

UNION GAS LIMITED

Undertaking of Mr. Kitchen
To Ms. Campbell

For Union to provide a detailed calculation of the 2007 proposed rates and T1 redesign rates, as well as any assumptions Union makes in providing those calculations.

Response:

To determine the proposed firm transportation demand rates for each block, Union took the following steps:

1. Union reviewed the contract demand ("CD") profile for T1 firm transportation customers in the 2007 forecast. The CD profile was examined because it is the firm demand charges that primarily recover capacity related transmission and distribution costs.
2. Union determined that there were "logical" breakpoints at approximately 400,000 10³/day and 1,100,000 10³/day. Union also maintained the 140,870 m³/d CD breakpoint for reasons of comparability with Rate M4, M5A and Rate M7.
3. Once the breakpoints were determined, Union analyzed the capacity related costs associated with providing firm transportation service to the customers within each block.
4. Using the costs of providing service to the fourth block and the 2007 forecast CD levels, Union calculated the fourth block rate to be 10.6872 cents/m³/month.
5. To ensure that the overall cost recovery from the T1 rate class was not impacted by the redesign of the T1 rate structure Union allocated the demand costs of the T1 rate class not recovered from the fourth block to the remaining three blocks in proportion to CD.
6. Union also reviewed the average unit cost based rate associated with providing service to customers served off distribution or transmission main to determine if the rates in the first and last block were reasonable. For customers in block 1 the proposed rate of 31.5303 cents/m³/month appeared to be reasonable when compared to the average unit cost based rate associated with providing service to customers served off distribution main of 28.43 cents/m³/month. Most customers in the first block are served off distribution main.

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The same is also true of the fourth block where the average unit cost based rate associated with providing service to customers served off transmission main is approximately 9.00 cents/m*3/month. Most customers in the last block are served off transmission main.

7. Finally, Union looked at the relative rate relationships with bundled M2, M4, M7 services to ensure the firm rate continuum is maintained between in-franchise services. Comparable services are provided at comparable prices.

For detailed calculation see attachments 1 and 2.

Witness: Mark Kitchen
Question: April 5, 2006
Answer: April 17, 2006
Docket: EB-2005-0551

UNION GAS LIMITED
Southern Operations Area - T1 Proposed
Effective January 1, 2007

Line No.	Particulars	Billing Units	Current Approved				T1 Proposed 2007					
			2007 Forecast (1) Usage (a)	Current Approved Revenue (\$000's) (b)	Current Approved Rates (2) (cents / m ³) (c)	Revenue (Deficiency) Sufficiency (\$000's) (d) = (b - e)	Proposed Revenue Requirement (3) (\$000's) (e)	Revenue Excess/ (Deficiency) (\$000's) (f)	Proposed Revenue (\$000's) (g)=(e + f)	Proposed Rates (cents / m ³) (h) = (g / a)	Revenue to Cost Ratios (i) = (g / e)	Rate Change (%) (j) = (h - c) / (c)
<u>T1 Storage and Transportation</u>												
Storage (\$/GJ's)												
Demand:												
Firm injection / withdrawal												
1	Union provides deliverability inventory	GJ/d.mo.	1,643,806	3,232	1.966	878	2,354	1,240	3,594	2.187		
2	Customer provides deliverability inventory	GJ/d.mo.	1,250,570	1,279	1.023	347	932	484	1,416	1.133		
3	Incremental firm injection right	GJ/d.mo.	-	-	1.023	-	-	-	-	1.133		
4	Interruptible	GJ/d.mo.	443,760	454	1.023	454	-	503	503	1.133		
5	Space	GJ/d.mo.	155,037,691	1,550	0.010	(124)	1,674	(3)	1,671	0.011		
6	Commodity (Customer Provides)	GJ	25,785,803	103	0.004	(76)	179	15	194	0.008		
7	Commodity (Union Provides)	GJ	-	-	0.056	-	-	-	-	0.064		
8	Customer supplied fuel	GJ	25,785,803	1,536		76	1,460	-	1,460			
Transportation (cents/ m ³)												
Demand												
9	First 140 870 m ³	10 ³ m ³ /d.mo.	66,541	11,271	16.9379	(4,655)	15,925	(1,829)	14,096	21.1844		
10	All Over 140 870 m ³	10 ³ m ³ /d.mo.	124,828	15,274	12.2359	(6,308)	21,582	(2,764)	18,818	15.0749		
Commodity:												
Firm												
11	First 2 360 653 m ³	10 ³ m ³	1,185,567	1,584	0.1336	241	1,343	301	1,644	0.1387		
12	All Over 2 360 653 m ³	10 ³ m ³	3,444,064	2,698	0.0783	410	2,288	433	2,721	0.0790		
13	Interruptible	10 ³ m ³	260,358	2,028	0.7788	(1,115)	3,142	(789)	2,353	0.9039		
14	Monthly Charges	Meter/mo.	962	1,732	\$1,800	(301)	2,033	(301)	1,732	\$1,800		
15	Customer supplied fuel	10 ³ m ³	4,889,989	10,151	35.5473	577	9,574	-	9,574			
16	Total Rate T1		<u>4,889,989</u>	<u>52,892</u>	<u>1.0816</u>	<u>(9,594)</u>	<u>62,486</u>	<u>(2,710)</u>	<u>59,777</u>	<u>1.2224</u>	<u>0.957</u>	<u>13.0%</u>

Notes:

- (1) EB-2005-0520, Exhibit C3, Tab 2, Schedule 1, Column (b)
- (2) EB-2005-0290, Appendix A effective July 1, 2005 (Excludes prospective recoveries)
- (3) EB-2005-0520, Exhibit G3, Tab 2, Schedules 3-24

UNION GAS LIMITED
 Southern Operations Area - T1 Redesign
 Effective January 1, 2007

Line No.	Particulars	Billing Units	Current Approved				T1 Redesign					
			2007 Forecast (1) Usage (a)	Current Approved Revenue (\$000's) (b)	Current Approved Rates (2) (cents / m ³) (c)	Revenue (Deficiency) Sufficiency (\$000's) (d) = (b - e)	Proposed Revenue Requirement (3) (\$000's) (e)	Revenue Excess/ (Deficiency) (\$000's) (f)	Proposed Revenue (\$000's) (g)=(e + f)	Proposed Rates (cents / m ³) (h) = (g / a)	Revenue to Cost Ratios (i) = (g / e)	Rate Change (%) (j) = (h - c) / (c)
<u>T1 Storage and Transportation</u>												
Storage (\$/GJ's)												
Demand:												
Firm injection / withdrawal												
1	Union provides deliverability inventory	GJ/d.mo.	1,643,806	3,232	1.966	878	2,354	1,240	3,594	2.187		
2	Customer provides deliverability inventory	GJ/d.mo.	1,250,570	1,279	1.023	347	932	484	1,416	1.133		
3	Incremental firm injection right	GJ/d.mo.		-	1.023	-	-	-	-	1.133		
4	Interruptible	GJ/d.mo.	443,760	454	1.023	454	-	503	503	1.133		
5	Space	GJ/d.mo.	155,037,691	1,550	0.010	(124)	1,674	(3)	1,671	0.011		
6	Commodity (Customer Provides)	GJ	25,785,803	103	0.004	(76)	179	15	194	0.008		
7	Commodity (Union Provides)	GJ	-	-	0.056	-	-	-	-	0.064		
8	Customer supplied fuel	GJ	25,785,803	1,536		76	1,460	-	1,460			
Transportation (cents/ m ³)												
Demand												
9	Up to 140,870 m3	10 ³ m ³ /d.mo.	29,333				7,838	1,410	9,249	31.5303		
10	140,871 m3 to 422,610 m3	10 ³ m ³ /d.mo.	27,053				4,924	1,320	6,244	23.0820		
11	422,611 m3 to 1,126,964 m3	10 ³ m ³ /d.mo.	75,996				9,714	1,404	11,118	14.6293		
12	All over 1,126,964 m3	10 ³ m ³ /d.mo.	58,987				15,030	(8,727)	6,303	10.6872		
13	Total		191,369	26,544		(10,963)	37,507	(4,593)	32,914			
Commodity:												
14	Firm	10 ³ m ³	4,629,631	4,282		651	3,631	734	4,365	0.0943		
15	Interruptible	10 ³ m ³	260,358	2,028	0.7788	(1,115)	3,142	(789)	2,353	0.9039		
16	Monthly Charges	Meter/mo.	962	1,732	\$1,800	(301)	2,033	(301)	1,732	\$1,800		
17	Customer supplied fuel	10 ³ m ³	4,889,989	10,151	35.5473	577	9,574	-	9,574			
18	Total Rate T1		4,889,989	52,892	1.0816	(9,594)	62,486	(2,710)	59,777	1.2224	0.957	13.0%

Notes:

- (1) EB-2005-0520, Exhibit C3, Tab 2, Schedule 1, Column (b)
- (2) EB-2005-0290, Appendix A effective July 1, 2005 (Excludes prospective recoveries)
- (3) EB-2005-0520, Exhibit G3, Tab 2, Schedules 3-24

UNION GAS LIMITED

Undertaking of Mr. Kitchen
To Ms. Campbell

For Union to provide the overall bill impact associated with proposed changes to the T1 Rate.

Response:

The table below identifies the impact of the proposed changes to the T1 rate. Column (c) provides the impact on the firm transportation rate. Column (f) provides the impact including storage. Upstream commodity and transportation costs have not been included as they are not services that T1 customers purchase from Union.

Line No.	Block	Delivery Rate Impacts			Overall Bill Impacts		
		2007 Proposed cents / m ³ (a)	T1 Redesign cents / m ³ (b)	% (c)	2007 Proposed cents / m ³ (d)	T1 Redesign cents / m ³ (e)	% (f)
1	Up to 140,870	1.2102	1.6891	40%	1.3879	1.8668	35%
2	140,871 to 422,610	1.0662	1.2618	18%	1.1629	1.3584	17%
3	422,611 to 1,126,964	0.9068	0.8342	-8%	0.9749	0.9023	-7%
4	All Over 1,126,964	0.8675	0.6349	-27%	0.9284	0.6958	-25%

Assumptions

1. Excludes interruptible transportation revenue.
2. Customer supplies fuel and deliverability inventory.

Witness: Mark Kitchen
 Question: April 5, 2006
 Answer: April 17, 2006
 Docket: EB-2005-0551

UNION GAS LIMITED

Undertaking of Mr. Kitchen
To Mr. Moran

For Union to provide the change in cost for a 5-percent and 10-percent deliverability based on the development of 200,000 GJs.

Response:

If Union were to develop an additional 200,000 GJ/day of deliverability, the cost based storage rate at 5% and 10% deliverability would be approximately \$0.982/GJ of space and \$1.819/GJ of space, respectively. The cost based storage rates include the cost associated with space, deliverability, and commodity costs related to one cycle of storage space. They also assume that the customer supplies fuel and deliverability inventory.

Witness: Mark Kitchen
Question: April 5, 2006
Answer: April 17, 2006
Docket: EB-2005-0551

UNION GAS LIMITED

Undertaking of Mr. Isherwood
To Mr. Moran

For Union to provide the time frame for the construction and installation of a well.

Response:

It has been Union's experience that the total time required to drill 1 well is approximately 14 months. This assumes timely regulatory approvals, permitting, construction and commissioning under normal conditions. The time may vary depending on the time of year and field conditions. Due to the significant increase in drilling activity in the Western Canadian Sedimentary Basin and North America in general, the availability of drilling services and equipment may cause project delays and significant cost increases. This estimate is based on a "wells only" development plan and assumes that there is no requirement for pipeline construction requiring Leave to Construct. Each additional well may require up to 2 additional months to construct and install depending on the availability of drilling services and equipment.

As Union has stated previously, it would require 24-30 months to add additional deliverability. This estimate assumed that the critical path item would be additional compression or pipeline construction. The time required for a new well, would fit within the same project timeline.

Witness: Mark Isherwood
Question: April 5, 2006
Answer: April 17, 2006
Docket: EB-2005-0551

UNION GAS LIMITED

Undertaking of Mr. Shorts
To Mr. Moran

For Union to provide an indication of what prevents Union from having a single contract for multiple plants, not necessarily owned by the same owner, but fuel management being managed by the same legal entity.

Response:

Subject to the qualifications below, nothing prevents Union from having a single T1 contract for multiple redelivery points not necessarily owned by the same owner.

For T1 contracts today with multiple redelivery points under common corporate ownership, Union manages them in the following manner:

- Each redelivery point must be able to meet the minimum qualifications of the T1 rate schedule individually.
- The contract holder must provide credit to cover the prudential requirements of all the redelivery points.
- The individual redelivery points are jointly and severally liable for the distribution and storage service invoice.
- The contract holder is jointly and severally liable to ensure the supply arrives.
- The Board approved aggregate excess formula is used to calculate storage space allocations based on the aggregate load of all redelivery points.

To expand this capability to include multiple redelivery points that are not under common corporate ownership but are being managed by a common “fuel manager”, Union would still require each redelivery point to individually meet the minimum qualifications for the T1 rate schedule. In addition, a fully binding agency agreement with the fuel manager would be required for each of the redelivery points. The fuel manager would be responsible for providing credit to cover the prudential requirements of all of the redelivery points in aggregate. Since a single invoice would be prepared, one of the underlying legal entities, responsible for the individual redelivery points of the “fuel manager” would need to be designated for invoicing purposes. In addition, all of the underlying legal entities (and fuel manager) would be jointly and severally liable for the payment of the distribution and storage service invoice. The fuel manager and underlying legal entities would be jointly and severally liable to ensure the gas supply arrives and jointly liable for contract performance including events of default.

Witness: Chris Shorts / Libby Passmore
Question: April 5, 2006
Answer: April 17, 2006
Docket: EB-2005-0551

UNION GAS LIMITED

Undertaking of Mr. Shorts
To Mr. Moran

For Union to provide an indication of what prevents Union from allowing multiple T1 customers to pool their storage accounts and their nominations.

Response:

The T1 service currently allows multiple redelivery points on the same T1 contract, as long as each redelivery point qualifies for the T1 rate schedule individually. Multiple plant locations, therefore, can share one storage allocation and make one nomination for gas to be received by Union. As with all T1 contracts, no nomination is required for daily consumption or for net injections or withdrawals from storage. Please also see response to Undertaking 5.

The pooling of storage service allocations, while maintaining distinct plant transportation parameters and contractual obligations (several liability) would require significant changes to Union's systems in order to manage the contract and to allocate services for billing purposes.

Witness: Chris Shorts / Libby Passmore
Question: April 5, 2006
Answer: April 17, 2006
Docket: EB-2005-0551

UNION GAS LIMITED

Undertaking of Mr. Isherwood
To Mr. Moran

For Union to file the interrogatory responses from the 2007 rate case.

Response:

See attached Interrogatory Responses (Exhibit J1.27 and Exhibit J5.02) from the EB-2005-0520 proceeding.

Witness: Mark Isherwood
Question: April 5, 2006
Answer: April 17, 2006
Docket: EB-2005-0551

UNION GAS LIMITED

Answer to Interrogatory from
Board Staff

Reference: C1/T3/p4

Issue 2.4 - Is the proposed total 2007 Storage and Transportation (S&T) Revenue Forecast appropriate? (C1/T3)

Question:

The evidence states that "Customers, whose existing storage contracts with Union expire in 2005 and beyond, now have market based options for services provided by third parties...."(C1/T3/P4/L20)

- a) *What was Union's renewal rate for storage contracts which expired in 2003, 2004 and 2005?*
- b) *What is the assumed renewal rate for storage contracts which expire in the 2007 forecast?*

Response:

- a) The table below identifies the actual weighted average market rates for long term storage contracts over the period April 2001 through March 2007 and the forecast for April 2007 to March 2008.

Long term storage contracts are those contracts that extend beyond one year. In general, the value of storage services is based on the summer/ winter differentials or the intrinsic value; however the real value is what customers are willing to pay for that service.

Market Rates for Long term Storage Contracts

<u>Particulars(\$/GJ)</u>	Actual	Actual	Actual	Actual	Actual	Actual	Forecast
	<u>01-02</u>	<u>02-03</u>	<u>03-04</u>	<u>04-05</u>	<u>05-06</u>	<u>06-07</u>	<u>07-08</u>
	(a)	(b)	(c)	(d)	(e)	(f)	(g)
Standard Long Term Contracts	0.53	0.63	0.65	0.56	0.65	0.77	0.70

- b) The assumed renewal rate for long term storage contracts which expire in the 2007 forecast contracts is \$0.70 CDN/GJ. Please also refer to Exhibit J29.14 a).

Witness: Steve Poredos
 Question: March 10, 2006
 Answer: April 4, 2006
 Docket: EB-2005-0520

UNION GAS LIMITED

Answer to Interrogatory from
City Of Kitchener ("CCK")

Reference: *S & T Revenue (C3 Tab 4 Schedule 1 and C3 Tab 4 Schedule 2)*

Issue 2.4 - Is the proposed total 2007 Storage and Transportation (S & T) Revenue Forecast appropriate?

Question:

- a) Please reproduce and update Exhibit J1.60 from RP-2003-0063 to cover the years 2000 to 2007. Please advise whether the storage which is released to ex-franchise markets during the course of each year is shown as ex-franchise or in-franchise storage.*
- b) For the years 2000 to 2007, please quantify the storage which was released or is forecasted to be released from in-franchise to ex-franchise.*
- c) Please provide an updated version (to 2007) of Exhibit J1.60 from RP-2003-0063 showing the storage released to ex-franchise use as ex-franchise storage capacity.*
- d) When Union sells short term storage (term of one year or less) is it included in the in-franchise number shown? Please break-out the volumes sold under short term and the average price achieved for each year shown.*
- e) For Union's recent offer (January and February 2006) of short term peak storage service for the winter of 2006 / 2007, please provide the amount of storage that was awarded and the low, weighted average and high prices achieved for the service.*
- f) Please provide the Union Gas forecast submitted to the OEB for RP-1999-0017 and RP-2003-0063 for all Storage and Transportation revenue categories, i.e. C1 Storage, C1 Transportation, etc. Please provide the actual revenues achieved for each of the individual accounts for the years 2000 through 2005.*
- g) Union provides a margin calculation for C1 Storage transactions. Please provide the costs that contributed to the expense side of the equation. Is the total cost of in-franchise storage collected in in-franchise rates?*

Response:

- a) Please see Attachment # 1

Witness: Steve Poredos
Question: March 15, 2006
Answer: April 4, 2006
Docket: EB-2005-0520

The storage shown in Attachment # 1 includes physical space that is allocated to both in-franchise and ex-franchise customers. Physical storage space released that has been allocated to ex-franchise markets is shown on this schedule as ex-franchise storage.

In the year 2001 and 2002 Union repurchased storage space that was not being utilized by in-franchise customers and resold this space on a short term basis. This space is included in Appendix A as ex-franchise storage space.

- b) Union does not forecast any storage to be released from in-franchise to ex-franchise.
- c) The schedule remains unchanged.
- d) No. Please see Attachment # 2.
- e) Union notes that high volatility of natural gas prices due to last summer's supply disruptions followed by a warmer than normal winter, has resulted in storage prices hitting historically high levels. These prices, however, are not indicative of longer term normal values. Please see Attachment #3.
- f) Please refer to Exhibit C1, Summary Schedule 7, Addendum.
- g) The costs that contribute to the expense side of the margin calculation for C1 storage transactions are as follows:
 - Space Costs (cost based) – physical space allocated to ex-franchise customers only
 - Fuel
 - UFG

Union only attributes space costs for storage that has been allocated to ex-franchise customers. Fuel and UFG is applied only if the customer does not provide fuel in kind.

The total cost of in-franchise storage is included in-franchise rates but is only collected if in-franchise customers consume the forecasted amount.

Witness: Steve Poredos
Question: March 15, 2006
Answer: April 4, 2006
Docket: EB-2005-0520

Transmission & Storage Capacity Allocation

	Actual 2000		Actual 2001		Actual 2002		Actual 2003		Actual 2004		Actual 2005		Forecast 2006		Forecast 2007	
	PJ or PJ/d	(%)	PJ or PJ/d	(%)	PJ or PJ/d	(%)	PJ or PJ/d	(%)	PJ or PJ/d	(%)	PJ or PJ/d	(%)	PJ or PJ/d	(%)	PJ or PJ/d	(%)
Transmission Capacity	6.0		6.1		6.1		6.1		6.2		6.1		6.4		6.9	
<i>In-Franchise</i>		36%		35%		35%		36%		36%		35%		33%		31%
<i>Ex-Franchise</i>		64%		65%		65%		64%		64%		65%		67%		69%
Storage Capacity	154.9		163.0		163.0		162.7		159.5		162.7		163.5		163.5	
<i>In-Franchise</i>		57%		54%		54%		52%		55%		56%		55%		56%
<i>Ex-Franchise</i>		43%		46%		46%		48%		45%		44%		45%		44%
Deliverability	2.2		2.4		2.5		2.5		2.5		2.4		2.4		2.4	
<i>In-Franchise</i>		60%		61%		60%		56%		59%		58%		59%		61%
<i>Ex-Franchise</i>		40%		39%		40%		44%		41%		42%		41%		39%

UNION GAS LIMITED

Line No.	Particulars PJ'S	Actual 2000	Actual 2001	Actual 2002	Actual 2003	Actual 2004	Actual 2005	Forecast 2006	Forecast 2007
	<u>Space Available</u>								
1	Base	151.8	159.9	159.9	159.6	159.6	161.7	162.5	162.5
2	(Unavailable)	(0.7)	(0.7)	(0.7)	(0.7)	(0.7)	(0.7)	(0.7)	(0.7)
3	LNG	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
4	3rd Party	3.2	3.2	3.2	3.2	-	1.1	1.1	1.1
5	Total Storage Space	<u>154.9</u>	<u>163.0</u>	<u>163.0</u>	<u>162.7</u>	<u>159.5</u>	<u>162.7</u>	<u>163.5</u>	<u>163.5</u>
	<u>Infranchise</u>								
6	Union Requirement	67.0	67.1	68.6	63.1	63.0	64.5	63.6	63.8
7	Carriage	9.9	10.1	10.3	12.0	15.5	16.2	17.3	18.7
8	Contingency	11.4	11.3	9.7	9.7	9.7	9.7	9.7	9.7
9	Total Infranchise Space	<u>88.2</u>	<u>88.5</u>	<u>88.6</u>	<u>84.8</u>	<u>88.2</u>	<u>90.4</u>	<u>90.6</u>	<u>92.1</u>
10	Infranchise Demand	563.6	524.4	563.0	550.4	549.3	543.0	547.8	584.5
11	Storage Space as % of Demand	16%	17%	16%	15%	16%	17%	17%	16%
	<u>Exfranchise</u>								
12	Total Long Term C1 Contracts	19.3	31.7	38.8	46.1	67.9	64.3	69.4	67.9
13	Total M12 Contracts	44.8	30.1	30.1	24.3	-	-		
14	Total Short Term Contracts	2.6	12.7	5.5	7.5	3.4	8.1	3.5	3.5
15	Total Exfranchise	<u>66.7</u>	<u>74.5</u>	<u>74.4</u>	<u>77.9</u>	<u>71.3</u>	<u>72.3</u>	<u>72.9</u>	<u>71.4</u>
	Total Utilization	<u>154.9</u>	<u>163.0</u>	<u>163.0</u>	<u>162.7</u>	<u>159.5</u>	<u>162.7</u>	<u>163.5</u>	<u>163.5</u>

Physical Short Term Space

<u>Line No.</u>	<u>Particulars</u>	<u>Actual 2000/2001</u>	<u>Actual 2001/2002</u>	<u>Actual 2002/2003</u>	<u>Actual 2003/2004</u>	<u>Actual 2004/2005</u>	<u>Actual 2005/2006</u>	<u>Year to Date 2006/2007</u>	<u>Forecast 2007/2008</u>
1	Short Term Space Allocated to Exfranchise (PJ's)	2.6	12.7	5.5	7.5	3.4	8.1	2.1	2.1
3	Value per GJ/year	0.46	\$ 0.55	\$ 0.62	\$ 0.86	\$ 1.15	\$ 1.49	\$ 2.19	\$ 0.85

Short Term Open Seasons

Line	<u>Volume</u> (a)	<u>High</u> (b)	<u>Low</u> (c)	<u>Weighted Average</u> (d)
1 US\$/MMBtu	7,800,000	2.90	1.55	2.09
2 CDN\$/GJ	8,229,437	3.43	1.84	2.48

UNION GAS LIMITED

Undertaking of Mr. Kitchen
To Mr. Moran

For Union to provide a written response establishing what the criteria are to distinguish between a transmission main and a distribution main.

Response:

Union classifies mains as transmission when the specified minimum yield strength ("SMYS") is greater than 30% or it operates at a pressure in excess of 500 psi or it is a major feed to a distribution system.

Witness: Mark Kitchen
Question: April 5, 2006
Answer: April 17, 2006
Docket: EB-2005-0551

UNION GAS LIMITED

Undertaking of Mr. Kitchen
To Mr. Moran

For Union to provide how the rate range for C1 storage is determined.

Response:

See attached Interrogatory Response (Exhibit J1.77) from the EB-2005-0520 proceeding.

Witness: Mark Kitchen
Question: April 5, 2006
Answer: April 17, 2006
Docket: EB-2005-0551

UNION GAS LIMITED

Answer to Interrogatory from
Board Staff

Reference: H1/T2

Issue 6.10 - Are the terms and conditions of M12 and C1 services, including the proposed rate schedule changes, appropriate (excluding the consideration of potential new services for power producers)? (H1/T2)

Question:

- a) *“This wider range will allow Union to better respond to the market needs of all customers, including power customers.” How will an increase in the current maximum Short-Term, Off Peak and Long-Term Storage allow Union to better respond to customers? Please explain fully.*
- b) *How was the increase of \$3/GJ to the maximum rates for C1 storage services determined?*

Response:

- a) and b) The current maximum storage rates of \$3/GJ for combined storage space and interruptible deliverability and \$3/GJ for firm deliverability were approved by the Board in the RP-2001-0029 proceeding (for rates effective January 1, 2002). Since that time, there has been additional volatility in the natural gas markets, which leads to additional volatility in storage values. Additionally, the increased Ontario power generation loads may generate greater interest for storage that has high deliverability, storage services that are firm throughout the contract year, and a storage service without inventory ratchets. A storage service with high deliverability, firm throughout the contract year and without inventory ratchets will be a high value service. Going forward, this type of premium service above the traditional 1.2% deliverability service may exceed the current maximum rates. Increasing the maximum rates allows Union to continue to respond to Shipper’s needs.

Union picked the new maximum rates to ensure the range is wide enough to accommodate market value volatility and to ensure full value is achieved from the provision of “market-based” services.

Witness: Mark Isherwood / Carol Cameron
Question: March 10, 2006
Answer: April 4, 2006
Docket: EB-2005-0520

UNION GAS LIMITED

Undertaking of Mr. Isherwood
To Mr. Thompson

For Union to provide the amount of short –term storage space currently under contract in the ex-franchise market, using the in-franchise allocation of storage.

Response:

At pages 146-147 of the April 5, 2006 transcript, Mr. Isherwood described that Union has 71.5 PJ of storage space dedicated to the long term ex-franchise market. Mr. Isherwood also stated that Union may also sell short term storage services to the ex-franchise market if it is determined that the in-franchise market does not need the capacity on a short term basis. The selling of this short-term storage space results from Union optimizing the overall system.

Of the 71.5 PJ of storage space that Union sells into the ex-franchise market, Union has historically sold approximately 2.5 PJ's as short term (storage for 1 year or less). To date in 2006, Union has not sold any storage services using capacity that Union has determined is not needed to serve in-franchise customers on a short term basis. Union will continue to review the use of its assets and may sell some short term space if the assets are not otherwise being used to serve in-franchise customers.

Witness: Mark Isherwood
Question: April 5, 2006
Answer: April 17, 2006
Docket: EB-2005-0551

UNION GAS LIMITED

Undertaking of Mr. Kitchen
To Mr. Thompson

11 a) For Union to eliminate the fourth block on chart 1, Tab 3, page 21, at the top and determine the impacts on the rates.

11b) For Union to create two blocks, with the only break being at 422,610 m³ per day.

Response:

Proposed T1 Firm Transportation Pricing

Line No.	Particulars	cents / m ³
1	Monthly Charge (all customers)	\$1,800
2	Commodity Charge (Union Supplies Fuel)	0.2912
3	Commodity Charge (Customer Supplies Fuel)	0.0943
	Monthly Demand Charge	
	<u>Proposed 4 Block Structure</u>	
4	Up to 140,870 m ³	31.5303
5	140,871 m ³ to 422,610 m ³	23.0820
6	422,611 m ³ to 1,126,964 m ³	14.6293
7	All over 1,126,964 m ³	10.6872
	(a) <u>3 Block Structure</u>	
8	Up to 140,870 m ³	31.5303
9	140,871 m ³ to 422,610 m ³	23.0820
10	All over 422,610 m ³	12.9067
	(b) <u>2 Block Structure</u>	
11	Up to 422,610 m ³	27.4770
12	All over 422,610 m ³	12.9067

Witness: Mark Kitchen
 Question: April 5, 2006
 Answer: April 17, 2006
 Docket: EB-2005-0551

UNION GAS LIMITED

Undertaking of Mr. Kitchen
To Mr. Thompson

For Union to provide the cost-based prices for UPBS, DPBS, and F24-S.

Response:

The cost based rates for UPBS, DPBS and F24-S are below. The average unit rate for individual customers will vary depending on services each customer contracts for.

UNION GAS LIMITED
Southern Operations Area
Cost of UPBS, DPBS and Firm All Day Storage (F24S)

<u>Line No.</u>	<u>Particulars</u>	<u>Demand Rate /GJ</u>
	<u>Upstream Pipeline Balancing Service (UPBS)</u>	
1	Storage costs per unit of deliverability (1), (2)	1.560
2	IT Development costs per unit of deliverability (3)	0.386
	<u>Downstream Pipeline Balancing Service (DPBS)</u>	
3	Storage costs per unit of deliverability (1), (2)	1.560
4	IT Development costs per unit of deliverability (3)	0.386
	<u>Firm All Day Storage (F24S)</u>	
5	Storage costs	Note (4)
6	IT Development costs	Note (5)

- Notes:
- 1 Cost based storage rate for 10% deliverability expressed per unit of deliverability (1.872 / 10% / 12 months)
 - 2 Union provides fuel and deliverability inventory.
 - 3 Revenue requirement of \$695,000 / 150,000 GJ's day of deliverability.
 - 4 Cost based storage rates vary from \$0.675/GJ per unit of space for 1.2% deliverability to \$1.872/GJ per unit of space based on 10% deliverability (Union supplies fuel and deliverability inventory).
 - 5 IT development costs are proposed to be recovered from firm all day transportation (F24T) customers.

Witness: Mark Kitchen
Question: April 5, 2006
Answer: April 17, 2006
Docket: EB-2005-0551

UNION GAS LIMITED

Undertaking of Mr. Shorts
To Mr. Brown

For Union to provide a copy of its standard T1 carriage service contract.

Response:

Please see attachment 1, 2 and 3.

Witness: Chris Shorts
Question: April 5, 2006
Answer: April 17, 2006
Docket: EB-2005-0551

Contract ID	
Contract Name	
DUNS#	

T1 CONTRACT

This GAS STORAGE AND DISTRIBUTION CONTRACT ("Contract"), made as of the ____ day of _____, 200_

BETWEEN:

UNION GAS LIMITED
hereinafter called "Union"

- and -

COMPANY NAME
hereinafter called "Customer"

WHEREAS, Customer has requested Union and Union has agreed to provide Customer Services;

AND WHEREAS, Union will deliver Customer owned Gas to Customer's Point(s) of Consumption or Storage under this Contract pursuant to the T1 Rate Schedule;

IN CONSIDERATION of the mutual covenants, the parties agree as follows:

1 ATTACHMENTS

The following are hereby incorporated in and form part of this Contract:

- a) Contract Parameters contained in Schedule 1; and
- b) T1 Contract Terms and Conditions contained in Schedule 2; and
- c) General Terms and Conditions, attached hereto.

For the purposes of this Contract, "Point(s) of Receipt" shall mean those points identified in Schedule 1 where Union may receive Gas from Customer.

2 PRELIMINARY AND CONTINUING CONDITIONS

This Contract and the rights and obligations of the Parties hereunder shall be conditional upon the fulfillment and maintenance in good standing of the following conditions:

- a) Security arrangements acceptable to Union shall be supplied and maintained in accordance with the General Terms and Conditions; and
- b) Union shall have received all required OEB approvals.

The above conditions must be initially satisfied by Customer 25 days prior to the Day of First Delivery.

3 CONTRACT TERM

This Contract shall be effective from the date hereof. However, the Service, obligations, terms and conditions hereunder, shall commence on the Day of First Delivery. Subject to the provisions hereof, this Contract shall continue in full force and effect for each Contract Year until notice to terminate is provided by either Union or Customer. Such notice must be delivered at least three (3) months prior to the end of a Contract Year.

4 SERVICES PROVIDED

Union agrees to provide Storage Services and Distribution Services as specified in Schedule 1. To be eligible for these services, the Customer must have forecasted annual natural gas consumption of 5,000,000 m³ or greater at one property or contiguous properties. If the Customer does not maintain this level of consumption during the current contract year or is not expected to maintain this level of consumption then, effective the following contract year, the Customer will be placed on an alternate service.

5 RATES FOR SERVICE

Customer agrees to pay for Services herein pursuant to the terms and conditions of the following:

- a) The Rate Schedules R1 and T1 as they may be amended from time to time by the Ontario Energy Board; and
- b) This Contract and the attachments hereto.

6 NOTICES

Notices shall be delivered pursuant to the Notice provision of the General Terms and Conditions and delivered to the addresses as referenced in Schedule 1.

7 CONTRACT SUCCESSION

This Contract replaces all previous Gas Storage and Distribution Contracts, subject to settlement of any Surviving Obligations.

The undersigned execute this Contract as of the above date.

UNION GAS LIMITED

I have the Authority to bind the Corporation, or Adhere C/S, if applicable

CUSTOMER

I have the Authority to bind the Corporation, or Adhere C/S, if applicable

Please Print Name

Contract ID	
Contract Name	
DUNS#	

Schedule 1
 DCQ, Storage and Distribution Services Parameters
 Rate T1

1 DATES

"Day of First Delivery" means the 1st day of _____, 200_.

The first Contract Year shall expire at the end of _____, 200_.

2 DAILY CONTRACT QUANTITY (DCQ)*

Upstream Point(s) of Receipt (GJ per Day)

Location	Obligated DCQ

Location	Obligated DCQ

Ontario Point(s) of Receipt (GJ per Day)

Location	Obligated DCQ
Parkway	
Ojibway	
Bluewater	
St. Clair	

Location	Obligated DCQ
Dawn (TCPL)	
Dawn (Vector)	
Dawn (Facilities)	

* Obligated DCQ does not include Compressor Fuel.

3 SUPPLY OF COMPRESSOR FUEL

Customer shall (shall not) supply compressor fuel for Union's distribution and storage services.

4 STORAGE PARAMETERS

Parameter	Amount	Unit of Measure
Firm Storage Space		GJ
Firm Injection/Withdrawal Right (Union provides deliverability inventory)		GJ per Day
Firm Injection/Withdrawal Right (Customer provides deliverability inventory)		GJ per Day

5 DISTRIBUTION PARAMETERS

Point(s) of Consumption

	A	B	C	D
Location				
Union Meter Number				

	Unit of Measure	Point(s) of Consumption			
		A	B	C	D
Daily Contract Demand (CD):					
Firm Demand	m ³ /Day				
Interruptible Demand	m ³ /Day				
Maximum Hourly Volume	m ³ /hour				
Minimum Gauge Pressure	kPa				
Notice Period for Interruption	hours				
Maximum Number of Days Interruption	days				

Rate Parameters	Unit of Measure	Point(s) of Consumption			
		A	B	C	D
Monthly Demand Charge	cents per m ³				
Firm Commodity Charge	cents per m ³				
Interruptible Commodity Charge	cents per m ³				

On any Day, any Gas in excess of 103% of the Contract Demand shall be unauthorized overrun as, and shall be paid for at the rate specified in the Rate Schedule.

The parties agree that any reference to Transportation Service in the Rate Schedule shall include the Distribution Parameters as set out in this Schedule 1.

On any Day during the Contract Year, Gas usage shall be deemed as follows:

- First gas used Firm Gas up to the Firm Contract Demand then in effect.
- Next gas used Interruptible Gas (if applicable) up to the Interruptible Contract Demand then in effect.
- Overrun gas As specified in this Section.

6 MINIMUM ANNUAL VOLUME (“MAV”)

	Unit of Measure	Point(s) of Consumption			
		A	B	C	D
Firm MAV	m ³ /year				
Interruptible MAV	m ³ /year				

7 CONTACT LIST FOR NOTICES

Notices for Nomination Matters

Customer Name	Union Gas Limited
Position Title	Position Title
Mail and courier address	50 Keil Dr N, Chatham Ontario N7M 5M1
Phone: xxx-xxx-xxxx	Phone: 519-xxx-xxxx
Fax: xxx-xxx-xxxx	Fax: 519-xxx-xxxx

Notices for Invoices and Payments

Customer Name	Union Gas Limited
Position Title	Position Title
Mail and courier address	50 Keil Dr N, Chatham Ontario N7M 5M1
Phone: xxx-xxx-xxxx	Phone: 519-xxx-xxxx
Fax: xxx-xxx-xxxx	Fax: 519-xxx-xxxx

Notices for Interruptions and Force Majeure

	Point(s) of Consumption			
	A	B	C	D
Customer Name				
Position Title				
Phone				
Fax				

Notices for All other Matters

Customer Name	Union Gas Limited
Position Title	Position Title
Mail and courier address	50 Keil Dr N, Chatham Ontario N7M 5M1
Phone: xxx-xxx-xxxx	Phone: 519-xxx-xxxx
Fax: xxx-xxx-xxxx	Fax: 519-xxx-xxxx

SCHEDULE “2”
Terms and Conditions
T1 Contract

1 UPSTREAM TRANSPORTATION COSTS

Where Union is receiving Gas from Customer at a Point of Receipt upstream of Union’s system, Customer shall be responsible to Union for all direct and indirect upstream transportation costs including fuel from the Point of Receipt to Union’s system, whether Gas is received by Union or not for any reason including Force Majeure. Where actual quantities and costs are not available by the date when Union performs its billing, Union's reasonable estimate will be used and the appropriate reconciliation will be done in the following month.

2 DELIVERY, RECEIPT, DISTRIBUTION AND STORAGE OBLIGATIONS

2.01 Delivery

Customer accepts the obligations to deliver the Obligated DCQ parameters in Schedule 1 to Union on a Firm basis. On days when an Authorization Notice is given, the DCQ parameters are as amended in the Authorization Notice. For all Gas to be received by Union at the Upstream Point of Receipt, Customer shall, in addition to the DCQ, supply on each day sufficient Compressor Fuel as determined by the Transporter.

For all Obligated quantities of Gas actually received by Union at a Receipt Point, Union will pay Customer the Delivery Commitment Credit (“DCC”) in Union’s R1 Rate Schedule.

If a customer fails to deliver the Obligated DCQ, Union can demand that the DCC provided to Customer be retroactively refunded to Union for quantities Union determines were not Firm. This will only apply to quantities delivered as part of the current Contract Year. Union will not resume paying the DCC until Customer can substantiate to Union’s satisfaction that the Gas received is Firm.

2.02 Receipt

Union agrees to receive a quantity of Gas at the Points of Receipt identified in Schedule 1, provided Union is not obligated to accept quantities of Gas that exceed any of the following:

- a) the sum of the Obligated DCQ as authorized for that Day;
- b) the amount properly nominated by Customer to Union for receipt by Union;
- c) an amount that would result in Customer exceeding the Firm Storage Space;
- d) an amount that would result in Customer exceeding the Firm Injection Right.

2.03 Distribution to Point(s) of Consumption

Union agrees to distribute a quantity of Gas to each Point of Consumption, not to exceed the sum of Firm Contract Demand and Interruptible Contract Demand, or the Firm Contract Demand only when an interruption is in effect, subject to the Maximum Hourly Volume parameters.

2.04 Storage Injection

Union agrees to inject a quantity of Gas to storage, provided Union is not obligated to inject a quantity of Gas that exceeds the sum of the Firm Injection Right and, if applicable, the Incremental Firm Injection Right.

2.05 Storage Withdrawal

Union agrees to withdraw a quantity of Gas from storage, provided Union is not obligated to withdraw a quantity of Gas that exceeds the Firm Withdrawal Right or exceeds the quantity of gas remaining in the Customer's Firm Storage Space.

2.06 Overrun

Unless Union specifically provides written authorization to exceed contract parameters, any excess shall be unauthorized overrun and, in addition to any other remedies Union may pursue, Customer shall incur charges as referenced in the Rate Schedule.

2.07 Type Of Distribution Service

The type of Distribution Service herein shall be a combination of Firm and Interruptible Service for each Point of Consumption as identified in Schedule 1.

The Interruptible Contract Demand at a Point of Consumption is subject to interruption by Union and, in addition to Force Majeure, is limited to the Maximum Number of Days of Interruption during each Contract Year as identified in Schedule 1. Union shall provide Customer notice of interruption not less than the Notice Period for Interruption for each Point of Consumption, as identified in Schedule 1.

3 MINIMUM ANNUAL VOLUME

3.01 Firm Minimum Annual Volume

In each Contract Year, the Customer shall consume or, in any event, pay for the Firm Minimum Annual Volume ("FMAV") as adjusted in the formula below. The payment required for the firm quantity not consumed in any Contract Year (the "Firm Deficiency Volume" or "FDV") shall be calculated by multiplying FDV by the Firm Delivery Commodity Charge as of the last day of the Contract Year. This payment would only apply if the FDV was greater than zero.

Where:

$$FDV = [FMAV \times [(U - D_F) / U]] - [FV - (F + O)]$$

And:

FMAV	=	Firm Minimum Annual Volume (as identified in Schedule 1)
U	=	number of days in the Contract Year
D_F	=	number of days of Force Majeure in the Contract Year where service is curtailed below the Firm Contract Demand, then in effect

- FV** = total firm volume taken in the Contract Year
F = volumes delivered to the Points of Consumption during Force Majeure
O = total Authorized and/or Unauthorized Overrun Gas taken in the Contract Year

3.02 Interruptible Minimum Annual Volume

In each Contract Year, the Customer shall consume or, in any event, pay for the Interruptible Minimum Annual Volume ("IMAV") as adjusted in the formula below. The payment required for the interruptible quantity not consumed in any Contract Year (the "Interruptible Deficiency Volume" or "IDV") shall be calculated by multiplying the IDV by the Interruptible Delivery Commodity Charge as of the last day of the Contract Year. This payment would only apply if the IDV was greater than zero.

Where:

$$\text{IDV} = [\text{IMAV} \times [(U - D_1) / U]] - [\text{IV} - (\text{F} + \text{O})]$$

And:

- IMAV** = Interruptible Minimum Annual Volume (as identified in Schedule 1)
U = number of days in the Contract Year
D₁ = number of days of Force Majeure or interruption in the Contract Year where service is curtailed below the Firm Contract Demand, then in effect
IV = total interruptible volume taken in the Contract Year
F = volumes delivered to the Points of Consumption during Force Majeure or periods of interruption or curtailment
O = total Authorized and/or Unauthorized Overrun Gas taken in the Contract Year

3.03 Qualifying Annual Volume

The sum of the adjusted FMAV and adjusted IMAV shall not be less than the qualifying annual volume defined in the Rate Schedule.

4 CUSTOMER SUPPLIED DISTRIBUTION AND STORAGE COMPRESSOR FUEL

Customer shall have the option of supplying Compressor Fuel to Union for movement of Customer's Gas on Union's system for both Distribution and Storage services. Customer's right to supply Compressor Fuel herein shall only be effective where Schedule 1 states Customer has accepted this option.

4.01 Distribution Compressor Fuel Quantity

If Customer has elected to supply its own distribution compressor fuel, Union shall, on a daily basis, deduct the distribution fuel quantity from the Gas received from Customer. The distribution fuel quantity shall be equal to the quantity of Gas for which a distribution commodity charge applies multiplied by the distribution fuel ratio specified in the Rate Schedule.

4.02 Storage Compressor Fuel Quantity

If Customer has elected to supply its own storage compressor fuel, Union shall reduce Customer's storage inventory by a quantity equal to the "Storage Fuel Quantity". The "Storage Fuel Quantity" shall be the sum of the injection and withdrawal quantities for which a commodity charge applies, multiplied by the storage fuel ratio specified in the Rate Schedule.

5 ENERGY CONVERSION

Balancing of Gas receipts by Union with Gas distributed to Customer is calculated in energy. The distribution to Customer is converted from volume to energy at the Customer site-specific heat measurement value.

Site-specific heat measuring equipment will be supplied, installed and maintained by Union Gas at each Point of Consumption, or as determined necessary by Union Gas, at the Customer's expense. The resulting heat value adjustment quantity shall be applied to the Customer's storage account.

6 STORAGE SERVICES

6.01 Storage Injection and Withdrawal

Subject to Section 2, if on any Day the quantity of Gas Union receives from Customer exceeds the quantity distributed to Customer, the amount of such excess shall be deemed to have been injected into Customer's storage account.

Subject to Section 2, if on any Day the quantity of Gas Union distributed to Customer exceeds the quantity received from Customer, the amount of such excess shall be deemed to have been withdrawn from Customer's storage account.

6.02 Deliverability Inventory Provided By Customer

If Customer has agreed to supply their own deliverability inventory, Customer's right to withdraw Gas under the Firm Withdrawal Right shall be adjusted between January 1 and April 30. During this period, if Customer's inventory level in storage at the start of each Day is less than 20% of Storage Space entitlement then Customer's Firm Withdrawal Right will be adjusted in accordance with the following formula:

$$AFW = FW \times (I / CDI)$$

Where:

AFW	=	Adjusted Firm Withdrawal
FW	=	Firm Withdrawal Right
I	=	Actual Inventory at the beginning of each Day
CDI	=	Customer Deliverability Inventory (Lesser of: 0.2 x SP or FW/0.075) where: SP = Firm Storage Space

6.03 Disposition of Gas at Contract Termination

If this Contract terminates or expires and Customer does not have a contract for Storage Service with Union then, except as authorized by Union, any Gas balance remaining in Customer's Storage Space shall incur a charge equivalent to the Unauthorized Storage Space Overrun rate in the T1 Rate

Schedule. Customer shall incur such charge until the Gas balance remaining has been reduced to zero.

7 CUSTOMER'S FAILURE TO DELIVER GAS

7.01 Customer's Failure To Deliver Obligated DCQ to Union

If on any Day, for any reason, including an instance of Force Majeure, Customer fails to deliver the Obligated DCQ to Union then such event shall constitute a Failure to Deliver as defined in the General Terms and Conditions. The Failure to Deliver rate in the R1 Rate Schedule shall apply to the quantity Customer fails to deliver. The upstream transportation costs (if any) (Section 1) shall also apply and be payable by Customer.

For Gas that should have been received, Union may make reasonable attempts, but is not obligated to acquire an alternate supply of Gas ("Alternate Supply Gas"). Union's costs and expenses associated with acquiring Alternate Supply Gas will be payable by Customer. For greater certainty, payment of the Failure to Deliver charge is independent of and shall not in any way influence the calculation of Union's costs and expenses associated with acquiring the said Alternate Supply Gas.

Union's obligation to deliver Gas to the Point(s) of Consumption shall be reduced to a quantity of Gas (the "Reduced Distribution Obligation") in aggregate not to exceed the sum of:

- a) The confirmed Nomination quantity of Gas to be delivered to Union;
- b) Alternate Supply Gas if acquired by Union;
- c) Customer's Firm Withdrawal Right subject to Section 6.02.

In addition to any rights of interruption in the Contract, if the Customer consumes Gas in excess of the Reduced Distribution Obligation, Union may immediately suspend deliveries of Gas to the Point(s) of Consumption. In addition, Union may direct Customer to immediately curtail or cease consumption of Gas at the Point(s) of Consumption.

Customer shall immediately comply with such direction. Such suspension or curtailment shall not constitute an interruption under the Contract.

Union shall not be liable for any damages, losses, costs or expenses incurred by Customer as a consequence of Union exercising its rights under this Section.

7.02 Notice Of Failure

Each Party shall advise the other by the most expeditious means available as soon as it becomes aware that such failure has occurred or is likely to occur. Such notice may be oral, provided it is followed by written notice.

7.03 Customer Failure To Deliver Compressor Fuel

For Gas to be delivered by Customer to Union at an Upstream Point of Receipt, if Customer fails to deliver sufficient Compressor Fuel then in addition to any other remedy Union shall deem the first Gas delivered to be Compressor Fuel and Section 7.01 will apply.

UNION GAS LIMITED

Undertaking of Mr. Shorts
To Mr. Brown

For Union to answer the following question: Would Union contemplate an arrangement whereby it had multiple T1 users who were all under contract to a common gas manager, and the contractual arrangement between them and Union would be one where the gas manager would be jointly liable for all liability in respect of those locations and each end user would only be severally liable for that branch of costs.

Response:

Please see response to Undertaking 5 and 6.

Witness: Chris Shorts / Libby Passmore
Question: April 5, 2006
Answer: April 17, 2006
Docket: EB-2005-0551

UNION GAS LIMITED

Undertaking of Mr. Kitchen
To Mr. Brown

For Union to provide the historical cost-based rates for storage.

Response:

UNION GAS LIMITED
Southern Operations Area
Annual Cost of Storage Space & Deliverability @ 1.2%

<u>Line No.</u>	<u>Particulars</u>	<u>Annual Rate per unit of Storage Space \$/GJ</u>
1	EB-2005-0520, Proposed 2007	0.309
2	RP-2003-0063, Approved 2004	0.275
3	RP-2002-130, Approved 2003	0.215
4	RP-2001-0029, Approved 2002	0.231
5	RP-2001-0029, Approved 2001	0.202
6	RP-1999-0017, Approved 2000	0.226

Notes: (1) Rates assume firm deliverability of 1.2%.
(2) Rates assume customer supplies fuel and UFG in kind.
(3) Rates assume customer provides deliverability inventory.
(4) Rates assume customer cycles storage once.

Witness: Mark Kitchen
Question: April 5, 2006
Answer: April 17, 2006
Docket: EB-2005-0551

UNION GAS LIMITED

Undertaking of Mr. Isherwood
To Mr. Brown

For Union Gas to provide the formula for the calculation of market-based rates.

Response:

The theoretical market value of storage can be calculated using the following information. The true market value of storage has two components, the intrinsic value (theoretical calculation) plus the extrinsic value (a premium or discount to the theoretical value based on the actual value to the individual shipper).

A) Intrinsic Value

The intrinsic value would have the following components:

i) The future value of natural gas commodity on NYMEX

The New York Mercantile Exchange ("NYMEX") is the trading platform that is used to establish the future value of natural gas. Natural gas is traded as a monthly contract. Comparing the differences between monthly values of natural gas (ie. summer vs. winter) is the first step in establishing the theoretical value of storage.

ii) The future basis values at or near the storage location

The NYMEX assumes that all gas is purchased and sold at Henry Hub in Louisiana. As such, there is an additional value to be placed on the monthly NYMEX values that incorporate the value of gas at a particular trading location (such as Dawn) which is different than Henry Hub. Basis values at any location change daily. Basis can be either a positive or negative value, depending on the market's perceived value of gas at the another location. Basis is affected by the availability and costs of transportation between two locations, the cost of transportation fuel between two locations, and the natural gas supply and demand at a particular location. Basis values at Dawn are well established and are widely available from market participants.

iii) The time value of money

The time value of money, or TVM, recognizes that while gas is in storage, the capital required to purchase that gas is fully committed and is unavailable for other uses. Each corporation views this cost differently. Some market participants use the prevailing interest rate and other market participants have an established internal rate.

Witness: Mark Isherwood / Carol Cameron
Question: April 5, 2006
Answer: April 17, 2006
Docket: EB-2005-0551

iv) The variable (commodity and fuel) costs of the storage contract

The storage contract may require that the Shipper pay a usage fee for all gas injected and/or withdrawn. This fee may be in the form of fuel-in-kind, a commodity fee, or a combination of both.

Items i) through iv) above provided the foundation for the theoretical value of storage and is sometimes called the intrinsic value. However, every market participant values storage differently. This component of the storage is referred to as the extrinsic value.

B) Extrinsic Value

v) The extrinsic value of storage

This value is unique to each individual shipper and may be impacted by:

- the shipper's risk profile,
- market volatility and the Shipper's perceived ability to capture market opportunities,
- operational flexibility – the value placed on the ability to store gas for unplanned outages, weather swings, supply outages and/or capture market savings,
- the location of the storage facility - the liquidity at that location, the supply diversity, the ability to acquire transportation to and from the storage facility, and interconnections to other pipelines and access to other markets, and
- the ability to operate upstream transportation assets at higher load factors. This may avoid having to resell pipeline capacity in the summer at a loss.

It is impossible to estimate the extrinsic value of storage given that each individual shipper has their own unique circumstances. The following calculation covers the theoretical value based on the intrinsic values.

The Calculation

One methodology for calculating the theoretical market price for a standard storage service is:

Theoretical market value = (average NYMEX winter strip - average NYMEX summer strip ("A")) + basis ("B") – time value of money ("C") – variable costs ("D")

To provide an example, at the close of business on March 29, 2006, the calculation would have been (all values in \$US/MMBtu):

A) NYMEX

Witness: Mark Isherwood / Carol Cameron
Question: April 5, 2006
Answer: April 17, 2006
Docket: EB-2005-0551

- simple average NYMEX winter strip for November 2007 to March 2008
 - November 2007 = \$9.911
 - December 2007 = \$10.496
 - January 2008 = \$10.901
 - February 2008 = \$10.891
 - March 2008 = \$10.666
 - Total = \$52.865
 - Divided by 5 months (November to March) = \$10.573 US/MMBtu
- simple average NYMEX summer strip for April to October 2007
 - April 2007 = \$9.221
 - May 2007 = \$9.034
 - June 2007 = \$9.084
 - July 2007 = \$9.149
 - August 2007 = \$9.16
 - September 2007 = \$9.221
 - October 2007 = \$9.291
 - Divided by 7 months (April to October) = \$9.170 US/MMBtu
- Average winter NYMEX less average summer NYMEX
 - $\$10.573 - \$9.170 = \$1.403$ US/MMBtu

B) Basis

- Dawn basis for Summer 2007 was (\$0.05) US/MMBtu (as quoted on NGX on March 29, 2006)
- Dawn basis for Winter 07/08 was (\$0.17) US/MMBtu (as quoted on NGX on March 29, 2006)
- Winter Basis – Summer Basis = $(\$0.17) - (\$0.05) = (\$0.12)$ US/MMBtu

C) Time Value of Money (TVM)

- The prime lending rate was 5.5%
- Assuming that half of the gas inventory is purchased by July 16 and half of the gas inventory is withdrawn by January 15, the capital required to purchase the gas is unavailable for 183 days
 - July 16 – 31 = 15 days
 - August, October, December = 31 days x 3
 - September, November = 30 days x 2
 - January 1 – 15 = 15 days
 - Total days = 183
- The prime lending rate is multiplied by the number of days in storage = $0.055 / 365 \times 183 = 0.02757$ (TVM)
- The TVM is multiplied by the cost of gas in storage plus Dawn basis
 - $\$9.170 + (\$0.035) = \$9.135$
 - $\$9.135 \times .02757 = \0.252 US/MMBtu

Witness: Mark Isherwood / Carol Cameron
Question: April 5, 2006
Answer: April 17, 2006
Docket: EB-2005-0551

D) Variable Costs

- Assume \$0.0037 US/MMBtu commodity costs for each of 1 injection and 1 withdrawal cycle
 - $\$0.0037 \times 2 = \0.0074 US/MMBtu
- Assume 0.63% injection and withdrawal fuel multiplied by the cost of gas in storage
 - $0.0063 \times 2 \times \$9.135 = \0.115
- Total variable costs = $\$0.0074 + \$0.115 = \$0.123$ US/MMBtu

Using the above calculation, the theoretical value of storage (without extrinsic values) on March 29, 2006 at Dawn for the April 2007 to March 2008 period is:

A + B - C - D

$\$1.403 + (\$0.111) - \$0.252 - \$0.123 = \$0.917$ US/MMBtu

Witness: Mark Isherwood / Carol Cameron
Question: April 5, 2006
Answer: April 17, 2006
Docket: EB-2005-0551

UNION GAS LIMITED

Undertaking of Mr. Kitchen
To Ms. Young

For Union to provide a provision of the range at Tab 3, page 26, Table 3, from highest to lowest, in the final percentage column.

Response:

The attached table provides by block, the number of T1 delivery points (forecast and existing), the range of rate impacts and the firm transportation delivery rate impact relative to current approved rates.

Witness: Mark Kitchen
Question: April 5, 2006
Answer: April 17, 2006
Docket: EB-2005-0551

Firm Transportation Delivery Rate Impacts

Line No.	Block	T1 Delivery Points (1)			2007 Proposed vs T1 Redesign			Range			2006 Existing vs T1 Redesign		
		Forecast (2)	Existing	Total	2007 Proposed cents / m ³	T1 Redesign cents / m ³	%	Highest %	Lowest %	2006 Existing cents / m ³	T1 Redesign cents / m ³	%	
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	
1	Up to 140,870	4	46	50	1.2102	1.6891	40%	47%	37%	0.9903	1.6891	71%	
2	140,871 to 422,610	1	9	10	1.0662	1.2618	18%	31%	9%	0.8752	1.2618	44%	
3	422,611 to 1,126,964	1	7	8	0.9068	0.8342	-8%	-5%	-9%	0.7490	0.8342	11%	
4	All Over 1,126,964	2	4	6	0.8675	0.6349	-27%	-23%	-27%	0.7178	0.6349	-12%	

Notes:

(1) T1 Customers may have more than one delivery point.

(2) Forecast delivery points may be new customers to Union Gas or customers switching to Rate T1 from a different rate.

UNION GAS LIMITED

Undertaking of Mr. Kitchen
To Ms. Young

For Union to provide a breakdown of how many of the customers in the final column of Tab 3, page 26, Table 3 are existing and how many are new/ forecast customers within each block.

Response:

Please see response provided to Undertaking 17.

Witness: Mark Kitchen
Question: April 5, 2006
Answer: April 17, 2006
Docket: EB-2005-0551

UNION GAS LIMITED

Undertaking of Mr. Kitchen
To Ms. Young

To provide a new table where the reference point is the 2006 rates rather than the 2007 rates.

Response:

Please see response provided to Undertaking 17.

Witness: Mark Kitchen
Question: April 5, 2006
Answer: April 17, 2006
Docket: EB-2005-0551

UNION GAS LIMITED

Undertaking of Mr. Isherwood
To Mr. Keys

To determine whether there is a written policy for curtailment in the ex-franchise area, and if there is, to provide it, should there be no formal written policy, to provide the informal procedures that Union follows for curtailment in the ex-franchise area.

Response:

Union Gas does have an Emergency Response Plan. The Emergency Response Plan outlines Union's response to a wide range of emergencies and deals with both in-franchise services and ex-franchise services. However, for security reasons, Union is unable to make the document available publicly. Attached to this undertaking is an index of Section 6 that gives the reader a sense of the documents content.

How Union would deal with an Emergency can be summarized through two examples. The first example is a major emergency on the Union system that would limit our ability to provide firm service (this would typically result from a major mechanical problem). In a major gas emergency where curtailment is required to maintain Union's facilities, Union would call force majeure. Union's ex-franchise and in-franchise customers would be curtailed proportionally to the level the system could supply. Curtailment only occurs after 1) interruptible services have been turned off, 2) requests for heat demand turndown of large customers is attempted, and 3) any market capabilities and/or interconnecting pipeline or LDC assistance has been investigated and exhausted.

With in-franchise curtailments, consideration is made to minimize the impacts on major care facilities (hospitals, nursing homes) and major community gathering places (schools, churches, recreation halls, etc.) in order to minimize the effects on a community.

In the second example, Union is experiencing flows at Parkway into downstream operators that are significantly higher than scheduled. In this case, all equipment is operating as expected, but flows are much higher than anticipated. It should be noted that in this example, an unexpected demand at Parkway would be a demand on an interconnecting pipeline (either TCPL or Enbridge). Union would have no knowledge of the reason for the higher flow.

As in normal daily operations, Union would work closely with the interconnecting pipeline to try to resolve the situation. Interconnecting pipelines will usually cooperate and work with one

Witness: Mark Isherwood
Question: April 5, 2006
Answer: April 17, 2006
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another to resolve any drafting or packing of each others system. This cooperation is available as long as neither pipeline is abusing the other for financial gain.

Union would expect the downstream pipeline to manage the overtake and if necessary, shut off the supply to the particular customer that is violating the allotted demand (nomination), just as Union would do if it were occurring on Union's system. If the situation could not be resolved in an orderly manner, Union would restrict the flow to the downstream system to the level that was nominated to protect firm loads on Union's system.

Witness: Mark Isherwood
Question: April 5, 2006
Answer: April 17, 2006
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Union Gas Emergency Response Plan
Section 6 - Specific Functions

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UNION GAS LIMITED

Undertaking of Mr. Isherwood
To Mr. Keys

To determine whether in-franchise services have higher priority than ex-franchise services in the event of a curtailment.

Response:

Please see response provided to Undertaking 20.

Witness: Mark Isherwood
Question: April 5, 2006
Answer: April 17, 2006
Docket: EB-2005-0551

UNION GAS LIMITED

Undertaking of Mr. Kitchen
To Ms. Campbell

Re: Board Hearing Team Question 10 B: Please provide a table depicting the allocated costs for distribution and transmission mains to the T1 rate class. Please include the forecast revenues under the T1 re-design scenario from customers that use the transmission and/or distribution mains respectively.

Clarified by Board Staff during telephone conversation Friday April 7, 2006.

Response:

The average cost-based demand rates for customers served off distribution and transmission main are approximately 28.43 cents/m³/month and 9.00 cents/m³/month respectively.

The table below provides the daily contracted demand for customers served off transmission and distribution main by block.

UNION GAS LIMITED
2007 Contract Demand by Block
Forecast

	<u>Daily Contracted Demand (10³m³ / d)</u>			<u>Percent of Daily Contract Demand Served By</u>	
	<u>Transmission</u>	<u>Distribution</u>	<u>Total</u>	<u>Transmission</u>	<u>Distribution</u>
Block 1	581	1,907	2,488	23%	77%
Block 2	1,215	1,039	2,254	54%	46%
Block 3	4,940	1,393	6,333	78%	22%
Block 4	10,520	1,200	11,720	90%	10%

Witness: Mark Kitchen
Question: April 5, 2006
Answer: April 17, 2006
Docket: EB-2005-0551

UNION GAS LIMITED

Undertaking of Mr. Isherwood & Mr. Shorts
To Ms. Campbell

Board Hearing Team Question 35 A Scenarios 2 and 4. Assuming a generator size of 50 MW and 500 MW respectively, operating 5x16 throughout the year under a CES contract. The generators are located in the four geographical areas outlined in Figure 1. Please identify the optimal services for each of the generators outlined in Figure 1. Please specify all parameters including: supply delivery points, amount of space, injections and withdrawals, contract demand, and upstream transmission capacity where appropriate. Please assume that the proposed new services by Union and EGD have been approved by the OEB. For each scenario, please provide an estimate of the unit cost and annual costs for each of the required services. Please identify all assumptions being made.

Response:

Scenario's 2 & 4 represent hypothetical power plants located within Union's franchise area. Scenario 2 assumes the plant is served by Union's integrated system near Parkway while scenario 4 assumes the plant is served off of Union's integrated system in the Sarnia area just west of the Dawn hub. All of these scenarios ignore any impacts to rates of the cost of the distribution and transmission investments that would be required to save these locations.

The following assumptions (provided in consultation with OEB staff) were used in the analyses:

500 MW plant

Firm T1 CD	90,000 GJ/D (2,385,000 m ³ /D)
Annual volume	15.6 PJ (409,220,738 m ³) assuming 5x16x52
Storage space	500,000 GJ
Firm injection/withdrawal	6,000 GJ

No injection or withdrawal commodity charges have been included but they would be minimal. When no T1 storage is incorporated, the cost of market supplied storage would need to be added. Customer supplied fuel costs has not been included.

All deliveries by customer to Union take place at Dawn.

For Parkway locations M12 transportation based on average day demand of 42,312 GJ/D to facilitate Parkway obligated DCQ.

Proposed T1 rate structure has been used in the analysis

Witness: Mark Isherwood / Chris Shorts
Question: April 5, 2006
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50 MW plant

Firm T1 CD 9,000 GJ/D (238,474 m³/D)
Annual volume 1.5 PJ (40,922,099 m³) assuming 5x16x52
Storage space 50,000 GJ
Firm injection/withdrawal 600 GJ

No injection or withdrawal commodity charges have been included but they would be minimal.
When no T1 storage is incorporated, the cost of market supplied storage would need to be added.
Customer supplied fuel costs has not been included.

All deliveries by customer to Union take place at Dawn.

For Parkway locations M12 transportation based on average day demand of 4,231 GJ/D to facilitate Parkway obligated DCQ.

Proposed T1 rate structure has been used in the analysis.

No costs have been included for upstream transportation or natural gas supply.

The following summarizes the results of each scenario.

<u>500 MW plants</u>	<u>Annual cost (\$000)</u>	<u>Unit cost (\$/GJ)</u>
Located at Parkway with T1 storage	\$4,921	\$0.32
Located at Parkway without T1 storage	\$4,773	\$0.31
Located at Dawn with T1 storage	\$3,613	\$0.23
Located at Dawn without T1 storage	\$3,466	\$0.22
<u>50 MW plants</u>		
Located at Parkway with T1 storage	\$866	\$0.56
Located at Parkway without T1 storage	\$851	\$0.55
Located at Dawn with T1 storage	\$735	\$0.48
Located at Dawn without T1 storage	\$721	\$0.47

Attached please find the supporting spreadsheets.

Witness: Mark Isherwood / Chris Shorts
Question: April 5, 2006
Answer: April 17, 2006
Docket: EB-2005-0551

Scenario 2

T1 Delivery service cost estimation (nominal 500 MW CCGT plant) - Parkway location with storage

(Firm contract demand at 24 times peak hour and 1.2 % firm deliverability)

	Volume GJ	Rate \$/GJ	Monthly Total \$	Yearly Total \$	Comments
Storage					
Space	500,000	0.011	5,500	66,000	fuel ratio = 0.600%
Total injection / withdrawal right	6,000				
Firm injection / withdrawal right	6,000	1.133	6,798	81,576	
Interruptible injection / withdrawal right	-	1.133	-	-	
Total Storage			12,298	147,576	
Transportation					
	m3	cents/m3			
Firm Demand	2,384,738	10.6872	254,862	3,058,340	fuel ratio = 0.554%
Firm Commodity	409,220,986	0.0943		385,895	
Total Transportaion			254,862	3,444,236	
Customer charge			1,800	21,600	
Subtotal			268,960	3,613,412	
				0.88	average unit price (cents/m ³)
				23.40	average unit price (cents/GJ)
M12 for DCQ	42,312	2.575	108,954	1,307,451	
Total			377,914	4,920,863	
				1.20	all in average unit price (cents/m ³)
				31.86	all in average unit price (cents/GJ)

T1 Delivery service cost estimation (nominal 500 MW CCGT plant) - Parkway location with no storage

(Firm contract demand at 24 times peak hour no T1 storage service from Union)

	Volume GJ	Rate \$/GJ	Monthly Total \$	Yearly Total \$	Comments
Storage					
Space	-	0.011	-	-	
Total injection / withdrawal right	-				
Firm injection / withdrawal right	-	1.133	-	-	
Interruptible injection / withdrawal right	-	1.133	-	-	
Total Storage			-	-	
Transportation					
	m3	cents/m3			
Firm Demand	2,384,738	10.6872	254,862	3,058,340	- fuel ratio = 0.554%
Firm Commodity	409,220,986	0.0943		385,895	
Interruptible Demand	-				
Total Transportaion			254,862	3,444,236	
Customer charge			1,800	21,600	
Subtotal			256,662	3,465,836	
				0.85	average unit price (cents/m ³)
				22.44	average unit price (cents/GJ)
M12 for DCQ	42,312	2.575	108,954	1,307,451	
Total			365,616	4,773,287	
				1.17	all in average unit price (cents/m ³)
				30.91	all in average unit price (cents/GJ)

**Numbers above do not include fuel

Scenario 4

T1 Delivery service cost estimation (nominal 500 MW CCGT plant) - Sarnia area with storage

(Firm contract demand at 24 times peak hour and 1.2 % firm deliverability)

	Volume	GJ	Rate \$/GJ	Monthly Total \$	Yearly Total \$	Comments
Storage						
Space		500,000	0.011	5,500	66,000	fuel ratio = 0.600%
Total injection / withdrawal right		6,000				
Firm injection / withdrawal right		6,000	1.133	6,798	81,576	
Interruptible injection / withdrawal right		-	1.133	-	-	
Total Storage				12,298	147,576	
	m3		cents/m3			
Transportation						
Firm Demand		2,384,738	10.6872	254,862	3,058,340	fuel ratio = 0.554%
Firm Commodity		409,220,986	0.0943		385,895	
Total Transportaion				254,862	3,444,236	
Customer charge				1800	21,600	
Total				268,960	3,613,412	
					0.88	average unit price (cents/m ³)
					23.40	average unit price (cents/GJ)

T1 Delivery service cost estimation (nominal 500 MW CCGT plant) - Sarnia area with no storage

(Firm contract demand at 24 times peak hour no T1 storage service from Union)

	Volume	GJ	Rate \$/GJ	Monthly Total \$	Yearly Total \$	Comments
Storage						
Space		-	0.011	-	-	
Total injection / withdrawal right		-				
Firm injection / withdrawal right		-	1.133	-	-	
Interruptible injection / withdrawal right		-	1.133	-	-	
Total Storage				-	-	
	m3		cents/m3			
Transportation						
Firm Demand		2,384,738	10.6872	254,862	3,058,340	fuel ratio = 0.554%
Firm Commodity		409,220,986	0.0943		385,895	
Total Transportaion				254,862	3,444,236	
Customer charge				1,800	21,600	
Total				256,662	3,465,836	
					0.85	average unit price (cents/m ³)
					22.44	average unit price (cents/GJ)

**Numbers above do not include fuel

Scenario 2

T1 Delivery service cost estimation (nominal 50 MW CCGT plant) - Parkway location with storage

(Firm contract demand at 24 times peak hour and 1.2 % firm deliverability)

	<u>Volume</u>	<u>GJ</u>	<u>Rate \$/GJ</u>	<u>Monthly Total \$</u>	<u>Yearly Total \$</u>	<u>Comments</u>
Storage						
Space		50,000	0.011	550	6,600	fuel ratio = 0.600%
Total injection / withdrawal right		600	-	-	-	
Firm injection / withdrawal right		600	1.133	680	8,158	
Interruptible injection / withdrawal right		-	1.133	-	-	
Total Storage				<u>1,230</u>	<u>14,758</u>	
Transportation						
	<u>m3</u>		<u>cents/m3</u>			fuel ratio = 0.554%
Firm Demand	238,474		23.082	55,045	660,534	
Firm Commodity	40,922,099		0.0943	-	38,590	
Total Transportaion				<u>55,045</u>	<u>699,124</u>	
Customer charge				1,800	21,600	
Subtotal				<u>58,074</u>	<u>735,481</u>	
					1.80	average unit price (cents/m ³)
					47.62	average unit price (cents/GJ)
M12 for DCQ	4,231		2.575	10,895	130,745	
Total				<u>68,970</u>	<u>866,226</u>	
					2.12	all in average unit price (cents/m ³)
					56.09	all in average unit price (cents/GJ)

T1 Delivery service cost estimation (nominal 50 MW CCGT plant) - Parkway location with no storage

(Firm contract demand at 24 times peak hour and no T1 storage service from Union)

	<u>Volume</u>	<u>GJ</u>	<u>Rate \$/GJ</u>	<u>Monthly Total \$</u>	<u>Yearly Total \$</u>	<u>Comments</u>
Storage						
Space	-		0.011	-	-	
Total injection / withdrawal right	-		-	-	-	
Firm injection / withdrawal right	-		1.133	-	-	
Interruptible injection / withdrawal right	-		1.133	-	-	
Total Storage				<u>-</u>	<u>-</u>	
Transportation						
	<u>m3</u>		<u>cents/m3</u>			fuel ratio = 0.554%
Firm Demand	238,474		23.082	55,045	660,534	
Firm Commodity	40,922,099		0.0943	-	38,590	
Total Transportaion				<u>55,045</u>	<u>699,124</u>	
Customer charge				1,800	21,600	
Subtotal				<u>56,845</u>	<u>720,724</u>	
					1.76	average unit price (cents/m ³)
					46.67	average unit price (cents/GJ)
M12 for DCQ	4,231		2.575	10,895	130,745	
Total				<u>67,740</u>	<u>851,469</u>	
					2.08	all in average unit price (cents/m ³)
					55.13	all in average unit price (cents/GJ)

**Numbers above do not include fuel

Scenario 4

T1 Delivery service cost estimation (nominal 50 MW CCGT plant) - Sarnia Area Location

Firm contract demand at 24 times peak hour and 1.2 % firm deliverability)

	Volume	GJ	Rate \$/GJ	Monthly Total \$	Yearly Total \$	Comments
Storage						
Space		50,000	0.011	550	6,600	fuel ratio = 0.600%
Total injection / withdrawal right		600				
Firm injection / withdrawal right		600	1.133	680	8,158	
Interruptible injection / withdrawal right		-	1.133	-	-	
Total Storage				1,230	14,758	
Transportation						
	m3		cents/m3			
Firm Demand		238,474	23.082	55,045	660,534	fuel ratio = 0.554%
Firm Commodity		40,922,099	0.0943		38,590	
Total Transportaion				55,045	699,124	
Customer charge				1,800	21,600	
Total				58,074	735,481	
					1.80	average unit price (cents/m ³)
					47.62	average unit price (cents/GJ)

T1 Delivery service cost estimation (nominal 50 MW CCGT plant) - Sarnia Area Location

(Firm contract demand at 24 times peak hour and no T1 storage service from Union)

	Volume	GJ	Rate \$/GJ	Monthly Total \$	Yearly Total \$	Comments
Storage						
Space		-	0.011	-	-	
Total injection / withdrawal right		-				
Firm injection / withdrawal right		-	1.133	-	-	
Interruptible injection / withdrawal right		-	1.133	-	-	
Total Storage				-	-	
Transportation						
	m3		cents/m3			
Firm Demand		238,474	23.082	55,045	660,534	fuel ratio = 0.554%
Firm Commodity		40,922,099	0.0943		38,590	
Total Transportaion				55,045	699,124	
Customer charge				1,800	21,600	
Total				56,845	720,724	
					1.76	average unit price (cents/m ³)
					46.67	average unit price (cents/GJ)

**Numbers above do not include fuel

UNION GAS LIMITED

Undertaking of Mr. Isherwood & Mr. Shorts
To Ms. Campbell

Board Hearing Team Question 35 A Scenarios 2 and 4. Assuming a generator size of 50 MW and 500 MW respectively operating 5X16 throughout the year under a CES contract. The generators are located in the four geographical areas outlined in Figure 1. Please identify the optimal services for each of the generators outlined in Figure 1. Please specify all parameters including: supply delivery points, amount of space, injections and withdrawals, contract demand, and upstream transmission capacity where appropriate. Please assume that the proposed new services by Union and EGD have been approved by the OEB. For each scenario, please provide an estimate of the unit cost and annual costs for each of the required services. Please identify all assumptions being made.

Response:

Board Staff have requested further clarification of the interrelationships of Union's proposed services for Power Customers, and the contracts and services required along the entire transportation route from Dawn to the Power Customer's end use location. Scenarios 1 and 3 reflect a Power Customer being located in Enbridge's franchise area. Union can provide information on the contracts and service to Parkway. Enbridge will provide contract and service information from the TCPL CDA to the end use location. Union and Enbridge have provided a high level overview of current and proposed services that may be available on TCPL.

In addition, the Board has requested that Union and Enbridge provide 2 different responses for each scenario based on the size of the prospective Power Customer. The information following is for a 500 MW generator (100,000 GJ/d of transportation). On the Union and TCPL systems, the service selection and unit costs are identical for the small generator scenario (50 MW) and large generator scenario (500 MW) provided that both generators operate during the same hours. This will result in the same load factor for the natural gas contracts. On the Enbridge Gas Distribution system, the distribution service selection would differ as the maximum daily volume requirements for a small generator (50 MW) would not qualify for the Rate 125 service that would be available for a 500 MW generator.

The response has been organized as follows:

Witness: Mark Isherwood / Carol Cameron / Dave Charleson
Question: April 5, 2006
Answer: April 17, 2006
Docket: EB-2005-0551

A) Service on Union

- a) M12 Transportation – Current Service
- b) M12 Transportation with F24-T
- c) M12 Transportation with F24-T & UPBS
- d) M12 Transportation with F24-T, UPBS & DPBS
- e) F24-S

B) Service on TCPL

- a) TCPL FT Transportation – Current Service
- b) TCPL FT-SN

C) Service on Enbridge

- a) Rate 125
- b) Rate 316
- c) Service Applicability to Board Scenarios

A) Service on Union

In response to the Board Staff's request, the following example has been developed for the 500 MW plant, operating on a 5 x 16 schedule.

i) M12 Transportation – Current Service

M12 Transportation Service Description

Union's current ex-franchise transportation service is M12 Transportation. It provides transportation service between Dawn and Parkway (Toronto) and Kirkwall.

As outlined in Union's evidence (Tab 4, Pages 1 and 2), M12 Transportation is a cost based service. This is a nominated service which is available on a firm basis on the NAESB timely nomination window only (first window). Shipper is required to provide transportation fuel on each day that gas is transported.

Example

Shipper A has a firm M12 Dawn to Parkway transportation contract for 100,000 GJ/d, which allows maximum hourly flows of 5,000 GJ/hour. Shipper A wants to operate for 16 hours on the next day, for a total daily consumption of 80,000 GJ (ie 5,000 GJ/h).

Shipper A nominates on the timely window (nomination deadline at 12:45 pm EST for effective flow at 10:00 am) for 80,000 GJ/d of transportation from Dawn to Parkway for tomorrow's gas day. In this example, 3,333 GJ/h will be received at Dawn and 3,333 GJ/h will be delivered to Parkway for a total of 80,000 GJ over the total gas day. Quantities are scheduled and flow throughout North America based on a rateable flow of 1/24th of the total daily nomination.

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Shipper A will also be required to provide transportation fuel at Dawn, however, fuel is assumed to be zero to simplify this example.

The total amount scheduled and invoiced by Union will be 80,000 GJ, regardless of the ultimate consumption by Shipper A.



Interconnecting Activity

Shipper A will be required to nominate to Union receipts at Dawn and deliveries to Parkway. Based on the Shipper's nomination, Union will confirm the total receipts at Dawn with any combination of interconnecting pipelines (Vector, TCPL, Panhandle or Bluewater), withdrawals from storage, or title transfers from other parties, such as marketers. Union will confirm the total deliveries to Parkway with interconnecting pipelines (either Enbridge or TCPL) of 80,000 GJ/d. Shipper A will use their selected downstream service to continue transporting the 80,000 GJ away from Parkway on both TCPL and Enbridge.

All pipelines in this example operate under the NAESB standards and schedule their pipelines on the 4 NAESB nomination windows.

Other Considerations

If Shipper A wanted to increase its Dawn to Parkway nomination during the gas day, they would have two opportunities using the existing NAESB windows – Intraday 1 (nomination deadline at 11:00 am for effective flow at 6:00 pm) and Intraday 2 (nomination deadline at 6:00 pm for effective flow at 10:00 pm). Requests to increase Dawn to Parkway transportation are interruptible after the timely window. Union would only authorize this nomination if sufficient unutilized capacity exists.

This service may result in concerns for downstream operators given that hourly flows and consumption will not be equal. Shippers such as Power Customers would also have concerns with this service given the service is not firm across all nomination windows.

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ii) F24-T

When Union reviewed the existing services with Power Customers in August 2005, they requested a service that was available on a firm basis all day (essentially a reservation of capacity) and which had additional nomination windows.

F24-T Service Description

As outlined in Union's evidence (Tab 4, Pages 9, 12 and 13), F24-T is a cost based service which is an enhancement to Union's M12 Transportation service. It is a service that would be added to an existing M12 Transportation service. This service responds to Power Customers requests by providing access to an additional 6 nomination windows during the gas day and provides for the reservation of transportation capacity throughout the gas day. The proposed 10 nomination windows (the existing 4 NAESB nomination windows and the proposed 6 additional nomination windows) are outlined in Union's evidence at Tab 4, Page 10.

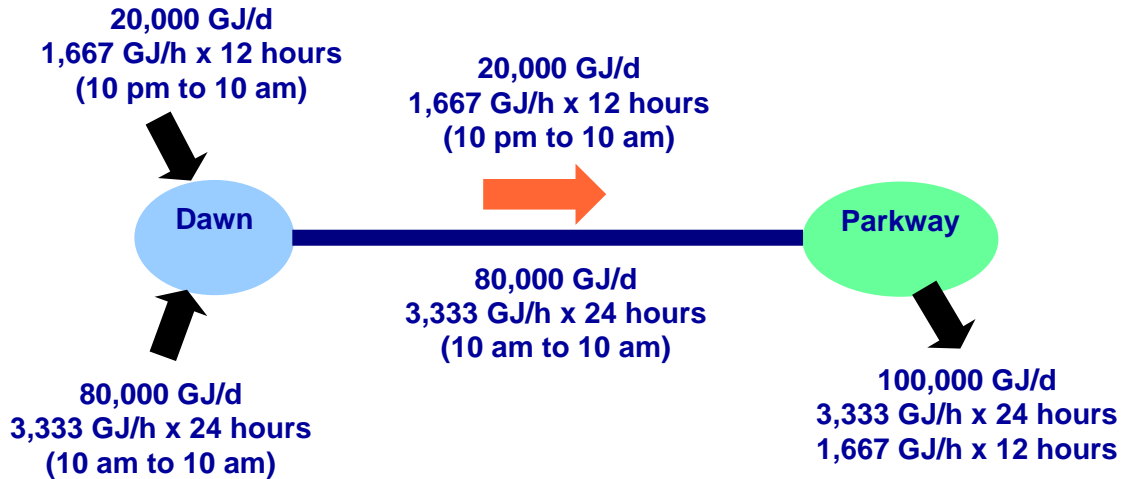
Example

In addition to the firm M12 Dawn to Parkway transportation contract of 100,000 GJ/d, Shipper A has also contracted for F24-T for the same amount (100,000 GJ/d). The Dawn to Parkway capacity is available on a firm basis on the timely nomination window, and with the addition of F24-T service, the transportation capacity is also available, on a firm basis, on the later NAESB nomination windows and the proposed 6 additional nomination windows.

Shipper A wants to operate for 16 hours on the next day, for a total daily consumption of 80,000 GJ. Shipper A nominates on the timely window (nomination deadline at 12:45 pm ECT (Eastern Clock Time) for effective flow at 10:00 am) for 80,000 GJ/d of transportation from Dawn to Parkway for tomorrow's gas day. Based on this first nomination, gas is scheduled and flows at Dawn and Parkway at a rateable flow of 3,333 GJ/h as outlined in the example in Section i). During the day, at 5:30 pm, Shipper A determines that they want to operate for an additional 4 hours within the current gas day. With F24-T, Shipper A can nominate on nomination window #7 (nomination deadline at 6:00 pm for effective flow at 10:00 pm). This increases the total deliveries required at Parkway to 100,000 GJ. In this example, the additional 20,000 GJ/d needs to be delivered over the remaining 12 hours of the gas day at an incremental flow rate of 1,667 GJ/h for 12 hours. This incremental flow is in addition to the 3,333 GJ/h (80,000 GJ/d) that was already nominated and flowing, for a total hourly flow of 5,000 GJ/h for the last 12 hours. Shipper A will also be required to provide transportation fuel at Dawn, however, fuel is assumed to be zero to simplify this example.

The total amount scheduled and invoiced by Union will be 100,000 GJ, regardless of the ultimate consumption by Shipper A.

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Interconnecting Activity

Union will confirm the total receipts at Dawn with any combination of interconnecting pipelines (Vector, TCPL, Panhandle or Bluewater), withdrawals from storage, or title transfers from other parties, only on the nomination windows that are recognized by the upstream party. If upstream parties are unable to recognize the additional nomination windows, Shipper A will be limited to acquiring additional sources of supply from storage withdrawals or title transfers at Dawn. Union will confirm the total deliveries to Parkway with interconnecting pipelines (either Enbridge or TCPL). Shipper A will use the appropriate downstream service to continue transporting the 80,000 / 100,000 GJ away from Parkway.

Other Considerations

With F24-T, Shipper A will have the ability to increase or decrease its nomination on any of the subsequent nomination windows, up to the maximum hourly limits. That is, at any of the nomination windows, the hourly flows on the M12 Dawn to Parkway contract cannot exceed 5,000 GJ/h (100,000 GJ divided by 20 hours).

While Union is providing the transportation service between Dawn and Parkway on a firm reserved basis, Shipper A will need to acquire the accompanying upstream services (firm all day upstream transport, storage withdrawals, or gas purchase agreements) in order to ensure the firm supply is available to match the transportation service being provided by Union. Also, Shipper A will need to acquire the accompanying downstream services (firm all day downstream transport) with 10 nomination windows, in order to ensure the gas supplies can be transported to the required destination using the same flexibility. Currently, the upstream and downstream parties only recognize the 4 NAESB nomination windows. Union is hopeful that both upstream and downstream parties will recognize the additional nomination windows and provide the additional flexibility to Shippers.

It is also possible that a Shipper may want to use a mix of M12 Transportation only or M12 Transportation and F24-T services. A shipper may want to satisfy 50% of their requirements

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using the core M12 Transportation service and 50% of the requirement using the enhanced M12/F24-T service. This will give the Shipper additional flexibility to manage their gas supply balancing requirements, but at a lower overall cost.

iii) UPBS

UPBS Service Description

As outlined in Union's evidence (Tab 4, Pages 20 and 21), the Upstream Pipeline Balancing Service ("UPBS") is a market priced service using Dawn storage and deliverability. This service provides the Shipper with flexibility to deliver gas supplies to Union at Dawn evenly over the gas day (1/24th) while Union will deliver gas to Parkway on an accelerated basis, based on the hourly profile that the Shipper has provided. Union will not deliver the Shipper's daily nominated quantities at Parkway in less than 12 hours, nor at hourly flow rates greater than the M12 Transportation hourly limits.

M12 & UPBS – UPBS may be combined with M12 Transportation service alone or with M12/F24-T. In the case of M12 Transportation service only, changes to the UPBS service could only be made on the 4 NAESB nomination windows and it is only available on a firm basis on the timely nomination window.

M12, F24-T and UPBS – In this combination (M12, F24-T and UPBS), the UPBS is a firm service available on all 10 nomination windows. For maximum flexibility, Union recommends that UPBS be combined with M12 Transportation service and F24-T.

Example

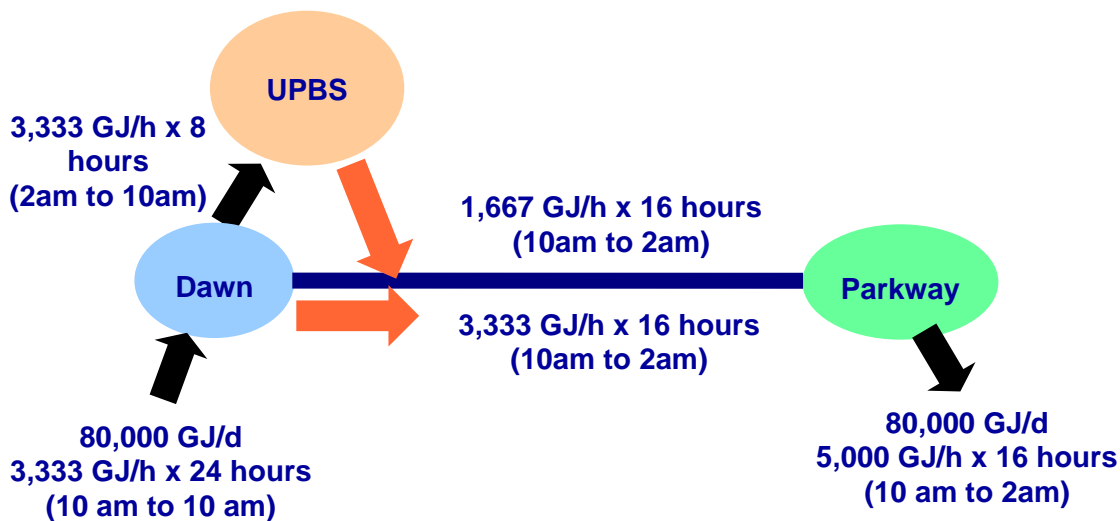
Continuing with the previous example, Shipper A has an M12 Dawn to Parkway transportation contract for 100,000 GJ/d, which allows maximum hourly flows of 5,000 GJ/hour. Shipper A has also contracted for 100,000 GJ/d of F24-T and UPBS. The UPBS contract allows Shipper A to deliver gas supplies evenly over the day at Dawn and Union will deliver the same amount of gas at Parkway over a period of between 12 and 24 hours, based on the hourly profile provided by the Shipper.

Shipper A nominates on the timely window for 80,000 GJ/d of transportation from Dawn to Parkway for the next gas day. Using the UPBS service, Shipper A has also provided to Union a delivery profile which indicates that the 80,000 GJ is to be delivered at Parkway at 5,000 GJ/h from 10:00 am to 2:00 am (16 hours). In this example, Union will receive at Dawn 3,333 GJ/h over the 24 hour gas day and Union will deliver at Parkway 5,000 GJ/h from 10:00 am to 2:00 am (16 hours). The total receipts (Dawn) and deliveries (Parkway) will balance at 80,000 GJ.

Union notes that it is more likely that a 16 hour operation would start at 6:00 or 7:00 am and end at 10:00 or 11:00 pm. However, to simplify this example and to keep all flows on the same gas day, Union has assumed a 10:00 am start time.

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The total amount scheduled and invoiced by Union will be 80,000 GJ, regardless of the ultimate consumption by Shipper A.



Interconnecting Activity

Union will confirm the total receipts at Dawn with any combination of interconnecting pipelines (Vector, TCPL, Panhandle or Bluewater), withdrawals from storage, or title transfers from other parties. Again, currently these parties only recognize the 4 NAESB nomination windows.

Union will confirm the total deliveries to Parkway with interconnecting pipelines (either Enbridge or TCPL), however Union will deliver the nominated quantities as 5,000 GJ/h for 16 hours and 0 GJ/h for 8 hours. Shipper A will use the appropriate downstream service to continue transporting the 80,000 GJ away from Parkway in the same flow pattern.

Other Considerations

Shipper A can continue to revise the nominations and hourly profiles as required on each nomination window. If UPBS is combined with M12 Transportation service only, Shipper A can revise nominations on the 4 NAESB nomination windows, but only nominations placed at the timely nomination window will be considered firm.

With M12 Transportation, F24-T and UPBS, Shipper A has the maximum flexibility. In this situation, Shipper A can revise nominations across all existing and proposed nomination windows on a firm basis.

Confirmations will occur as part of the existing 4 NAESB nomination windows and as part of the proposed additional 6 nomination windows, provided that upstream and downstream parties allow the additional flexibility. Downstream parties would also have to recognize the non-standard form of deliveries with gas only flowing for 12 hours.

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iii) DPBS

DPBS Service Description

As outlined in Union's evidence (Tab 4, Pages 26 to 29), the Downstream Pipeline Balancing Service ("DPBS") is a market priced service. This service uses Dawn storage and deliverability to provide park and loan capability at Parkway. This service provides the Shipper with the flexibility on short notice to park up to 2 hours of gas supply or to loan (or borrow) up to 2 hours of gas supply. This is a firm service available on 15 minutes notice.

This service is intended to provide two additional benefits to Shippers such as Power Customers. The first is the ability to start up or shut down on a short notice, firm basis between nomination windows (provided that the Power Customer has either previously parked gas or has remaining loan capability). The second benefit is that the service aligns with TCPL's proposed FT-SN service. The service can be combined with M12 Transportation service and/or F24-T and/or UPBS.

M12 & DPBS – If DPBS is only combined with M12 Transportation service, the injections and withdrawals into or out of the DPBS service would be firm every 15 minutes. This would happen in the case where the gas supply from Dawn was established on the timely (first) nomination window, but the load downstream of Parkway changed (either increased or decreased). In this scenario, the injections into or withdrawals out of DPBS could be nominated to help balance the overall supply and demand. However, any change to transportation quantities from Dawn required to increase or decrease the balance of the DPBS service will be limited to the 4 NAESB nomination windows and will be available on a firm basis only on the timely nomination window.

M12, F24-T & DPBS – If DPBS is combined with M12 Transportation service and F24-T, the injections and withdrawals into or out of the DPBS service would still be firm every 15 minutes. However, and changes in transportation quantities from Dawn into the DPBS service could now be nominated on all existing and proposed nomination windows (10 in total) on a firm basis. If a Power Customer did not contract for UPBS but did contract for DPBS, the gas supplies will flow at Parkway at the same rate of flow as gas received at Dawn, subject to minor supply modifications using the DPBS service at Parkway.

M12, F24-T, UPBS & DPBS – For maximum flexibility, Shippers such as Power Customers will want to contract for all of the above services. By contracting for all of the services, the Shippers such as Power Customers will be able to have firm access to the contracted quantity across all 10 nomination windows (F24-T), be able start up or shut down on a firm basis between nomination windows (DPBS), will be able to deliver gas at Parkway at a different profile than the receipts of gas at Dawn (UPBS), and it will have services that align with TCPL's proposed FT-SN service (DPBS).

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Example

Continuing with the previous example, Shipper A has an M12 Dawn to Parkway transportation service contract for 100,000 GJ/d, which allows maximum hourly flows of 5,000 GJ/hour. Shipper A has also contracted for 100,000 GJ/d of F24-T, UPBS and DPBS. The DPBS contract allows Shipper A to receive or deliver gas supplies on a very short notice at Parkway, up to a maximum of 5,000 GJ/h for 4 hours.

Shipper A nominates on the timely window for 80,000 GJ/d of transportation service from Dawn to Parkway for the next gas day. Using the UPBS service, Shipper A has also provided to Union a delivery profile which indicates that they need the 80,000 GJ to be delivered at Parkway at 5,000 GJ/h from 10:00 am to 2:00 am (16 hours). In this example, 3,333 GJ/h will be received at Dawn over the gas day and 5,000 GJ/h will be delivered to Parkway from 10:00 am to 2:00 am for a total of 80,000 GJ over the total gas day (see example in Section iii) UPBS).

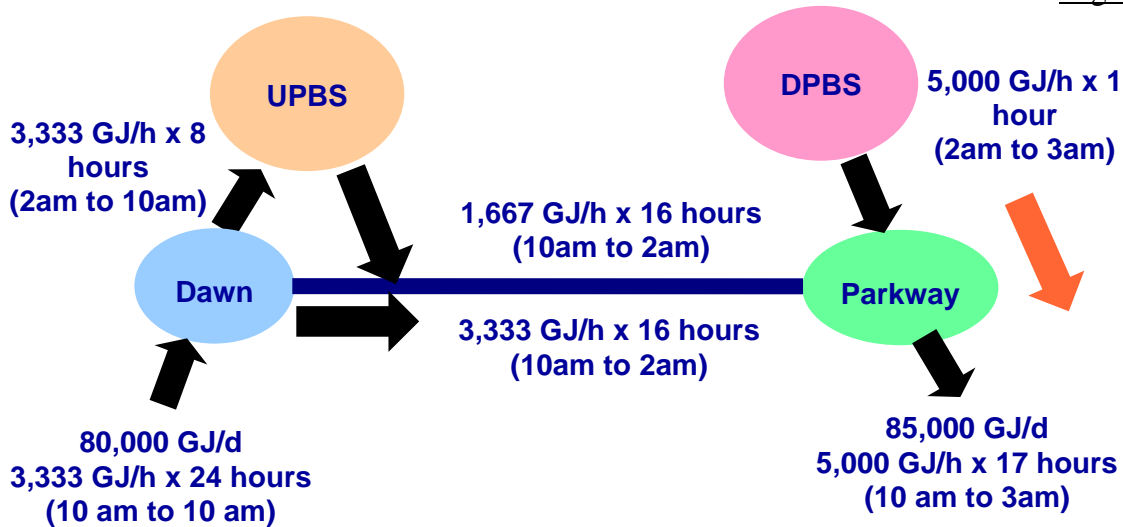
At 1:00 am, Shipper A determines that it will continue to operate until 3:00 am of the current gas day. Shipper A has only contracted for gas supplies to meet their consumption needs until 2:00 am (80,000 GJ). This results in an additional requirement of gas supplies at Parkway of 5,000 GJ (1 hour x 5,000 GJ/h). The next nomination window where Shipper A can acquire additional supplies at Dawn is #9, with a nomination deadline of 4:00 am and an effective flow time of 6:00 am. To bridge the interval between Shipper A's requirements for gas supplies at 2:00 am and the next nomination effective flow time of 6:00 am, Shipper A can utilize the DPBS service, provided the current balance within the DPBS could accommodate it.

Therefore, assume that on a previous gas day Shipper A had parked 10,000 GJ (2 hours) of gas supplies into the DPBS service. In the current gas day, Shipper A will nominate to withdraw 5,000 GJ (1 hour) of gas supplies from the DPBS service. The balance in the DPBS service after the 1 hour of flow would now be 5,000 GJ (equivalent to 1 hour of contract demand). The lower limit of the DPBS account for Shipper A is -10,000 GJ (leaving a total of 3 hours for later use).

Union will deliver to Parkway 5,000 GJ/h for the next 1 hour (2:00 am to 3:00 am) to satisfy Shipper A's supply requirements. This nomination can be confirmed with Enbridge and TCPL within 15 minutes of receipt and Union will increase its deliveries at Parkway accordingly.

The total amount scheduled and invoiced by Union will be 85,000 GJ, regardless of the ultimate consumption by Shipper A.

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Interconnecting Activity

Union will not confirm any activity at Dawn on the 15 minute nomination. Union will only complete an entire system rescheduling on one of the 10 nomination windows. Activity at Dawn will not change.

Other Considerations

With the entire suite of services – M12 Transportation, F24-T, UPBS and DPBS – Shipper A has the maximum flexibility. The addition of DPBS allows Shipper A to receive or park short notice firm supplies at Parkway to match consumption requirements.

The DPBS service gives Shipper A full control on how they manage the DPBS account. Shipper A has the option to pre-load the account (park) to ensure the maximum amount of short notice withdrawals (4 hours) or Shipper A can maintain a negative balance (loan) to ensure the maximum amount of short notice injections (4 hours). Shipper A can inject or withdraw within the DPBS service on a short notice basis. However, the injections and withdrawals based on the change in deliveries from Dawn that eliminate the balance in the DPBS can only be accommodated on the available nomination windows (4 NAESB nomination windows with M12 Transportation only or 10 nomination windows with M12/F24-T).

The DPBS service would require downstream pipeline operators to be able to accept confirmations and flow changes at 15 minute intervals.

iv) F24-S

F24-S Service Description

As outlined in Union's evidence (Tab 4, Pages 34 and 35), F24-S is a market priced service which is an enhancement to C1 Storage. This service responds to Shippers such as Power Customers requests by providing access to an additional 6 nomination windows during the gas

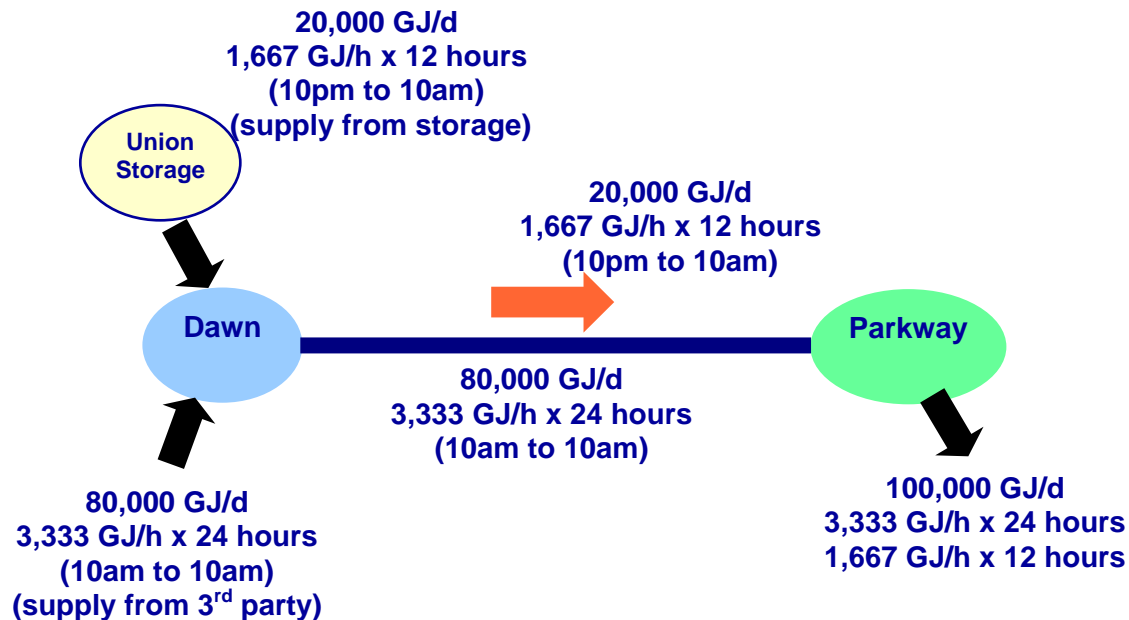
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day and provides for the reservation of storage injection and withdrawal capacity throughout the gas day ensuring that the capacity is available on a firm basis on all nomination windows (10 in total). The proposed 10 nomination windows are outlined in Union's evidence at Tab 4, Page 10.

Example

Shipper A has a C1 storage contract at Dawn with firm deliverability (withdrawal rights) of 48,000 GJ/d. This allows maximum hourly flows of 2,000 GJ/hour. In the F24-T example, when Shipper A nominated at the 6:00 pm nomination window (effective 10:00 pm) to transport an additional 20,000 GJ/d of gas from Dawn to Parkway, it was assumed that the incremental gas supply came from a gas supplier at Dawn. In this example, the incremental gas supply is withdrawn from Shipper A's F24-S storage. Shipper A nominated to withdraw, on a firm basis, 20,000 GJ (1,667 GJ/hour) from its C1/F24-S storage contract.

The total amount scheduled and invoiced by Union will be 20,000 GJ from storage, regardless of the ultimate consumption by Shipper A.



Contracting for F24-S provides the Power Customer with significant flexibility to balance supply and demand during the day.

Interconnecting Activity

Since Shipper A has chosen to source its incremental gas supplies from its Union storage contract at Dawn, only the storage withdrawal needs to be confirmed at Dawn. Gas will flow out of storage ratably over the day or part of day remaining, in this case at a rate of 1,667 GJ/h.

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Other Considerations

Shipper A chose to contract directly with Union for storage at Dawn. If Shipper A purchased gas supplies from a third party who held C1 storage with F24-S rights at Dawn, the process would have been similar to that describe above, although there would also have been a title transfer at Dawn to effectuate the purchase and sale of gas between the third party and Shipper A.

A Shipper contracting for F24-S is not required to hold F24-T. However, practically, it would make sense for either the F24-S Shipper or the market they service to hold F24-T.

F24-S can be combined with DPBS and/or UPBS. Again, F24-S simply acts as a source of supply for Shippers. Being available on a firm basis all day and available on 10 nomination windows provides enhanced flexibility to the contract holder.

v) Summary

Union has developed the 4 new services to provide Power Customers and other market participants the maximum flexibility. Each new service can be purchased independently or in any combination. Although this adds maximum shipper flexibility, it also may add an element of complexity. The above examples are intended to clarify how the services work and how they interact with each other. The services have also been designed to allow other market participants to contract for these services, rather than the Power Customer only. A good example of this flexibility is F24-S. A Power Customer may contract for F24-T (with or without UPBS and DPBS) but may contract with a gas marketer to provide a gas supply service. The gas marketer in this case may contract for F24-S to provide the service.

In the examples provide by Board Staff, it was assumed that the Power Customer would be operating 16 hours per day for 5 days per week. This assumption would imply a fairly predictable operation. In this mode of operation, the only service the Power Customer outside of Union's franchise area may need would be M12 and UPBS.

The ultimate mix of services chosen by a Power Customer will depend on many things, including power plant design, power plant location, risk tolerances of the Power Customer, expected mode of operations, services available from others, nomination windows recognized by market participants, etc.

It should be noted that even the simple application of F24-T and UPBS would require Enbridge and TCPL to recognize the additional nomination windows, firm all day nature of the services and uneven deliveries of supply. As noted in the next section, TCPL's FT transportation service could not interface with F24-T or UPBS. TCPL's proposed FT-SN service (in its current form) could interface with both F24-T and UPBS, but it would not work for Power Customers embedded in the Enbridge service area (Scenario 3 in the Board Staff question).

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B) Service on TCPL

i) TCPL FT Transportation – Current Service

Service Description

FT Transportation service provides transportation between multiple receipt and delivery points on TCPL's system. In the example stated here, a Power Customer will require transportation service from Parkway to Enbridge CDA. This is a nominated service which is available on a firm basis on the timely nomination window only. Shipper is required to pay transportation fuel on each day that transportation is nominated. This service aligns well with Union's M12 Transportation service.

Example

Shipper A has a firm M12 Dawn to Parkway transportation contract for 100,000 GJ/d, which allows maximum hourly flows of 5,000 GJ/hour. Shipper A also has a firm FT Parkway to Enbridge CDA transportation contract for 100,000 GJ/d, which allows maximum hourly flows of 5,000 GJ/hour.

Shipper A nominates to Union on the timely window (nomination deadline at 12:45 pm EST for effective flow at 10:00 am) for 80,000 GJ/d of transportation from Dawn to Parkway and nominates to TCPL on the timely window for 80,000 GJ/d of transportation from Parkway to Enbridge CDA for the next gas day. In this example, 3,333 GJ/h will be received at Dawn from the Power Customer and 3,333 GJ/h will be delivered to TCPL at Parkway on behalf of the Power Customer. TCPL will receive 3,333 GJ/h at Parkway and will deliver 3,333 GJ/h to Enbridge CDA. The total daily deliveries are 80,000 GJ over the gas day. Shipper A will also be required to provide transportation fuel to Union at Dawn and to TCPL at Parkway, however, fuel is assumed to be zero to simplify this example. If the Power Customer actually consumed the 80,000 GJ/d over 16 hours as outlined in the earlier example, the Power Customer may require an intraday balancing service from either Enbridge or TCPL.

The total amount scheduled and invoiced by Union and TCPL will be 80,000 GJ, regardless of the ultimate consumption by Shipper A.

Interconnecting Activity

Union will confirm the total receipts at Dawn with any combination of interconnecting pipelines (Vector, TCPL, Panhandle or Bluewater), withdrawals from storage, or title transfers from other parties. Currently all parties are able to confirm on the 4 NAESB nomination windows.

Union will confirm the total deliveries to Parkway with TCPL. TCPL will confirm with Union the receipt of gas at Parkway and will confirm with Enbridge the delivery of gas to Enbridge CDA.

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Confirmations will occur as part of the existing 4 NAESB nomination windows.

Other Considerations

If Shipper A wanted to increase its Dawn to Parkway and Parkway to Enbridge CDA nomination during the gas day, they would have two opportunities using the existing NAESB nomination windows – Intraday 1 (nomination deadline at 11:00 am for effective flow at 6:00 pm) and Intraday 2 (nomination deadlines at 6:00 pm for effective flow at 10:00 pm). Requests to increase Dawn to Parkway or Parkway to Enbridge CDA transportation service are interruptible after the timely nomination window.

Given the limitations of the TCPL FT Service (not firm after the timely nomination window and limited to 4 NAESB nomination windows) the F24-T, F24-S, UPBS and DPBS services would have limited value.

TCPL FT-SN

Service Description

The following description is Union and Enbridge Gas Distributions' current understanding of the service. TCPL has not yet filed evidence on this service with the NEB or OEB.

As proposed, FT-SN Transportation service provides transportation between multiple receipt and delivery points on TCPL's system. This service requires that the Shipper utilize a TCPL delivery point which is restricted to only that Shipper's activity. TCPL would create a new delivery point to accommodate this service. For example, a Power Customer in the Enbridge franchise area served directly off of the TCPL system would have a separate delivery point defined in TCPL's tariff.

This is a nominated service which is available on a firm basis throughout the gas day with 96 opportunities (every 15 minutes) to adjust quantities. Shipper is required to provide transportation fuel on each day that transportation is nominated.

For FT-SN to work, TCPL requires the upstream pipeline (Union) to confirm that supply is available at Parkway to meet Shipper A's needs every 15 minutes. As stated in evidence, Union cannot fully schedule its system every 15 minutes. To provide an interface between Union's and TCPL's system (in regards to the FT-SN service), Union created DPBS. With DPBS, Union will confirm to TCPL and Enbridge every 15 minutes, if the hourly quantity requested is available at Parkway.

It is important to note that TCPL is not scheduling their entire transportation system every 15 minutes. They are simply requesting confirmation of 1 flow rate from 1 party (Power Customer) at 1 location (Parkway).

Interconnecting Activity

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Union will confirm the total receipts at Dawn with any combination of interconnecting pipelines (Vector, TCPL, Panhandle or Bluewater), withdrawals from storage, or title transfers from other parties. This activity would be limited to the 4 NAESB nomination windows unless upstream parties adopt the 6 additional nomination windows as proposed by Union.

Union will confirm the total deliveries to Parkway with TCPL and Enbridge. TCPL will confirm with Union the receipt of gas at Parkway and will confirm with Enbridge the delivery of gas to "Shipper A Delivery Point".

Union will only be able to confirm quantities based on flows nominated using the 10 nomination windows (flows out of Dawn) plus any activity nominated and confirmed based on the DPBS every 15 minutes.

Other Considerations

As stated earlier, DPBS and FT-SN align well. However, there are several noteworthy features of FT-SN. Mainly:

- FT-SN only works if the Power Customer is served directly off of TCPL. This service would not be available to Power Customers embedded in an LDC. This results in Union's F24-T, F24-S, UPBS and DPBS being of limited value to generators embedded in Enbridge's franchise area, given the inability to telegraph the benefits of the service through TCPL.
- Very few other TCPL services on TCPL will be available on the 15 minute windows. TCPL will continue to schedule their entire transmission system on the 4 NAESB nomination windows.

C) Service on Enbridge

In response to the Board Staff's request, the following information and examples are applicable to a 500 MW plant, operating on a 5 X 16 schedule. As indicated earlier, the Rate 125 service described below is not applicable to a small scale generator (50 MW). These generators would have the option of selecting existing distribution services or other unbundled rates that are applicable to their level of demand (e.g. Rate 300). Evidence related to these unbundled rates has not yet been filed in this proceeding.

i) Rate 125

Service Description

Rate 125 is a distribution service that is designated as an extra large firm transportation service for customers that have a maximum daily volume (Contract Demand) of natural gas of not less than 600,000 m³. Enbridge Gas Distribution has proposed a limited balancing service as an enhancement to this service. This allows for a customer to have a daily imbalance of up to 10% of their Maximum Contractual Imbalance (MCI) and a cumulative imbalance up to their MCI,

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depending on the time of year. More details on these provisions can be found at Exhibit C, Tab 2, Schedule 1.

Other Considerations

The ability for Enbridge Gas Distribution to offer these balancing services to a customer is dependent on the services made available by upstream service providers. Since Enbridge Gas Distribution has no storage capacity within its franchise areas, it is dependent on the ability to move gas into or away from its franchise areas for the purpose of balancing its loads. As described at Exhibit B, Tab 3, Schedule 1 of Enbridge Gas Distribution's evidence, the specific upstream requirements that Enbridge Gas Distribution views as essential to managing this balancing is the availability of more nomination windows and the reservation of upstream transportation capacity to the delivery area. The availability of additional nomination windows will allow the customer to adjust their deliveries more frequently throughout the gas day in response to their needs. Enbridge Gas Distribution expects that this will leave a smaller portion of the customer's load that requires balancing at the end of the day through the use of the additional nomination windows. These additional nomination windows are of limited value however if there is not the ability increase a nomination to the franchise area on a firm basis. This requires the reservation of capacity.

With the proposed FT-SN service from TCPL, as discussed earlier in this response, the features of Rate 125 are significantly limited. Enbridge Gas Distribution shares Union's understanding that TCPL is proposing that the service be to a designated delivery point and not the general delivery area. This condition effectively eliminates the ability for Enbridge Gas Distribution to provide load balancing to the customer in a manner that would be any different from what the customer would already be able to do for themselves. None of the efficiencies that can be obtained from aggregating all of the loads within a delivery area for the purpose of balancing can be obtained.

If TCPL files and obtains approval for FT-SN in the manner that Enbridge Gas Distribution understands the service, Enbridge Gas Distribution will be unable to provide any form of load balancing for these customers under the Rate 125 service. It would require the customer using the service to balance their loads exactly on a daily basis.

ii) Rate 316

Service Description

Enbridge Gas Distribution has proposed a high flexibility, high deliverability, natural gas storage service. This service provides access to Enbridge Gas Distribution's storage with the gas being delivered at Dawn. As outlined in Enbridge Gas Distribution's evidence (Exhibit C, Tab 3, Schedule 1), the Rate 316 service is proposed to be made available at market based rates.

The service is intended to provide market participants with access to high deliverability storage that, if desired, can be offered on a firm unratcheted basis 365 days a year. Since the service is

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made available at Dawn, the service provides an alternative for customers to access their gas supply on days when firm supply arrangements have not been made. Rate 316 will make available all nomination windows provided in the transportation services used by the customer to move the gas away from Dawn to the market area.

iii) Service Applicability to Board Scenarios

Scenario 1 – Generator within the Enbridge Gas Distribution Franchise area directly connected to TCPL

In the case of a power generator that is directly connected to the TCPL system within Enbridge Gas Distribution's franchise area, there are two service options that they may have available to them if the TCPL FT-SN service, as it has been described earlier, is approved by the NEB. In either of these scenarios, the choice of services would be similar regardless of whether the facility was located in the Enbridge CDA or Enbridge EDA. The only difference would be the cost difference of the TCPL toll between the CDA and EDA (approximately \$0.12 / GJ for short haul services).

1. Use FT-SN to move gas from Parkway to the Enbridge Gas Distribution interconnection with the TCPL system

In this scenario, the customer would use Enbridge Gas Distribution's Rate 125 service. However, Enbridge Gas Distribution would not be able to offer any form of load balancing to the customer. The customer may choose to acquire some Rate 316 service from Enbridge Gas Distribution for the purpose of providing supply at Dawn. Their decision to use Rate 316 would depend on what other market supply or storage alternatives that they have available to them.

In addition to the Enbridge Gas Distribution and TCPL services, the customer would require some form of services from Union Gas that have been described earlier in this response. Given the facility is scheduled to run 5X16 throughout the year. Certain services may have less appeal to the customer than others. The customer may only require the use of M12 and UPBS as the load profile is fairly steady and predictable. The UPBS service would allow the customer to transform its 24 hourly deliveries at Dawn into the 16 equal deliveries needed to serve the facility. This is just one alternative that is likely the most straight forward for the customer, but many permutations of the other services available could also be used depending on the potential for deviation from the 5X16 demand profile and whether the customer wants to hedge some of its supply costs through the use of storage.

2. Use existing FT services to move gas from Dawn or Parkway to the Enbridge Gas Distribution franchise area

In this scenario, the customer would use Enbridge Gas Distribution's Rate 125 service and

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would be able to take advantage of the limited balancing service provided within the rate. Since the FT service does not provide access to additional nomination windows or the reservation of capacity, the customer would likely not contract for any of the new services proposed by Union as the flexibility they provide would not be matched by the TCPL service.

Given the apparent predictability of the load, the customer would be able to submit its nomination for the next day at the timely window and then deliver the total daily requirement over the 24 hour period. Enbridge Gas Distribution would then receive these deliveries in its franchise area with those of its other customers and would manage the overall demand for the day.

If the load were less predictable, this could pose significant challenges to the power generator as they may have a challenge in ensuring they have nominated the appropriate volume of gas on the day to remain within the allowed tolerances provided within Rate 125. If this were the case, the customer would be at significant risk of regularly incurring imbalance charges and potentially triggering cashout provisions.

Whether the load is predictable or not, the customer may choose to acquire some Rate 316 service from Enbridge Gas Distribution for the purpose of providing supply at Dawn. Their decision to use Rate 316 would depend on what other market supply or storage alternatives that they have available to them and their desire to have the ability to have excess deliveries under Rate 125 balanced to storage under certain operating and contractual conditions.

Scenario 3 – Generator embedded within the Enbridge Gas Distribution Franchise area

In the case of a power generator that is embedded within Enbridge Gas Distribution's franchise area, there is only one service option that they would have available to them if the TCPL FT-SN service, as it has it is currently understood, is approved by the NEB. Since the customer would not have a direct interconnection with the TCPL system, the FT-SN service would not be available as an option. The choice of services would be similar regardless of whether the facility was located in the Enbridge CDA or Enbridge EDA. The only difference would be the cost difference of the TCPL toll between the CDA and EDA (approximately \$0.12 / GJ for short haul services).

This scenario would be identical to option 2 described for Scenario 1, where the customer uses FT service to move gas from Dawn or Parkway to the Enbridge Gas Distribution franchise area.

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UNION GAS LIMITED

Undertaking of Mr. Shorts
To Mr. Moran

For Union to calculate the variable charges and penalties that Union would charge for each of the proposed 4 electric days using current T-1 and the proposed NGEIR T-1 rate schedules.

Response:

In order to conduct this analysis, Union followed these steps:

1. Established assumptions about the plant as follows:
 - 500 MW Plant
 - CD = 90,000 GJ/Day
 - Deliveries at Dawn
 - Customer supplied deliverability inventory and fuel
 - 500,000 GJ of Storage
 - 1.2% Deliverability at Cost Based Rates = 6,000 GJ/day injection/withdrawal capability
2. Created spreadsheet that breaks each electric day, as provided by APPrO, into the two relative “gas days” in order to determine daily contracted ability to inject into storage and to determine the amount of gas that needed to be “reconciled” or “balanced” for each gas day. See attached spreadsheet “APPrO Gas Day-Electric Day Analysis.”
3. Created a second spreadsheet that compares current T-1 rates and the proposed NGEIR T-1 rates for services used in the APPrO example. See attached spreadsheet “Comparative Pricing for T1 for APPrO undertaking.”

Under the comparative pricing, Union has shown what the cost would be for the generator after they had injected their full contract capability.

The generator has 3 cost-scenarios at this time.

- i. They could have contacted his Union Gas Sales associate and requested “Authorized Overrun.”
- ii. They could have done nothing and been charged “Unauthorized Overrun.”
- iii. Recognizing that the plant was not going to run as forecast, they could have sold the unused gas at Dawn before it was injected into their storage account. (Title Transfer at Dawn)

Witness: Chris Shorts / Libby Passmore
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Date	HE	Pre-Dispatch Signal	Gas Purchased for MW Produced (GJ)	Energy Cost	HOEP	Gas Consumed when Dispatched (GJ)	Hourly Gas Imbalance			
1-Feb-2005	10:00	\$163.40	4000.00	65.00	\$52.32		4,000			
1-Feb-2005	11:00	\$178.71	4000.00	65.00	\$53.73		4,000			
1-Feb-2005	12:00	\$159.99	4000.00	65.00	\$52.15		4,000			
1-Feb-2005	13:00	\$141.94	4000.00	65.00	\$51.21		4,000			
1-Feb-2005	14:00	\$137.23	4000.00	65.00	\$53.03		4,000			
1-Feb-2005	15:00	\$136.15	4000.00	65.00	\$49.53		4,000			
1-Feb-2005	16:00	\$137.23	4000.00	65.00	\$49.10		4,000			
1-Feb-2005	17:00	\$150.44	4000.00	65.00	\$46.61		4,000			
1-Feb-2005	18:00	\$193.31	4000.00	65.00	\$73.15	4,000				
1-Feb-2005	19:00	\$240.71	4000.00	65.00	\$83.42	4,000				
1-Feb-2005	20:00	\$200.13	4000.00	65.00	\$83.39	4,000				
1-Feb-2005	21:00	\$193.33	4000.00	65.00	\$74.52	4,000				
1-Feb-2005	22:00	\$163.98	4000.00	65.00	\$52.43		4,000			
1-Feb-2005	23:00	\$130.57	4000.00	65.00	\$54.78		4,000			
1-Feb-2005	24:00	\$58.17	0.00	65.00	\$45.36					
2-Feb-2005	1:00									
2-Feb-2005	2:00									
2-Feb-2005	3:00									
2-Feb-2005	4:00									
2-Feb-2005	5:00									
2-Feb-2005	6:00									
2-Feb-2005	7:00									
2-Feb-2005	8:00									
2-Feb-2005	9:00									
Transportation to Plant						16,000	40,000	Sub-Total Imbalance		
							(6,000)	Injection into Storage @	\$0.008	\$24.00
							34,000	Amount of Natural Gas to be Reconciled		
							34,000	Authorized Overrun of Storage Injections @	\$0.080	\$2,720.00
							34,000	Unauthorized Overrun Storage Injection Fee @	\$6.00	\$204,000.00

Assumptions:

500 MW Plant Contract Demand = 90,000 GJ Peak Hour = 3,750 GJ
 500,000 GJ of Storage Deliverability at 1.2% = 6000 GJ/day of injection/withdrawal capability
 Customer supplies own fuel; fuel assumed to be zero to simplify example

April 30/May 1 Gas Days

Date	HE	Pre-Dispatch Signal	Gas Purchased for MW Produced (GJ)	Energy Cost	HOEP	Gas Consumed when Dispatched (GJ)	Hourly Gas Imbalance
30-Apr-2005	10:00						
30-Apr-2005	11:00						
30-Apr-2005	12:00						
30-Apr-2005	13:00						
30-Apr-2005	14:00						
30-Apr-2005	15:00						
30-Apr-2005	16:00						
30-Apr-2005	17:00						
30-Apr-2005	18:00						
30-Apr-2005	19:00						
30-Apr-2005	20:00						
30-Apr-2005	21:00						
30-Apr-2005	22:00						
30-Apr-2005	23:00						
30-Apr-2005	24:00						
1-May-2005	1:00	\$37.39	0.00	65.00	\$55.25		
1-May-2005	2:00	\$42.27	0.00	65.00	\$44.02		
1-May-2005	3:00	\$36.66	0.00	65.00	\$38.14		
1-May-2005	4:00	\$36.66	0.00	65.00	\$35.81		
1-May-2005	5:00	\$37.19	0.00	65.00	\$36.68		
1-May-2005	6:00	\$42.01	0.00	65.00	\$36.85		
1-May-2005	7:00	\$43.32	0.00	65.00	\$35.58		
1-May-2005	8:00	\$70.28	4000.00	65.00	\$39.45		4,000
1-May-2005	9:00	\$101.70	4000.00	65.00	\$49.19		4,000

Transportation to Plant	0.00	8,000	Sub-Total Imbalance		
		(6,000)	Injection into Storage @	\$0.008	\$48.00
		2,000	Amount of Natural Gas to be Reconciled		
		2,000	Authorized Overrun of Storage Injections @	\$0.080	\$160.00
		2,000	Unauthorized Overrun Storage Injection Fee @	\$6.00	\$12,000.00

Date	HE	Pre-Dispatch Signal	Gas Purchased for MW Produced (GJ)	Energy Cost	HOEP	Gas Consumed when Dispatched (GJ)	Hourly Gas Imbalance
1-May-2005	10:00	\$109.16	4000.00	65.00	\$63.74		4,000
1-May-2005	11:00	\$138.13	4000.00	65.00	\$72.77	4,000	
1-May-2005	12:00	\$150.00	4000.00	65.00	\$74.54	4,000	
1-May-2005	13:00	\$129.22	4000.00	65.00	\$67.33	4,000	
1-May-2005	14:00	\$108.23	4000.00	65.00	\$68.56	4,000	
1-May-2005	15:00	\$118.18	4000.00	65.00	\$65.30	4,000	
1-May-2005	16:00	\$107.76	4000.00	65.00	\$69.77	4,000	
1-May-2005	17:00	\$108.52	4000.00	65.00	\$46.80		4,000
1-May-2005	18:00	\$107.99	4000.00	65.00	\$37.40		4,000
1-May-2005	19:00	\$128.89	4000.00	65.00	\$36.01		4,000
1-May-2005	20:00	\$150.00	4000.00	65.00	\$36.35		4,000
1-May-2005	21:00	\$128.58	4000.00	65.00	\$35.37		4,000
1-May-2005	22:00	\$128.26	4000.00	65.00	\$35.22		4,000
1-May-2005	23:00	\$100.68	4000.00	65.00	\$35.71		4,000
1-May-2005	24:00	\$66.00	4000.00	65.00	\$39.03		4,000
2-May-2005	1:00						
2-May-2005	2:00						
2-May-2005	3:00						
2-May-2005	4:00						
2-May-2005	5:00						
2-May-2005	6:00						
2-May-2005	7:00						
2-May-2005	8:00						
2-May-2005	9:00						

Transportation to Plant	24,000	36,000	Sub-Total Imbalance		
		(6,000)	Injection into Storage @	\$0.008	\$48.00
		30,000	Amount of Natural Gas to be Reconciled		
		30,000	Authorized Overrun of Storage Injections @	\$0.080	\$2,400.00
		30,000	Unauthorized Overrun Storage Injection Fee @	\$6.00	\$180,000.00

Assumptions:

500 MW Plant Contract Demand = 90,000 GJ Peak Hour = 3,750 GJ
 500,000 GJ of Storage Deliverability at 1.2% = 6000 GJ/day of injection/withdrawal capability
 Customer supplies own fuel; fuel assumed to be zero to simplify example

June 30/July 1 Gas Days

Date	HE	Pre-Dispatch Signal	Gas Purchased for MW Produced (GJ)	Energy Cost	HOEP	Gas Consumed when Dispatched (GJ)	Hourly Gas Imbalance	
30-Jun-2005	10:00							
30-Jun-2005	11:00							
30-Jun-2005	12:00							
30-Jun-2005	13:00							
30-Jun-2005	14:00							
30-Jun-2005	15:00							
30-Jun-2005	16:00							
30-Jun-2005	17:00							
30-Jun-2005	18:00							
30-Jun-2005	19:00							
30-Jun-2005	20:00							
30-Jun-2005	21:00							
30-Jun-2005	22:00							
30-Jun-2005	23:00							
30-Jun-2005	24:00							
1-Jul-2005	1:00	\$52.89	0.00	65.00	\$55.25			
1-Jul-2005	2:00	\$45.81	0.00	65.00	\$44.02			
1-Jul-2005	3:00	\$35.82	0.00	65.00	\$38.14			
1-Jul-2005	4:00	\$33.76	0.00	65.00	\$35.81			
1-Jul-2005	5:00	\$32.40	0.00	65.00	\$36.68			
1-Jul-2005	6:00	\$30.03	0.00	65.00	\$36.85			
1-Jul-2005	7:00	\$36.98	0.00	65.00	\$35.58			
1-Jul-2005	8:00	\$43.08	0.00	65.00	\$39.45			
1-Jul-2005	9:00	\$95.29	4000.00	65.00	\$49.19			
						4,000		
						Transportation to Plant	0.00	
						4,000	Sub-Total Imbalance	
						(4,000)	Injection into Storage @	
						0.00	Amount of Natural Gas to be Reconciled	
							\$0.008 \$32.00	

Date	HE	Pre-Dispatch Signal	Gas Purchased for MW Produced (GJ)	Energy Cost	HOEP	Gas Consumed when Dispatched (GJ)	Hourly Gas Imbalance
1-Jul-2005	10:00	\$120.29	4000.00	65.00	\$63.74		4,000
1-Jul-2005	11:00	\$131.14	4000.00	65.00	\$72.77	4,000	
1-Jul-2005	12:00	\$132.64	4000.00	65.00	\$74.54	4,000	
1-Jul-2005	13:00	\$151.90	4000.00	65.00	\$67.33	4,000	
1-Jul-2005	14:00	\$153.27	4000.00	65.00	\$68.56	4,000	
1-Jul-2005	15:00	\$153.40	4000.00	65.00	\$65.30	4,000	
1-Jul-2005	16:00	\$172.32	4000.00	65.00	\$69.77	4,000	
1-Jul-2005	17:00	\$173.41	4000.00	65.00	\$46.80		4,000
1-Jul-2005	18:00	\$172.32	4000.00	65.00	\$37.40		4,000
1-Jul-2005	19:00	\$172.32	4000.00	65.00	\$36.01		4,000
1-Jul-2005	20:00	\$172.32	4000.00	65.00	\$36.35		4,000
1-Jul-2005	21:00	\$172.32	4000.00	65.00	\$35.37		4,000
1-Jul-2005	22:00	\$180.22	4000.00	65.00	\$35.22		4,000
1-Jul-2005	23:00	\$153.27	4000.00	65.00	\$35.71		4,000
1-Jul-2005	24:00	\$108.23	4000.00	65.00	\$39.03		4,000
2-Jul-2005	1:00						
2-Jul-2005	2:00						
2-Jul-2005	3:00						
2-Jul-2005	4:00						
2-Jul-2005	5:00						
2-Jul-2005	6:00						
2-Jul-2005	7:00						
2-Jul-2005	8:00						
2-Jul-2005	9:00						

Transportation to Plant	24,000	32,000	Sub-Total Imbalance		
		(6,000)	Injection into Storage @	\$0.008	\$48.00
		26,000	Amount of Natural Gas to be Reconciled		
		26,000	Authorized Overrun of Storage Injections @	\$0.080	\$2,080.00
		26,000	Unauthorized Overrun Storage Injection Fee @	\$6.00	\$156,000.00

Assumptions:

500 MW Plant
 500,000 GJ of Storage
 Customer supplies own fuel; fuel assumed to be zero to simplify example

Contract Demand = 90,000 GJ
 Deliverability at 1.2% = 6000 GJ/day of injection/withdrawal capability

Peak Hour = 3,750 GJ

September 30/October 1 Gas Days

Date	HE	Pre-Dispatch Signal	Gas Purchased for MW Produced (GJ)	Energy Cost	HOEP	Gas Consumed when Dispatched (GJ)	Hourly Gas Imbalance	
30-Sep-2005	10:00		0.00	65.00	\$41.74			
30-Sep-2005	11:00		0.00					
30-Sep-2005	12:00		0.00					
30-Sep-2005	13:00		0.00					
30-Sep-2005	14:00		0.00					
30-Sep-2005	15:00		0.00					
30-Sep-2005	16:00		0.00					
30-Sep-2005	17:00		0.00					
30-Sep-2005	18:00		0.00					
30-Sep-2005	19:00		0.00					
30-Sep-2005	20:00		0.00					
30-Sep-2005	21:00		0.00					
30-Sep-2005	22:00		0.00					
30-Sep-2005	23:00		0.00					
30-Sep-2005	24:00		0.00					
1-Oct-2005	1:00	\$43.79	0.00	65.00	\$41.74			
1-Oct-2005	2:00	\$43.53	0.00	65.00	\$39.40			
1-Oct-2005	3:00	\$38.83	0.00	65.00	\$39.23			
1-Oct-2005	4:00	\$37.09	0.00	65.00	\$38.18			
1-Oct-2005	5:00	\$38.31	0.00	65.00	\$39.42			
1-Oct-2005	6:00	\$39.68	0.00	65.00	\$39.74			
1-Oct-2005	7:00	\$46.54	0.00	65.00	\$40.24			
1-Oct-2005	8:00	\$219.90	4000.00	65.00	\$48.58		4,000	
1-Oct-2005	9:00	\$241.15	4000.00	65.00	\$87.02	4,000		
			Transportation to Plant		4,000	4,000	Sub-Total Imbalance	
						(4,000)	Injection into Storage @	\$0.008
								\$32.00
							0.00	Amount of Natural Gas to be Reconciled

Date	HE	Pre-Dispatch Signal	Gas Purchased for MW Produced (GJ)	Energy Cost	HOEP	Gas Consumed when Dispatched (GJ)	Hourly Gas Imbalance
1-Oct-2005	10:00	\$258.19	4000.00	65.00	\$143.85	4,000	
1-Oct-2005	11:00	\$241.15	4000.00	65.00	\$91.01	4,000	
1-Oct-2005	12:00	\$241.15	4000.00	65.00	\$63.48		4,000
1-Oct-2005	13:00	\$251.39	4000.00	65.00	\$57.06		4,000
1-Oct-2005	14:00	\$241.15	4000.00	65.00	\$96.12	4,000	
1-Oct-2005	15:00	\$219.90	4000.00	65.00	\$111.04	4,000	
1-Oct-2005	16:00	\$200.00	4000.00	65.00	\$68.51	4,000	
1-Oct-2005	17:00	\$217.07	4000.00	65.00	\$54.13		4,000
1-Oct-2005	18:00	\$239.60	4000.00	65.00	\$52.98		4,000
1-Oct-2005	19:00	\$241.15	4000.00	65.00	\$77.03	4,000	
1-Oct-2005	20:00	\$240.18	4000.00	65.00	\$106.18	4,000	
1-Oct-2005	21:00	\$241.15	4000.00	65.00	\$40.06		4,000
1-Oct-2005	22:00	\$100.00	4000.00	65.00	\$40.76		4,000
1-Oct-2005	23:00	\$55.00	0.00	65.00	\$44.52		
1-Oct-2005	24:00	\$38.51	0.00	65.00	\$37.01		
2-Oct-2005	1:00						
2-Oct-2005	2:00						
2-Oct-2005	3:00						
2-Oct-2005	4:00						
2-Oct-2005	5:00						
2-Oct-2005	6:00						
2-Oct-2005	7:00						
2-Oct-2005	8:00						
2-Oct-2005	9:00						

Transportation to Plant	28,000	24,000	Sub-Total Imbalance		
		(6,000)	Injection into Storage @	\$0.008	\$48.00
		18,000	Amount of Natural Gas to be Reconciled		
		18,000	Authorized Overrun of Storage Injections @	\$0.080	\$1,440.00
		18,000	Unauthorized Overrun Storage Injection Fee @	\$6.00	\$108,000.00