# Recalculated Landed Cost Analysis - 1.4 Foreign Exchange Rate

**Nov 2017 to Oct 2032 Transportation Contracting Analysis**

| | Route | Point of Supply | Basis Differential $US/mmBtu | Supply Cost $US/mmBtu | Unitized Demand Charge $US/mmBtu(1)(7) | Commodity Charge $US/mmBtu (1) | Fuel Charge $US/mmBtu (1) | 100% LF Transportation Inclusive of Fuel $US/mmBtu | Landed Cost $US/mmBtu | Landed Cost $Cdn/G | Point of Delivery | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (A) | (B) | ( C ) | = Nymex + | (E) | (F) | (G) | = E + F + | (J) = D + I | (K) | (L) | |
| (6) | TCPL Niagara to Kirkwall | Niagara | -0.449 | 7.0511 | 0.1687 | 0.0000 | 0.0103 | 0.1790 | $7.23 | $9.59 | Kirkwall | |
| (3) | Rover** | Southwest PA | -0.954 | 6.5455 | 0.8000 | 0.0000 | 0.1577 | 0.9577 | $7.50 | $9.96 | Dawn | |
| * | NEXUS / St. Clair | Southwest PA | -0.954 | 6.5455 | 0.7980 | 0.0000 | 0.1728 | 0.9708 | $7.52 | $9.97 | Dawn | Includes St. Clair to Dawn costs |
| (5) | NEXUS/St. Clair (Increase Upper end of toll by 15%) | Southwest PA | -0.954 | 6.5455 | 0.8934 | 0.0000 | 0.1728 | 1.0663 | $7.61 | $10.10 | Dawn | Toll is $ 0.77+ $ 0.635*15%. Includes St. Clair to Dawn costs |
| (6) | Vector (2014 - 2017) | Chicago | -0.103 | 7.3972 | 0.1879 | 0.0017 | 0.0732 | 0.2628 | $7.66 | $10.16 | Dawn | |
| (2) | Dawn | Dawn | 0.177 | 7.6769 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | $7.68 | $10.19 | Dawn | |
| (6) | Michcon (2014-2015) | Michcon Generic | 0.023 | 7.5229 | 0.0613 | 0.0000 | 0.1398 | 0.2011 | $7.72 | $10.25 | Dawn | Includes St. Clair to Dawn costs |
| (6) | Vector (2012 - 2016) | Chicago | -0.103 | 7.3972 | 0.2500 | 0.0990 | 0.0732 | 0.4222 | $7.82 | $10.38 | Dawn | |
| (6) | Trunkline / Panhandle | Trunkline Field Zone | -0.092 | 7.4075 | 0.2195 | 0.0268 | 0.2995 | 0.5458 | $7.95 | $10.55 | Dawn | Includes Ojibway to Dawn costs |
| (6) | Panhandle (2012-2017) | Panhandle Field Zone | -0.377 | 7.1230 | 0.3474 | 0.0439 | 0.4687 | 0.8600 | $7.98 | $10.59 | Dawn | Includes Ojibway to Dawn costs |
| (6) | Alliance / Vector | CREC | -1.067 | 6.4335 | 1.5155 | -0.3279 | 0.3593 | 1.5469 | $7.98 | $10.59 | Dawn | |
| (6) | Panhandle (2014-2015) | Panhandle Field Zone | -0.377 | 7.1230 | 0.4529 | 0.0439 | 0.4687 | 0.9655 | $8.09 | $10.73 | Dawn | Includes Ojibway to Dawn costs |
| (6) | Panhandle (2010-2017) | Panhandle Field Zone | -0.377 | 7.1230 | 0.4529 | 0.0439 | 0.4687 | 0.9655 | $8.09 | $10.73 | Dawn | Includes Ojibway to Dawn costs |
| (2) | TCPL Empress to Dawn | Empress | -0.722 | 6.7782 | 1.3649 | 0.0000 | 0.2745 | 1.6394 | $8.42 | $11.17 | Dawn | |
| (6) | TCPL Empress to Union CDA | Empress | -0.722 | 6.7782 | 1.4812 | 0.0000 | 0.2793 | 1.7605 | $8.54 | $11.33 | Union CDA | |

(1) Unitized Demand Charges, Commodity Charges and Fuel Charges per Maximum Applicable Tariff and include capacity required to flow fuel for downstream pipeline segments
(2) For Reference Only
(3) Toll Estimates used in lieu of official toll for portion of path
(5) Sensitivity Analysis
(6) Existing Union Contract
* indicates path referenced in evidence for this analysis

** The analysis is based on an indicative rate for Rover of $0.80 USD/mmbtu. The analysis does not contemplate potential toll increases arising from factors such as capital cost overruns or pipeline undersubscription.

**Assumptions used in Developing Transportation Contracting Analysis:**

| Annual Gas Supply & Fuel Ratio Forecasts | Point of Supply Col (B) above | Nov 2017 - Oct 2018 | Nov 2018 - Oct 2019 | Nov 2019 - Oct 2020 | Nov 2020 - Oct 2021 | Nov 2021 - Oct 2022 | Nov 2022 - Oct 2023 | Nov 2023 - Oct 2024 | Nov 2024 - Oct 2025 | Nov 2025 - Oct 2026 | Nov 2026 - Oct 2027 | Nov 2027 - Oct 2028 | Nov 2028 - Oct 2029 | Nov 2029 - Oct 2030 | Nov 2030 - Oct 2031 | Nov 2031 - Oct 2032 | Average Annual Gas Supply Cost $US/mmBtu Col (D) above | Fuel Ratio Forecasts Col (G) above |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Henry Hub (NYMEX) | Henry Hub | $4.62 | $5.43 | $6.12 | $6.59 | $6.81 | $6.89 | $7.06 | $7.23 | $7.56 | $8.03 | $8.44 | $8.90 | $9.26 | $9.62 | $9.96 | $7.50 | |
| TCPL Niagara to Kirkwall | Niagara | $4.62 | $5.35 | $5.96 | $6.37 | $6.54 | $6.59 | $6.71 | $6.78 | $7.00 | $7.33 | $7.71 | $8.13 | $8.56 | $8.86 | $9.26 | $7.05 | 0.15% |
| Rover | Southwest PA | $4.09 | $4.88 | $5.50 | $5.89 | $6.06 | $6.12 | $6.25 | $6.32 | $6.53 | $6.85 | $7.19 | $7.58 | $7.98 | $8.28 | $8.66 | $6.55 | 2.41% |
| NEXUS / St. Clair | Southwest PA | $4.09 | $4.88 | $5.50 | $5.89 | $6.06 | $6.12 | $6.25 | $6.32 | $6.53 | $6.85 | $7.19 | $7.58 | $7.98 | $8.28 | $8.66 | $6.55 | 2.64% |
| NEXUS/St. Clair (Increase Upper end of toll by 15%) | Southwest PA | $4.09 | $4.88 | $5.50 | $5.89 | $6.06 | $6.12 | $6.25 | $6.32 | $6.53 | $6.85 | $7.19 | $7.58 | $7.98 | $8.28 | $8.66 | $6.55 | 2.64% |
| Vector (2014 - 2017) | Chicago | $4.63 | $5.41 | $6.07 | $6.52 | $6.73 | $6.81 | $6.97 | $7.14 | $7.46 | $7.91 | $8.31 | $8.75 | $9.09 | $9.42 | $9.73 | $7.40 | 0.99% |
| Dawn | Dawn | $4.82 | $5.62 | $6.29 | $6.76 | $6.98 | $7.07 | $7.24 | $7.42 | $7.75 | $8.21 | $8.63 | $9.08 | $9.43 | $9.77 | $10.09 | $7.68 | 0.00% |
| Michcon (2014-2015) | Michcon Generic | $4.70 | $5.49 | $6.16 | $6.62 | $6.84 | $6.92 | $7.09 | $7.26 | $7.59 | $8.05 | $8.46 | $8.91 | $9.25 | $9.59 | $9.90 | $7.52 | 1.86% |
| Vector (2012 - 2016) | Chicago | $4.63 | $5.41 | $6.07 | $6.52 | $6.73 | $6.81 | $6.97 | $7.14 | $7.46 | $7.91 | $8.31 | $8.75 | $9.09 | $9.42 | $9.73 | $7.40 | 0.99% |
| Trunkline / Panhandle | Trunkline Field Zone | $4.56 | $5.37 | $6.05 | $6.51 | $6.72 | $6.80 | $6.97 | $7.14 | $7.46 | $7.93 | $8.33 | $8.79 | $9.14 | $9.49 | $9.83 | $7.41 | 4.04% |
| Panhandle (2012-2017) | Panhandle Field Zone | $4.42 | $5.20 | $5.84 | $6.29 | $6.48 | $6.56 | $6.71 | $6.88 | $7.19 | $7.63 | $8.02 | $8.44 | $8.76 | $9.07 | $9.36 | $7.12 | 6.58% |
| Alliance / Vector | CREC | $3.69 | $4.44 | $5.08 | $5.54 | $5.77 | $5.87 | $6.04 | $6.23 | $6.55 | $6.99 | $7.36 | $7.78 | $8.09 | $8.39 | $8.67 | $6.43 | 5.58% |
| Panhandle (2014-2015) | Panhandle Field Zone | $4.42 | $5.20 | $5.84 | $6.29 | $6.48 | $6.56 | $6.71 | $6.88 | $7.19 | $7.63 | $8.02 | $8.44 | $8.76 | $9.07 | $9.36 | $7.12 | 6.58% |
| Panhandle (2010-2017) | Panhandle Field Zone | $4.42 | $5.20 | $5.84 | $6.29 | $6.48 | $6.56 | $6.71 | $6.88 | $7.19 | $7.63 | $8.02 | $8.44 | $8.76 | $9.07 | $9.36 | $7.12 | 6.58% |
| TCPL Empress to Dawn | Empress | $4.03 | $4.78 | $5.42 | $5.87 | $6.09 | $6.18 | $6.36 | $6.55 | $6.88 | $7.33 | $7.72 | $8.15 | $8.47 | $8.78 | $9.07 | $6.78 | 4.05% |
| TCPL Empress to Union CDA | Empress | $4.03 | $4.78 | $5.42 | $5.87 | $6.09 | $6.18 | $6.36 | $6.55 | $6.88 | $7.33 | $7.72 | $8.15 | $8.47 | $8.78 | $9.07 | $6.78 | 4.12% |

**Sources for Assumptions:**

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|---|---|
| Gas Supply Prices (Col D): | ICF Base Case Jan 2015 |
| Fuel Ratios (Col G): | Average ratio over the previous 12 months or Pipeline Forecast |
| Transportation Tolls (Cols E & F): | Union Tolls in Effect Jan 2015 |
| Foreign Exchange (Col K): | $1 US = 1.4 CDN    Updated to 1.4 exchange as per Exhibit B.T3.Staff.18 |
| Energy Conversions (Col K): | 1 dth = 1 mmBtu = 1.055056 |

Union's Analysis Completed:
* indicates path referenced in evidence for this analysis