

CHAPTER 3 - DESIGN FORECAST**3.1 Introduction**

This Annual Plan is based on NGTL's July 2004 design forecast of gas delivery and FS productive capability, which in turn is based on supply and market assessments completed in May 2004. The forecast of FS productive capability used in this Annual Plan is subject to numerous uncertainties. Producer success in developing new supply, actual levels of new firm transportation Service Agreements, and changes in market demand may result in deviations from forecast values. NGTL will continue to closely monitor industry activity throughout the year in order to anticipate and respond to Customer requirements for Service.

NGTL's July 2004 design forecast of gas delivery and FS productive capability applies to the firm transportation design process for facilities to be in-service for the 2005/06 Gas Year and the winter season of the 2006/07 Gas Year. The July 2004 design forecast comprises two principal parts. The first part is the gas delivery forecast (Sections 2.9.4.2 and 3.4), which is a forecast of the natural gas volumes to be delivered at all Delivery Points on the Alberta System. The second part is the FS productive capability forecasts (Sections 2.9.4.1 and 3.5), each of which represents the forecast peak rate at which gas can be received onto the Alberta System at a specific Receipt Point under firm transportation Service Agreements.

An overview of the July 2004 design forecast was presented at the November 23, 2004 TTFP meeting. This chapter presents a detailed description of the July 2004 design forecast.

The July 2004 design forecast includes winter and summer seasonal forecasts of maximum, average, and minimum day delivery for all Delivery Points and a forecast of FS productive capability for all Receipt Points on the Alberta System. Refer to

Section 2.9.4 for further details on the relationship between FS productive capability, field deliverability and Receipt Contract Demand under firm transportation Service Agreements for all Receipt Points on the Alberta System.

Storage Facilities remain a significant source of winter supply. Currently connected Storage Facilities have a maximum day receipt capacity of $136.9 \times 10^6 \text{m}^3/\text{d}$ (4.86 bcf/d). Actual maximum day receipts from storage will be dependent upon market conditions, storage working gas levels, storage compression power, and Alberta System operations. A discussion of the maximum day receipt capacity associated with Storage Facilities is provided for information purposes in Section 3.6. Refer to Section 2.6.4 for further details on the treatment of storage in the system design.

3.2 Economic Assumptions

3.2.1 General Assumptions

Underlying the gas delivery and FS productive capability forecasts are assumptions concerning broader trends in the North American economy and energy markets.

These assumptions, developed early in 2004, include:

- World oil prices in 2004 are forecasted to average \$U.S. 32.00/bbl for West Texas Intermediate (WTI), up from \$U.S. 31.10/bbl in 2003. Prices are expected to moderate over the next several years as growing Non-OPEC and OPEC oil supply keep the market reasonably well supplied, even with fairly strong oil demand growth. Prices reach a low point of \$U.S. 25.00/bbl in 2007. From there the price grows to \$U.S. 28.00/bbl or to \$U.S. 25.00 (real 2003) by 2010. It remains at the \$U.S. 25.00 (real 2003) level for the remainder of the forecast period as growing world oil demand and slower non-OPEC oil supply increases

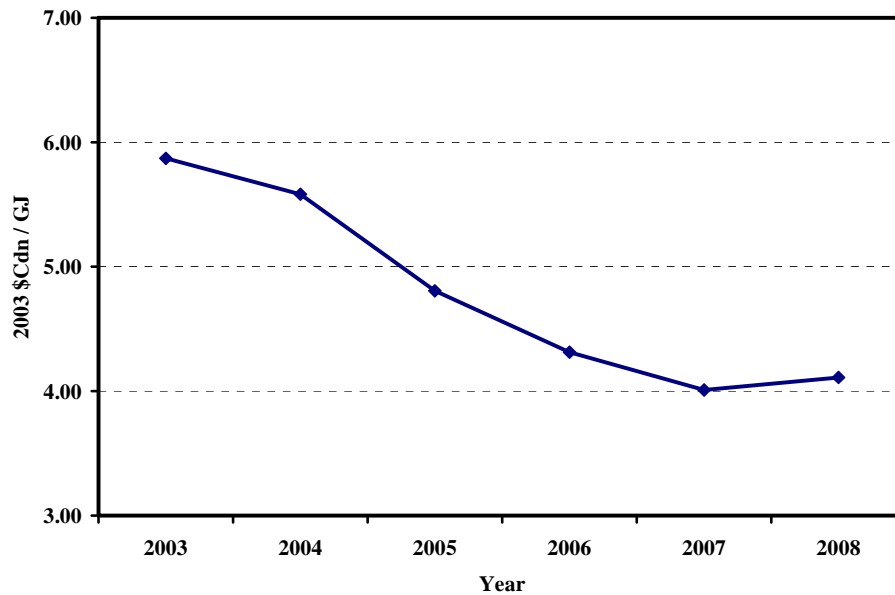
are counterbalanced by pressure from a number of OPEC members for higher quotas due to their own rising oil productive capacity.

- U.S. gas prices in 2004 are expected to be strong with an average of \$U.S. 5.50/MMBTU for NYMEX Henry Hub due to the difficulty U.S. and Canadian gas supply will have in meeting growing demand. Prices will decline somewhat over the 2005-2007 period to \$U.S. 4.30/MMBTU by 2007. Prices then rise slowly to \$U.S. 4.55/MMBTU in current dollars or \$U.S. 4.05/MMBTU in real 2003 \$U.S. by 2010
- Gas demand is expected to increase with continued economic and population growth in both the U.S. and Canada. Gas demand growth will be predominately in the industrial and electricity generation sectors. In addition, Western Canadian industrial gas demand is expected to grow significantly, driven by oil sands and heavy oil activity.
- The U.S. is expected to be able to supply most of its natural gas needs by drawing from its extensive gas resource base, with production from the Rocky Mountain basin showing significant growth. However, US domestic supply in aggregate will be unable to satisfy the growth in demand and imported liquefied natural gas (LNG) will play a significant role in providing additional supply to U.S. markets. The four existing US receiving terminals have all been re-activated and each one will be expanded in the next several years. A number of new LNG receiving terminals will become operational in the US and Mexico from 2006/07 onward. This additional LNG supply will help to moderate gas prices in the North American market.

3.2.2 Gas Price

A gas price forecast is used by NGTL to determine gas demand, to evaluate the viability of gas supply development for the July 2004 design forecast and in the economic evaluation of facilities. The gas price forecast is based on an assessment of North American gas supply and demand. The gas price represents an Alberta average field price at a point just prior to receipt onto the Alberta System. The path of gas prices, shown in Figure 3.2.2, reflects the general assumptions from Section 3.2.1.

**Figure 3.2.2
NGTL Gas Price Forecast
Alberta Average Field Price (Alberta Reference Price)**



The Alberta average field price (in 2003 \$) is expected to remain strong in 2004 at \$Cdn 5.90/GJ. Alberta prices decline over the next several years in line with the drop in NYMEX gas prices to the \$Cdn 4.00/GJ (real 2003 \$) range by 2007. Prices are forecasted to grow slowly to \$Cdn 4.50/GJ (real 2003 \$) by 2015 and then remain constant for the remainder of the forecast period.

The gas price forecast affects NGTL’s FS productive capability forecast and gas delivery forecast and is used as input into the economic analysis for new facilities.

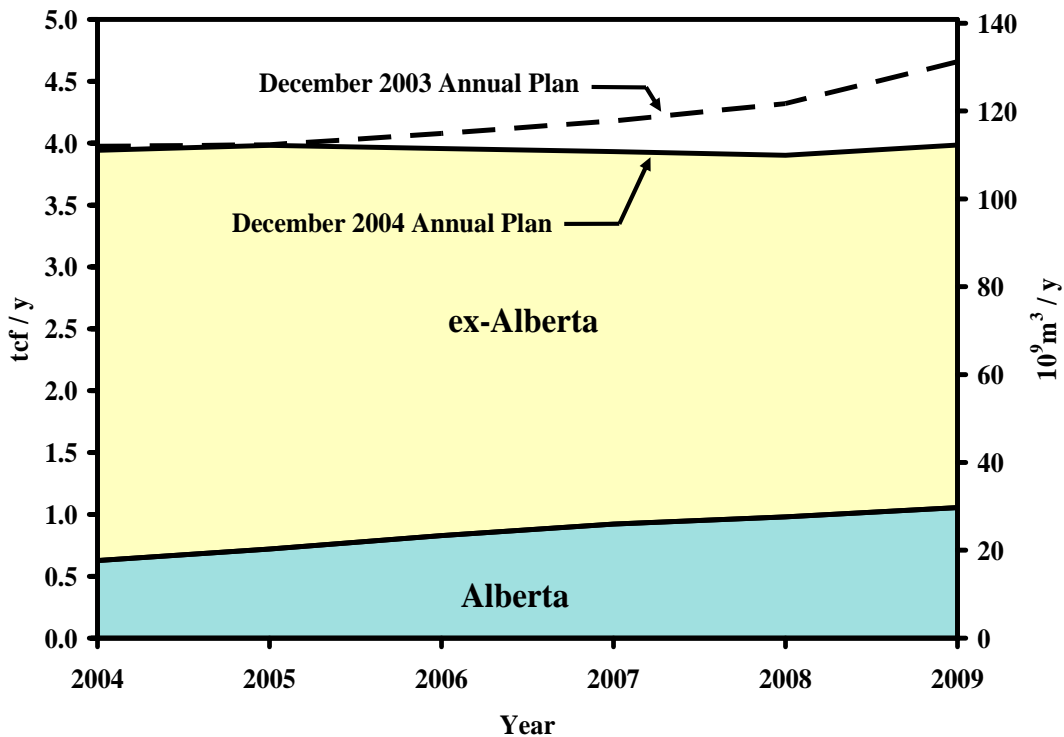
The level of the gas price affects anticipated producer activity to support continuing production from connected supplies, connection of unconnected reserves, and the activity required to discover and to develop new reserves.

3.3 System Annual Throughput

NGTL’s forecast of system annual throughput is included for informational purposes. The system annual throughput forecast projects the total amount of gas to be transported by NGTL in future years and is the basis for the forecast of unit volume cost (Section 7.3).

System annual throughput (Figure 3.3.1) is expected to remain relatively flat, at approximately 112 10⁹m³/y (4.0 tcf/y) for the entire design forecast period.

**Figure 3.3.1
System Annual Throughput**



3.4 Gas Delivery Forecast

The gas delivery forecast describes one of the two principal components of the July 2004 design forecast. The second component, the FS productive capability forecast, is described in Section 3.5.

3.4.1 System Maximum Day Delivery Forecast

The system maximum day delivery forecast projects aggregate maximum day delivery for the entire Alberta System in each of the winter and summer seasons for the 2004/05 through 2008/09 Gas Years. NGTL does not anticipate delivering the maximum day delivery at all Delivery Points simultaneously, although the maximum day delivery at individual Delivery Points may occur at some time during a season.

A breakdown of the system maximum day delivery forecast for both the winter and summer seasons of the 2005/06 Gas Year and the winter season of the 2006/07 Gas Year is provided in Tables 3.4.2.1 and 3.4.2.2. The July 2004 forecast indicates a winter system maximum day delivery of $345.2 \times 10^6 \text{m}^3/\text{d}$ (12.25 bcf/d) for the 2005/06 Gas Year. This represents an increase of $10.5 \times 10^6 \text{m}^3/\text{d}$ (0.37 bcf/d), or 3.1 percent from the winter system maximum day delivery forecast for the 2004/05 Gas Year.

NGTL's July 2004 forecast of winter system maximum day delivery for the 2005/06 Gas Year includes deliveries to the major Export Delivery Points (Empress, McNeill, Alberta/British Columbia) of $236.2 \times 10^6 \text{m}^3/\text{d}$ (8.38 bcf/d), deliveries to other Export Delivery Points of $0.6 \times 10^6 \text{m}^3/\text{d}$ (0.02 bcf/d), and deliveries to Alberta Delivery Points of $108.4 \times 10^6 \text{m}^3/\text{d}$ (3.85 bcf/d).

The July 2004 summer system maximum day delivery forecast for the 2005/06 Gas Year is $319.0 \times 10^6 \text{m}^3/\text{d}$ (11.32 bcf/d). This represents an increase of $10.3 \times 10^6 \text{m}^3/\text{d}$

(0.37 bcf/d), or 3.4 percent, from the summer system maximum day delivery forecast for the 2004/05 Gas Year.

NGTL's July 2004 forecast of summer system maximum day delivery for the 2005/06 Gas Year includes deliveries to the major Export Delivery Points (Empress, McNeill, Alberta/British Columbia) of $236.2 \times 10^6 \text{m}^3/\text{d}$ (8.38 bcf/d), deliveries to other Export Delivery Points of $0.6 \times 10^6 \text{m}^3/\text{d}$ (0.02 bcf/d) and deliveries to Alberta Delivery Points of $82.2 \times 10^6 \text{m}^3/\text{d}$ (2.92 bcf/d).

The July 2004 forecast indicates a winter system maximum day delivery of $344.5 \times 10^6 \text{m}^3/\text{d}$ (12.23 bcf/d) for the 2006/07 Gas Year. This represents a decrease of $0.7 \times 10^6 \text{m}^3/\text{d}$ (0.03 bcf/d), or 0.2 percent, from the winter system maximum day delivery forecast for the 2005/06 Gas Year.

NGTL's July 2004 forecast of winter system maximum day delivery for the 2006/07 Gas Year includes deliveries to the major Export Delivery Points (Empress, McNeill, Alberta/British Columbia) of $227.7 \times 10^6 \text{m}^3/\text{d}$ (8.08 bcf/d), deliveries to other Export Delivery Points of $0.6 \times 10^6 \text{m}^3/\text{d}$ (0.02 bcf/d), and deliveries to Alberta Delivery Points of $116.2 \times 10^6 \text{m}^3/\text{d}$ (4.12 bcf/d).

3.4.2 Export Delivery Points

The facilities requirements detailed in this Annual Plan provide sufficient capacity to transport the July 2004 forecasted maximum day delivery for both the winter and summer seasons for each Export Delivery Point in the 2005/06 Gas Year and the winter season of the 2006/07 Gas Year.

The July 2004 forecast of maximum day delivery at the Export Delivery Points is consistent with NGTL's downstream capacity assumption (Section 2.6.3).

Table 3.4.2.1
Winter System Maximum Day Delivery Forecast

Gas Year	July 2004 Design Forecast				
	04/05	05/06	06/07	07/08	08/09
(Volumes in 10 ⁶ m ³ /d at 101.325 kPa and 15°C)					
Empress	102.8	90.1	81.6	78.6	76.6
McNeill	47.3	63.5	63.5	63.5	63.5
Alberta/B.C.	82.7	82.6	82.6	82.6	82.6
Boundary Lake	0.0	0.0	0.0	0.0	0.0
Unity	0.0	0.0	0.0	0.0	0.0
Cold Lake	0.0	0.0	0.0	0.0	0.0
Gordondale	0.0	0.0	0.0	0.0	0.0
Alberta/Montana	1.0	0.6	0.6	0.6	0.0
Alberta	100.9	108.4	116.2	118.2	124.8
TOTAL SYSTEM	334.7	345.2	344.5	343.4	347.5
(Volumes in bcf/d at 14.65 psia and 60°F)					
Empress	3.65	3.20	2.90	2.79	2.72
McNeill	1.68	2.26	2.26	2.26	2.26
Alberta/B.C.	2.93	2.93	2.93	2.93	2.93
Boundary Lake	0.00	0.00	0.00	0.00	0.00
Unity	0.00	0.00	0.00	0.00	0.00
Cold Lake	0.00	0.00	0.00	0.00	0.00
Gordondale	0.00	0.00	0.00	0.00	0.00
Alberta/Montana	0.04	0.02	0.02	0.02	0.00
Alberta	3.58	3.85	4.12	4.19	4.43
TOTAL SYSTEM	11.88	12.25	12.23	12.19	12.33

NOTES:

- Delivery volumes shown are not anticipated to occur simultaneously but are projected to occur at some time during the winter season.
- Numbers may not add due to rounding.

Table 3.4.2.2
Summer System Maximum Day Delivery Forecast

Gas Year	July 2004 Design Forecast				
	04/05	05/06	06/07	07/08	08/09
(Volumes in 10 ⁶ m ³ /d at 101.325 kPa and 15°C)					
Empress	102.8	90.1	81.6	78.6	76.6
McNeill	47.0	63.5	63.5	63.5	63.5
Alberta/B.C.	82.1	82.6	82.6	82.6	82.6
Boundary Lake	0.0	0.0	0.0	0.0	0.0
Unity	0.0	0.0	0.0	0.0	0.0
Cold Lake	0.0	0.0	0.0	0.0	0.0
Gordondale	0.0	0.0	0.0	0.0	0.0
Alberta/Montana	1.0	0.6	0.6	0.6	0.0
Alberta	75.7	82.2	88.7	92.9	96.0
TOTAL SYSTEM	308.7	319.0	317.0	318.1	318.7
(Volumes in bcf/d at 14.65 psia and 60°F)					
Empress	3.65	3.20	2.90	2.79	2.72
McNeill	1.67	2.26	2.26	2.26	2.26
Alberta/B.C.	2.91	2.93	2.93	2.93	2.93
Boundary Lake	0.00	0.00	0.00	0.00	0.00
Unity	0.00	0.00	0.00	0.00	0.00
Cold Lake	0.00	0.00	0.00	0.00	0.00
Gordondale	0.00	0.00	0.00	0.00	0.00
Alberta/Montana	0.04	0.02	0.02	0.02	0.00
Alberta	2.69	2.92	3.15	3.30	3.41
TOTAL SYSTEM	10.96	11.32	11.25	11.29	11.31

NOTES:

- Delivery volumes shown are not anticipated to occur simultaneously but are projected to occur at some time during the summer season.
- Numbers may not add due to rounding.

3.4.2.1 Empress

The forecast of maximum day delivery at the Empress Export Delivery Point reflects the forecast level of firm transportation Service Agreements at the Empress Export Delivery Point.

The July 2004 forecast winter maximum day delivery for the 2005/06 Gas Year at the Empress Export Delivery Point is 90.1 10⁶m³/d (3.20 bcf/d). This represents a decrease of 12.7 10⁶m³/d (0.45 bcf/d), or 12.4 percent, from the winter season maximum day delivery forecast for the 2004/05 Gas Year.

The July 2004 forecast summer maximum day delivery for the 2005/06 Gas Year at the Empress Export Delivery Point is $90.1 \text{ } 10^6 \text{ m}^3/\text{d}$ (3.20 bcf/d). This represents a decrease of $12.7 \text{ } 10^6 \text{ m}^3/\text{d}$ (0.45 bcf/d), or 12.4 percent, from the summer season maximum day delivery forecast for the 2004/05 Gas Year.

The July 2004 forecast winter maximum day delivery for the 2006/07 Gas Year at the Empress Export Delivery Point is $81.6 \text{ } 10^6 \text{ m}^3/\text{d}$ (2.90 bcf/d). This represents a decrease of $8.5 \text{ } 10^6 \text{ m}^3/\text{d}$ (0.30 bcf/d), or 9.4 percent, from the winter season maximum day delivery forecast for the 2005/06 Gas Year.

3.4.2.2 McNeill

The forecast of maximum day delivery at the McNeill Export Delivery Point for 2005/06 reflects the forecast level of firm transportation Service Agreements at the McNeill Export Delivery Point.

The July 2004 forecast winter maximum day delivery for the 2005/06 Gas Year at the McNeill Export Delivery Point is $63.5 \text{ } 10^6 \text{ m}^3/\text{d}$ (2.26 bcf/d). This represents an increase of $16.3 \text{ } 10^6 \text{ m}^3/\text{d}$ (0.58 bcf/d), or 34.4 percent, from the winter season maximum day delivery forecast for the 2004/05 Gas Year.

The July 2004 forecast summer maximum day delivery for the 2005/06 Gas Year at the McNeill Export Delivery Point is $63.5 \text{ } 10^6 \text{ m}^3/\text{d}$ (2.26 bcf/d). This represents an increase of $16.5 \text{ } 10^6 \text{ m}^3/\text{d}$ (0.59 bcf/d), or 35.1 percent, from the summer season maximum day delivery forecast for the 2004/05 Gas Year.

The July 2004 forecast winter maximum day delivery for the 2006/07 Gas Year at the McNeill Export Delivery Point is $63.5 \text{ } 10^6 \text{ m}^3/\text{d}$ (2.26 bcf/d). This represents no change from the winter season maximum day delivery forecast for the 2005/06 Gas Year.

3.4.2.3 Alberta/British Columbia

The forecast of maximum day delivery at the Alberta/British Columbia Export Delivery Point reflects the forecast level of firm transportation Service Agreements at the Alberta/British Columbia Export Delivery Point.

The July 2004 forecast winter maximum day delivery for the 2005/06 Gas Year at the Alberta/British Columbia Export Delivery Point is $82.6 \text{ } 10^6 \text{ m}^3/\text{d}$ (2.93 bcf/d). This represents a decrease of $0.1 \text{ } 10^6 \text{ m}^3/\text{d}$ (0.005 bcf/d), or 0.2 percent, from the winter season maximum day delivery forecast for the 2004/05 Gas Year.

The July 2004 forecast summer maximum day delivery for the 2005/06 Gas Year at the Alberta/British Columbia Export Delivery Point is $82.6 \text{ } 10^6 \text{ m}^3/\text{d}$ (2.93 bcf/d). This represents an increase of $0.4 \text{ } 10^6 \text{ m}^3/\text{d}$ (0.02 bcf/d), or 0.5 percent, from the summer season maximum day delivery forecast for the 2004/05 Gas Year.

The July 2004 forecast winter maximum day delivery for the 2006/07 Gas Year at the Alberta/British Columbia Export Delivery Point is $82.6 \text{ } 10^6 \text{ m}^3/\text{d}$ (2.93 bcf/d). This represents no change from the winter season maximum day delivery forecast for the 2005/06 Gas Year.

3.4.2.4 Other Exports

(a) Boundary Lake, Unity, Cold Lake and Gordondale

The July 2004 forecast maximum day delivery for the 2005/06 Gas Year and the winter season of the 2006/07 Gas Year for each of the Boundary Lake, Unity, Cold Lake and Gordondale Export Delivery Points is zero. This is unchanged from the maximum day delivery forecast for the 2004/05 Gas Year.

(b) Alberta/Montana

The July 2004 forecast maximum day delivery for the 2005/06 Gas Year at the Alberta/Montana Export Delivery Point is $0.6 \times 10^6 \text{m}^3/\text{d}$ (0.02 bcf/d). This represents a decrease of $0.4 \times 10^6 \text{m}^3/\text{d}$ (0.01 bcf/d), or 40.4 percent, from the winter season maximum day delivery forecast for the 2004/05 Gas Year.

The July 2004 forecast winter maximum day delivery for the 2006/07 Gas Year at the Alberta/Montana Export Delivery Point is $0.6 \times 10^6 \text{m}^3/\text{d}$ (0.02 bcf/d). This represents no change from the winter season maximum day delivery forecast for the 2005/06 Gas Year.

3.4.3 Alberta Deliveries

The July 2004 Alberta maximum day delivery forecast for the winter season of the 2005/06 Gas Year is $108.4 \times 10^6 \text{m}^3/\text{d}$ (3.85 bcf/d). This is an increase of $7.5 \times 10^6 \text{m}^3/\text{d}$ (0.27 bcf/d), or 7.4 percent, from the 2004/05 Gas Year winter season value. The July 2004 Alberta maximum day delivery forecast for the summer season of the 2005/06 Gas Year is $82.2 \times 10^6 \text{m}^3/\text{d}$ (2.92 bcf/d). This is an increase of $6.5 \times 10^6 \text{m}^3/\text{d}$ (0.23 bcf/d), or 8.6 percent, from the 2004/05 Gas Year summer season value.

The July 2004 Alberta maximum day delivery forecast for the winter season of the 2006/07 Gas Year is $116.2 \times 10^6 \text{m}^3/\text{d}$ (4.12 bcf/d). This is an increase of $7.8 \times 10^6 \text{m}^3/\text{d}$ (0.28 bcf/d), or 7.2 percent, from the 2005/06 Gas Year winter season value.

NGTL considered several sources of information in developing its Alberta maximum day delivery forecast. First, operators of downstream facilities such as connecting pipelines and industrial plant operators were requested to provide a forecast of their maximum, average, and minimum requirements for deliveries from NGTL over the next ten years. NGTL analyzed the forecasts and compared them to historical flow

patterns at the Alberta Delivery Points. In cases where NGTL’s analysis did not support the operator’s forecast, NGTL contacted the operator and either the operator’s forecast was revised or NGTL adjusted its analysis based on new information provided by the operator. In cases where the operator did not provide a forecast, NGTL based its forecast on growth rates for specific demand sectors.

A summary of winter and summer maximum day delivery from the July 2004 design forecast by NGTL project area is shown in Tables 3.4.3.1, and 3.4.3.2, respectively.

**Table 3.4.3.1
Winter Maximum Day Delivery Forecast**

Project Area	July 2004 Design Forecast (10 ⁶ m ³ /d)		
	2004/05	2005/06	2006/07
Peace River	6.1	5.9	5.9
North and East	43.8	50.1	57.6
Mainline	46.3	47.7	47.9
Gas taps	4.7	4.8	4.8
TOTAL ALBERTA	100.9	108.4	116.2
Project Area	July 2004 Design Forecast (bcf/d)		
	2004/05	2005/06	2006/07
Peace River	0.22	0.21	0.21
North and East	1.55	1.78	2.04
Mainline	1.64	1.69	1.70
Gas taps	0.17	0.17	0.17
TOTAL ALBERTA	3.58	3.85	4.12

NOTES:

- Numbers may not add due to rounding.
- Gas taps are located in all areas of the province.

**Table 3.4.3.2
Summer Maximum Day Delivery Forecast**

Project Area	July 2004 Design Forecast (10 ⁶ m ³ /d)	
	2004/05	2005/06
Peace River	4.0	3.6
North and East	40.5	47.2
Mainline	29.1	29.2
Gas taps	2.2	2.2
TOTAL ALBERTA	75.7	82.2
Project Area	July 2004 Design Forecast (bcf/d)	
	2004/05	2005/06
Peace River	0.14	0.13
North and East	1.44	1.68
Mainline	1.03	1.04
Gas taps	0.08	0.08
TOTAL ALBERTA	2.69	2.92

NOTES:

- Numbers may not add due to rounding.
- Gas taps are located in all areas of the province.

3.5 FS Productive Capability Forecast

The following FS productive capability forecast comprises the second principal part of the July 2004 design forecast.

3.5.1 System FS Productive Capability Forecast

The system FS productive capability forecast from the July 2004 design forecast is 260.7 10⁶m³/d (9.25 bcf/d) in the 2005/06 Gas Year. This is a decrease of 1.8 10⁶m³/d (0.06 bcf/d), or 0.7 percent, from the 2004/05 Gas Year level of 262.4 10⁶m³/d (9.32 bcf/d). This decrease reflects the net effect of both new and non-renewing firm transportation Service Agreements throughout the Alberta System.

A summary of system FS productive capability from the July 2004 design forecast by NGTL project area is shown in Table 3.5.1.

Table 3.5.1
System FS Productive Capability Forecast

Project Area	July 2004 Design Forecast (10 ⁶ m ³ /d)				
	2004/05	2005/06	2006/07	2007/08	2008/09
Peace River	98.5	98.1	94.5	87.4	84.6
North and East	43.6	42.0	37.4	34.6	35.0
Mainline	120.4	120.6	114.4	110.8	109.8
TOTAL SYSTEM	262.4	260.7	246.3	232.9	229.4
Project Area	July 2004 Design Forecast (bcf/d)				
	2004/05	2005/06	2006/07	2007/08	2008/09
Peace River	3.50	3.48	3.35	3.10	3.00
North and East	1.55	1.49	1.33	1.23	1.24
Mainline	4.27	4.28	4.06	3.93	3.90
TOTAL SYSTEM	9.32	9.25	8.74	8.27	8.14

NOTE:

- Numbers may not add due to rounding.

3.5.2 System Field Deliverability

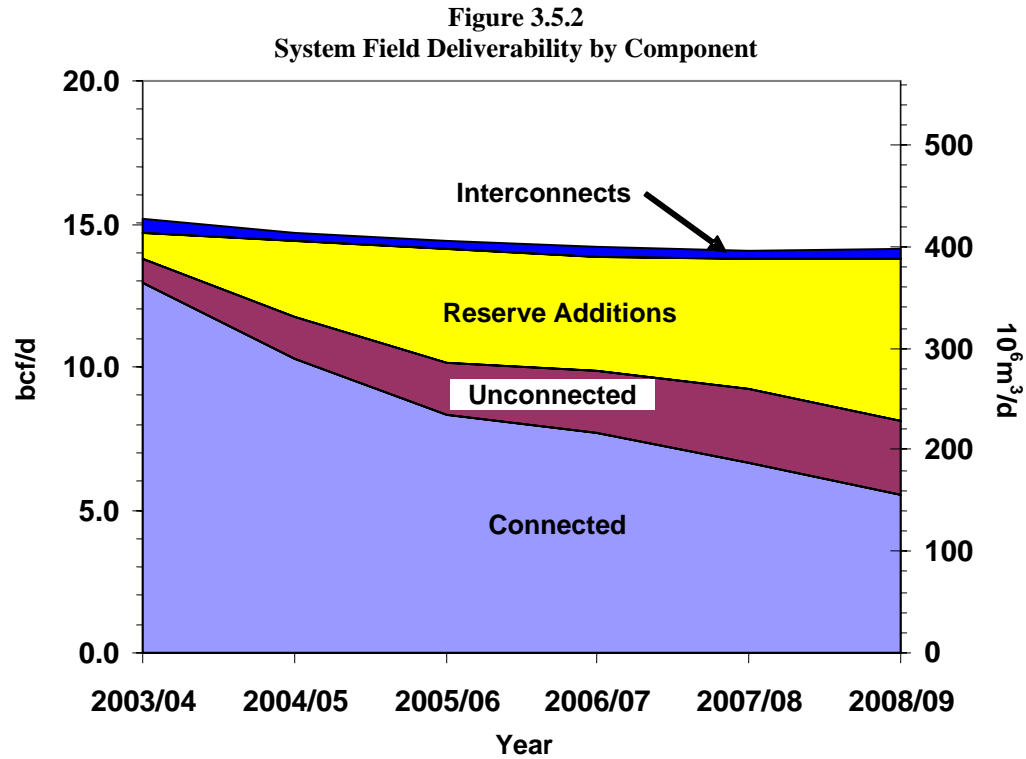
In updating the field deliverability for the July 2004 design forecast, three major sources of gas supply were included:

- Connected and Unconnected Reserves – supply from established reserves upstream of NGTL’s Receipt Points.
- Reserve Additions - supply from undiscovered reserves, including unconventional coalbed methane and tight gas.
- Interconnections - supply from interconnections with other pipeline systems.

Incremental supply from reserve additions and from the unconnected component of discovered reserves are expected to become available to offset declines in field deliverability from connected established reserves where economics permit.

Figure 3.5.2 shows the system field deliverability and its composition by supply source. In aggregate, NGTL expects the WCSB field deliverability to remain

relatively flat over the forecast period. However, NGTL has assumed that pipeline competition will reduce the field deliverability available to the Alberta System.



Gas supplied from Storage Facilities has not been included in the data presented in this section. Information pertaining to gas supply from Storage Facilities is contained in Section 3.6.

Supply from reserve additions was forecast on an area basis, based on economic potential from the Canadian Gas Potential Committee Report – Natural Gas Potential in Canada – 2001, and from expected delivery requirements. The supply from reserve additions was then allocated to each Receipt Point within the forecast area. The allocated supply from reserve additions was combined with the established supply forecast from connected gas and existing economic unconnected gas to provide a forecast of future supply at each Receipt Point.

Table 3.5.2 presents the forecast of field deliverability from reserve additions by project area to the 2008/09 Gas Year.

Table 3.5.2
Field Deliverability from Reserve Additions

	July 2004 Design Forecast (10 ⁶ m ³ /d)				
Project Area	2004/05	2005/06	2006/07	2007/08	2008/09
Peace River	39.7	54.0	54.5	66.8	76.7
North and East	4.5	9.0	8.6	8.0	21.9
Mainline	36.8	56.3	58.2	60.0	70.3
TOTAL SYSTEM	81.0	119.3	121.3	134.9	168.8
	July 2004 Design Forecast (bcf/d)				
Project Area	2004/05	2005/06	2006/07	2007/08	2008/09
Peace River	1.41	1.92	1.93	2.37	2.72
North and East	0.16	0.32	0.30	0.28	0.78
Mainline	1.30	2.00	2.07	2.13	2.50
TOTAL SYSTEM	2.87	4.23	4.30	4.79	5.99

NOTES:

- Numbers may not add due to rounding.
- Includes unconventional gas.

3.5.3 Firm Transportation Service Agreements

The following is a summary of the aggregate Receipt Contract Demand forecast to be held under firm transportation Service Agreements on the Alberta System.

The July 2004 forecast of aggregate Receipt Contract Demand under firm transportation Service Agreements is 263.5 10⁶m³/d (9.35 bcf/d) for the 2005/06 Gas Year, as shown in Table 3.5.3. This is a decrease of 0.6 10⁶m³/d (0.02 bcf/d), or 0.2 percent, from the 2004/05 Gas Year and reflects the net effect of both new and non-renewing firm transportation Service Agreements.

Table 3.5.3
Forecast of Receipt Contract Demand under Firm Transportation Service Agreements

Gas Year	July 2004 Design Forecast	
	(10 ⁶ m ³ /d)	(bcf/d)
2004/05	264.1	9.37
2005/06	263.5	9.35
2006/07	246.3	8.74
2007/08	232.9	8.27
2008/09	229.4	8.14

NOTE:

- Represents Alberta System peak values anticipated in Gas Year.

3.5.4 Natural Gas Reserves

Table 3.5.4.1 presents a summary of remaining established gas reserves in Alberta by NGTL project area. This summary is based on NGTL's assessment of available information. The Board's 2004 reserve estimate of 1087.6 10⁹m³ (38.6 tcf) is based upon Board reserves to year end 2003. NGTL's estimate of established reserves is 136 10⁹m³ (4.8 tcf) higher than the Board's estimate. NGTL's estimate is based on the Board estimate for established reserves which existed at year end 2003 augmented by more recent data provided by NGTL studies and customers and by additional reserves discovered since year end 2003.

NGTL's estimate of 1223 10⁹m³ (43.4 tcf) remaining established gas reserves in Alberta is a decrease of about 122 10⁹m³ (4.3 tcf), or 9.1 percent, from the 1345 10⁹m³ (47.7 tcf) reported in the December 2003 Annual Plan.

Table 3.5.4.1
Remaining Established Conventional Alberta Gas Reserves by Project Area

Project Area	NGTL Estimate (10 ⁹ m ³)	NGTL Estimate (tcf)
Peace River	247	8.8
North & East	195	6.9
Mainline	511	18.1
Other ¹	270	9.6
Total	1223	43.4

NOTES:

- ¹ Reserves not directed to NGTL.
- Numbers may not add due to rounding.

Table 3.5.4.2 presents the estimate of remaining established reserves and forecast reserve additions for the next 25 years. For British Columbia and the lower Northwest Territories, the estimate is limited to areas connected or likely to be connected to the Alberta System.

Table 3.5.4.2
Remaining Established Conventional Reserves and 25 Year Forecast of Reserve Additions

Reserve Basis	Alberta		B.C. and N.W.T.		Total	
	10 ⁹ m ³	tcf	10 ⁹ m ³	tcf	10 ⁹ m ³	tcf
Remaining Established Reserves connected to NGTL ^{1,2}	954	33.8	58	2.0	1011	35.9
Remaining Established Reserves not connected to NGTL ^{3,4}	270	9.6	-	-	270	9.6
SUBTOTAL	1223	43.4	58	2.0	1281	45.5
Reserve Additions Expected to Connect to NGTL ⁵	1318	46.8	114	4.0	1431	50.8
Reserve Additions Not Expected to Connect to NGTL ⁴	379	13.4	-	-	379	13.4
TOTAL ⁶	2920	103.6	171	6.1	3091	109.7

NOTES:

- ¹ The remaining established reserves are those connected and those expected to be connected to NGTL and include reserve estimates from NGTL initiated reserve studies.
- ² Reserve estimates for B.C. and N.W.T. include reserve additions.
- ³ Alberta reserves not connected to NGTL are those which would be transported on other systems.
- ⁴ NGTL does not estimate B.C. reserves or reserve additions that are not forecasted to flow on its pipeline system.
- ⁵ Reserve additions are to the year 2028 and include Gordondale and other connected B.C. Receipt Points. Reserve additions include unconventional gas (coalbed methane and tight gas).
- ⁶ Numbers may not add due to rounding.

3.5.5 British Columbia Gas

It is anticipated that customers will execute firm transportation Service Agreements for an aggregate Receipt Contract Demand under firm transportation Service Agreements of $23.7 \times 10^6 \text{m}^3/\text{d}$ (0.84 bcf/d) of British Columbia gas for the 2005/06 Gas Year. This is an increase of $1.5 \times 10^6 \text{m}^3/\text{d}$ (0.05 bcf/d), or 7 percent, from the Receipt Contract Demand under firm transportation Service Agreements projected for the 2004/05 Gas Year. British Columbia gas supply is currently received at seventeen Receipt Points on the Alberta System.

3.6 Storage Facilities

There are seven storage facilities presently connected to the Alberta System, as shown in Table 3.6.1. They are located at the AECO 'C', Carbon, Chancellor, Crossfield East, Demmitt #2, January Creek, and Severn Creek Meter Stations (Figure 2.6.4). The Demmitt #2 Storage Facility temporarily ceased commercial operation as of April 1, 2004. The total deliverability from Storage Facilities is significant when compared to the field deliverability available from other Receipt Points on the Alberta System.

The Big Eddy Storage facility is a new storage facility that is expected to be developed and connected to the Grande Prairie Mainline during 2005. Planned peak receipt capacity for the Big Eddy Storage facility is 725 MMcf/d.

The maximum day receipt capacity for each of the connected Storage Facilities for the 2005/06 Gas Year is shown in Table 3.6.1.

Table 3.6.1
Receipt Capacity from Storage Facilities

	Maximum Day Receipt Capacity from Storage Facilities 2005/06	
	10 ⁶ m ³ /d	bcf/d
AECO C	50.7	1.80
Carbon	13.8	0.49
Chancellor	35.2	1.25
Crossfield East	14.1	0.50
Demmitt #2	3.4	0.12
January Creek	14.1	0.50
Severn Creek	5.6	0.21
TOTAL	136.9	4.86

NOTES:

- Storage is presently considered as an interruptible supply source. Refer to Section 2.6.4 for details on the treatment of storage in the system design.
- Numbers may not add due to rounding.
- Demmitt #2 is currently not being used as commercial storage.
- Big Eddy storage has purposely not been included in the table.

3.7 Supply To Delivery Comparisons

This section discusses the relative levels of gas delivery and the FS productive capability forecasts for the Alberta System, as were described in Sections 3.4 and 3.5, based on the July 2004 design forecast.

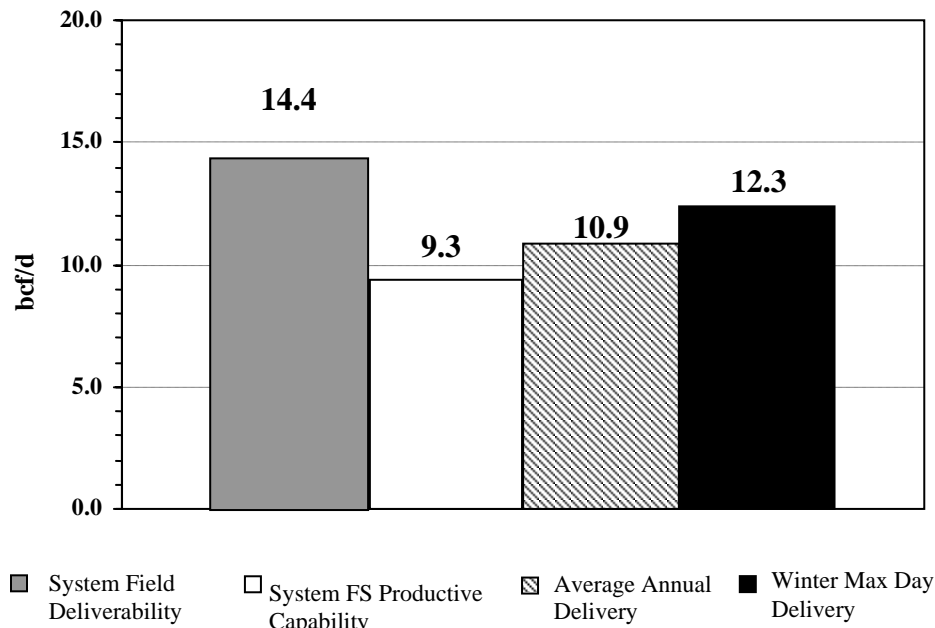
For illustrative purposes, Figure 3.7.1 also shows the forecast of the system FS productive capability, system field deliverability, the system average annual delivery and the system winter maximum day delivery for the 2005/06 Gas Year.

It should be noted that Storage Facilities are anticipated to contribute significant additional supply to the pipeline system during peak demand conditions. As described in Section 2.6.4, gas deliverability from Storage Facilities is provided as an interruptible service on NGTL's pipeline. The capability of the system to receive large withdrawals from Storage Facilities will be dependent upon the prevailing operating conditions and corresponding ability to move interruptible volumes at the

time the withdrawals are requested. For this reason, the potential supply contribution from Storage Facilities is not shown in Figure 3.7.1.

System field deliverability is projected to be $405.6 \times 10^6 \text{m}^3/\text{d}$ (14.4 bcf/d) as shown in Figure 3.7.1. Based on the aggregate of each Receipt Point's FS productive capability forecast, the system FS productive capability is $260.7 \times 10^6 \text{m}^3/\text{d}$ (9.3 bcf/d). Delivery volumes are projected to be $305.7 \times 10^6 \text{m}^3/\text{d}$ (10.9 bcf/d) for the system average annual delivery and $345.3 \times 10^6 \text{m}^3/\text{d}$ (12.3 bcf/d) for the system maximum day delivery.

**Figure 3.7.1
Supply/Demand Comparison
2005/06 Gas Year**



NOTE:
- Storage excluded.