S	42-Hanna	ATCO	84
7L153	138	Wheatland	609S	43-Sheerness	ATCO	50
7L153	138	Wintering Hills	804S	43-Sheerness	ATCO	50
7L159	138	Three Hills	770S	42-Hanna	ATCO	87
7L159	138	Heatburg	948S	42-Hanna	ATCO	64
7L16	138	Nevis	766S	42-Hanna	ATCO	56
7L16	138	Heatburg	948S	42-Hanna	ATCO	69
7L171	138	Michichi Creek	802S	42-Hanna	ATCO	38
7L171	138	Wintering Hills	804S	43-Sheerness	ATCO	50
7L224	138	Hansman Lake	650S	37-Provost	AltaLink	90
7L224	138	Monitor	774S	42-Hanna	ATCO	146
7L238	138	Buffalo Bird	601S	42-Hanna	ATCO	182
7L238	138	Lanfine	959S	42-Hanna	ATCO	181
7L25	138	Rowley	768S	42-Hanna	ATCO	129
7L25	138	Michichi Creek	802S	42-Hanna	ATCO	107
7L42	138	Lloydminster	716S	13-Lloydminster	ATCO	175
7L42	138	Hill	751S	13-Lloydminster	ATCO	167
7L50	138	Buffalo Creek	526S	32-Wainwright	AltaLink	80
7L50	138	Battle River	757S	36-Alliance/Battle River	ATCO	132
7L53	138	Bonnyville	700S	28-Cold Lake	ATCO	124
7L53	138	Irish Creek	706S	13-Lloydminster	ATCO	127
7L65	138	Vegreville	709S	56-Vegreville	ATCO	126
7L65	138	Vermilion	710S	13-Lloydminster	ATCO	117
7L70	138	Bonnyville	700S	28-Cold Lake	ATCO	114
7L70	138	St. Paul	707S	56-Vegreville	ATCO	170
7L701	138	Battle River	757S	36-Alliance/Battle River	ATCO	176
7L749	138	Lloydminster	716S	13-Lloydminster	ATCO	92
7L760	138	Oyen	767S	42-Hanna	ATCO	103
7L77	138	North Holden	395S	56-Vegreville	AltaLink	123
7L77	138	Vegreville	709S	56-Vegreville	ATCO	94
7L79	138	Veteran	771S	42-Hanna	ATCO	102

Line Name	Voltage (kV)	Substation Name	Facility Code	Planning Area	TFO	Capability (MW) <sup>4</sup>
7L79	138	Veteran	771S	42-Hanna	ATCO	108
7L79	138	Ribstone Creek	892S	42-Hanna	ATCO	103
7L79	138	Pemukan	932S	42-Hanna	ATCO	106
7L85	138	Anderson	801S	43-Sheerness	ATCO	85
7L85	138	Bullpound	803S	43-Sheerness	ATCO	70
7L85	138	Bullpound	803S	43-Sheerness	ATCO	70
7L85	138	Wintering Hills	804S	43-Sheerness	ATCO	50
7L85AL	138	Badlands	981S	43-Sheerness	ATCO	56
7L92	138	Vegreville	709S	56-Vegreville	ATCO	114
7L92	138	Vilna	777S	56-Vegreville	ATCO	156
7L92	138	Vilna	777S	56-Vegreville	ATCO	140
7L92	138	Whitbylake	819S	56-Vegreville	ATCO	147
7LA128	138	Highland	572S	42-Hanna	AltaLink	180
7LA129	138	Bauer	918S	13-Lloydminster	ATCO	108
7LA159	138	Ghost Pine	114S	42-Hanna	ATCO	24
7LA53	138	Lindbergh	969S	28-Cold Lake	ATCO	87
7LA65	138	Grizzly Bear	708S	13-Lloydminster	ATCO	134
7LA701	138	Heisler	764S	36-Alliance/Battle River	ATCO	129
7LA760	138	Bindloss	914S	48-Empress	ATCO	100
7LA92	138	Watt Lake	956S	56-Vegreville	ATCO	44
7LB749	138	Briker	880S	13-Lloydminster	ATCO	101
7LB760	138	Cavendish	893S	48-Empress	ATCO	100
812AL	138	Hartell	512S	46-High River	AltaLink	34
812L	138	Black Diamond	392S	46-High River	AltaLink	34
812L	138	High River	65S	46-High River	AltaLink	33
813L	138	Macdonald	146S	54-Lethbridge	City of Lethbridge	15
813L	138	Uplands	241S	54-Lethbridge	City of Lethbridge	15
814L	138	Brooks	121S	47-Brooks	AltaLink	233
814L	138	West Brooks	28S	47-Brooks	AltaLink	154
820AL	138	Chin Chute	315S	54-Lethbridge	AltaLink	8
820L	138	Coaldale	254S	54-Lethbridge	AltaLink	8
820L	138	Stirling	67S	55-Glenwood	AltaLink	8
821L	138	Vauxhall	158S	52-Vauxhall	AltaLink	7
821L	138	Hays	421S	52-Vauxhall	AltaLink	11
823L	138	Macdonald	146S	54-Lethbridge	City of Lethbridge	15
823L	138	Lakeview	593S	54-Lethbridge	City of Lethbridge	15
824L	138	Lakeview	593S	54-Lethbridge	City of Lethbridge	15
824L	138	Riverbend	618S	54-Lethbridge	AltaLink	15
827L	138	Brooks	121S	47-Brooks	AltaLink	233
827L	138	West Brooks	28S	47-Brooks	AltaLink	154
830L	138	Cypress	562S	48-Empress	AltaLink	25
831AL	138	Cutting Lake	227S	47-Brooks	AltaLink	90
831L	138	Brooks	121S	47-Brooks	AltaLink	90
831L	138	Duchess	339S	47-Brooks	AltaLink	91
850L	138	Carseland	525S	45-Strathmore/Blackie	AltaLink	20
850L	138	Okotoks	678S	46-High River	AltaLink	34
851L	138	Blackie	253S	45-Strathmore/Blackie	AltaLink	14
851L	138	Carseland	525S	45-Strathmore/Blackie	AltaLink	20
853AL	138	Bassano	435S	47-Brooks	AltaLink	83
853L	138	West Brooks	28S	47-Brooks	AltaLink	75
853L	138	Queenstown	504S	45-Strathmore/Blackie	AltaLink	63

Line Name	Voltage (kV)	Substation Name	Facility Code	Planning Area	TFO	Capability (MW) <sup>4</sup>
863L	138	Magrath	225S	55-Glenwood	AltaLink	15
863L	138	Riverbend	618S	54-Lethbridge	AltaLink	15
869L	138	Amoco Empress	163S	48-Empress	AltaLink	44
869L	138	Sandy Point	204S	48-Empress	AltaLink	44
871L	138	Amoco Empress	163S	48-Empress	AltaLink	116
871L	138	Sand Hills Sub	341S	48-Empress	AltaLink	116
876L	138	Gleichen	179S	45-Strathmore/Blackie	AltaLink	6
876L	138	Blackie	253S	45-Strathmore/Blackie	AltaLink	14
879AL	138	Rattlesnake Ridge	719S	04-Medicine Hat	AltaLink	1
879L	138	Bowmanton	244S	04-Medicine Hat	AltaLink	3
879L	138	Burdett	368S	52-Vauxhall	AltaLink	1
880L	138	Al Rothbauer	321S	04-Medicine Hat	AltaLink	154
880L	138	Bullshead	523S	04-Medicine Hat	AltaLink	128
885L	138	Metiskow	648S	37-Provost	AltaLink	437
885L	138	Hansman Lake	650S	37-Provost	AltaLink	451
886L	138	Namaka	428S	45-Strathmore/Blackie	AltaLink	5
886L	138	Hussar	431S	45-Strathmore/Blackie	AltaLink	5
891L	138	Garden City	226S	55-Glenwood	AltaLink	15
892L	138	Bowmanton	244S	04-Medicine Hat	AltaLink	35
892L	138	Suffield	895S	04-Medicine Hat	AltaLink	62
893AL	138	Windy Point	112S	53-Fort Macleod	AltaLink	64
893L	138	Fidler	312S	53-Fort Macleod	AltaLink	93
893L	138	Oldman River	806S	53-Fort Macleod	AltaLink	65
912L	240	Red Deer	63S	35-Red Deer	AltaLink	342
912L	240	Nevis	766S	42-Hanna	ATCO	466
923L	240	Newell	2075S	47-Brooks	AltaLink	466
923L	240	Milo	356S	47-Brooks	AltaLink	466
924L	240	Langdon	102S	6-Calgary	AltaLink	378
924L	240	Milo	356S	47-Brooks	AltaLink	466
927L	240	Langdon	102S	6-Calgary	AltaLink	408
927L	240	Milo	356S	47-Brooks	AltaLink	466
931L	240	Ware Junction	132S	47-Brooks	AltaLink	466
931L	240	West Brooks	28S	47-Brooks	AltaLink	466
933L/9L933	240	Ware Junction	132S	47-Brooks	AltaLink	414
933L/9L933	240	Anderson	801S	43-Sheerness	ATCO	466
934L/9L934	240	Ware Junction	132S	47-Brooks	AltaLink	297
934L/9L934	240	Anderson	801S	43-Sheerness	ATCO	466
935L	240	Cassils	324S	47-Brooks	AltaLink	466
935L	240	Milo	356S	47-Brooks	AltaLink	466
940L	240	Picture Butte	120S	54-Lethbridge	AltaLink	311
940L	240	North Lethbridge	370S	54-Lethbridge	AltaLink	303
944L	240	Ware Junction	132S	47-Brooks	AltaLink	466
944L	240	Jenner	275S	48-Empress	AltaLink	265
945L	240	Jenner	275S	48-Empress	AltaLink	265
945L	240	Cypress	562S	48-Empress	AltaLink	158
948L/9L948	240	Hansman Lake	650S	37-Provost	AltaLink	300
948L/9L948	240	Paintearth Creek	863S	36-Alliance/Battle River	ATCO	432
949L	240	Jenner	275S	48-Empress	AltaLink	265
949L	240	Halsbury	306S	48-Empress	AltaLink	267
950L/9L950	240	Ware Junction	132S	47-Brooks	AltaLink	298
950L/9L950	240	Anderson	801S	43-Sheerness	ATCO	466
951L	240	Ware Junction	132S	47-Brooks	AltaLink	466
951L	240	Jenner	275S	48-Empress	AltaLink	265
953L/9L953	240	Nilrem	574S	32-Wainwright	AltaLink	455
953L/9L953	240	Cordel	755S	36-Alliance/Battle River	ATCO	466
954L	240	Metiskow	648S	37-Provost	AltaLink	392



Line Name	Voltage (kV)	Substation Name	Facility Code	Planning Area	TFO	Capability (MW) <sup>4</sup>
954L	240	Hansman Lake	650S	37-Provost	AltaLink	390
955L	240	Goose Lake	103S	53-Fort Macleod	AltaLink	429
955L	240	Peigan	59S	53-Fort Macleod	AltaLink	398
956L	240	Goose Lake	103S	53-Fort Macleod	AltaLink	429
956L	240	Peigan	59S	53-Fort Macleod	AltaLink	398
964AL	240	Granlea	1024S	04-Medicine Hat	AltaLink	466
964L	240	Bowmanton	244S	04-Medicine Hat	AltaLink	466
964L	240	Whitla	251S	04-Medicine Hat	AltaLink	466
966L/9L966	240	Hansman Lake	650S	37-Provost	AltaLink	466
966L/9L966	240	Pemukan	932S	42-Hanna	ATCO	466
967L	240	Windy Flats	138S	53-Fort Macleod	AltaLink	418
967L	240	North Lethbridge	370S	54-Lethbridge	AltaLink	368
968L	240	Windy Flats	138S	53-Fort Macleod	AltaLink	418
968L	240	North Lethbridge	370S	54-Lethbridge	AltaLink	368
983AL	240	Woolchester	1019S	04-Medicine Hat	AltaLink	466
983L	240	Bowmanton	244S	04-Medicine Hat	AltaLink	466
983L	240	Whitla	251S	04-Medicine Hat	AltaLink	466
994L	240	Goose Lake	103S	53-Fort Macleod	AltaLink	429
994L	240	Fidler	312S	53-Fort Macleod	AltaLink	431
9L100	240	Anderson	801S	43-Sheerness	ATCO	65
9L100	240	Sheerness	807S	43-Sheerness	ATCO	65
9L16	240	Cordel	755S	36-Alliance/Battle River	ATCO	287
9L16	240	Tinchebray	972S	36-Alliance/Battle River	ATCO	313
9L20	240	Cordel	755S	36-Alliance/Battle River	ATCO	466
9L20	240	Nevis	766S	36-Alliance/Battle River	ATCO	335
9L24	240	Oakland	946S	43-Sheerness	ATCO	466
9L24	240	Lanfine	959S	42-Hanna	ATCO	466
9L27	240	Cordel	755S	36-Alliance/Battle River	ATCO	466
9L27	240	Paintearth Creek	863S	36-Alliance/Battle River	ATCO	466
9L29	240	Oakland	946S	43-Sheerness	ATCO	466
9L29	240	Coyote Lake	963S	43-Sheerness	ATCO	466
9L46	240	Pemukan	932S	42-Hanna	ATCO	320
9L46	240	Lanfine	959S	42-Hanna	ATCO	466
9L46AL	240	Sedalia	363S	42-Hanna	ATCO	395
9L59	240	Anderson	801S	43-Sheerness	ATCO	466
9L59	240	Tinchebray	972S	36-Alliance/Battle River	ATCO	313
9L59AL	240	Garden Plain	1045S	42-Hanna	ATCO	466
9L70	240	Anderson	801S	43-Sheerness	ATCO	466
9L70	240	Oakland	946S	43-Sheerness	ATCO	466
9L79	240	Cordel	755S	36-Alliance/Battle River	ATCO	108
9L79	240	Battle River	757S	36-Alliance/Battle River	ATCO	108
9L80	240	Cordel	755S	36-Alliance/Battle River	ATCO	466
9L80	240	Battle River	757S	36-Alliance/Battle River	ATCO	466
9L93	240	Halkirk	615S	42-Hanna	ATCO	233
9L93	240	Tinchebray	972S	36-Alliance/Battle River	ATCO	232
9L97	240	Anderson	801S	43-Sheerness	ATCO	466
9L97	240	Oakland	946S	43-Sheerness	ATCO	466
9L99	240	Anderson	801S	43-Sheerness	ATCO	83
9L99	240	Sheerness	807S	43-Sheerness	ATCO	83
CHD-1	69	Magrath	225S	55-Glenwood	AltaLink	15
CHD-1	69	Taylor Hydro Plant		55-Glenwood	AltaLink	15
PCES01L	138	Namaka	428S	45-Strathmore/Blackie	AltaLink	5
PCES01L	138	Cavalier		45-Strathmore/Blackie	AltaLink	5