

**APPENDIX G    NORTHWEST REGION FORECAST APPENDIX**

### 1 Introduction

The AESO's responsibilities with respect to forecasting the need for transmission in Alberta are described in section 33(1) of the *Electric Utilities Act* and section 8 of the *Transmission Regulation*.

Load and generation forecasts in this document are a subset of the forecasts published separately by the AESO. The AESO's latest corporate forecast and associated forecast scenarios are found in the *AESO 2014 Long-term Outlook*, also referred to as the 2014 LTO.<sup>1</sup>

This report presents the results from the 2014 LTO for the Northwest Region. Both seasonal historical and forecasted load are shown, as well as generation assumptions for the region. Commentary on the characteristics and growth for the region are also included.

---

<sup>1</sup> The 2014 LTO is available online at: [http://www.aeso.ca/downloads/AESO\\_2014\\_Long-term\\_Outlook.pdf](http://www.aeso.ca/downloads/AESO_2014_Long-term_Outlook.pdf). This link is provided for ease of reference and does not form part of this Application.

### 2 Historical Load and Drivers

Covering over 230,000 km<sup>2</sup>, the Northwest Region is geographically one of the largest regions in the province.

Compared to the Industrial sector, the demand for Residential and Commercial energy in the region is low. There is some Agricultural activity but the majority of load growth in the region comes from the Industrial sector.

Industrial load in the region is comprised of forestry sites, manufacturing, and oil and gas, including unconventional opportunities such as the Montney/Duvernay oil and gas plays. There is also some oilsands activity—mostly in the testing and pilot phases—and associated pipelines.

Tables 2-1 and 2-2 summarize historic winter peak and summer peak load levels for the Northwest Region and for Alberta internal load<sup>2</sup> (AIL) at the time of their respective peaks.

**Table 2-1: Historical Winter Load at Northwest Region Peak and AIL Peak (MW)**

Year	NW Region	AIL
2009	1132	10,236
2010	1145	10,226
2011	1213	10,609
2012	1233	10,599
2013	1259	11,139
2014	1231	11,229

The annual average winter compound growth rate for the Northwest Region from 2009 to 2014 is 1.4 per cent.

---

<sup>2</sup> Alberta internal load represents total provincial electricity consumption including behind-the-fence, the City of Medicine Hat, and losses (transmission and distribution)

**Table 2-2: Historical Summer Load at Northwest Region Peak and AIL Peak (MW)**

Year	NW Region	AIL
2009	1059	9,117
2010	1063	9,343
2011	1030	9,552
2012	1141	9,885
2013	1132	10,063
2014	1151	10,419

The annual average summer compound growth rate for the Northwest Region from 2009 to 2014 is 1.4 per cent.

### **3 Load Forecast**

Tables 3-1 and 3-2 summarize predicted winter and summer load levels for the Northwest Region and for AIL at the time of AIL peak demand.

As the data shows, the Northwest Region is forecast to grow at an average annual compound growth rate of 2.5 per cent over the next 10 years (2015 to 2025).

This expected load growth is due to expansion of oilsands projects in the Northwest Region along with associated infrastructure development.

---

## Northwest Region – 2014 LTO Load and Generation Forecasts

---

Table 3-1 summarizes 2014 LTO forecasted winter load levels for the Northwest Region and for AIL at the time of AIL peak demand.

**Table 3-1: 2014 LTO Winter Load at AIL Peak with losses (MW)**

Year	NW Region	AIL
2015	1297	11,811
2016	1369	12,531
2017	1449	13,192
2018	1502	13,783
2019	1539	14,274
2020	1571	14,722
2021	1590	15,033
2022	1618	15,376
2023	1643	15,672
2024	1667	16,014
2025	1696	16,318

Table 3-2 summarizes 2014 LTO forecasted summer load levels for the Northwest Region and for AIL at the time of AIL peak demand.

**Table 3-2: 2014 LTO Summer Load at AIL Peak with losses (MW)**

Year	NW Region	AIL
2015	1191	10,765
2016	1208	11,170
2017	1271	11,799
2018	1349	12,390
2019	1398	12,938
2020	1432	13,429
2021	1451	13,865
2022	1477	14,148
2023	1507	14,460
2024	1527	14,731
2025	1575	15,048

## Northwest Region – 2014 LTO Load and Generation Forecasts

---

The forecast growth rate is based on a number of factors including overall economic growth as well as forecast information provided by the legal owner of electric distribution facilities (DFO) for consideration in the preparation of the 2014 LTO. Since the preparation of the 2014 LTO, the DFO in the Northwest Region has submitted numerous System Access Service Requests (SASRs) to the AESO. These projects are related to the Duvernay unconventional oil and gas play. The majority of the projects are in the Fox Creek, Grande Cache and Grande Prairie planning areas. Listed below in Table 3-3 are projects related to the Duvernay play that have applied to the AESO for system access service since the 2014 LTO was prepared.

**Table 3-3: Projects Related to the Duvernay Play**

Area	Year	Project#	Project Name	Additional MW
19	2017	1646	ATCO Eureka River Upgrade	5.12
20	2017	1618	ATCO Spirit River New POD	21
20	2017	1658	ATCO Ksituan River Capacity Increase	11.71
20	2020	1672	ATCO Heriot New POD	42.0
20	2018	1682	ATCO Wapiti Upgrade	20.5
22	2017	1581	ATCO Simonette Transformer Upgrade	9.36
22	2016	1634	ATCO Thornton New POD Phase 1*	17.9
24	2015	1610	ATCO Fox Creek DTS Increase	1
24	2016	1616	ATCO Fox Creek Breaker Addition	24.8
24	2017	1625	ATCO Jebb New POD	25
24	2018	1654	ATCO Muir New POD	25
<b>Total</b>				<b>203.39</b>

\* ATCO Electric Ltd. has indicated that it may request additional Demand Transmission Service increases to 25.4 MW (Phase 2) in November 2017 and to 42 MW (Phase 3) in August 2018.

The total requested Demand Transmission Service (DTS) related to the Duvernay play in the Northwest Region is about 203 MW by 2020. The 2014 LTO predicts growth occurring in this region—about 275 MW from 2015 to 2020—thereby regionally accommodating the total requested DTS amounts related to the Duvernay play.

While the 2014 LTO accommodated the requested DTS amounts on a regional basis, the location of specific load development was uncertain. As such, the location of predicted load growth in the 2014 LTO is not always consistent with the location of the requested DTS amounts associated with the Duvernay play. Uncertainty around unconventional natural gas development, like the Duvernay play, was recognized in the 2014 LTO as a potential risk to the load forecast.<sup>3</sup>

### 4 Existing Generation

Generation in the Northwest Region currently contains gas-fired industrial and peaking generation, baseload coal-fired generation, and biomass generation. At the end of 2014, there was 1,040 MW of generation in the region. Approximately 506 MW of the capacity was peaking and the largest unit in the region was the 144 MW H.R. Milner (HRM) coal-fired facility.

Table 4-1 lists existing generation in the Northwest Region (Please note: capacity values in Table 4-1 are as of December 31, 2014 and may have since changed).

---

<sup>3</sup> 2014 LTO, pages 28-29.

## Northwest Region – 2014 LTO Load and Generation Forecasts

**Table 4-1. Existing Northwest Region  
Generation as of December 31, 2014**

Unit	Asset ID	Technology	Area	Net Capacity (MW)
Bear Creek 2	BCR2	Cogen	20	36
Bear Creek 1	BCRK	Cogen	20	58
Whitecourt Power	EAGL	Biomass	26	25
Fort Nelson	FNG1	CC	17	73
Gold Creek 1	GOC1	Other	20	5
Grande Prairie EcoPower	GPEC	Biomass	20	27
Elmworth	NPC1	SC	20	12
Northern Prairie Power	NPP1	SC	20	93
Poplar Hill	PH1	SC	20	48
Rainbow 1 - 3	RB1-3	SC	17	90
Rainbow 5	RB5	SC	17	50
Rainbow 4	RL1	Cogen	17	47
Valleyview 1 & 2	VVW1 - 2	SC	23	100
Weyerhaeuser	WEY1	Biomass	20	48
AB Newsprint	ANC1	SC	26	63
HR Milner	HRM	Coal	22	144
Daishowa	DAI1	Other	19	52
Windfall Power Station	NRG3	Other	26	19
Carson Creek	GEN5	SC	26	15
Judy Creek	GEN6	SC	26	15
West Cadotte	WCD1	SC	19	20
<b>Total Northwest Region</b>				<b>1,040</b>

## 5 Generation Forecast

The 2014 LTO contains near term generation additions of gas-fired and biomass generation as well as the retirement of 90 MW of generation from the Rainbow 1-3 units and 144 MW from the HRM coal-fired unit. Gas-fired generation additions are a combination of cogeneration, peaking capacity, and on-site generation. In the longer term, large combined cycle and additional peaking/on-site capacity



---

## Northwest Region – 2014 LTO Load and Generation Forecasts

---

has been included in the forecast. The ultimate timing of the development of generation is dependent on the decisions of market participants.

Table 5-1 shows the anticipated Northwest Region generation in the next 20 years by technology.

**Table 5-1: 2014 LTO Northwest Region Generation by Technology**

Northwest Region Generation Capacity (MW)				
Technology	Existing	2020	2025	2035
Coal-fired	144	0	0	0
Cogeneration	141	831	831	831
Combined Cycle	73	73	73	773
Simple Cycle	506	568	568	748
Hydro	0	0	0	0
Wind	0	0	0	0
Other	176	217	217	267
Total	1,040	1,689	1,689	2,619

## 6 Summary

From a load forecast perspective, eleven SASRs relating to the Duvernay unconventional oil and gas play have been received since the preparation of the 2014 LTO. The total requested DTS related to the Duvernay play in the Northwest Region is about 203 MW by 2020. The 2014 LTO predicts growth occurring in this region—about 275 MW from 2015 to 2020—thereby regionally accommodating the total requested DTS amounts related to the Duvernay play.

From a generation forecast perspective, the 2014 LTO anticipates cogeneration, simple cycle and on-site generation to develop in the Northwest Region.