

3. Customer, Energy and Demand Forecast

Customer, Energy and Demand Forecast

April 2018

1.0 INTRODUCTION

The Customer, Energy and Demand forecast (the “forecast”), which is prepared annually, forms the foundation of Newfoundland Power’s planning process. The forecast is a key input in developing estimates of capital expenditures required to ensure the electrical system can meet the increasing demands associated with both customer and energy sales growth. The forecast also directly addresses the estimation of future revenue from electrical sales and the Company’s single largest expenditure, purchased power.

The forecast was created as of April 2018.

2.0 FORECAST METHODOLOGY

Introduction

Newfoundland Power provides electrical service to three distinct categories of customers including domestic, general service and street and area lighting. In 2017, domestic accounted for 61% of total energy sales, while general service and street and area lighting represented 38% and 1%, respectively.

Domestic

The domestic category includes Rate # 1.1 Domestic Service and Rate # 1.1S Domestic Seasonal – Optional. The domestic category primarily refers to residential dwellings such as single detached homes, single attached homes, apartments and mobile homes. This category also includes non-residential services such as cottages, personal use garages and other metered services that qualify for the domestic rate category. Residential customers use electricity primarily for space and water heating, and the operation of miscellaneous appliances and lighting. In this category, a customer/average use methodology is employed where growth in the number of customers is primarily based on forecast housing completions. Average use is forecast using an end-use/econometric model that includes the market share for electric space heating, household disposable income and the marginal price of electricity in the current and previous year. The model also includes a variable to reflect the impact of conservation and demand management programs on average use.

General Service

The general service category primarily refers to commercial, institutional and industrial customers. Unlike the domestic category, which represents a relatively homogenous group of customers, the general service category represents a relatively diverse group whose activities include, trade, finance, real estate, public administration, health, education, commercial services, transportation, manufacturing, mining, fishing, forestry and construction. These customers provide goods and services to the local market as well as for export. In 2017, approximately 85% of energy sales in this category were to customers in the service producing sector of the economy while only 15% were in the goods producing sector.

From a forecasting perspective, the general service category is divided into small general service, which includes Rate # 2.1 General Service 0 – 100 kW (110 kVA), and large general service, which includes Rate # 2.3 General Service 110 kVA (100 kW) – 1000 kVA and Rate # 2.4 General Service 1000 kVA and Over. In the small general service category, the growth in

Newfoundland Power Inc.
Purchased Energy and Demand Forecast
2018 - 2020F

Year	Produced Purchased & Wheeled		Total Wheeled Energy		Total Produced & Purchased (NP Native Peak)		Total Curtailed Demand		NP Produced		Total Purchased	
	GWH		GWH		GWH	MW	MW		GWH	MW	GWH	MW
	(1)	(2)	(3)	(4)	(5)	(6)						
Existing												
2018	6,372.8	115.2	6,257.6	1,392.743	51.29%	11.0	435.2	119.329	5,822.4	1,262.414		
2019	6,347.2	117.0	6,230.2	1,386.645	51.29%	11.0	429.5	119.329	5,800.7	1,256.316		
2020	6,359.3	118.2	6,241.1	1,385.275	51.29%	11.0	436.9	119.329	5,804.2	1,254.946		
Proposed												
2018	6,372.8	115.2	6,257.6	1,392.743	51.29%	11.0	435.2	119.329	5,822.4	1,262.414		
2019	6,340.7	117.0	6,223.7	1,385.198	51.29%	11.0	429.5	119.329	5,794.2	1,254.869		
2020	6,345.7	118.2	6,227.5	1,382.257	51.29%	11.0	436.9	119.329	5,790.6	1,251.928		

Notes:

1. Native peak is the maximum demand forecast to be served by Newfoundland Power. The 2018 native peak reflects the forecast for the winter period of December 2018 to March 2019.
2. Load Factor is based on an average of 15 year historical (normalized) load factors.
3. Based on historical performance of participants plus curtailment of company owned facilities.
4. Normal production for the forecast period is 439.1 GWh adjusted for plant availability and efficiency improvements.
5. Produced for 2018 also includes 0.2 GWh of production at Newfoundland Power's thermal plants.
6. Assumes a generation credit of 119,329 MW.
7. The purchased demand for 2018 reflects the purchased demand from Newfoundland and Labrador Hydro for the winter period of December 2018 to March 2019 and represents Newfoundland Power's forecast billing demand for 2019.

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Comparison of Forecast Energy Sales
To Weather Adjusted Actual Sales

		Forecast Sales ¹ (GWh)	Weather Adjusted Actual Sales (GWh)	Difference	
				(GWh)	(%)
1					
2	2008	5,215.1	5,208.2	-6.9	-0.1
3					
4	2009	5,244.5	5,299.0	54.5	1.0
5					
6	2010	5,349.9	5,419.0	69.1	1.3
7					
8	2011	5,480.0	5,552.8	72.8	1.3
9					
10	2012	5,658.1	5,652.2	-5.9	-0.1
11					
12	2013	5,763.6	5,763.3	-0.3	0.0
13					
14	2014	5,835.6	5,898.5	62.9	1.1
15					
16	2015	5,997.2	5,956.6	-40.6	-0.7
17					
18	2016	5,990.5	5,950.1	-40.4	-0.7
19					
20	2017	5,992.2	5,922.2	-70.0	-1.2
21					

22 Notes:

23 ¹ The forecast sales figures are from the annual forecasts prepared in the previous year and were part of the Capital Budget
24 presentations made to the Board in those years. The 2008, 2010, 2013, 2014, 2016 and 2017 forecasts were the basis
25 for the revenue requirement determinations presented as part of the Company's General Rate Applications filed in 2007,
26 2009, 2012 and 2015, respectively.