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December 14, 2016

All Customers  
Other Interested Parties

Re: 2016 Annual Plan

Nova Gas Transmission Ltd (“NGTL”) has posted its 2016 Annual Plan on TransCanada PipeLine Limited’s website at:

<http://www.transcanada.com/customerexpress/5525.html>

Customers and other interested parties are encouraged to communicate their suggestions and comments to NGTL regarding the development of the NGTL System to me at (403) 920-7186.

Yours truly,  
Nova Gas Transmission Ltd.  
A wholly owned subsidiary of TransCanada PipeLine Limited

A handwritten signature in black ink, appearing to read "Norm Bowman", consisting of a stylized first name and a surname.

Norm Bowman  
Vice – President  
Commercial Services, Optimization & Design

## TABLE OF CONTENTS

### EXECUTIVE SUMMARY

<b>1.0</b>	<b>DESIGN FORECAST .....</b>	<b>1-1</b>
<b>1.1</b>	INTRODUCTION .....	1-1
<b>1.2</b>	ECONOMIC ASSUMPTIONS .....	1-3
	1.2.1 General Assumptions .....	1-3
	1.2.2 Average Field Price.....	1-3
<b>1.3</b>	GAS DELIVERY FORECAST .....	1-4
	1.3.1 Average Annual Delivery Forecast.....	1-5
	1.3.2 Maximum Day Delivery Forecast.....	1-6
<b>1.4</b>	RECEIPT FORECAST.....	1-7
	1.4.1 Average Receipt Forecast .....	1-8
<b>1.5</b>	SUPPLY DEMAND BALANCE .....	1-9
<b>1.6</b>	STORAGE FACILITIES.....	1-11
	1.6.1 Commercial Storage.....	1-11
	1.6.2 Peak Shaving Storage .....	1-12
<b>2.0</b>	<b>DESIGN FLOWS AND MAINLINE FACILITIES .....</b>	<b>2-1</b>
<b>2.1</b>	INTRODUCTION .....	2-1
<b>2.2</b>	FACILITIES FOR AGGREGATE SYSTEM REQUIREMENTS .....	2-2
	2.2.1 Design Flows - Peace River Project Area.....	2-2
	2.2.2 Proposed Facilities for Aggregate System Requirements.....	2-3
<b>2.3</b>	FACILITIES FOR SPECIFIC AREA DEMANDS.....	2-5
	2.3.1 Design Flows – Wainwright Area.....	2-6
	2.3.2 Proposed Facilities for Specific Area Demands .....	2-7
<b>3.0</b>	<b>EXTENSION FACILITIES, LATERAL LOOPS AND METER STATIONS .....</b>	<b>3-1</b>
<b>3.1</b>	INTRODUCTION .....	3-1
<b>3.2</b>	FACILITY DESCRIPTION .....	3-3

## LIST OF FIGURES

Figure 1-1: NGTL Project Areas .....	1-2
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Figure 1-2: Average Field Price.....	1-4
Figure 1-3: System Deliveries by Destination .....	1-10
Figure 1-4: System Receipts by Project Area .....	1-10
Figure 2-1: Peace River Project Area Design Chart .....	2-3
Figure 2-2: Proposed Facilities for Aggregate System Requirements.....	2-4
Figure 2-3: Wainwright Area.....	2-5
Figure 2-4: Wainwright Area Design Chart.....	2-6
Figure 2-5: Proposed Facilities for Wainwright Area.....	2-7
Figure 3-1: Proposed Extensions, Lateral Loops and Meter Stations.....	3-2

### LIST OF TABLES

Table E-1: Proposed Facilities Additions .....	iv
Table 1-1: System Average Annual Delivery Forecast by Delivery Type .....	1-5
Table 1-2: Intra System Deliveries – Average Annual Delivery Forecast by Project Area .....	1-6
Table 1-3: Winter Maximum Day Intra System Delivery Forecast.....	1-7
Table 1-4: Summer Maximum Day Intra System Delivery Forecast .....	1-7
Table 1-5: System Average Receipts .....	1-9
Table 1-6: Receipt Meter Capacity from Commercial Storage Facilities.....	1-11
Table 2-1: Proposed Facilities for Aggregate System Requirements .....	2-4
Table 2-2: Proposed Facilities for Wainwright Area.....	2-7
Table 3-1: Proposed Extensions, Lateral Loops and Meter Stations .....	3-3
Table A2-1: Current Status of Facilities .....	A2-1

## EXECUTIVE SUMMARY

The 2016 Annual Plan provides NOVA Gas Transmission Ltd.'s (NGTL's) customers and other interested parties an overview of potential NGTL System facilities that are expected to be applied for in the 2016/17 Gas Year. The 2016 Annual Plan describes NGTL's long-term outlook for receipts, deliveries, peak expected flows, design flow requirements supporting these proposed facilities. This 2016 Annual Plan is based on NGTL's June 2016 Design Forecast of receipts and deliveries.

Since the release of the 2015 Annual Plan, TransCanada Pipelines Limited (TransCanada) has identified a number of NGTL System facility projects. NGTL's Tolls, Tariff, Facility and Procedures (TTFP) Committee has been notified of these facilities, and they are summarized in *Appendix 2: Facility Status Update*.

NGTL provides commercial services under the NGTL Tariff using the combined assets of the NGTL System and the ATCO Pipelines (AP) System. NGTL follows facility planning processes to identify facilities required for the combined assets in the NGTL and AP footprints. For an overview of these processes, see the *Facilities Design Methodology* document. NGTL files facility applications with the National Energy Board (NEB) for facility additions on the NGTL System within the NGTL footprint. AP files facility applications with the Alberta Utilities Commission (AUC) for facility additions on the AP System within the AP footprint.

The facilities identified in this Annual Plan were presented to the TTFP Committee on December 5, 2016. New facilities proposed after issuance of this Annual Plan will be shown in the *2017 Facility Status Update*, which can be accessed at <http://www.transcanada.com/customerexpress/871.html>.

For the 10 facilities projects identified in the 2016 Annual Plan, see Table E-1.

**Table E-1: Proposed Facilities Additions**

Project Area	Proposed Facilities	Annual Plan Reference	Description	Target In-Service Date	Regulator	Capital Cost (\$ Millions)
North and East	Wainwright CS Unit Replacement	Chapter 2	0.4 MW	Jul 2017	NEB	2
Mainline	ATCO Strathmore NW Lateral Loop	Chapter 3	7 km NPS 3	Nov 2018	NEB	4
Peace River	Smoky River Lateral Loop	Chapter 3	10 km NPS 20	Apr 2019	NEB	54
Peace River	Gold Creek C/S Unit Addition & Coolers	Chapter 2	30 MW	Jun 2019	NEB	116
Peace River	Gordondale Lateral Loop No. 3	Chapter 2	25 km NPS 36	Jun 2019	NEB	96
Peace River	Latornell CS Unit Addition	Chapter 2	30 MW	Jun 2019	NEB	101
Peace River	NWML Loop (Peace River Crossing)	Chapter 2	3.5 km NPS 36	Jun 2019	NEB	40
Peace River	Pipestone CS Unit Addition & Coolers	Chapter 2	30 MW	Jun 2019	NEB	116
Peace River	Saddle Hills CS Unit Addition	Chapter 2	15 MW	Jun 2019	NEB	74
Peace River	Swartz Creek CS Unit Addition	Chapter 2	30 MW	Jun 2019	NEB	116
<b>Total</b>						<b>719</b>

The Wainwright compressor unit replacement is required to transport the declining receipts in the Wainwright area.

The ATCO Strathmore Lateral Loop is required to meet the delivery requirements in the Strathmore area.

The Smoky River Lateral Loop is required to transport growing supply in the Lower Peace River Design Area.

The Saddle West Expansion Project comprised of compressor unit additions at Gold Creek, Latornell, Pipestone, Saddle Hills, Swartz Creek and the pipeline loops of the Gordondale Lateral and Northwest Mainline (NWML), are required to transport the growing aggregate supply from the Peace River Project Area to satisfy total system demands.

This 2016 Annual Plan includes the following sections:

- Executive Summary
- Chapter 1: Design Forecast
- Chapter 2: Design Flow and Mainline Facilities
- Chapter 3: Extensions, Lateral Loops and Meter Stations
- Appendix 1: Glossary of Terms
- Appendix 2: Facility Status Update
- Appendix 3: System Map (expected in March 2017)

Electronic versions of the Annual Plan and the *Facilities Design Methodology* document can be accessed at <http://www.transcanada.com/customerexpress/871.html>.

Customers and other interested parties are encouraged to communicate their suggestions, comments and questions to NGTL regarding the 2016 Annual Plan to:

- Darryn Rouillard, Manager, Mainline Planning West (403) 920-6341
- Murray Ferraton, Manager, Customer Solutions (403) 920-5323
- Karen Hill, Manager, Receipt and Delivery Forecasting (403) 920-5622
- Norm Bowman, Vice President, Commercial Services, Optimization and Design (403) 920-7186

## 1.0 DESIGN FORECAST

### 1.1 INTRODUCTION

This Annual Plan is based on the June 2016 Design Forecast of receipts and deliveries for the NGTL System. An overview of the June 2016 Design Forecast was presented at the November 8, 2016 TTFP meeting.

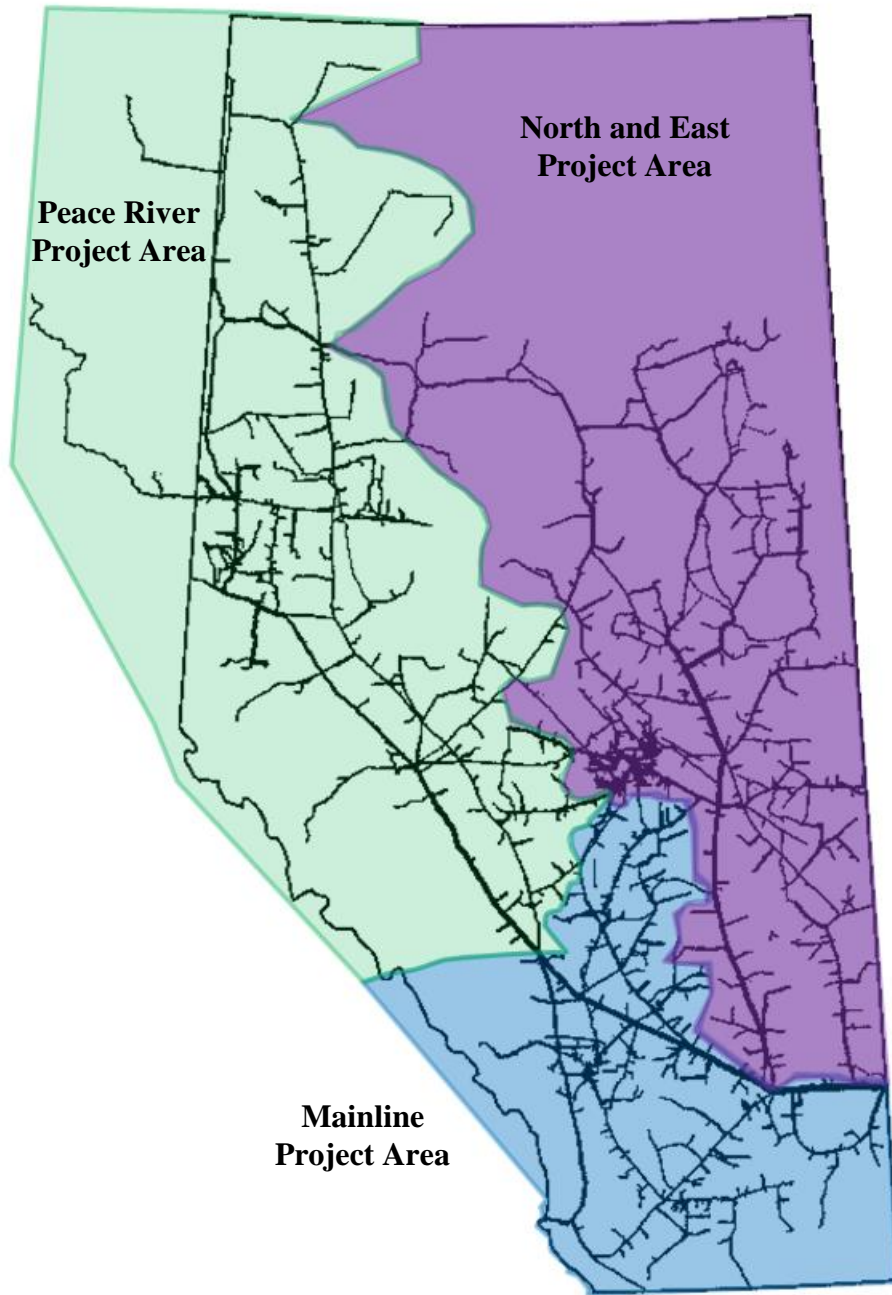
For information on forecasting methodology, see *Facilities Design Methodology*, Section 4.4: Design Forecast Methodology, which can be accessed at <http://www.transcanada.com/customerexpress/871.html>

This section describes:

- economic assumptions used in developing the 2016 Design Forecast
- receipt and delivery forecasts for the NGTL System
- supply contribution, including winter withdrawal from storage facilities, used in the design process

In order to highlight the regional forecast differences on the NGTL System, this section references the three Project Areas as per the NGTL tariff. Figure 1-1 depicts the three Project Areas.

Figure 1-1: NGTL Project Areas





## 1.2 ECONOMIC ASSUMPTIONS

### 1.2.1 General Assumptions

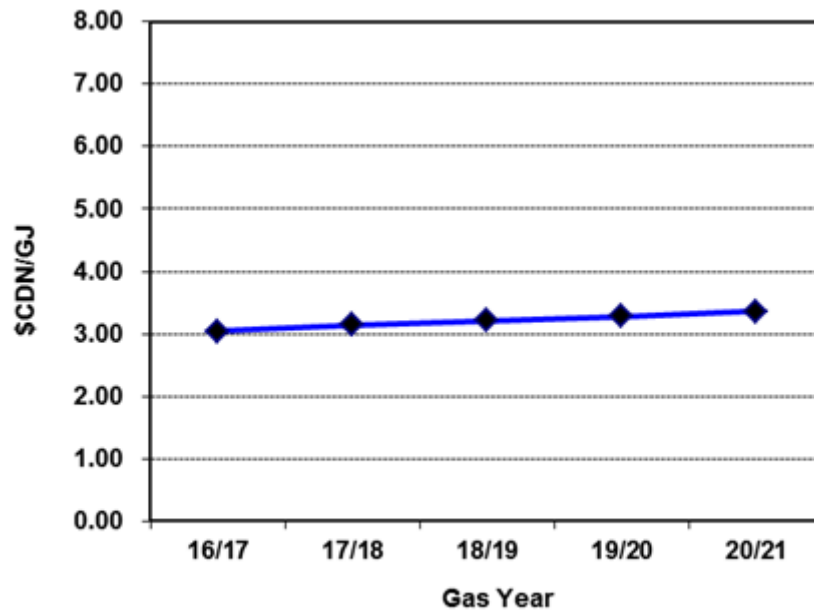
The following assumptions, developed in early 2016, reflect broader trends in the North American economy and energy markets, and underlie the forecast of receipts and deliveries:

- North American natural gas demand continues to grow. While commercial and residential will remain fairly flat, electric generation, industrials and Liquefied Natural Gas (LNG) exports will lead the demand growth. Canada and Western Canada reflect similar market sector demand growth as the larger North American Demand.
- Legislated coal conversions and carbon taxes, are heavily influencing electric generation gas demand growth and some timing of coal conversions have been accelerated from previous forecasts.
- Oil sands growth continues and leads the industrial growth in Western Canada.
- LNG export projects are being developed in both the U.S. and Canada. Those in the US will start exporting earlier than previous forecasts and within the next couple of years. Canada LNG exports have lessened in volume and are delayed to the next decade.
- Lower cost northeast supplies are exerting more influence on North American prices, and NIT continues to price below Henry Hub as eastern and Midwestern markets continue to be challenged by competing basins. This will force prices lower in these markets and also force WCSB sellers to seek to move more WCSB gas into Pacific Northwest and California markets in competition with Rockies gas.
- Gas prices are expected to grow slowly with Henry Hub reaching \$3.90 real 2014 US/MMBtu by 2025, and reaching \$4.75 real 2014 US/MMBtu by 2035.

### 1.2.2 Average Field Price

TransCanada's Average Field Price, which represents the estimated price of natural gas at a point just before receipt onto the NGTL System, is taken from the Alberta Energy Regulator's S5.4 report. The gas price forecast is shown in Figure 1-2.

Figure 1-2: Average Field Price



The gas price forecast affects the receipt and delivery forecast, and is an input into the economic analysis for new facilities.

### 1.3 GAS DELIVERY FORECAST

Several sources of information were considered in developing the gas delivery forecast. First, operators of downstream facilities such as connecting pipelines, local distribution companies (LDCs), and industrial plants were requested to provide a forecast of their maximum, average, and minimum requirements for deliveries from the NGTL System over the next 10 years. The forecasts were analyzed and compared with historical flow patterns at NGTL Delivery Points. In cases where NGTL's analysis differed substantially from the operator's forecast, NGTL contacted the operator and either the operator's forecast was revised or NGTL adjusted its analysis. In cases where the operator did not provide a forecast, NGTL based its forecast on historical flows and growth rates for specific demand sectors.

Deliveries to markets in the NGTL System are forecasted to increase, primarily due to industrial demand in the oil sands sector and growth in electrical generation sector. However this growth is offset by the decline in Export markets.

The Export Points on the system, in aggregate are forecasted to decrease with the exception of Alberta-British Columbia export, which grows slightly and then remains flat. Empress and McNeil exports decline the most with the conversion of long haul contracts to short haul. LNG export points don't start taking gas until early in the new decade, which doesn't influence supply or demand within this annual plan horizon.

### 1.3.1 Average Annual Delivery Forecast

Forecast deliveries are expressed as an average daily flow. The Average Annual Delivery Forecast is the aggregate forecast deliveries for the NGTL System. The Average Annual Delivery Forecast, for Gas Years 2017 through 2021 are listed by Delivery Type in Table 1-1 and further detailed by Project Area in Table 1-2.

**Table 1-1: System Average Annual Delivery Forecast by Delivery Type**

Delivery Type	June 2016 Design Forecast (10 <sup>6</sup> m <sup>3</sup> /d)				
	2016/17	2017/18	2018/19	2019/20	2020/21
Export	141.8	125.2	121.7	126.2	138.8
Intra System	147.4	155.2	160.4	163.1	165.2
<b>Total System</b>	<b>289.2</b>	<b>280.4</b>	<b>282.1</b>	<b>289.2</b>	<b>304.0</b>
Delivery Type	June 2016 Design Forecast (Bcf/d)				
	2016/17	2017/18	2018/19	2019/20	2020/21
Export	5.01	4.42	4.30	4.45	4.90
Intra System	5.20	5.48	5.66	5.76	5.83
<b>Total System</b>	<b>10.21</b>	<b>9.90</b>	<b>9.96</b>	<b>10.21</b>	<b>10.73</b>
Note: Totals have been rounded. Volumes expressed as an average daily flow for each gas year, at 101.325 kPa and 15°C.					

**Table 1-2: Intra System Deliveries – Average Annual Delivery Forecast by Project Area**

Project Area	June 2016 Design Forecast (10 <sup>6</sup> m <sup>3</sup> /d)				
	2016/17	2017/18	2018/19	2019/20	2020/21
Peace River	3.6	3.9	4.0	4.0	4.0
North and East	104.0	111.0	116.1	118.6	118.4
Mainline	39.8	40.3	40.4	40.5	42.8
<b>Total</b>	<b>147.4</b>	<b>155.2</b>	<b>160.4</b>	<b>163.1</b>	<b>165.2</b>
Project Area	June 2016 Design Forecast (Bcf/d)				
	2016/17	2017/18	2018/19	2019/20	2020/21
Peace River	.13	0.14	0.14	0.14	0.14
North and East	3.67	3.92	4.10	4.19	4.18
Mainline	1.41	1.42	1.42	1.43	1.51
<b>Total</b>	<b>5.20</b>	<b>5.48</b>	<b>5.66</b>	<b>5.76</b>	<b>5.83</b>
Note: Totals have been rounded. Volumes expressed as an average daily flow for each Gas Year.					

### 1.3.2 Maximum Day Delivery Forecast

Peak deliveries (Maximum Day Delivery) are also forecast for the NGTL Delivery Points and are based on customer input, market conditions, firm transportation contracts, and historical flows.

A summary of the June 2016 Design Forecast winter and summer Maximum Day Delivery by Project Area for Intra System Deliveries is provided in Table 1-3 for winter and Table 1-4 for summer.

**Table 1-3: Winter Maximum Day Intra System Delivery Forecast**

Project Area	June 2016 Design Forecast (10 <sup>6</sup> m <sup>3</sup> /d)				
	2016/17	2017/18	2018/19	2019/20	2020/21
Peace River	12.7	12.9	13.1	13.1	15.0
North and East	165.0	171.4	177.0	180.0	181.9
Mainline	77.3	77.1	77.6	80.3	81.3
<b>Total</b>	<b>255.0</b>	<b>261.4</b>	<b>267.6</b>	<b>273.4</b>	<b>278.3</b>
Project Area	June 2016 Design Forecast (Bcf/d)				
	2016/17	2017/18	2018/19	2019/20	2020/21
Peace River	0.45	0.45	0.46	0.46	0.53
North and East	5.82	6.05	6.24	6.35	6.42
Mainline	2.73	2.72	2.74	2.83	2.87
<b>Total</b>	<b>9.00</b>	<b>9.23</b>	<b>9.45</b>	<b>9.65</b>	<b>9.82</b>
Note: Totals have been rounded					

**Table 1-4: Summer Maximum Day Intra System Delivery Forecast**

Project Area	June 2016 Design Forecast (10 <sup>6</sup> m <sup>3</sup> /d)				
	2016/17	2017/18	2018/19	2019/20	2020/21
Peace River	10.0	10.1	10.3	10.3	12.1
North and East	140.2	146.5	151.4	153.6	155.3
Mainline	55.2	54.9	54.7	51.2	58.0
<b>Total</b>	<b>205.5</b>	<b>211.5</b>	<b>216.3</b>	<b>221.1</b>	<b>225.4</b>
Project Area	June 2016 Design Forecast (Bcf/d)				
	2016/17	2017/18	2018/19	2019/20	2020/21
Peace River	.35	0.36	0.36	0.36	0.43
North and East	4.95	5.17	5.34	5.42	5.48
Mainline	1.95	1.94	1.93	2.02	2.05
<b>Total</b>	<b>7.3</b>	<b>7.5</b>	<b>7.6</b>	<b>7.8</b>	<b>8.0</b>
Note: Totals have been rounded.					

## 1.4 RECEIPT FORECAST

NGTL develops its Receipt Forecast on an average annual basis that is based on two general approaches:

- For conventional production, NGTL typically uses an internal pool-based forecasting model that incorporates established reserve estimates and actual production records from government sources. For discovered resources, the model uses current

- production rates and reservoir modeling, supplemented by internal analysis to estimate future production. To estimate the future supply from undiscovered resources, NGTL bases its assessment on play- and pool-based resource estimates.
- For unconventional resources such as shale gas, NGTL typically uses well-based forecasting methods and models, supplemented with information from customers, to generate forecasts of future production. Factors such as total number of drilling locations available, well production profiles, pace of development, material and equipment availability, potential capital requirements, and access constraints when developing a forecast of supply are considered.
  - The annual WCSB decline, on aggregate, is around 18%, translating to around 2.5 bcf/d of decline. NGTL transports between 73-75% of total WCSB supply, which is roughly an annual decline of 2 bcf/d.

Exploration activity focused on unconventional gas has resulted in shale and tight gas volumes entering the NGTL System primarily in the Peace River Project Area. The incremental shale and tight gas supply is expected to offset declines in production from connected established reserves, however with declining markets, supply will also decline to around 9.8 bcf/d until the beginning of the next decade.

Gas supplied from storage facilities was not included in the data presented in this section. For information pertaining to gas supply from Commercial Storage Facilities, see Section 1.6.

#### **1.4.1 Average Receipt Forecast**

The Average Receipt Forecast is the forecast aggregate receipts for the NGTL System for the 2017 through 2021 Gas Years. A summary of System Average Receipts by Gas Year and Project Area is expressed as an average daily flow and shown in Table 1-5.

**Table 1-5: System Average Receipts**

Project Area	June 2016 Design Forecast (10 <sup>6</sup> m <sup>3</sup> /d)				
	2016/17	2017/18	2018/19	2019/20	2020/21
Peace River	219.5	217.9	224.7	238.4	258.9
North and East	13.8	12.4	11.2	10.1	9.2
Mainline	54.0	48.0	43.1	38.9	35.2
<b>Total</b>	287.3	278.4	279.0	287.5	303.4
Project Area	June 2016 Design Forecast (Bcf/d)				
	2016/17	2017/18	2018/19	2019/20	2020/21
Peace River	7.75	7.69	7.93	8.42	9.14
North and East	0.49	0.44	0.40	0.36	0.36
Mainline	1.9	1.7	1.52	1.37	1.24
<b>Total</b>	10.14	9.83	9.85	10.15	10.71
Note: Totals have been rounded.					

## 1.5 SUPPLY DEMAND BALANCE

Supply received on to the NGTL System is balanced with System deliveries (net of gas in storage). System deliveries by destination are shown in Figure 1-3, while System receipts by Project Area are shown in Figure 1-4.

Figure 1-3: System Deliveries by Destination

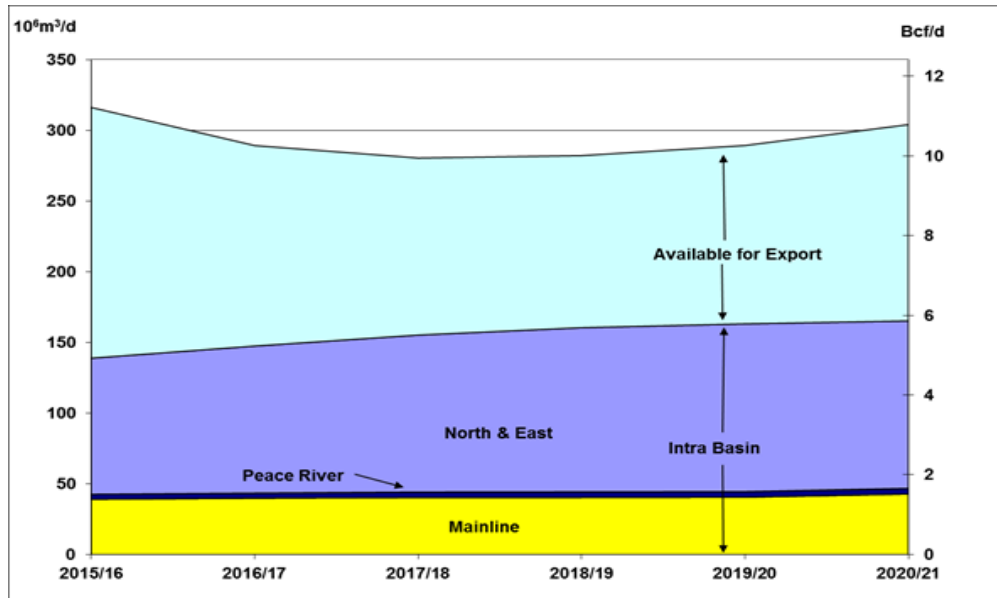
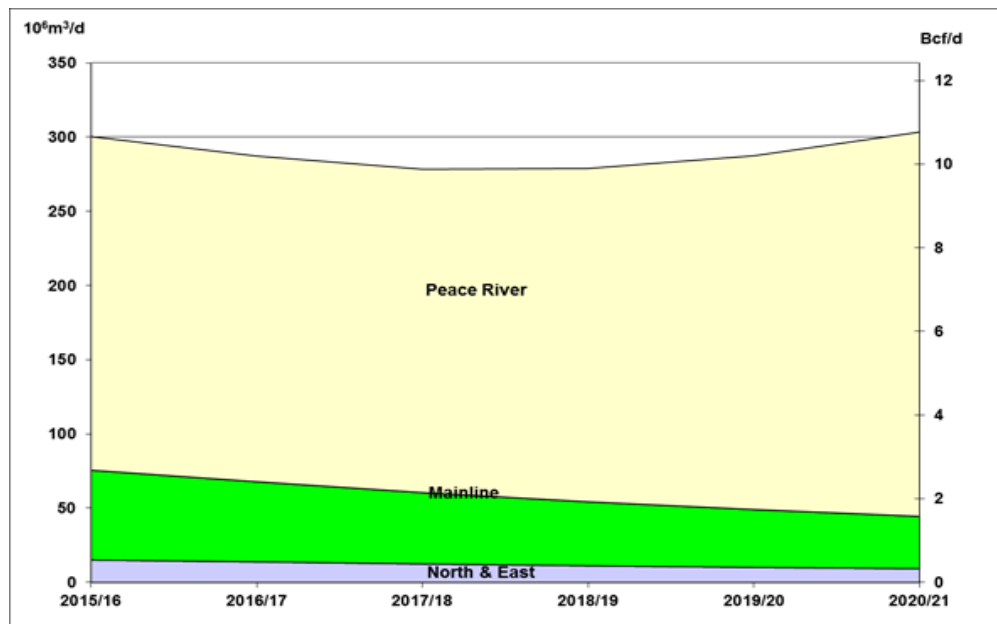


Figure 1-4: System Receipts by Project Area





## 1.6 STORAGE FACILITIES

### 1.6.1 Commercial Storage

There are nine commercial storage facilities connected to the NGTL System (AECO ‘C’, Big Eddy, Carbon, Chancellor, Crossfield East #2, January Creek, Rat Creek West, Severn Creek and Warwick Southeast Meter Stations). The total deliverability from Storage Facilities is significant, but actual maximum day receipts from storage are dependent on a number of factors, including market conditions, level of working gas in each storage facility, compression power at each storage facility, and NGTL System operations.

For design purposes, a supply contribution from Storage Facilities is used to meet peak day winter delivery requirements and provide for a better correlation between forecast design flow requirements and historical actual flows for the winter period. Historical withdrawals during recent winter periods for each Storage Facility were used to determine a reasonable expected rate of withdrawal for future winter seasons.

For the receipt meter capacity for each of the connected commercial storage facilities, see Table 1-6.

**Table 1-6: Receipt Meter Capacity from Commercial Storage Facilities**

Storage Facility	Receipt Meter Capacity from Commercial Storage Facilities – 2015/16	
	10 <sup>6</sup> m <sup>3</sup> /d	Bcf/d
AECO C	45.0	1.59
Big Eddy	40.8	1.45
Carbon	12.1	0.43
Chancellor	35.6	1.26
Crossfield East 2	16.3	0.58
January Creek	19.2	0.68
Rat Creek West	3.6	0.13
Severn Creek	11.6	0.41
Warwick Southeast	9.5	0.34
<b>Total</b>	<b>193.7</b>	<b>6.87</b>

Note: Storage is considered an interruptible supply source. Totals have been rounded.
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### 1.6.2 Peak Shaving Storage

The Fort Saskatchewan Salt Caverns are a peak shaving storage facility in the greater Edmonton area within the ATCO Pipeline footprint, in North of Bens Lake Design Area of the NGTL System. Similar to Commercial Storage Facilities, the total deliverability from the peak shaving Storage Facility is significant, but the actual maximum day receipt from storage depends on a number of factors, including market conditions, level of working gas, compression power at the storage facility and NGTL System operations.

For design purposes, a supply contribution from the peak shaving Storage Facility is used to meet peak day winter delivery requirements and provide for a better correlation between forecast design flow requirements and historical actual flows for the winter period. The maximum withdrawal rate and the maximum working inventory of the Storage Facility are used as the upper limits for the supply contribution provided.

## 2.0 DESIGN FLOWS AND MAINLINE FACILITIES

### 2.1 INTRODUCTION

This section contains the proposed natural gas transportation mainline facilities to be applied for on the NGTL System in the 2016/17 Gas Year to meet the design flow requirements. Included is information regarding size, routes, locations and cost estimates.

The design flows are presented for design areas where new mainline facilities are required. Design flows are based on the June 2016 design forecast presented in Section 1, and were determined using the methodology described in *Facilities Design Methodology*, Section 3.5: Mainline Facilities Flow Determination. This document can be accessed at <http://www.transcanada.com/customerexpress/871.html>.

This section includes a comparison of historical flows to the design flows. Additionally, the expected design capability is shown for the Gas Year when facilities are required in each applicable design area. Where there is a shortfall between design flow and the design capability, a facility solution has been proposed. A facility application to the regulator for construction and operation is triggered by Firm Transportation (FT) contracts in excess of design capability and submitted to ensure the facility is in place in time to meet the FT requirements. Aggregated FT contract levels are also presented to indicate commercial underpinning of the proposed facilities.

This section of the Annual Plan presents facilities grouped by common purpose. Facilities that serve aggregate system requirements are first presented, followed by facilities that serve the requirements of specific areas. Presentation of the proposed facilities in this manner is intended to improve the clarity of their requirement and commercial underpinning.

An overview of the design flows and proposed facilities resulting from the June 2016 design forecast were presented at the TTFP meeting on December 5, 2016.

For a summary of the status of mainline facilities that have been proposed, applied for, under construction or placed in-service since the December 2015 Annual Plan, see *Appendix 2: Facility Status Update*.

## **2.2 FACILITIES FOR AGGREGATE SYSTEM REQUIREMENTS**

As described in Section 1, aggregate system supply continues to shift towards the Peace River Project Area. Supply declines in other areas of the System will be offset by increasing supply in the Peace River Area. The Peace River Area contains a majority of the System supply and is the only region in the System where supply is growing. From the figures provided in Table 1.5, supply in the Peace River Area grows from 76% of the total system supply to 85% of the total system supply from 2016/17 to 2020/21. Since this represents such a large portion of total system supply, the design condition for the Peace River Area is very interdependent with total system conditions. The prevailing design condition for the Peace River Area is therefore best represented by a Total System Flow-Within condition: When total system deliveries are at their maximum and total system receipts, a vast majority of which are from the Peace River Area, are at their peak as well. System facilities must be capable of transporting enough gas out of the Peace River Project Area to meet expected peak system deliveries.

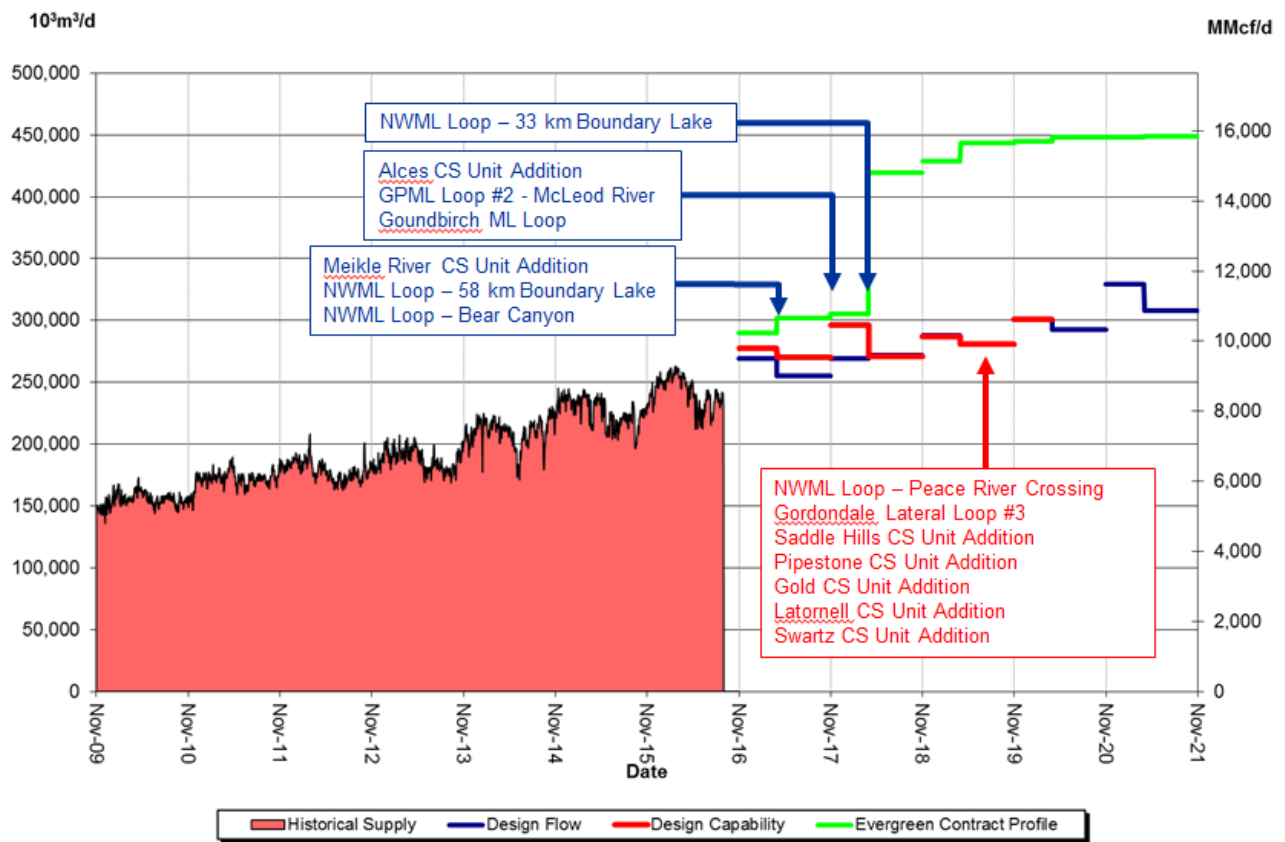
### **2.2.1 Design Flows - Peace River Project Area**

The design flows for the Total System Flow-Within design condition in the Peace River Project Area are the maximum expected local receipts in the area. The continued receipt shift to the area will be accommodated by seven proposed facilities, commonly known as the Saddle West Expansion Project.

Figure 2-1 shows historical receipts, receipt design flow, contract levels and design capability for the Peace River Project Area. Receipt design flow rises throughout this forecast period, attributable to increasing supply in the Peace River Project Area.

Previously proposed facilities are highlighted blue in Figure 2-1 to provide a correlation to the increasing design capability. There is a marked decrease in design capability from Nov 2017 to Nov 2018 in spite of the previously proposed facilities. This decrease results in design capability below design flow levels by the summer of 2019, indicating the requirement for the newly proposed facilities highlighted in red in Figure 2-1. This design capability decrease is attributable to the shift of supply within the Peace River Project Area itself. Peace River receipts are not only growing, shifting from outside the area into it, but also shifting to locations further upstream within the area.

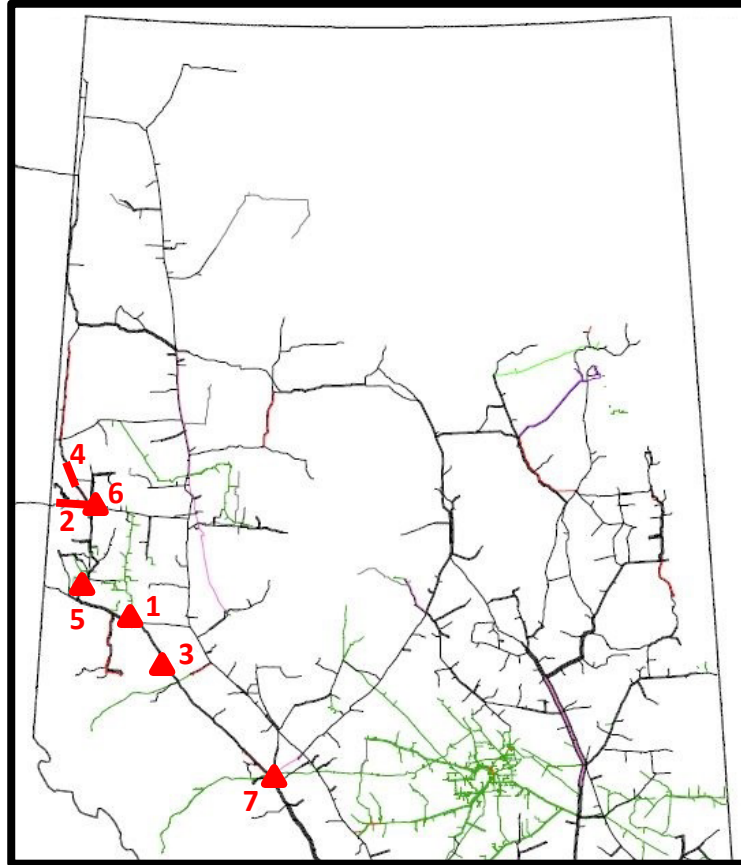
**Figure 2-1: Peace River Project Area Design Chart**



**2.2.2 Proposed Facilities for Aggregate System Requirements**

Figure 2-2 shows the locations of the proposed Saddle West Expansion facilities required to meet the aggregate system requirements resulting from the Total System Flow-Within design condition.

**Figure 2-2: Proposed Facilities for Aggregate System Requirements**



Applications for the proposed Saddle West Expansion facilities are expected to be filed with the NEB in gas year 2016/2017 and the facilities are proposed to be in-service in 2019. For details on each of the proposed facilities, see Table 2-1.

**Table 2-1: Proposed Facilities for Aggregate System Requirements**

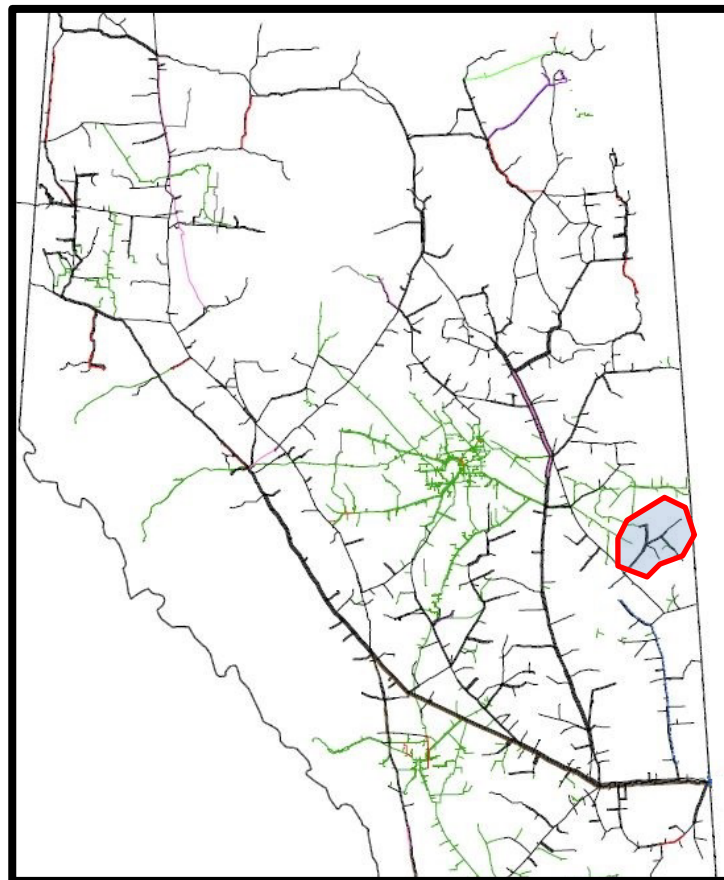
Map Location	Applied-For Facility	Description	Target In-Service Date	Forecast Cost (\$Millions)
1	Gold Creek C/S Unit Addition & Coolers	30 MW	Jun 2019	116
2	Gordondale Lateral Loop No. 3	25 km NPS 36	Jun 2019	96
3	Latornell CS Unit Addition	30 MW	Jun 2019	101

Map Location	Applied-For Facility	Description	Target In-Service Date	Forecast Cost (\$Millions)
4	NWML Loop (Peace River Crossing)	3.5 km NPS 36	Jun 2019	40
5	Pipestone CS Unit Addition & Coolers	30 MW	Jun 2019	116
6	Saddle Hills CS Unit Addition	15 MW	Jun 2019	74
7	Swartz Creek CS Unit Addition	30 MW	Jun 2019	116
			<b>Total</b>	<b>659</b>

**2.3 FACILITIES FOR SPECIFIC AREA DEMANDS**

A proposed facility is required to meet the gas receipts in the Wainwright area shown in Figure 2-3.

**Figure 2-3: Wainwright Area**

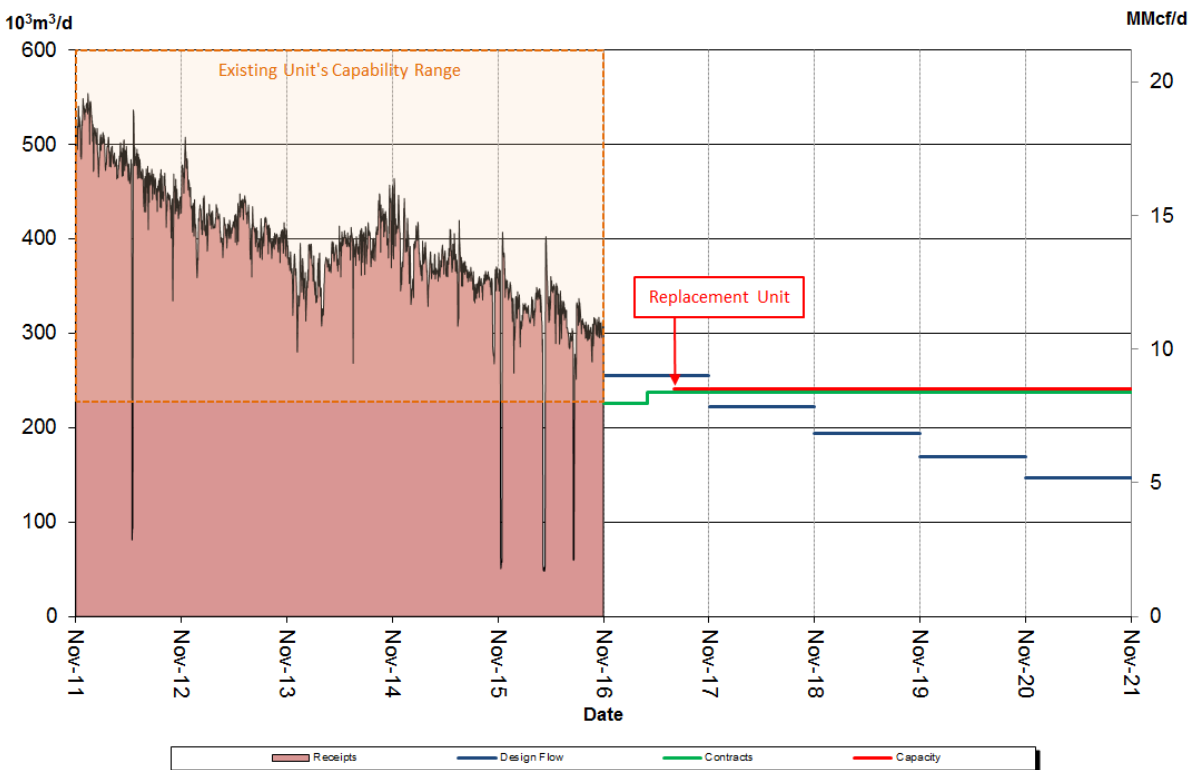


2.3.1 Design Flows – Wainwright Area

The design flows for Wainwright Area are the net effect of the local receipts in the area less the local demands. Area facilities must be capable of transporting the excess local receipts out of the area. The declining area receipts will be accommodated by one proposed facility.

Figure 2-4 shows historical flows, design flows, contract levels and design capability for the Wainwright Area. Receipt design flow decreases throughout this forecast period, attributable primarily to reserve declines. This decrease brings the design flows below the minimum capability range of the existing Wainwright compression facilities, indicating the requirement for the proposed facility.

Figure 2-4: Wainwright Area Design Chart

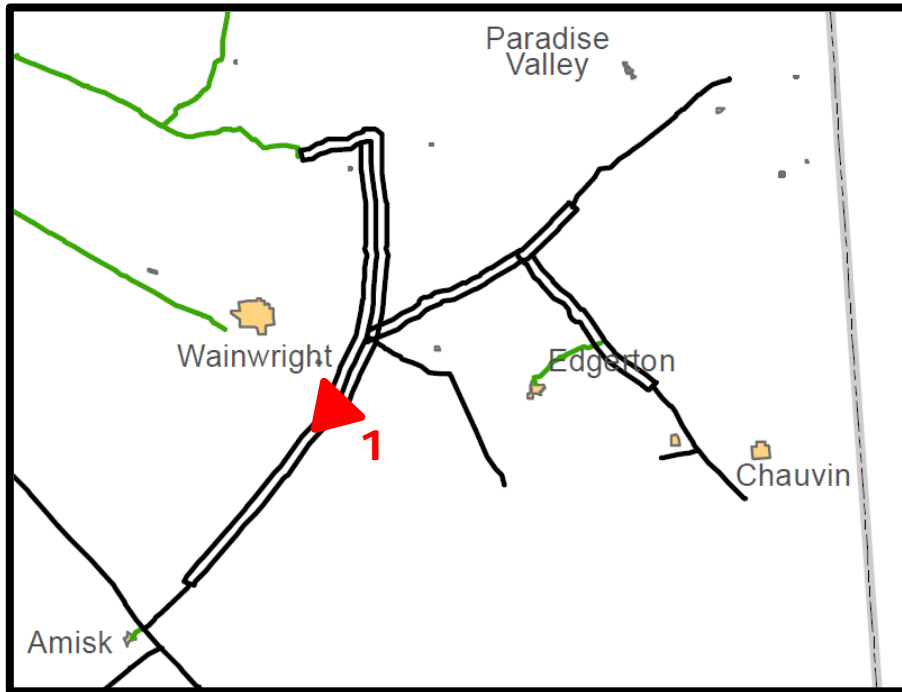




**2.3.2 Proposed Facilities for Specific Area Demands**

Figure 2-5 shows the location of the proposed facility required to meet the design flow requirements for the Wainwright area.

**Figure 2-5: Proposed Facilities for Wainwright Area**



The application for the proposed facility is expected to be filed with the NEB in gas year 2016/2017 and is proposed to be in-service in 2017. For details on the proposed facility, see Table 2-2.

**Table 2-2: Proposed Facilities for Wainwright Area**

Map Location	Proposed Facility	Description	Target In-Service Date	Forecast Cost (\$Millions)
1	Wainwright CS Unit Replacement	0.4 MW	Jul 2017	2
			<b>Total</b>	<b>2</b>

### 3.0 EXTENSION FACILITIES, LATERAL LOOPS AND METER STATIONS

#### 3.1 INTRODUCTION

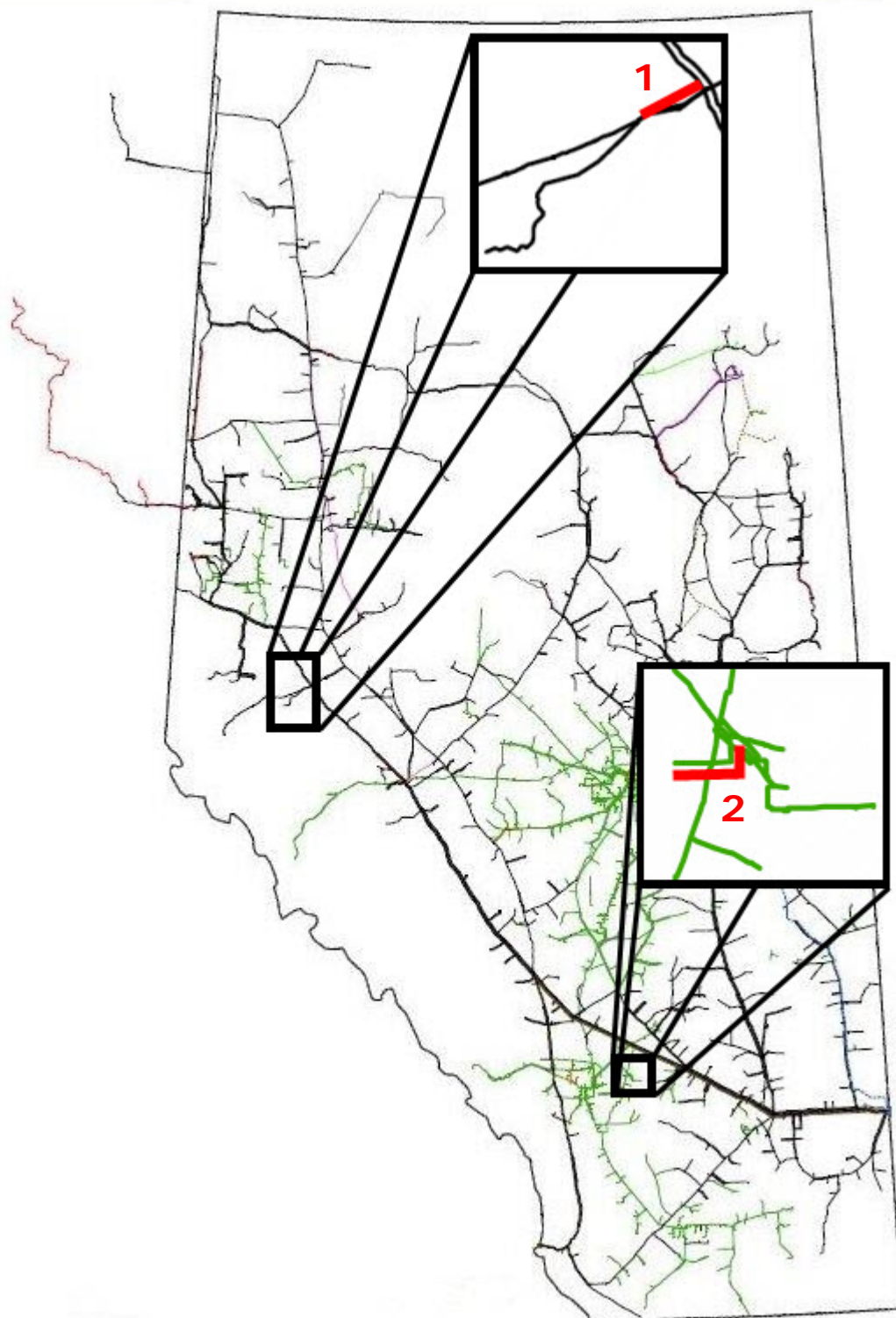
This section presents an overview of the extension facilities, lateral loops and receipt and delivery meter stations that are required to meet customer requests for firm service.

If mainline facilities are required, transportation service may be provided to customers on an interruptible basis until the required mainline facilities are in service. If a customer's request for service results in the addition of new or modified receipt meter stations, the minimum term and minimum contractual obligation are determined in accordance with the economic criteria described in the *Gas Transportation Tariff of NOVA Gas Transmission Ltd., Appendix E: Criteria for Determining Primary Term*.

For locations of the proposed extension facilities, lateral loops and meter stations, see Figure 3-1 and for facility details, see Table 3-1. These proposed facilities were presented at the TTFP meeting on December 5, 2016.

For a summary of the status of facilities that have been proposed, applied for, under construction or placed in-service since the 2015 Annual Plan, see *Appendix 2: Facility Status Update*.

Figure 3-1: Proposed Extensions, Lateral Loops and Meter Stations



**Table 3-1: Proposed Extensions, Lateral Loops and Meter Stations**

Map Location	Proposed Facilities	Description	Target In-Service Date	Forecast Cost (\$Millions)
1	Smoky River Lateral Loop	10 km NPS 20	Apr 2019	54
2	ATCO Strathmore NW Lateral Loop	7 km NPS 3	Nov 2018	4
			<b>TOTAL</b>	<b>58</b>

### 3.2 FACILITY DESCRIPTION

#### Smoky River Lateral Loop

The 10 km segment of up to NPS 20 pipeline is a loop of the NPS 10 Grande Cache Lateral and NPS 12 Smoky River Expansion pipeline and is required to accommodate incremental receipt contracts as a result of gas development in the Resthaven and Prairie Creek areas.

The target in-service date for the facilities is April 1, 2019. The facility application is scheduled to be filed with the NEB in Q3 2017.

#### ATCO Strathmore NW Lateral Loop

The 7 km NPS 3 pipeline is a loop of the NPS 1.5 ATCO Strathmore NW Lateral. It is required to meet the delivery requirements and existing delivery contracts in the Strathmore area.

The target in-service date for the facilities is November 1, 2018. The facility application is scheduled to be filed by ATCO with the AUC in Q4 2017.

#### Planned Meter Stations

Meter station projects are identified and planned to meet customer requests for service on an ongoing basis throughout the year. As new meter station projects are identified the TTFP will be informed and the new meter station projects will be included in the *2016 Facility Status Update*, which can be accessed at

<http://www.transcanada.com/customerexpress/871.html>.

**Appendix 1: Glossary of Terms**

The following definitions are provided to help the reader understand the Annual Plan. The definitions are not intended to be precise or exhaustive and have been simplified for ease of reference. These definitions should not be relied on to interpret NGTL's Gas Transportation Tariff or any Service Agreement. Capitalized terms not defined here are defined in NGTL's Gas Transportation Tariff.

**Allowance for Funds Used During Construction (AFUDC)**

The capitalization of financing costs incurred during construction of new facilities before the facilities are included in rate base.

**Annual Plan**

A document outlining NGTL's planned facility additions and major modifications.

**Average Annual Delivery**

The average day delivery determined for the period of one Gas Year. All forecast years are assumed to have 365 days.

**Average Day Delivery**

The average day delivery over a given period, determined by summing the total volumes delivered divided by the number of days in that period. It is determined for either a Delivery Point or an aggregation of Delivery Points.

**Average Field Price**

Average estimated price of natural gas (post processing) before receipt into the NGTL System. The Average Field Price is equivalent to the Alberta Reference Price (ARP).

**Average Receipt Forecast**

The forecast of average flows expected to be received onto the NGTL System at each receipt point.

**Coincidental**

Occurring at the same time.

**Delivery Meter Station**

A facility that measures gas volumes leaving the NGTL System.

**Delivery Point**

The point where gas might be delivered to customer by company under a Schedule of Service, which shall include but not be limited to Group 1 Delivery Point, Group 2 Delivery Point, Group 3 Delivery Point, Extraction Delivery Point and Storage Delivery Point.

**Delivery Design Area**

The NGTL System is divided into five delivery design areas used to facilitate delivery service within or between Delivery Design Areas:

- Northwest Alberta and Northeast BC Delivery Area
- Northeast Delivery Area
- Southwest Delivery Area
- Southeast Delivery Area
- Edmonton and Area Delivery Area

**Demand Coincidence Factor**

A factor applied to adjust the system maximum and minimum day deliveries in a design area to a value more indicative of the expected actual peak day deliveries.

**Design Area**

The NGTL System is divided into three project areas – Peace River Project Area, North and East Project Area and Mainline Project Area. These project areas are subdivided into design and sub design areas. This subdivision allows the system to be modelled in a way that best reflects the pattern of flows in each area of the system.

**Design Capability**

The maximum volume of gas that can be transported in a pipeline system considering design assumptions. Usually presented as a percentage of design flow requirements.

**Design Flows**

Forecast of Peak Expected Flow required to be transported in a pipeline system considering design assumptions.

**Design Forecast**

Forecast of the most current projection of receipts and deliveries over a five-year design horizon.

**Expansion Facilities**

Facilities that will expand the existing NGTL System to/from the point of customer connection, including any pipeline loop of the existing system, metering and associated connection piping and system compression.

**Extension Facilities**

Facilities that connect new or incremental supply or markets to the NGTL System.

**Firm Transportation**

Service offered to customers to receive gas onto the NGTL System at Receipt Points or deliver gas off the NGTL System at Delivery Points with a high degree of reliability.

**Gas Year**

A period beginning at 800 hours (08:00) Mountain Standard Time on the first day of November in any year and ending at 800 (08:00) Mountain Standard Time on the first day of November of the next year.

**Interruptible Transportation**

Service offered to customers to receive gas onto the NGTL System at Receipt Points or deliver gas off the NGTL System at Delivery Points, provided capacity exists in the facilities, that is not required to provide firm transportation.

**Lateral**

A section of pipe that connects one or more Receipt or Delivery Points to the mainline.

**Loop**

The paralleling of an existing pipeline by another pipeline.

**Mainline**

A section of pipe, identified through application of the mainline system design assumptions, necessary to meet the aggregate requirements of all customers.

**Maximum Day Delivery**

The forecast maximum volume, included in the design, to be delivered to a Delivery Point.

**Maximum Operating Pressure**

The maximum operating pressure at which a pipeline is operated.



**Minimum Day Delivery**

The forecast minimum volume, included in the design, to be delivered to a Delivery Point.

**NPS**

Nominal pipe size, in inches.

**Non-coincidental**

Non-simultaneous occurrence.

**Peak Expected Flow**

The peak flow expected to occur at a point or points on the NGTL System. For a design area or subdesign area, this is the coincidental peak of the aggregate flow. For a single receipt point, it is equivalent to field deliverability.

**Project Area**

For design purposes, the NGTL System is divided into three project areas – Peace River Project Area, North and East Project Area and Mainline Project Area.

Dividing the system this way allows the system to be modelled in a way that best reflects the pattern of flows in each area of the system.

**Receipt Meter Station**

A facility that measures gas volumes entering the NGTL System.

**Receipt Point**

The point on the NGTL System at which gas may be received from customer by company under a Schedule of Service.

**Storage Facility**

Any commercial facility where gas is stored, that is connected to the NGTL System, and that is available to all customers.

**Summer Season**

The period starting April 1 and ending on October 31 of any calendar year.

**System Average Receipts**

The forecast of aggregate average receipts at all Receipt Points.

**Transportation Design Process**

The process that includes qualifying a customer's applications for service, designing additions to the system, sourcing all required facilities and installing facilities to meet firm transportation requests.

**Winter Season**

The period starting November 1 of any year and ending on March 31 of the following year.

## Appendix 2: 2016 Facility Status Update

This section describes the current status of facilities that were applied for, are under construction or have been placed on-stream since the 2015 Annual Plan was issued on December 15, 2015. Periodic updates are being provided based on the level of activity occurring with respect to facilities. Facilities with (AP) after the project name refer to facilities in the ATCO Pipelines footprint.

Table A2-1: Current Status of Facilities

Applied-for Facilities	Description	Target In-Service Date	Status	References <sup>1</sup>	Forecast Cost <sup>2</sup> (\$Millions)
2015 Meter Station and Associated Lateral Abandonment	Barich Bigstone East Bigstone East B Clyde North Craigend North Dapp East Devenish South Daysland Hamlin Jones Lake East Killam North Minnow Lake South Sales Niobe Creek Niton North Pleasant West Ribstone Valhalla East Woking Nosehill Creek Lateral	Q2 2017	Approved May 27, 2016	Aug 31, 2015 - Initial TTFP Notification  Oct 19, 2015 - NEB Application Filed <a href="#">Link to Application</a>	5.8
2016 Meter Station and Associated Lateral Abandonment	Coleman Enchant Grew Lake Grew Lake East Hotchkiss Hotchkiss East Mastin Lake Meanook Rambling Creek East Sharrow South No. 2 Steele Lake Thornbury West	Q3 2017 to Q1 2018	Proposed	Nov 1, 2016 - Initial TTFP Notification  <i>Dec 13, 2016 - NEB Application Filed</i> <a href="#">Link to Application</a>	7.3

## Appendix 2: 2016 Facility Status Update (December)

Applied-for Facilities	Description	Target In-Service Date	Status	References <sup>1</sup>	Forecast Cost <sup>2</sup> (\$Millions)
Aitken Creek Compressor Station <sup>3</sup>	15 MW Bi-directional	2019	Certificate Approval Jun 10, 2015	Oct 22, 2013 - Initial TTFP Presentation, 2013 Annual Plan <a href="#">Link to Annual Plan</a>  Nov 8, 2013 - NEB Application Filed <a href="#">Link to Application</a>	72 - ROT
Albersun Pipeline Asset Purchase	179 km	Q1 2017	Applied for Apr 27, 2016	May 12, 2015 - Initial TTFP Presentation  Apr 27, 2016 - NEB Application Filed <a href="#">Link to Application</a>	28 - Class 5  30 - Class 4
Alces River Compressor Station Unit Addition <sup>4</sup>	15 MW	Nov 2017	Approved Oct 31, 2016	Oct 30, 2014 - Initial TTFP Presentation, 2014 Annual Plan <a href="#">Link to Annual Plan</a>  Mar 31, 2015 - NEB Application Filed <a href="#">Link to Application</a>	79 - Class 5  85 - Class 4
Boulder Creek South Lateral	4 km NPS 8 17 km NPS 6	Jun 2017	<i>Under Construction</i>	Mar 8, 2016 - Initial TTFP Presentation  May 16, 2016 - NEB Application Filed <a href="#">Link to Application</a>	37 - Class 5  31 - Class 4
Buffalo Creek Compressor Station Unit Addition	30 MW	Nov 2018	Deferred	Dec 7, 2015 - Initial TTFP Presentation, 2015 Annual Plan <a href="#">Link to Annual Plan</a>  Aug 16, 2016 - TTFP Presentation (Status Update/Deferral)	139 - ROT
Burnt River Receipt Meter Station Replacement	662 Orifice Meter	Jun 2016	In-Service May 27, 2016	Oct 5, 2015 - Initial TTFP Notification  Oct 27, 2015 - NEB Application Filed <a href="#">Link to Application</a>	2.8
Calgary UPR – West Connector (AP) <sup>5</sup>	19 km NPS 20 1 km NPS 16	Q4 2017	Applied for May 6, 2016	Oct 30, 2014 - Initial TTFP Presentation  May 6, 2016 - AUC Application Filed <a href="#">Link to Application</a>	88

## Appendix 2: 2016 Facility Status Update (December)

Applied-for Facilities	Description	Target In-Service Date	Status	References <sup>1</sup>	Forecast Cost <sup>2</sup> (\$Millions)
Carmon Creek East Sales Meter Station	2-2012U Ultrasonic Meter	Sep 2016	Approved Sep 22, 2014 Deferred	May 30, 2014 - Initial TTFP Notification  Jun 10, 2014 - NEB Application Filed <a href="#">Link to Application</a>  Aug 16, 2016 - TTFP Presentation (Status Update/Deferral)	4.3
Cutbank River Lateral Loop No. 2 (Pinto Creek Section)  Musreau Lake North Receipt Meter Station	32 km NPS 24  2-1284U Ultrasonic Meter	Apr 2016	In-Service Mar 23, 2016  In-Service Jun 6, 2016	Oct 30, 2014 - Initial TTFP Presentation, 2014 Annual Plan <a href="#">Link to Annual Plan</a>  Nov 25, 2014 - NEB Application Filed <a href="#">Link to Application</a>	91 - Class 4 92 - Class 4
Cutbank River Lateral Loop No.2 (Red Rock Section)	18 km NPS 24	Q2 2018	Cancelled	Dec 7, 2015 - Initial TTFP Presentation, 2015 Annual Plan <a href="#">Link to Annual Plan</a>  Aug 16, 2016 - TTFP Presentation (Status Update/Cancellation)	65 - Class 5
Dawson Creek Receipt Meter Station	2-1610-4U	<i>Q1 2017</i>	Approved Aug 5, 2016	Dec 23, 2015 - Initial TTFP Notification  Apr 27, 2016 - NEB Application Filed <a href="#">Link to Application</a>	5.6
East Calgary Connector – UPR (AP) <sup>5</sup>	9 km NPS 30	Mar 2016	In-Service Mar 30, 2016	Jul 12, 2011 - Initial TTFP Presentation  Mar 16, 2016 - AUC Application Filed <a href="#">Link to Application</a>	66
Edmonton UPR – NE Connector (AP) <sup>5</sup>	8 km NPS 20	Q4 2018	Proposed	Oct 30, 2014 - Initial TTFP Presentation	34
Ferrier South A & B Receipt Meter Station Modifications	20 m NPS 6 Control Valve	Dec 2015	Cancelled	May 7, 2015 - Initial TTFP Notification	1.5

## Appendix 2: 2016 Facility Status Update (December)

Applied-for Facilities	Description	Target In-Service Date	Status	References <sup>1</sup>	Forecast Cost <sup>2</sup> (\$Millions)
Ferrier West Receipt Meter Station	660-2 Orifice Meter	Sep 2016	In-Service Sep 29, 2016	Jan 12, 2016 - Initial TTFP Notification  Feb 9, 2016 - NEB Application Filed <a href="#">Link to Application</a>	2.0
Flat Lake Loop Decommissioning	TBD	TBD	Proposed	Oct 30, 2014 - Initial TTFP Presentation, 2014 Annual Plan <a href="#">Link to Annual Plan</a>	7.0
<i>Gold Creek Compressor Station Unit Addition and Coolers</i>	<i>30 MW</i>	<i>Jun 2019</i>	<i>Proposed</i>	<i>Dec 5, 2016 - Initial TTFP Notification, 2016 Annual Plan</i>	<i>116 - ROT</i>
Gold Creek South Receipt Meter Station	882 Orifice Meter	Apr 2016	In-Service Apr 17, 2016	Jul 13, 2015 - Initial TTFP Notification  Sep 1, 2015 - NEB Application Filed <a href="#">Link to Application</a>	2.8
Goodfish Compressor Station	30 MW	Q1-Q3 2017	Approved Mar 18, 2015 In-Service Delayed	Oct 30, 2014- Initial TTFP Presentation, 2014 Annual Plan <a href="#">Link to Annual Plan</a>  Dec 18, 2014 - NEB Application Filed <a href="#">Link to Application</a>  Oct. 12, 2016 – TTFP Presentation (Facility Status Update)	135 - ROT  103 - Class 5
<i>Gordondale Lateral Loop No. 3</i>	<i>25 km NPS 36</i>	<i>Jun 2019</i>	<i>Proposed</i>	<i>Dec 5, 2016 - Initial TTFP Notification, 2016 Annual Plan</i>	<i>96 - ROT</i>
Grande Prairie Mainline Loop No. 2 (McLeod River Section) <sup>4</sup>	36 km NPS 48	Nov 2017	Approved Oct 31, 2016	Oct 30, 2014 - Initial TTFP Presentation, 2014 Annual Plan <a href="#">Link to Annual Plan</a>  Mar 31, 2015 - NEB Application Filed <a href="#">Link to Application</a>	207 - Class 5  228 - Class 4
Grey Owl Creek Receipt Meter Station Expansion	660-2 Orifice Meter	Mar 2016	In-Service Mar 9, 2016	Jul 15, 2015 - Initial TTFP Notification  Sep 1, 2015 - NEB Application Filed <a href="#">Link to Application</a>	3.0

## Appendix 2: 2016 Facility Status Update (December)

Applied-for Facilities	Description	Target In-Service Date	Status	References <sup>1</sup>	Forecast Cost <sup>2</sup> (\$Millions)
Grey Owl Creek North Receipt Meter Station	882 Orifice Meter	Apr 2016	In-Service Apr 8, 2016	Dec 16, 2014 - Initial TTFP Notification  Jan 29, 2015 - NEB Application Filed <a href="#">Link to Application</a>	2.9
Groundbirch Compressor Station <sup>3</sup>	2-15 MW units – Bi-directional	2017	Certificate Approval Jun 10, 2015	Oct 22, 2013 - Initial TTFP Presentation, 2013 Annual Plan <a href="#">Link to Annual Plan</a>  Nov 8, 2013 - NEB Application Filed <a href="#">Link to Application</a>	103 - ROT
Hermit Lake No. 2 Sales Meter Station	2-860T Turbine Meter	Dec 2016	<i>Under Construction</i>	Aug 24, 2016 - Initial TTFP Notification	1.8
Hidden Lake North C/S Unit Addition	15 MW	TBD	Proposed	Oct 30, 2014 - Initial TTFP Presentation, 2014 Annual Plan <a href="#">Link to Annual Plan</a>	78 - ROT
Hythe Lateral Loop No. 2	13 km NPS 20	Q4 2018	Deferred	Dec 7, 2015 - Initial TTFP Presentation, 2015 Annual Plan <a href="#">Link to Annual Plan</a>  Aug 16, 2016 - TTFP Presentation (Status Update/Deferral)	41 - Class 5
Inland Looping (AP)	19 km NPS 20	Feb 2017	Under Construction	Oct 22, 2013 - Initial TTFP Presentation, 2013 Annual Plan <a href="#">Link to Annual Plan</a>  Oct 30, 2014 - TTFP Presentation, 2014 Annual Plan <a href="#">Link to Annual Plan</a>  Jan 18, 2016 - AUC Application Filed <a href="#">Link to Application</a>	42

## Appendix 2: 2016 Facility Status Update (December)

Applied-for Facilities	Description	Target In-Service Date	Status	References <sup>1</sup>	Forecast Cost <sup>2</sup> (\$Millions)
James River Interchange Modifications	Bypass of Existing Control Valves	Aug 2016	In-Service Jun 25, 2016	Dec 7, 2015 - Initial TTFP Presentation, 2015 Annual Plan <a href="#">Link to Annual Plan</a>  Feb 26, 2016 - NEB Notification Filed <a href="#">Link to Notification</a>	6.0
Japan Canada No. 2 Sales Meter Station	2-860T Turbine Meter 480 m NPS 6 Pipe 54 m NPS 8 Pipe	May 2016	In-Service May 10, 2016	Sep 5, 2014 - Initial TTFP Notification  Oct 1, 2014 - NEB Application Filed <a href="#">Link to Application</a>	4.5
Kent Sales Meter Station Modifications	Yard Modifications	Nov 2016	In-Service Nov 7, 2016	Sep 20, 2016 - Initial TTFP Notification	1.2
Kettle River Lateral Loop (Christina River Section) <sup>4</sup>	20 km NPS 24	Apr 2017	Approved Oct 31, 2016	Oct 30, 2014 - Initial TTFP Presentation, 2014 Annual Plan <a href="#">Link to Annual Plan</a>  Mar 31, 2015 - NEB Application Filed <a href="#">Link to Application</a>	77 - Class 5  76 - Class 4
<i>Latornell Compressor Station Unit Addition</i>	<i>30 MW</i>	<i>Jun 2019</i>	<i>Proposed</i>	<i>Dec 5, 2016 - Initial TTFP Notification, 2016 Annual Plan</i>	<i>101 - ROT</i>
Leismer Compressor Station Isolation	1 – 1 MW unit	Q2 2016	Proposed	Oct 30, 2014 - Initial TTFP Presentation, 2014 Annual Plan <a href="#">Link to Annual Plan</a>	3.0
Leismer East Compressor Station <sup>6</sup>	15 MW	Jun 2016	In-Service Jun 10, 2016	Aug 19, 2014 - Initial TTFP Presentation  Sep 19, 2014 - NEB Application Filed <a href="#">Link to Application</a>	79 - Class 5
Liege Lateral Loop No.2 (Pelican Lake Section) <sup>4</sup>	56 km NPS 30	Apr 2017	Approved Oct 31, 2016	Oct 30, 2014 - Initial TTFP Presentation, 2014 Annual Plan <a href="#">Link to Annual Plan</a>  Mar 31, 2015 - NEB Application Filed <a href="#">Link to Application</a>	215 - Class 5  233 - Class 4



## Appendix 2: 2016 Facility Status Update (December)

Applied-for Facilities	Description	Target In-Service Date	Status	References <sup>1</sup>	Forecast Cost <sup>2</sup> (\$Millions)
Liege Lateral Loop No.2 (Thornbury Section) <sup>6</sup>	36.6 km NPS 30	Apr 2016	In-Service Apr 1, 2016	Aug 19, 2014 - Initial TTFP Presentation  Sep 19, 2014 - NEB Application Filed <a href="#">Link to Application</a>	139 - Class 4
Livingstone Creek Receipt Meter Station	2-1064U Ultrasonic Meter	Mar 2017	Approved Feb 26, 2015	Oct 23, 2014 - Initial TTFP Notification	7.1
Livingstone Creek No. 2 Receipt Meter Station	2-1064U Ultrasonic Meter			Nov 19, 2014 - NEB Application Filed <a href="#">Link to Application</a>	
Lodgepole Compressor Station Unit Addition and Interconnect	5 MW	Nov 2017	Approved May 5, 2016	Dec 7, 2015 - Initial TTFP Presentation, 2015 Annual Plan <a href="#">Link to Annual Plan</a>  Feb 12, 2016 - NEB Application Filed <a href="#">Link to Application</a>	62 - ROT  66 - Class 5
Marten Hills Extension Decommissioning	40 km NPS 20	TBD	Proposed	Oct 22, 2013 - Initial TTFP Presentation, 2013 Annual Plan <a href="#">Link to Annual Plan</a>  Oct 30, 2014 - TTFP Presentation, 2014 Annual Plan <a href="#">Link to Annual Plan</a>	3.0
McDermott Extension	8 km NPS 20	Aug 2016	In-Service Oct 29, 2016	Oct 30, 2014 - Initial TTFP Presentation, 2014 Annual Plan <a href="#">Link to Annual Plan</a>	44 - Class 4
Calumet River Sales	2-1280U		In-Service Nov 7, 2016	<a href="#">Link to Annual Plan</a>	
Calumet River No. 2 Sales Meter Stations	LVS-2		Under Construction	Dec 10, 2014 - NEB Application Filed <a href="#">Link to Application</a>	
Medicine Hat Compressor Station	3.5 MW	Q1 2017	Under Construction	Sep 15, 2015 - Initial TTFP Presentation  Oct 30, 2015 - NEB Application Filed <a href="#">Link to Application</a>	61 - Class 5  67 - Class 4

## Appendix 2: 2016 Facility Status Update (December)

Applied-for Facilities	Description	Target In-Service Date	Status	References <sup>1</sup>	Forecast Cost <sup>2</sup> (\$Millions)
Meikle River Compressor Station Series Modifications	Modifications to Enable Series Operation	Nov 2018	Deferred	Dec 7, 2015 - Initial TTFP Presentation, 2015 Annual Plan <a href="#">Link to Annual Plan</a>  Aug 16, 2016 - TTFP Presentation (Status Update/Deferral)	16.0
Meikle River D Compressor Station	33 MW	Q1-Q3 2017	Approved Mar 18, 2015 In-Service Delayed	Oct 30, 2014 - Initial TTFP Presentation, 2014 Annual Plan <a href="#">Link to Annual Plan</a>  Dec 18, 2014 - NEB Application Filed <a href="#">Link to Application</a>  Oct. 12, 2016 - TTFP Presentation (Facility Status Update)	136 - ROT  114 - Class 5
Mitsue Lateral Loop Decommissioning	13 km NPS 10 26 km NPS 8	TBD	Proposed	Oct 22, 2013 - Initial TTFP Presentation, 2013 Annual Plan <a href="#">Link to Annual Plan</a>  Oct 30, 2014 - TTFP Presentation, 2014 Annual Plan <a href="#">Link to Annual Plan</a>	3.1
Musreau Lake North No.2 Receipt Meter Station	2-1284U	Q3 2016	In-Service Aug 30, 2016	Dec 17, 2015 - Initial TTFP Notification  Jan 26, 2016 - NEB Application Filed <a href="#">Link to Application</a>	5.5
North Central Corridor Loop (North Star Section 1)	32 km NPS 48	Nov 2018	Deferred	Dec 7, 2015 - Initial TTFP Presentation, 2015 Annual Plan <a href="#">Link to Annual Plan</a>  Aug 16, 2016 - TTFP Presentation (Status Update/Deferral)	200 - ROT



## Appendix 2: 2016 Facility Status Update (December)

Applied-for Facilities	Description	Target In-Service Date	Status	References <sup>1</sup>	Forecast Cost <sup>2</sup> (\$Millions)
Northwest Mainline Loop No. 2 (Bear Canyon Section) <sup>4</sup>	27 km NPS 36	Apr 2017	Approved Oct 31, 2016	Oct 30, 2014 - Initial TTFP Presentation, 2014 Annual Plan <a href="#">Link to Annual Plan</a>	110 - Class 5
				Mar 31, 2015 - NEB Application Filed <a href="#">Link to Application</a>	116 - Class 4
Northwest Mainline Loop (Boundary Lake Section) <sup>4</sup>	58 km NPS 36	Apr 2017	Approved Oct 31, 2016	Oct 30, 2014 - Initial TTFP Presentation, 2014 Annual Plan <a href="#">Link to Annual Plan</a>	384 - Class 5
	33 km NPS 36	April 2018		Mar 31, 2015 - NEB Application Filed <a href="#">Link to Application</a>	442 - Class 4
<i>Northwest Mainline Loop (Peace River Crossing)</i>	<i>4 km NPS 36</i>	<i>Nov 2018</i>	<i>Proposed</i>	<i>Dec 5, 2016 - Initial TTFP Notification, 2016 Annual Plan</i>	<i>40 - Class 5</i>
Otter Lake Compressor Station	28 MW	Dec 2015	In-Service Dec 31, 2015	Oct 22, 2013 - Initial TTFP Presentation, 2013 Annual Plan <a href="#">Link to Annual Plan</a>	100 - Class 4
				Dec 18, 2013 - NEB Application Filed <a href="#">Link to Application</a>	
				Mar 2016 - Appendix 2 Update for Cost to Complete	116 - Class 3
Otter Lake Compressor Station Unit Addition <sup>4</sup>	30 MW	Nov 2017	Approved Oct 31, 2016	Oct 30, 2014 - Initial TTFP Presentation, 2014 Annual Plan <a href="#">Link to Annual Plan</a>	115 - Class 5
				Mar 31, 2015 - NEB Application Filed <a href="#">Link to Application</a>	113 - Class 4

## Appendix 2: 2016 Facility Status Update (December)

Applied-for Facilities	Description	Target In-Service Date	Status	References <sup>1</sup>	Forecast Cost <sup>2</sup> (\$Millions)
Peace River Mainline Abandonment (Meikle River to Valleyview Section)	266 km NPS 20 2.3 km NPS 4	TBD	Applied for Aug 18, 2016	Oct 22, 2013 - Initial TTFP Presentation, 2013 Annual Plan <a href="#">Link to Annual Plan</a>  Oct 30, 2014 - TTFP Presentation, 2014 Annual Plan <a href="#">Link to Annual Plan</a>  Jul 22, 2016 - TTFP Presentation (Filing/Scope Change)  Aug 18, 2016 - NEB Application Filed <a href="#">Link to Application</a>	22.5
Peigan Trail Pipeline – UPR (AP) <sup>5</sup>	3 km NPS 16	Dec 2016	Approved Sep 14, 2016	Jul 10, 2012 - Initial TTFP Presentation  Jul 20, 2016 - AUC Application Filed <a href="#">Link to Application</a>	15.0
Pembina Expansion Project (AP) <sup>7</sup>	20.2 km NPS 24	Mar 2017	Approved Jun 7, 2016	Oct 30, 2014 - Initial TTFP Presentation, 2014 Annual Plan <a href="#">Link to Annual Plan</a>  Jan 29, 2016 - AUC Application Filed <a href="#">Link to Application</a>	66
<i>Pipstone Compressor Station Unit Addition and Coolers</i>	<i>30 MW</i>	<i>Jun 2019</i>	<i>Proposed</i>	<i>Dec 5, 2016 - Initial TTFP Notification, 2016 Annual Plan</i>	<i>116 - ROT</i>
<i>Saddle Hills Compressor Station Unit Addition</i>	<i>15 MW</i>	<i>Jun 2019</i>	<i>Proposed</i>	<i>Dec 5, 2016 - Initial TTFP Notification, 2016 annual Plan</i>	<i>74 - ROT</i>
Saturn Compressor Station <sup>3</sup>	15 MW Bi-directional	2017	Certificate Approval Jun 10, 2015	Oct 22, 2013 - Initial TTFP Presentation, 2013 Annual Plan <a href="#">Link to Annual Plan</a>  Nov 8, 2013 - NEB Application Filed <a href="#">Link to Application</a>	70 - ROT

## Appendix 2: 2016 Facility Status Update (December)

Applied-for Facilities	Description	Target In-Service Date	Status	References <sup>1</sup>	Forecast Cost <sup>2</sup> (\$Millions)
Saturn Compressor Station – Unit 2 <sup>3</sup>	15 MW Bi-directional	2019	Certificate Approval Jun 10, 2015	Oct 22, 2013 - Initial TTFP Presentation, 2013 Annual Plan <a href="#">Link to Annual Plan</a>  Nov 8, 2013 - NEB Application Filed <a href="#">Link to Application</a>	63 - ROT
Scottford Area Expansion (AP)	6.9 km NPS 16 2 Meter Stations 1.0 km NPS 10 0.7 km NPS 8	Q3 2015	In-Service Jan 20, 2016	Aug 19, 2014 - Initial TTFP Presentation  Jan 22, 2015 - AUC Application Filed <a href="#">Link to Application</a>	20.0 (less 2.3 CIAC)
Shady Oak North Receipt Meter Station	2-1284U Ultrasonic Meter	Mar 2016	In-Service Mar 3, 2016	Jul 6, 2015 - Initial TTFP Notification  Sep 11, 2016 - NEB Application Filed <a href="#">Link to Application</a>	4.2 (less 2.4 CIAC)
Silverwood Meter Station Modifications	Piping Modifications NPS 48 Sour Bottle	Nov 2016	In-Service Oct 29, 2016	Mar 21, 2016 - Initial TTFP Notification  Apr 18, 2016 - NEB Streamlining Order Notification <a href="#">Link to Notification</a>	1.05
Simonette Lateral Loop  Simonette East Receipt Meter Station	22 km NPS 24	Apr 2016	In-Service Mar 31, 2016	Oct 30, 2014 - Initial TTFP Presentation, 2014 Annual Plan <a href="#">Link to Annual Plan</a>  Mar 13, 2015 - NEB Application filed <a href="#">Link to Application</a>  July 2016 - Appendix 2 Update for Cost to Complete	84 - Class 4  85 – Class 4  80.8 – Class 3
Smoky Lake Control Valve	NPS 6 Control Valve	Nov 2016	Under Construction	Jun 29, 2016 - Initial TTFP Notification  Jul 15, 2016 - NEB Streamlining Order Notification <a href="#">Link to Notification</a>	3.9

## Appendix 2: 2016 Facility Status Update (December)

Applied-for Facilities	Description	Target In-Service Date	Status	References <sup>1</sup>	Forecast Cost <sup>2</sup> (\$Millions)
<i>Smoky River Lateral Loop</i>	<i>10 km NPS 20</i>	<i>Apr 2019</i>	<i>Proposed</i>	<i>Dec 5, 2016 - Initial TTFP Notification, 2016 Annual Plan</i>	<i>54 - Class 5</i>
South Kirby Expansion Project	39 km NPS 24	Apr 2018	Deferred	Oct 30, 2014 - Initial TTFP Presentation, 2014 Annual Plan <a href="#">Link to Annual Plan</a>  Dec 7, 2015 - TTFP Presentation, 2015 Annual Plan <a href="#">Link to Annual Plan</a>  Aug 16, 2016 - TTFP Presentation, 2018 Expansion Project Facilities Update	137- Class 5
Southeast Calgary Connector – UPR (AP) <sup>5</sup>	13 km NPS 24	Mar 2016	In-Service Mar 30, 2016	Jul 12, 2011 - Initial TTFP Presentation  Mar 16, 2015 - AUC Application Filed <a href="#">Link to Application</a>	63
Southwest Edmonton Connector – UPR (AP) <sup>5</sup>	21 km NPS 20	Q2 2017	Under Construction	Jul 10, 2012 - Initial TTFP Presentation  Jun 2, 2015 - AUC Application Filed <a href="#">Link to Application</a>	93
Spirit River Interconnect Modifications (AP)	Yard Modifications	Nov 2016	<i>In-Service Dec 5, 2016</i>	Sep 30, 2016 – Initial TTFP Notification (Appendix 2)	1.2
<i>Strathmore NW Lateral Loop (AP)</i>	<i>7 km NPS 3</i>	<i>Nov 2018</i>	<i>Proposed</i>	<i>Dec 5, 2016 - Initial TTFP Notification, 2016 Annual Plan</i>	<i>4</i>
Sturgeon Refinery Process Delivery and Lateral (AP)	2-AAT 140 Meter 1 km NPS 12	Nov 2016	Under Construction	Jun 9, 2016 - AUC Application Filed <a href="#">Link to Application</a>	6.5
Sundre Crossover	20 km NPS 42	Nov 2018	Proposed	Dec 7, 2015 - Initial TTFP Presentation, 2015 Annual Plan <a href="#">Link to Annual Plan</a>  May 17, 2016 - TTFP Presentation (Scope Change)	240 - ROT  137 - Class 5 113 – Class 4
<i>Swartz Creek Compressor Station Unit Addition</i>	<i>30 MW</i>	<i>Jun 2019</i>	<i>Proposed</i>	<i>Dec 5, 2016 - Initial TTFP Notification, 2016 Annual Plan</i>	<i>116 - ROT</i>

## Appendix 2: 2016 Facility Status Update (December)

Applied-for Facilities	Description	Target In-Service Date	Status	References <sup>1</sup>	Forecast Cost <sup>2</sup> (\$Millions)
<u>Towerbirch Expansion</u>					
Groundbirch Mainline Loop	55 km NPS 36	Nov 2017	NEB Recommendation Oct 6, 2016	Aug 18, 2015 - Initial TTFP Presentation	470 - Class 5
Tower Lake Section	32 km NPS 30	Nov 2017		Sep 2, 2015 - NEB Application Filed <a href="#">Link to Application</a>	
Tower Lake Receipt Meter Station	2-1284U Ultrasonic Meter	Nov 2017		Mar 2016 - Appendix 2 Update for Cost to Complete	439 - Class 4
Dawson Creek North No. 2 Receipt Meter Station	2-1284U Ultrasonic Meter	Nov 2017			
Dawson Creek North Receipt Meter Station	2-1284U Ultrasonic Meter	Apr 2018			
Dawson Creek East Receipt Meter Station	882 Orifice Meter	Sep 2018			
Groundbirch East Receipt Meter Station Expansion	1-2412U Ultrasonic Meter	Jul 2017			
		Nov 2017			
Valhalla North Receipt Meter Station	882 Orifice Meter	Apr 2016	In-Service Apr 14, 2016	Jul 15, 2015 - Initial TTFP Notification  Aug 19, 2015 - NEB Application Filed <a href="#">Link to Application</a>	3.5
<i>Wainwright Compressor Station Unit Replacement</i>	<i>0.4 MW</i>	<i>Jul 2017</i>	<i>Proposed</i>	<i>Dec 5, 2016 - Initial TTFP Notification, 2016 Annual Plan</i>	<i>2</i>
Wolf Lake Compressor Station Demolition – Unit #1	1 – 15 MW unit	TBD	Proposed	Oct 30, 2014 - Initial TTFP Presentation, 2014 Annual Plan <a href="#">Link to Annual Plan</a>	4.0
Wolverine River Lateral Loop (Carmon Creek Section)	61 km NPS 20	Apr 2017	Certificate Approval Jun 1, 2015 Deferred	Oct 22, 2013 - Initial TTFP Presentation, 2013 Annual Plan <a href="#">Link to Annual Plan</a>  Mar 25, 2014 - NEB Application Filed <a href="#">Link to Application</a>  Aug 16, 2016 - TTFP Presentation, 2018 Expansion Project Facilities Update	128 - ROT  144 - Class 4



## Appendix 2: 2016 Facility Status Update (December)

Applied-for Facilities	Description	Target In-Service Date	Status	References <sup>1</sup>	Forecast Cost <sup>2</sup> (\$Millions)
Woodenhouse Coolers		Feb 2016	In-Service Feb 16, 2016	Oct 30, 2014 - Initial TTFP Presentation, 2014 Annual Plan <a href="#">Link to Annual Plan</a>  Dec 16, 2014 - NEB Application Filed <a href="#">Link to Application</a>  Mar 2016 - Appendix 2 Update for Cost to Complete	25 - ROT  30 - Class 4  41 - Class 3
Woodenhouse C/S Unit Addition	30 MW	Nov 2018	S.58 Application Filed Nov 7, 2016	Oct 30, 2014 - Initial TTFP Presentation, 2014 Annual Plan <a href="#">Link to Annual Plan</a>  Dec 7, 2015 - TTFP Presentation, 2015 Annual Plan <a href="#">Link to Annual Plan</a>  <a href="#">Link to S.58 Application</a>	138 – Class 5

<sup>1</sup> Hyperlinks to AUC filings require an AUC eFiling login which can be obtained by contacting the AUC.

<sup>2</sup> For NGTL projects greater than \$25 million, the estimate type for the forecasted costs have been provided. The typical expected accuracy for the various estimate types are shown in the table below. These accuracy ranges are for projects with established technological complexity and can be greater depending on area knowledge, technological complexity, level of expertise, and certainty of facility scope. Forecasted costs reflect the dollar value, economic conditions, and estimation procedures at the time the estimates were completed.

Estimate Type	Expected Accuracy Range
Rule of Thumb (ROT)	(-50% to +100%)
Class 5	(-20% to +30%)
Class 4	(-15% to +20%)
Class 3	(-10 to +10%)

<sup>3</sup> The *North Montney Project* was filed as a Section 52 application on November 8, 2013 comprised of the following facilities: North Montney Mainline (Aitken Creek Section), North Montney Mainline (Kahta Section), Aitken Creek Compressor Station, Saturn Compressor Station, Groundbirch Compressor Station, 14 receipt meter stations, a bi-

directional storage meter station (Aitken Creek Interconnect) and a delivery meter station (Mackie Creek Interconnection).

<sup>4</sup> NGTL filed the *2017 NGTL System Expansion Project* Section 52 application on March 31, 2015 comprised of the following facilities: Alces River Compressor Station Unit Addition, Grande Prairie Mainline Loop No. 2 (McLeod River Section), Kettle River Lateral Loop (Christina River Section), Liege Lateral Loop No.2 (Pelican Lake Section), Northwest Mainline Loop (Boundary Lake Section), Northwest Mainline Loop No. 2 (Bear Canyon Section) and Otter Lake Compressor Station Unit Addition.

<sup>5</sup> ATCO Pipelines filed an application with the AUC for the Urban Pipeline Replacement (UPR) project on March 19, 2013. The AUC approved the UPR project in a decision dated January 17, 2014. The proposed segments of the UPR project that have been presented to the TTFP are identified in the table by the inclusion of “UPR” in the facility name.

<sup>6</sup> The Liege Lateral Loop No.2 (Thornbury Section) and Leismer East Compressor Station were applied for together in a single NEB Section 58 application on September 19, 2014.

<sup>7</sup> Pembina Expansion – Phase 1 (AP) and Pembina Expansion – Phase 2 (AP) has been consolidated into the Pembina Expansion Project (AP). This was done to reflect ATCO Pipelines AUC application for these facilities as a single project.

### Appendix 3: System Map

The System Map, including the 2016 Annual Plan facilities, is expected to be available in March 2017 and can be accessed at

<http://www.transcanada.com/customerexpress/5525.html>.