

surcharges on the Lakehead System. Based on Mr. Earnest's projections, I have analyzed the effect of the incremental volumes that would be generated specifically by the Extension Pipeline on those volume-dependent surcharges. As Mr. Earnest shows, the Extension Pipeline will make it possible for the Lakehead System to transport crude volumes that would not otherwise move on Lakehead in every year of the Tariff Agreement's 15-year term. Those incremental barrels are relatively small in the first few years, but grow over time, reaching a level of nearly 600,000 bpd by 2016. See Affidavit of Neil K. Earnest ("Earnest Aff."), Exhibit NKE-10. As would be expected, increased throughput on the upstream system reduces the surcharges that are volume-dependent (*i.e.*, by spreading the same fixed costs over more barrels of throughput). Those surcharge benefits are distributed across the entire Lakehead System, accruing to shippers at every location in proportion to their distance moved under Lakehead's standard rate design. Furthermore, the upstream benefits associated with the incremental volumes do not terminate at the end of the Tariff Agreement.

## **II. ANALYSIS OF BALANCING ACCOUNT EFFECTS**

5. Under the Tariff Agreement, the Extension Pipeline's stand alone tariff rates are calculated annually on the basis of the Commission's Opinion No. 154-B methodology, using the following inputs:

- EEC will employ a stipulated capital structure that will remain fixed at 55% equity, 45% debt.
- The stipulated annual depreciation rate will be fixed at 3.33%, reflecting the 30-year projected life of the facilities.
- The stipulated cost of debt for each year will be the weighted average long-term cost of debt of EELP at the end of the prior calendar year.
- The stipulated cost of equity will be fixed at a 9% real rate of return plus inflation. The inflation rate used will be the current year CPI-U as determined from time to time in accordance with the Opinion 154-B methodology.

- The tax allowance component of the cost of service will be determined each year in accordance with the Commission's tax allowance policy in effect in such year.
- All incremental operating costs, property or similar taxes, and fuel and power expenses associated with the Extension Pipeline will be included in the cost of service.

Thus, in general, the Extension Pipeline rates will follow the same methodology and the same inputs that were approved by the Commission for the Southern Access Expansion Surcharge in its ruling on the Offer of Settlement for that Project. *Enbridge Energy, Limited Partnership*, 114 FERC ¶ 61,264 (2006).

6. In his Affidavit and attached Exhibits, Mr. Earnest provides a forecast of the volume of crude oil expected to be transported to Patoka through the Extension Pipeline in each year during the term of the Tariff Agreement. Earnest Aff., ¶ 32 & Exh. NKE-4. I have relied on Mr. Earnest's throughput forecasts in calculating the balancing account over the life of the Tariff Agreement.

7. My first analysis uses Mr. Earnest's Base Case throughput projections that utilize the CAPP Pipeline Planning supply forecast. For each year beginning with 2009 (the initial year of service of the Extension Pipeline) and extending into 2024, I have calculated the projected cost of service for the Extension Pipeline using the Commission's Opinion 154-B methodology, the estimated capital cost of the Extension, deemed throughput of 340,000 bpd, and the input factors described above. Those calculations are shown in Exhibit PD-1 ("Extension Pipeline Projected Cost of Service"). I then determined the stand alone tariff rate from Flanagan to Patoka for each year based on dividing the projected cost of service by the annual throughput corresponding to 340,000 bpd, but taking account of planned future capital costs.

8. In each year in which forecast Extension throughput is less than an annual average of 340,000 bpd, I multiplied the shortfall in volume on the Extension by the per-barrel rate to determine the deficit amount for that year. Those amounts are shown on Row 11 of

Schedule 1 of Exhibit PD-2 (“Base Case Projected Balancing Account”).<sup>2</sup> Row 11 also shows the surplus amount for each year in which the annual average throughput on the Extension Pipeline exceeds 340,000 bpd, calculated by multiplying the surplus volume by the per-unit rate for that year. Row 14 of Schedule 1 shows the cumulative deficit for all years, including interest (Row 12) at the Commission’s refund interest rate as projected by Enbridge for future years, which is more conservative than the five-year average of prior interest rates. As shown on Schedule 1, in the Base Case, the cumulative deficit starts at approximately \$34.7 million in 2009 and peaks at approximately \$187 million in 2012. Thereafter, the cumulative deficit is rapidly paid off, dropping to zero in 2016 (*i.e.*, eight years prior to the expiration of the Tariff Agreement).

9. Row 13 of Exhibit PD-2, Schedule 1, includes an amount in 2012 of approximately \$5.9 million that is excluded from the balancing account (although it is recovered through the Lakehead mainline surcharge). This excluded amount reflects the provision of the Tariff Agreement referred to in footnote 1 above, which permits a pro rata portion of the deficit to be excluded from the balancing account in a year in which the Qualifying Volume (essentially the incremental volume generated by Line 61) is 400,000 bpd or greater.<sup>3</sup> As explained by Mr. Schrage, this provision resulted from the negotiations between Petitioners and CAPP and reflects the view that, when Lakehead Qualifying Volume exceeds 400,000 bpd, the upstream benefits to Lakehead shippers justify the cost recovery from those shippers relating to the Extension.

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<sup>2</sup> This analysis is slightly simplified in one way. Under the Tariff Agreement, there is an annual true-up of estimated costs and throughputs to actual costs and throughputs, which would also enter into the deficit/surplus calculation. However, since my analysis is based entirely on forecast numbers, I have disregarded the true-up and assumed that the actual figures would be equal to my forecast figures. I do not believe this simplifying assumption has any impact on the reliability of my results, since any future variances between forecast and actual numbers would be eliminated by the true-up.

<sup>3</sup> The Lakehead Qualifying Volume, which is derived from Mr. Earnest’s throughput forecast (Earnest Aff., Exhibit NKE-4), is shown on Row 8 of Exhibit PD-2, Schedule 1.

Moreover, as my Exhibit PD-2, Schedules 1 and 2 show, this exclusion is likely to arise (if at all) only in the year in which the Extension transitions from deficit to surplus, at which point the Lakehead shippers will receive upstream benefits at no further net cost to them.

10. To further explain my analysis, the following is a step-by-step walk-through of Exhibit PD-2, Schedule 1 (Base Case Projected Balancing Account), using the year 2012 as an example. The fourth row for that year shows the 340,000 bpd throughput that is the basis for setting the Extension Pipeline's rates every year. Row 5 shows 271,000 bpd, which is the actual volume of crude that is expected to move on the Extension Pipeline in 2012. That volume is taken from Mr. Earnest's analysis. Earnest Aff., Exh. NKE-4. Row 6 shows the actual revenue collected based on the actual volumes carried (Row 5) and Row 7 shows the expected revenue requirement based on those actual volumes. The eighth row identifies the Lakehead Qualifying Volume (568,000 bpd) derived from Mr. Earnest's forecast at Row 16. Subtracted from this is the estimated pre-Southern Access Expansion capacity (Row 17) to arrive at Qualifying Volumes at Row 18. Earnest Aff., Exh. NKE-4. The ninth row identifies the percentage of any deficit in that year that may be included in the balancing account. That percentage is based on the extent to which the average daily Qualifying Volume is above 400,000 bpd during that year. In 2012, that means 70% (*i.e.*,  $400,000/568,000$ ) of the deficit experienced that year may be added to the balancing account. As mentioned above and as my Exhibit PD-2, Schedules 1 and 2 show, this exclusion is likely to arise (if at all) only in the year in which the Extension transitions from deficit to surplus. The tenth row represents the opening balance in the balancing account carried forward from the end of the prior year, in this instance \$159.4 million. Since there is less than 340,000 bpd moving on the Extension Pipeline, there is a deficit associated with the cost of service that year, which appears on Row 11 (\$19.8 million). The next row is the interest charge of \$13.7 million, which is based on an interest rate of 7.88% for that year (which appears on

Row 15), on the opening and newly deposited balance in the balancing account (*i.e.*, \$(159.4 million + 187 million)/2 \* .0788). Row 13 includes an adjustment for that portion, if any, of the deficit that is excused because the Qualifying Volume exceeds 400, 000 bpd (*i.e.*, \$19.8 million \* (1-70%)), or, in this instance, \$5.9 million. Row 14 sums the inputs to the balancing account over the year (*i.e.*, the sum of Rows 10 through 13) to arrive at the closing balance of \$187 million.

11. The analysis I performed for Mr. Earnest’s Conservative Case (which relies on the CAPP Moderate Case supply forecast) is shown in Schedule 2 of Exhibit PD-2. This analysis is identical in format and content to the Base Case analysis described above, except for the variances in throughput arising from Mr. Earnest’s different scenarios. As shown in the following Table 1, the results of my balancing account analyses are relatively stable between the two cases, which confirms that there is a high degree of likelihood that the early year Extension deficits recovered from Lakehead shippers will be repaid in accordance with the Tariff Agreement well before that Agreement expires.

Table 1

Cases	Base Case	Conservative Case
Years in which Deficiency is Accumulated	2009-2012	2009-2013
Year Deficiency is Completely Repaid	2016	2022
Date of Self-Sufficiency <sup>4</sup>	2016	2017

### III. UPSTREAM SURCHARGE BENEFITS

<sup>4</sup> Pursuant to the Tariff Agreement, self-sufficiency is reached after three years of surpluses. Beyond that point, no further deficits may be added to the balancing account.

12. As noted above, the second purpose of my Affidavit is to calculate the impact on certain Lakehead rate surcharges arising from incremental volumes. Because of the Lakehead rate structure, incremental volumes provide a direct rate benefit to all Lakehead System shippers because they increase the number of barrels across which fixed costs are spread in calculating the volume-dependent Lakehead surcharges. That in turn reduces the per-barrel rates paid by each and every shipper. As discussed in the Earnest Affidavit, using his Base Case as a starting point, he conducted a “with and without” comparison to determine the extent to which the Lakehead System would transport greater volumes with the Extension Pipeline than without it. Mr. Earnest shows the results of that comparison in his Exhibit NKE-10. According to his analysis, the basic conclusion is that the Extension Pipeline will draw additional volumes onto the Lakehead System that will move to Patoka and beyond that would not be likely to move on Lakehead if the Extension link to Patoka were not available (because of capacity constraints on other connecting pipelines, market saturation, and so forth).

13. By way of background, it is necessary to understand the tariff rate structure of Lakehead, which is the result of prior settlements approved by the Commission. Lakehead mainline shippers pay per-barrel rates that reflect the sum of a series of layered elements. The first layer is the base rate, which constitutes the original rate resulting from Lakehead’s last formal rate case (which was the subject of an uncontested settlement approved by the Commission in 1996), plus index adjustments for subsequent years. This rate is forecasted in Row 1 of Exhibit PD-3. Layered on top of the base rate are various surcharges used to recover the cost of specific expansions and/or improvements to the Lakehead System that were not in place when the base rate was originally determined. The currently approved surcharges include the System Expansion Phase II (“SEP II”) Surcharge (Row 2), the Terrace Surcharge (Row 3),

the Facilities Surcharge (Row 4), and the Southern Access Expansion Surcharge (Row 5).<sup>5</sup> Row 6 shows the future potential surcharge for the Alberta Clipper project. The base indexed rate, the SEP II Surcharge, and the Terrace Surcharge do not vary with incremental throughput in the range considered here. The Facilities Surcharges, the Southern Access Expansion Surcharge and the Alberta Clipper Surcharge will be adjusted annually for actual costs and throughputs. This volume-dependent component is expected to represent 22.9% of the Lakehead System tariff rate in 2009 when the Southern Access Extension is in-service, growing to 39.9% by 2011 incorporating potential future surcharges for projects such as Alberta Clipper, as calculated in Row 11.

14. A rate benefit of the Extension is that the volume-dependent surcharges on the Lakehead mainline (*e.g.*, the Facilities Surcharge and the Southern Access Expansion, as well as future potential surcharges for projects such as Alberta Clipper) are spread over greater volumes, thereby reducing the per-barrel amount of those surcharges.

15. In calculating the rate impact of incremental Lakehead barrels, I had to take into account the effect of spreading the volume-dependent surcharges over greater total volumes. In Row 8, I sum the volume dependent surcharges in Rows 4, 5 and 6. Row 9 shows the power portion of the surcharges which is not volume dependent. Therefore in Row 10 the power component is subtracted from Row 8 to generate the volume dependent portion of the rate. Row 11 calculates the volume dependent portion of the rate as a percentage of the total US Rate shown at Row 7. Rows 12 and 13 show the forecasted incremental volume generated by the Extension as per Earnest Affidavit, Exh. NKE-10. Row 14 is the sum of Rows 12 and 13 and represents the total incremental volume generated by the Extension. Rows 15 and 16 show the

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<sup>5</sup> *Lakehead Pipeline Co., Ltd. Partnership*, 85 FERC ¶ 61,397 (1998) (SEP II & Terrace Surcharge); *Enbridge Energy, Limited Partnership*, 107 FERC ¶ 61,336 (2004) (Facilities Surcharge); *Enbridge Energy, Limited Partnership*, 114 FERC ¶ 61,264 (2006) (Expansion Surcharge).

forecasted Enbridge mainline volume as per Earnest Affidavit, Exh. NKE-5. Row 17 is the sum of Rows 15 and 16 and represents the total incremental volume generated by the Extension. Row 18 calculates the forecasted total annual Enbridge mainline volume. Row 19 is a calculation of the proportion of incremental volume (Row 14) to the total mainline volume (Row 17). This percentage represents the incremental volume over which the volume-dependent surcharges would be spread. Therefore the surcharge reduction on a per barrel basis can be calculated by multiplying this percentage by the volume dependent portion of surcharges (Row 10). The results are shown in Row 20. This benefit is also expressed on an annual US\$ basis at Row 21. This is calculated by taking the per barrel reduction at Row 20 and multiplying it by the total annual mainline volume.

16. The resulting rate surcharge benefit to Lakehead mainline shippers, which applies whether or not that particular shipper moves any barrels to Patoka, starts at \$3.4 million in 2009 and escalates in 2012 and beyond as incremental barrels attributable to the Extension grow. See Exhibit PD-3 and Earnest Aff., Exh. NKE-10. A similar effect occurs on the EPI System in Canada, but I have not attempted to quantify the impact on the Canadian toll.

17. I have not incorporated in my rate analysis other benefits of the Extension quantified in the Schrage Affidavit, such as reduced carrying costs, enhanced quality and improved system flexibility, in that these benefits accrue directly to shippers rather than flowing through the rate mechanism.

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and accurate.

Executed on October 17, 2007.



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Peter Douvris

Exhibit PD-1  
 Extension Pipeline Projected Cost of Service  
 All figures in 000 US\$ unless otherwise noted

Schedule 2  
 Southern Access Extension Revenue Requirement at Base Case Forecasted Volumes

Row	2009 <sup>a</sup>	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024 <sup>b</sup>
1																
2																
3	10,197	20,264	39,867	40,378	38,966	37,809	37,473	37,263	35,761	34,232	32,855	31,632	29,361	27,828	25,859	6,061
4	8,490	11,984	12,397	12,733	12,800	12,778	12,557	12,717	12,491	12,247	11,963	11,699	11,392	11,052	10,706	2,596
5	5,265	6,796	7,910	16,883	26,077	17,340	26,972	44,673	55,272	52,854	54,081	57,628	60,270	62,748	67,802	17,811
6	11,666	15,941	16,640	17,340	17,340	17,340	17,340	18,656	18,656	18,656	18,656	18,656	18,656	18,656	18,656	4,863
7	1,107	1,476	1,476	1,476	1,476	1,476	1,476	1,476	1,476	1,476	1,476	1,476	1,476	1,476	1,476	969
8	58	392	530	816	1,087	1,383	1,641	1,970	2,360	2,814	3,231	3,511	3,751	3,951	4,118	1,121
9	57,473	75,772	78,761	87,543	87,955	86,237	85,500	116,923	121,846	123,219	121,660	121,660	121,660	121,660	121,660	32,782
10	137	92	98	271	629	619	564	758	800	800	800	800	800	800	800	200

<sup>a</sup> It is assumed that 2009 is a partial year that commences on April 1  
<sup>b</sup> It is assumed that 2024 is a partial year that ends on March 31

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**Exhibit PD-1**  
 Extension Pipeline Projected Cost of Service  
 All figures in 00's US\$ unless otherwise noted

**Schedule 3**  
 Southern Access Extension Revenue Requirement at Conservative Case Forecasted Volume

Row

- 1 Return on Rate Base
- 2 Income Tax Allowance
- 3 Operating Expenses Excluding Depreciation
- 4 Depreciation Expense
- 5 Amortization of AFUDC
- 6 Amortization of Deferred Earnings
- 7 Total Revenue Requirement
- 8 Projected System Volumes (Mbpd)

Sum (Row 1 to Row 6)  
 Refer to Exhibit MD-6

	2009 <sup>1</sup>	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024 <sup>2</sup>
1	30,197	32,304	37,823	38,377	40,350	40,073	38,628	37,171	35,883	34,159	32,949	30,877	29,308	27,586	25,809	24,019
2	8,180	11,584	11,788	12,291	12,555	13,105	12,907	12,698	12,474	12,233	11,972	11,659	11,283	10,852	10,368	9,835
3	4,827	6,443	6,821	6,895	6,928	6,955	6,975	6,990	7,000	7,005	7,008	7,009	7,009	7,009	7,009	7,009
4	11,856	15,841	15,541	15,495	15,428	15,355	15,275	15,190	15,100	15,005	14,905	14,800	14,690	14,575	14,455	14,330
5	1,107	1,476	1,476	1,476	1,476	1,476	1,476	1,476	1,476	1,476	1,476	1,476	1,476	1,476	1,476	1,476
6	68	302	564	795	1,067	1,356	1,654	1,952	2,251	2,550	2,849	3,148	3,447	3,746	4,045	4,344
7	57,124	75,029	74,093	77,550	76,284	77,342	76,034	74,526	72,924	71,322	69,720	68,118	66,516	64,914	63,312	61,710
8	107	46	60	104	165	380	516	657	729	588	640	728	800	800	800	700

<sup>1</sup> It is assumed that 2009 is a partial year that commences on April 1  
<sup>2</sup> It is assumed that 2024 is a partial year that ends on March 31

**Exhibit PD-2**  
**Balancing Account**  
 All figures in 1000s USD unless otherwise noted

Schedule 1  
 Base Case Projected Balancing Account

Row	Rate	Unit	Refer to	2009 <sup>1</sup>	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024 <sup>2</sup>
2	Portion of Capacity	85%	Refer to Row 9 of Exhibit PD-1, Schedule 1	0.637	0.631	0.650	0.665	0.679	0.671	0.683	0.710	0.703	0.698	0.690	0.583	0.675	0.666	0.663	0.659
3	Capacity	400 Mpd	Refer to Paragraph 3(a) of the SA Ext. Tariff Agreement																
4	Target Throughput	340 Mpd																	
5	Actual Volumes	Mpd	85% * 400 Mpd																
6	Annual Tariff Revenue Actually Collected		Refer to NKE-4	137	92	98	271	629	619	584	758	800	800	800	800	800	800	800	85
7	Actual Revenue Requirement based on Forecasted Volumes		Row 1 * Row 5 * 365	23,839	21,136	23,325	67,820	155,778	151,694	145,718	136,416	205,305	203,786	201,477	199,330	197,125	195,105	193,735	48,121
8	Qualifying Volumes	Mpd	Refer to Row 7 of Exhibit PD-1, Schedule 2	57,473	75,372	78,591	87,643	97,505	96,237	95,500	116,923	121,846	121,219	121,699	123,055	124,610	126,406	128,850	32,782
9	% of Deficiency Included in Cumulative Deficiency		Row 16	368	304	349	568	929	922	896	870	1,044	1,044	1,044	1,044	1,044	1,044	1,044	1,044
10	Balancing Account		Refer to Paragraph 6 of the SA Ext. Tariff Agreement	100%	100%	100%	70%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
11	Charged to Lakehead (Surcredit to Lakehead)		Refer to Paragraph 6 of the SA Ext. Tariff Agreement																
12	Interest		Row 7 - Row 6	33,633	34,864	94,015	159,305	186,968	141,589	95,439	53,364	0	0	-	-	-	-	-	-
13	Account Forgone by Lakehead Shippers due to Qualifying Volumes		(Row 10 + Row 10/2 * Row 15 - Row 11 * (1 - Row 9))	1,031	5,115	10,985	13,651	12,896	9,303	5,746	2,000	0	-	-	-	-	-	-	-
14	Closing		Sum (Rows 10 to 13)	34,664	94,015	159,305	186,968	141,589	95,439	53,364	0	0	-	-	-	-	-	-	-
15	Forecasted Prime Interest Rate <sup>3</sup>			7.92%	7.95%	7.99%	7.85%	7.85%	7.85%	7.85%	7.85%	7.85%	7.85%	7.85%	7.85%	7.85%	7.85%	7.85%	7.85%
16	Qualifying Volume Formula																		
17	Forecasted Surplus to Chicago Vol.	Mpd	Refer to NKE-4	1,308	1,244	1,289	1,508	1,899	1,962	1,838	1,910	1,984	1,984	1,984	1,984	1,984	1,984	1,984	1,984
18	Less:	Mpd		368	304	349	568	929	922	896	870	1,044	1,044	1,044	1,044	1,044	1,044	1,044	1,044
19	Qualifying Volumes	Mpd	Pre Southern Access Expansion Capacity	1,308	1,244	1,289	1,508	1,899	1,962	1,838	1,910	1,984	1,984	1,984	1,984	1,984	1,984	1,984	1,984

<sup>1</sup> It is assumed that 2009 is a partial year that commences on April 1.  
<sup>2</sup> It is assumed that 2024 is a partial year that ends on March 31.  
<sup>3</sup> As per CFR 340.1

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Exhibit PD-1  
 Extension Pipeline Projected Cost of Service  
 All figures in 000s US\$ unless otherwise noted

Schedule 1  
 Southern Access Extension Revenue Requirement at 340,000 bpd

Item	2009 <sup>a</sup>	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024 <sup>b</sup>
1 Return on Rate Base	30,197	39,304	39,847	40,378	38,866	37,609	37,473	37,263	35,787	34,232	32,655	31,052	29,381	27,638	25,828	24,061
2 Income Tax Allowance	9,380	11,964	12,307	12,753	12,560	12,378	12,257	12,117	12,451	12,241	11,963	11,699	11,382	11,022	10,706	10,386
3 Operating Expenses Excluding Depreciation	7,048	9,998	9,950	12,155	12,780	13,128	13,692	14,068	14,435	14,745	15,000	15,200	15,350	15,450	15,500	15,550
4 Depreciation Expense	11,656	15,241	16,440	17,340	17,340	17,340	17,340	17,340	17,340	17,340	17,340	17,340	17,340	17,340	17,340	17,340
5 Amortization of AFUDC	1,187	1,476	1,476	1,476	1,476	1,476	1,476	1,476	1,476	1,476	1,476	1,476	1,476	1,476	1,476	1,476
6 Amortization of Deferred Earnings	58	292	550	814	1,077	1,340	1,603	1,867	2,130	2,393	2,656	2,919	3,182	3,445	3,708	3,971
7 Total Revenue Requirement	59,266	78,274	85,135	88,950	84,217	83,290	84,275	83,119	81,763	79,501	76,951	74,401	71,851	69,301	66,751	64,201
8 Annual System Volumes (MMBtu)			340,000	340,000	340,000	340,000	340,000	340,000	340,000	340,000	340,000	340,000	340,000	340,000	340,000	340,000
9 Total (RGSANS)	93,275	124,100	124,100	124,100	124,100	124,100	124,100	124,100	124,100	124,100	124,100	124,100	124,100	124,100	124,100	124,100
	0.637	0.631	0.650	0.685	0.679	0.671	0.683	0.710	0.703	0.696	0.680	0.663	0.647	0.631	0.615	0.600

<sup>a</sup> It is assumed that 2009 is a partial year that commences on April 1  
<sup>b</sup> It is assumed that 2024 is a partial year that ends on March 31

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Exhibit PD-1

**Exhibit PD-2**  
**Balancing Account**  
 All figures in 000s US\$ unless otherwise noted  
 Schedule 2  
 Conservative Case Projected Balancing Account

Line	Rate	US\$/hr	Refer to	2009 <sup>1</sup>	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024 <sup>2</sup>
2	Portion of Capacity	85%	Refer to Row 9 of Exhibit PD-1, Schedule 1																
3	Capacity	400 kbpd	Refer to Paragraph 3(a) of the SA Ext. Tariff Agreement	0.037	0.031	0.022	0.044	0.096	0.722	0.715	0.709	0.702	0.697	0.689	0.682	0.674	0.667	0.663	0.656
4	Target Throughput	340 kbpd	85% * 400 kbpd																
5	Actual Volumes	kbpd	Refer to NKE-8	340	340	340	340	340	340	340	340	340	340	340	340	340	340	340	340
6	Annual Tariff Revenue Actually Collected		Row 1 * Row 5 * 365	107	46	60	104	186	380	516	657	729	588	540	725	800	800	800	85
7	Actual Revenue Requirement based on Forecasted Volumes		Refer to Row 7 of Exhibit PD-1, Schedule 3	18,629	10,542	13,522	24,460	42,402	100,179	134,803	170,002	186,961	149,529	161,029	180,628	196,890	194,873	193,505	48,054
8	Qualifying Volumes	kbpd	Row 18	57,134	75,089	74,093	77,550	85,294	97,342	94,934	104,226	109,324	107,506	120,733	109,853	121,132	122,709	124,721	31,758
9	% of Deficiency Included in Cumulative Deficiency		Refer to Paragraph 6 of the SA Ext. Tariff Agreement <sup>3</sup>	100%	100%	100%	100%	87%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
10	Balancing Account Opening		Refer to Paragraph 6 of the SA Ext. Tariff Agreement	334	205	216	313	460	683	828	869	943	801	831	919	1,010	1,010	1,010	1,010
11	Changed to Lakehead (Surcredit to Lakehead)		Row 7 - Row 6		39,685	110,189	182,405	252,644	313,008	335,630	321,555	279,305	221,362	196,157	170,242	110,496	40,872	(0)	-
12	Interest		Row 10 * Row 14/2 * Row 15	38,505	44,647	60,371	59,090	43,882	(2,837)	(38,869)	(65,776)	(77,657)	(41,593)	(40,266)	(70,765)	(75,758)	(42,268)	0	-
13	Amount Forgone by Lakehead Shippers due to Qualifying Volumes		Row 11 * (1 - Row 9)	1,180	5,268	31,645	17,448	22,282	25,459	23,586	19,654	15,368	14,381	11,019	5,923	1,586	-	-	-
14	Closing		Sum (Rows 10 to 13)	30,685	110,189	182,405	252,644	313,008	335,630	321,555	279,305	221,362	196,157	170,242	110,496	40,872	(0)	-	-
15	Forecasted Prime Interest Rate <sup>4</sup>			7.93%	7.56%	7.56%	7.88%	7.85%	7.85%	7.85%	7.85%	7.85%	7.85%	7.85%	7.85%	7.85%	7.85%	7.85%	7.85%
16	Qualifying Volume Formula																		
17	Forecasted Superior to Chicago Vols.	kbpd	Refer to NKE-4	1,274	1,145	1,156	1,253	1,400	1,623	1,708	1,809	1,883	1,741	1,771	1,859	1,950	1,950	1,950	1,950
18	Less	kbpd	Pre Southern Access Expansion Capacity	334	205	216	313	460	683	828	869	943	801	831	919	1,010	1,010	1,010	1,010

<sup>1</sup>It is assumed that 2009 is a partial year that commences on April 1.  
<sup>2</sup>It is assumed that 2024 is a partial year that ends on March 31.  
<sup>3</sup>As per CFR 340.1

Exhibit PD-3  
Calculation of Projected Upstream Surcharge Benefits

Item	2009 <sup>1</sup>	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
1 Rate Summary (US\$/bbl) - W. Canada-Griffiths-H	US\$/bbl	0.807	0.831	0.856	0.882	0.908	0.936	0.964	0.993	1.022	1.053	1.085	1.117	1.151	1.185	1.221
2 S&P II Surcharge	US\$/bbl	0.102	0.095	0.090	0.085	0.079	0.040	0.041	0.036	0.033	0.031	0.029	0.016	0.020	0.020	0.000
3 Tectonic Surcharge	US\$/bbl	0.008	0.016	0.016	0.016	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4 EEP Facilities	US\$/bbl	0.027	0.032	0.023	0.025	0.023	0.019	0.019	0.018	0.017	0.017	0.018	0.016	0.016	0.016	0.016
5 Southern Access Expansion	US\$/bbl	0.251	0.302	0.272	0.285	0.302	0.404	0.402	0.399	0.421	0.415	0.414	0.415	0.427	0.398	0.388
6 Alberta Clipper	US\$/bbl	0.000	0.217	0.351	0.252	0.304	0.122	0.155	0.091	0.057	0.051	0.066	0.036	0.028	0.017	0.008
7 Total US Rate Excluding Southern Access Extension	US\$/bbl	Sum (Row 1 to Row 6)	1.195	1.493	1.489	1.514	1.482	1.521	1.562	1.534	1.567	1.591	1.603	1.622	1.618	1.630
8 Volume Dependent Surcharges	US\$/bbl	Sum (Row 4 to Row 6)	0.279	0.350	0.347	0.332	0.479	0.543	0.557	0.508	0.495	0.484	0.478	0.470	0.452	0.431
9 Rate Impact of Power	US\$/bbl	0.004	-0.001	0.004	0.037	0.120	0.134	0.129	0.160	0.194	0.200	0.213	0.205	0.227	0.227	0.227
10 Volume Dependent Portion of Surcharges <sup>2</sup>	US\$/bbl	Row 8 - Row 9	0.274	0.351	0.343	0.295	0.349	0.411	0.418	0.348	0.301	0.284	0.263	0.244	0.225	0.204
11 Volume Sensitive % of Rate	Row 10 / Row 7	22.9%	30.9%	39.9%	32.7%	23.5%	27.0%	26.9%	22.7%	19.4%	18.1%	16.7%	15.2%	14.0%	12.6%	
Incremental Volume ex Borden <sup>3</sup>																
12 Light	bpd	43,470	94,843	(91,175)	63,044	280,500	266,018	254,758	290,819	347,188	402,550	419,931	404,578	404,578	404,578	404,578
13 Heavy	bpd	(9,339)	(72,224)	96,939	154,378	290,349	302,215	277,695	307,241	321,179	293,498	243,794	252,834	252,834	252,834	252,834
14 Total	bpd	Row 12 + Row 13	34,031	22,619	5,764	217,422	576,368	532,453	598,060	668,360	696,048	663,725	657,412	657,412	657,412	657,412
Enbridge Mainline Volume <sup>4</sup>																
15 Light	bpd	600,823	737,054	751,405	842,939	1,056,793	1,050,820	1,007,046	1,065,556	1,136,546	1,172,733	1,193,897	1,171,971	1,171,971	1,171,971	1,171,971
16 Heavy	bpd	773,386	1,032,491	1,110,672	1,249,487	1,397,740	1,398,692	1,410,318	1,513,043	1,517,182	1,487,960	1,458,510	1,498,276	1,498,276	1,498,276	1,498,276
17 Total	bpd	Row 15 + Row 16	1,374,209	1,769,545	1,862,077	2,092,426	2,454,534	2,465,364	2,417,364	2,578,601	2,660,728	2,652,407	2,670,247	2,670,247	2,670,247	2,670,247
18 Annual Total	bbls	Row 17 * 365	502,243,513	653,173,005	682,943,083	763,735,606	899,904,746	894,098,066	853,071,243	941,189,518	968,610,820	971,152,832	976,888,590	974,640,277	974,640,277	974,640,277
19 Incremental Volume as a % of Total Mainline Volume	Row 14 / Row 17	2.5%	1.2%	0.3%	10.5%	23.5%	23.2%	22.0%	23.2%	25.2%	25.0%	24.8%	24.6%	24.6%	24.6%	24.6%
20 Surcharge Reduction per Barrel	US\$/bbl	Row 10 * Row 19	0.007	0.007	0.002	0.052	0.062	0.095	0.052	0.081	0.078	0.071	0.066	0.050	0.050	0.045
21 Upstream Surcharge Benefits	US\$	Row 18 * Row 20	3,409,296	4,447,636	1,382,051	39,824,732	73,403,185	80,061,528	81,212,859	75,974,714	73,340,510	68,954,346	64,229,592	58,444,934	53,992,759	48,953,434

<sup>1</sup> It is assumed that 2009 is a partial year that commences on April 1.  
<sup>2</sup> Fixed portion of EEP Facilities, Southern Access Expansion, and Clipper.  
<sup>3</sup> Exhibit NRE-10 - Incremental Mainline System Throughput CAPP Pipeline Planning Scenario.  
<sup>4</sup> Exhibit NRE-9 - Overview of Western Canadian Crude Shipments - Base Case - CAPP Pipeline Planning Scenario.

**Exhibit 6**



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William B. Tye, being first duly sworn, states as follows:

**I. SCOPE OF TESTIMONY AND SUMMARY OF CONCLUSIONS**

1. I am an economist with The Brattle Group, an economic, management and environmental consulting firm. My principal office is in Washington, D.C.
2. I have been requested by Enbridge Energy Company, Inc. (“EEC”) and Enbridge Energy, Limited Partnership (“EELP”) (collectively, “Petitioners”) to identify the appropriate economic principles that should govern the pricing of service on the Southern Access Extension Pipeline from Flanagan to Patoka (“Extension”) and to apply those principles to the facts set forth in the Joint Petition for Declaratory Order in this case. In undertaking this analysis, I have conducted an extensive review of the economic literature and regulatory proceedings before the Federal Energy Regulatory Commission (“Commission”) and elsewhere that address these issues.<sup>1</sup> I have also undertaken an extensive review of the evidence in the prior regulatory proceedings involving the Enbridge System, including the proposed Extension Pipeline at issue in this proceeding.
3. In its *Order on Contested Offer of Settlement*, 117 FERC ¶ 61,279 (2006) (“2006 Settlement Order”), the Commission addressed a previous settlement to establish rolled-in rates on the proposed Extension Pipeline from Flanagan to Patoka. In rejecting the prior settlement offer, the Commission expressed concerns that: (1) it was looking for additional evidence on the magnitude of benefits to shippers that do not anticipate that they will use the Extension Pipeline, (2) such shippers might be required to subsidize construction of the Extension through higher rates, and (3) the fact that the pipeline would be owned by an affiliated company “heightens the risk” that shippers not using the Extension may cross-subsidize those that do. In the wake of that order, I understand that the Petitioners and the Canadian Association of Petroleum Producers (“CAPP”) have negotiated a new agreement (the “Tariff Agreement”) on terms that are described in the Affidavit of Wilfred R. Schrage, which is attached as Exhibit 3 to the Joint Petition.

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<sup>1</sup> The results of this review are contained in William B. Tye and José Antonio Garcia, “Who Pays, Who Benefits and Adequate Investment in Natural Gas Infrastructure,” *Energy Law Journal*, Vol. 28, No. 1 (2007): 1-42.

4. As I discuss further below, the Tariff Agreement is a distinctly different proposal from the prior settlement presented to the Commission in 2006. In particular, as the Joint Petition states, “the long-term objective ... [is] to have the Southern Access Extension operate as a pipeline with tariff rates set to reflect a stand alone operation.” Accordingly, this proposal does not establish rolled-in rates, but rather provides a backstopping arrangement whereby early contributions are paid back with interest during the term of the Tariff Agreement.
  
5. The Affidavit of Neil Earnest, attached to the Joint Petition as Exhibit 4, provides volume forecasts for the Extension that conclude that the Extension will be utilized in a wide variety of operating and competitive circumstances. Mr. Earnest’s throughput forecasts demonstrate that any early period deficits on the Extension will be reversed and recovered by later period surpluses. Over the life of the Tariff Agreement, rates on the Extension are designed to essentially recover its cost as a stand alone operation, while shipments on the Lakehead System that do not utilize the Extension are expected to realize upstream benefits as described further below. Thus, the Tariff Agreement resolves the concerns previously expressed by the Commission regarding the Extension Pipeline in the *2006 Settlement Order*.
  
6. Mr. Earnest forecasts that establishing a new market via the Extension results in a substantial increase in barrels shipped on the Lakehead System. Incremental volumes on Lakehead in turn generate numerous benefits for upstream shippers. In particular, as discussed in the Affidavit of Mr. Schrage, higher flow rates lead to a reduction in carrying costs associated with inventory; a reduction in batch pigging costs; and a revenue credit, all of which are explored in more detail below. Having a second pipeline in the Chicago to Patoka corridor also allows for additional benefits. In particular, there is a quality benefit applicable to the Extension in that it allows for greater crude segregation across lines, as well as a benefit to upstream shippers of having alternative routes into markets, as described more fully later. The value derived from these other benefits more than compensates upstream shippers for the small potential risk of under-recovery of early period deficits.

## II. QUALIFICATIONS

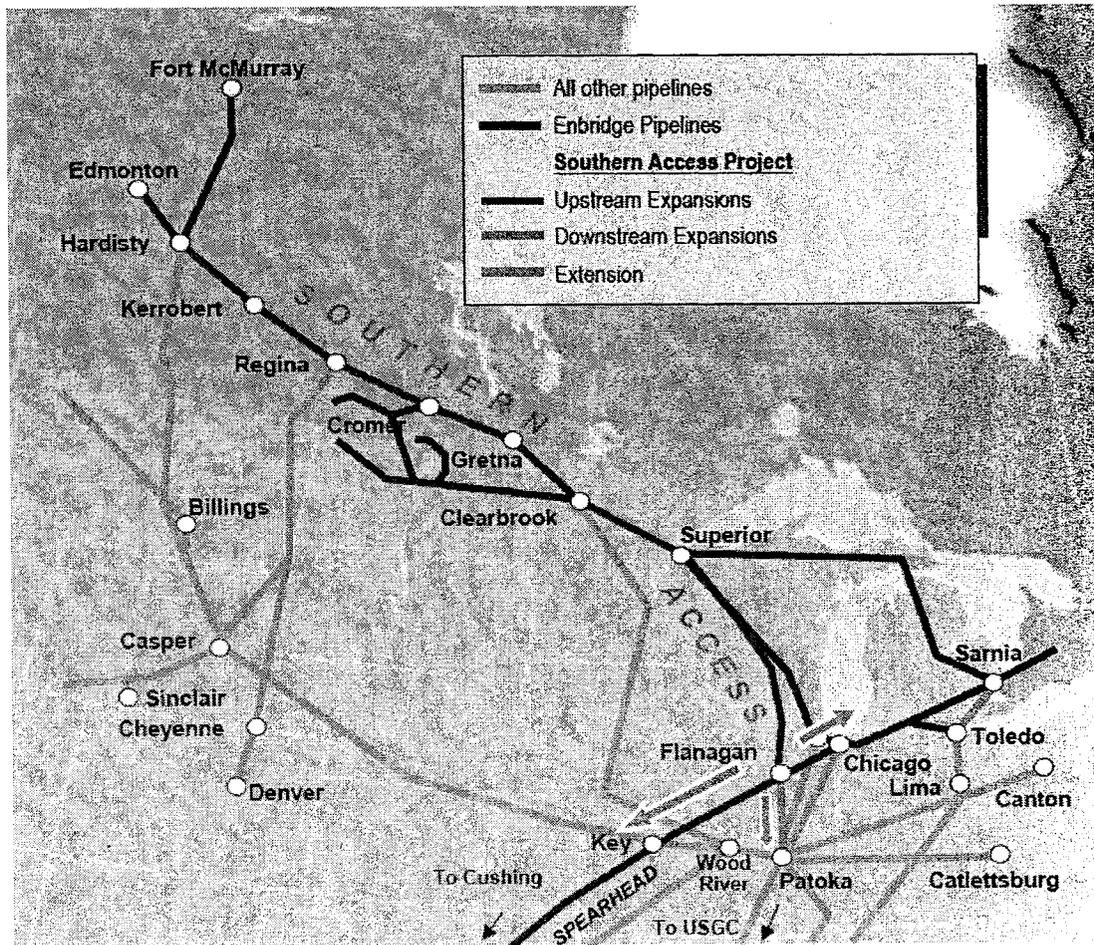
7. I received my Bachelor of Arts in economics from Emory University and my Ph.D. in economics from Harvard University. Upon leaving Harvard, I became an assistant professor of economics and management at the U.S. Air Force Academy. I taught quantitative economic theory, econometrics, policy issues in contemporary economics and quantitative decision methods. After leaving the service in 1972, I joined Charles River Associates, a Boston research and consulting firm, as a senior research associate and became program manager for transportation, and later vice president and a director of the company. I joined Putnam Hayes & Bartlett, Inc. in 1980 as a Principal. In August 1990, I, along with six colleagues, founded *The Brattle Group*, a successor firm resulting from the merger of *The Brattle Group, Inc.* and Incentives Research, Inc.

I am presently a Principal of *The Brattle Group*, an economic, management, and environmental consulting firm located in Cambridge, Massachusetts; Washington, DC; San Francisco, California; London, United Kingdom; and Brussels, Belgium. I have testified before regulatory commissions on the subjects of pipeline regulation generally and more specifically, rate design for regulated industries. These proceedings have involved matters before the Federal Energy Regulatory Commission, the Interstate Commerce Commission ("ICC," now the Surface Transportation Board ("STB")) and the Regulatory Commission of Alaska ("RCA"). I have also written numerous books and articles on these subjects. In addition, I have published two chapters in *Transport Strategy, Policy and Institutions*, a handbook by Permagon/Elsevier.

These qualifications and experience are detailed in my resume, a copy of which is attached as Exhibit WBT-1. As the resume indicates, I have over thirty years experience as a transportation economist.

### III. RELEVANT FACTS AND REGULATORY BACKGROUND

#### Map of Southern Access Project



8. Exhibit WRS-1 from Mr. Schrage’s affidavit, reproduced here for convenience, illustrates how the Extension Pipeline is positioned relative to the existing Enbridge mainline system.<sup>2</sup> Crude petroleum shipments on Lakehead originate primarily from two basins, the Williston Basin in Montana / North Dakota and the Western Canadian Sedimentary Basin in Alberta. Lakehead shipments terminate at various destinations in the U.S. Midwest, as well as points in Eastern Canada and New York State. Superior, Wisconsin, is a major interconnection point, where the Lakehead System diverges to go to (1) Sarnia,

<sup>2</sup> The Enbridge mainline system has two major components. The portions of the system in Canada are owned by Enbridge Pipelines Inc. (“EPI”). The portions in the U.S. are owned by EELP and are commonly referred to as the Lakehead System.

Ontario over the northernmost lines, (2) to the Chicago area (and potentially eastward to Sarnia) via the middle fork, and (3) to Flanagan, Illinois on the southern route, where Lakehead will connect with the Spearhead Pipeline beginning in 2009. Spearhead currently flows south from Chicago to Cushing, Oklahoma. At the time that the Lakehead System connects to Spearhead at Flanagan, the segment of Spearhead from Flanagan to Chicago ("Spearhead North") will be reversed so that crude oil can flow in either direction from Flanagan. The Superior to Flanagan route (Line 61) is part of a previous expansion of the Lakehead System (the "Southern Access Project") whose costs will be recovered in rates via a Commission-approved surcharge on all Lakehead shipments. Clearbrook is also a major delivery point that serves refineries in the Minneapolis / St. Paul area. The configuration of the Lakehead System is discussed in more detail by Mr. Schrage in his affidavit.

9. The *Petition for Declaratory Order* in this case involves a new and unique proposal to establish rates to recover the revenue requirement of the Extension in a manner reflective of stand alone operations and to provide a backstopping arrangement whereby early contributions are paid back with interest during the term of the Tariff Agreement. The proposed Extension would have an initial annual average capacity of 400,000 barrels per day ("bpd"), expandable to 800,000 bpd. As noted above, the Extension was the subject of a previous Commission proceeding. In its *Order on Contested Offer of Settlement*, December 8, 2006, the Commission rejected the proposed rolled-in rate settlement. The *Petition for Declaratory Order* in the present proceeding, which is based on a Tariff Agreement between Petitioners and CAPP (the Canadian Association of Petroleum Producers, the major association representing the Canadian producers whose oil is shipped over the Enbridge mainline system), establishes a unique model which effectively supports construction of the Extension on a stand alone basis. My testimony demonstrates that the concerns raised in the previous Commission proceeding are addressed by the unique Tariff Agreement that has been negotiated.

**IV. RESPONSIVENESS OF THE PETITION TO THE COMMISSION'S CONCERNS**

10. As I indicated above, the Commission's three main concerns about the prior settlement agreement to establish rolled-in rates were: (1) that the Commission was looking for additional evidence of benefits to shippers that do not anticipate that they will use the Extension, (2) that such ratepayers might be required to subsidize construction of the Extension through higher rates, and (3) that the fact that the pipeline would be owned by an affiliated company "heightens the risk" that shippers not using the Extension may cross-subsidize those that do. These three concerns really boil down to one issue: concern that any increase in rates by virtue of rolled-in rate treatment of the Extension to shippers that do not use the Extension must be justified by benefits to those shippers rather than being used to cross-subsidize those that do use the Extension.

11. The new Tariff Agreement, which is the basis for this Petition for Declaratory Order, is not premised on rolled-in rate treatment. The Extension rates will be established on a stand alone basis. The Tariff Agreement provides that until volumes reach 340,000 barrels per day the Lakehead shippers will backstop any shortfall in revenue requirement by paying a deficiency amount that will be tracked over time. At such time as the volumes exceed 340,000 barrels per day, the surplus revenue will be used to pay back the deficiency amounts that were tracked to the Lakehead shippers with interest. At such time as there are three consecutive years of surplus, then no further deficiency payments are to be made. Accordingly, there is no cross-subsidization between shippers.

With respect to the concern that the rolled-in rate structure did not benefit shippers upstream of the Extension, there is evidence that benefits to upstream shippers do arise from increased throughput as a result of this Extension and that those benefits will more than offset the small potential risk of under-recovery of early year deficits. The Affidavits of Mr. Schrage, Mr. Earnest and Mr. Douvris describe and quantify those benefits.

12. There are several features of the proposed Tariff Agreement that support the conclusion that the Extension will pay for itself on a self-sustaining basis over its lifetime:

- (a) The rate calculation for the Extension will employ a forecast throughput equal to 340,000 barrels per day regardless of the actual throughput. It is expected that when actual throughput is less than 340,000 barrels per day, the Extension will incur a deficit and, conversely, a surplus will occur when throughput exceeds 340,000 barrels.
- (b) Any Extension deficit will be recovered by a surcharge to the upstream system rates and any surpluses will be used to fund surcredits to the upstream system rates (subject to certain limits identified below).
- (c) An account will be established that will accumulate a balance of annual deficits and surpluses on the Extension (subject to certain limits identified below). The account will accrue interest on accumulated deficit balances.
- (d) The surcredit will apply only when the cumulative deficit (including interest) is equal to or greater than zero.
- (e) The percentage of the deficit that will be added to the accumulated balance depends on the "Qualifying Volume" on the upstream portion of the pipeline, ranging from a pro rata share to 100 percent. (Irrespective of this feature the full amount of the deficit will be included in the surcharge.) "Qualifying Volume" does not affect the amount of the surcredit accumulated in the account.
- (f) The Tariff Agreement provides that the surcharges will terminate when "self-sufficiency" is achieved on the Extension, defined as a situation where the Extension operates for three consecutive years with annual surpluses on the Extension in each year. Once "self-sufficiency" is realized, subsequent annual deficits are not recovered in Lakehead rates or added to the cumulative account. However, revenue surpluses would continue to be reflected in a surcredit to Lakehead rates and netted out of the cumulative deficiency until the cumulative account is reduced to zero or the agreement terminates. Additional surpluses thereafter are used to reduce the Extension's stand alone rates.

13. This surcharge/surcredit mechanism permits the Extension to achieve the objective of recovering its costs through stand alone rates over the term of the Tariff Agreement, provided the Extension transports sufficient throughput during that period. The Affidavit of Mr. Earnest, a Vice President with Muse, Stancil & Co., sets forth his calculation of the volumes that will be transported on the Extension based on CAPP's latest supply forecasts. Under two supply scenarios and three cases, Mr. Earnest demonstrates that there will be substantial utilization of the Extension over the entire period. In fact, volumes approach or reach the full (expanded) capacity of the Extension in later years under each case. The Affidavit of Mr. Douvris shows that, at the volumes calculated by