

Stakeholder Comments
AESO 2006 Contribution Policy Study: Preliminary Report
June 7, 2006

Written comments were received from:

ADC

AltaLink

EnCana

EPCOR

IPCAA

Kinder Morgan

RDLE

TransCanada



May 31, 2006

Lee Ann Leduc
Senior Regulatory Analyst
AESO
900, 736-8 Avenue S.W.
Calgary, Alberta

Dear Ms. Leduc

Re: Comments on AESO 2006 Customer Contribution Study

The ADC appreciates the opportunity to share our comments on the AESO's 2006 Customer Contribution Study.

There are a few details that the ADC would like to see the AESO include in their final customer contribution study. First, the cost function should be focused on standard facilities that are designed to accommodate the contract capacity at the substation. There are a number of substations listed in the study that appear oversized, or may have redundant transformers. Additionally, if not already incorporated into the study, costs associated with any facilities built under a prior definition of 'standard facilities' should both be aligned and updated to accord with the current definition, or be excluded from the study.

It would also be helpful if the AESO could provide details whether non-linear functions between costs and capacity sizes were examined in addition to the linear functions.

Thank you again for the opportunity to provide comments. We would be happy to meet with the AESO to discuss our views or answer any questions.

Kind regards,

(via e-mail)

Carrie Haines
Valeo Power
On behalf of the Alberta Direct Connect Consumers Association (ADC))

**AESO 2006 Customer Contribution Study
May 11, 2006 Preliminary Results — Stakeholder Comment Form**

Comments From: Alberta Direct Connect Consumer Association
 Date: May 31st, 2006
 Contact: Carrie Haines
 Phone: (403) 770-1164
 E-mail: carrie@valeopower.com

1. Incorporation of Sufficient Data Points

The data used by the AESO for 28 substations (comprising all load-only substations interconnected from 1999 to 2006 for which adequate data exists) is appropriate for the determination of an average project cost function. Support
 Oppose
 Indifferent

Reasons for Stakeholder Position:
 Has the AESO used the current definition of standard facilities to align the costs of each of the projects? For example, if a project was built with two transformers and at the time this was considered 'standard', but would not be considered 'standard' under the current facility standards, has this been taken into account? In other words, are there costs included in the study related to facilities that the AESO would now not invest in (would now be customer costs) due to a change in the definition of standard facilities?

2. Data Analysis and Findings

The AESO analyzed a number of variables and possible relationships, and presented those with the highest correlation values in the study document. Correlation factors were generally low for many of the possible relationships, and provided limited support for a causal relationship between the examined variables. Support
 Oppose
 Indifferent

Reasons for Stakeholder Position:
 On page 7 of the study, part of the scope identified by the AESO was:
 "The intent would be to recommend an investment function that represents the average cost per MW of capacity but will investigate whether the data exhibits any significant economies of scale, if the relationship between contract capacity and cost is linear or non-linear in nature or if relationships other than contract capacity exist."
 Did the AESO examine the relationship between variables using non-linear equations? If so, what were the results? If not, please explain why.

3. Calculation of a Raw Interconnection Project Cost Function

Given the information collected as part of this study, the cost functions developed by the AESO appropriately represent the data examined. Support
 Oppose
 Indifferent

Reasons for Stakeholder Position:
 The cost functions represent the data in a linear format. It would be useful to know if other non-linear relationships were also explored, prior to a decision over whether the linear equations are the best representation of the cost/capacity relationship.

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4. Highest Correlation of Single Linear Function

If a single linear function is desired, the study supports the following average cost function between standard facility costs and DTS contract capacity:

Cost = \$3.877 million + (\$0.133 × DTS MW).

Support
 Oppose
 Indifferent

Reasons for Stakeholder Position:
[Please see the answer to 3.](#)

4. Highest Correlation of Two-Segment Linear Function

If a two-segment linear function is desired, the study supports the following two-segment average cost function between standard facility costs and DTS contract capacity:

For DTS MW ≤ 13 MW, Cost = \$0.429 million + (\$0.545 × DTS MW).
For DTS MW > 13 MW, Cost = -\$2.201 million + (\$0.404 × DTS MW).

Support
 Oppose
 Indifferent

Reasons for Stakeholder Position:
[Please see the answer to 3.](#)

Additional Comments

- Some of the substations appear to be overbuilt. It would be constructive to see the costs associated with the equipment required to optimally size the substation for the contracted DTS level.
- If some of the DTS contract capacities have changed from when originally built, it would also be constructive to have the original and the updated values (including the date the contract capacity changed) noted.

Please return this form with your comments by May 30, 2006, to:

Lee Ann Leduc
Senior Regulatory Analyst
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Phone: (403) 539-2741
Fax: (403) 539-2524

**AESO 2006 Customer Contribution Study
May 11, 2006 Preliminary Results — Stakeholder Comment Form**

Comments From: AltaLink Management LTD.
Date: May 30, 2006
Contact: Jerome Johnson
Phone: 403-267-4296
E-mail: jerome.johnson@altalink.ca

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| 1. Incorporation of Sufficient Data Points | |
| The data used by the AESO for 28 substations (comprising all load-only substations interconnected from 1999 to 2006 for which adequate data exists) is appropriate for the determination of an average project cost function. | <input checked="" type="checkbox"/> Support <input type="checkbox"/> Oppose <input type="checkbox"/> Indifferent |
| Reasons for Stakeholder Position: The use of the most recent cost information makes sense, but has some concerns with the limited number of substations used over the proposed period. We suggest that a comparison of substations sampled from 1999 to 2005, to a random sample of facilities that exist in 2006, or a year over year comparison of similar substations from 1999 to 2006. This will provide adequate sampling at various capacities levels, making this assessment and cost function less distorted. | |

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| 2. Data Analysis and Findings | |
| The AESO analyzed a number of variables and possible relationships, and presented those with the highest correlation values in the study document. Correlation factors were generally low for many of the possible relationships, and provided limited support for a causal relationship between the examined variables. | <input checked="" type="checkbox"/> Support <input type="checkbox"/> Oppose <input type="checkbox"/> Indifferent |
| Reasons for Stakeholder Position: Agreed, there is little or no correlation in values of the study. | |

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|---|--|
| 3. Calculation of a Raw Interconnection Project Cost Function | |
| Given the information collected as part of this study, the cost functions developed by the AESO appropriately represent the data examined. | <input type="checkbox"/> Support <input type="checkbox"/> Oppose <input checked="" type="checkbox"/> Indifferent |
| Reasons for Stakeholder Position: This is a preliminary review with reasonable data used for the study. Although r^2 values are extremely low, and statistically inappropriate to use. | |

4. Highest Correlation of Single Linear Function

If a single linear function is desired, the study supports the following average cost function between standard facility costs and DTS contract capacity:

$$\text{Cost} = \$3.877 \text{ million} + (\$0.133 \times \text{DTS MW}).$$

- Support
 Oppose
 Indifferent

Reasons for Stakeholder Position:

We oppose because given the low r^2 value (.096) is statistically not appropriate to use in determining a viable cost function.

4. Highest Correlation of Two-Segment Linear Function

If a two-segment linear function is desired, the study supports the following two-segment average cost function between standard facility costs and DTS contract capacity:

$$\text{For DTS MW} \leq 13 \text{ MW, Cost} = \$0.429 \text{ million} + (\$0.545 \times \text{DTS MW}).$$

$$\text{For DTS MW} > 13 \text{ MW, Cost} = -\$2.201 \text{ million} + (\$0.404 \times \text{DTS MW}).$$

- Support
 Oppose
 Indifferent

Reasons for Stakeholder Position:

Same as above

Additional Comments

The AESO may want to look at alternative, less abstruse methods of determining a cost function. The AESO should also look at industry trends, impacts to TFO's and customers, when determining a fair and equitable cost function. Substations propose use are determined at inception, therefore determining who is responsible for certain cost should be based on who is benefiting from the Substation.

Please return this form with your comments by May 30, 2006, to:

Lee Ann Leduc
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Fax: (403) 539-2524

AESO 2006 Customer Contribution Study
May 11, 2006 Preliminary Results — Stakeholder Comment Form

Comments From: EnCana Corporation
Date: May 31, 2006
Contact: Rod Crockford, Rinde Powell, Roger Belland
Phone:
E-mail:

1. Incorporation of Sufficient Data Points

The data used by the AESO for 28 substations (comprising all load-only substations interconnected from 1999 to 2006 for which adequate data exists) is appropriate for the determination of an average project cost function.

- Support
 Oppose
 Indifferent

Reasons for Stakeholder Position:

The data is the appropriate type of data but needs to be reviewed and its reliability verified. For almost each project some category of costs is missing – why? (For example, four projects do not include any labour costs, several have no SCADA costs, some have no transmission line costs.) Where data is aggregated within other categories a reliable estimate should be used to re-allocate costs from other categories. If the data is missing, is the total project cost too low? Is it a reliable estimate of the interconnection costs?

Where a cost component is outside the typical range, there should be a review to determine whether it is a data anomaly or whether there are specific characteristics of the interconnection that lead to abnormal costs. Why for example do the Transmission line costs range from \$2,000/km to \$2,600,000/km? Why do labour costs range from less than \$1,000,000 to over \$6,000,000? Why does the “substation costs” (column P, Q, R) not correlate with the “sub equipment” category (column T) under the total project costs?

The data appears to include the cost of GST. If the GST is included, it should be removed before conducting any analysis.

Before placing weight on any statistical findings, there needs to be some assurance that the quality of the data is acceptable. We recommend that the AESO take the time to re-examine the data to assure its quality before proceeding with further analytical studies.

2. Data Analysis and Findings

The AESO analyzed a number of variables and possible relationships, and presented those with the highest correlation values in the study document. Correlation factors were generally low for many of the possible relationships, and provided limited support for a causal relationship between the examined variables.

- Support
 Oppose
 Indifferent

Reasons for Stakeholder Position:

Is the AESO asking whether we agree that the R^2 is low in the linear regressions performed by the AESO? The data speaks for itself.

Is the AESO asking whether we agree that it has completed a comprehensive analysis, and that analysis finds a weak relationship? Then we would say, no. See comments under item 3.

3. Calculation of a Raw Interconnection Project Cost Function

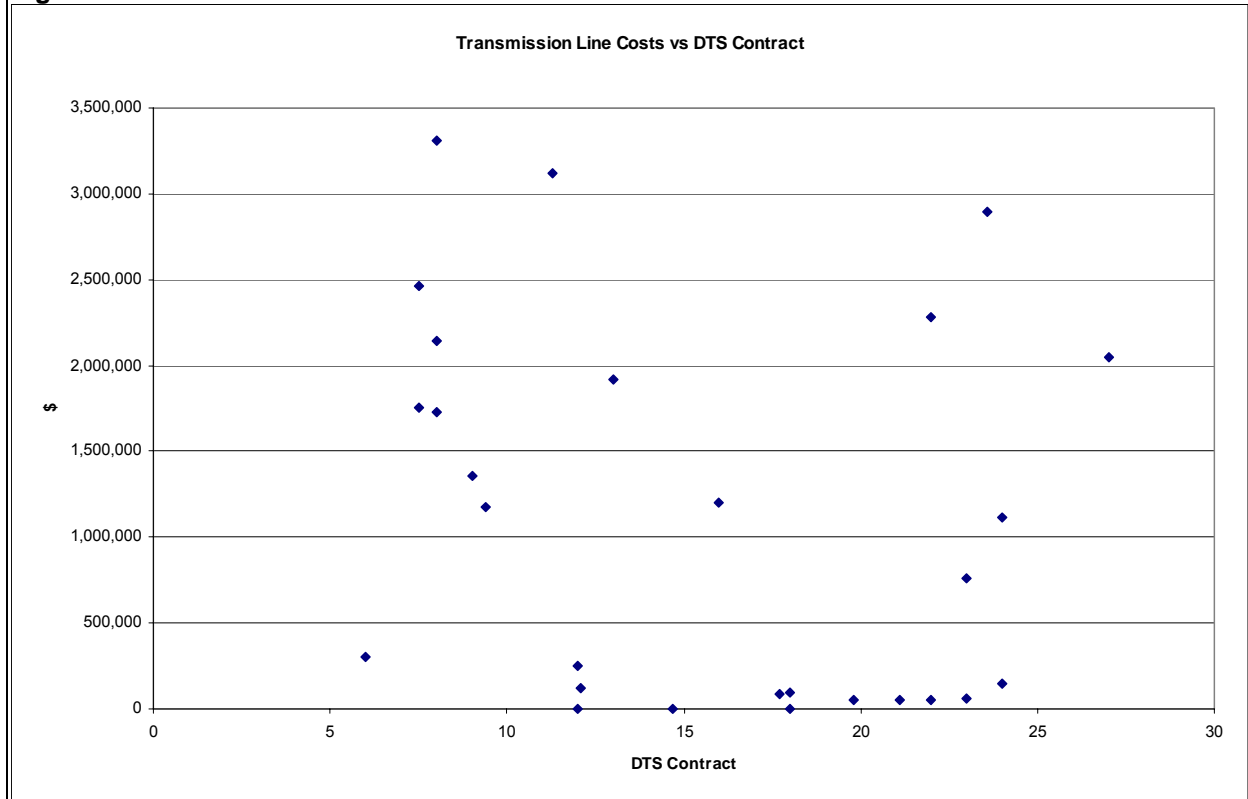
Given the information collected as part of this study, the cost functions developed by the AESO appropriately represent the data examined.

- Support
- Oppose
- Indifferent

Reasons for Stakeholder Position:

In the various studies, the AESO attempts to correlate DTS Contract amounts to various definitions of “Local” (radial line + POD) costs. This is a very crude approach to understanding interconnection costs because certain of these costs would normally have only a weak relationship to the DTS contract amounts. Radial transmission line costs for example are only weakly related to the DTS contract amounts. The more significant factor is location and therefore the distance of the radial line required to connect the POD to “the system”. As you can see in Figure 1, small DTS contract projects can have high radial line costs and equally large DTS contract projects can have low transmission line costs. Including radial line costs in any linear relationship with DTS contract amounts will accordingly lead to weaker results.

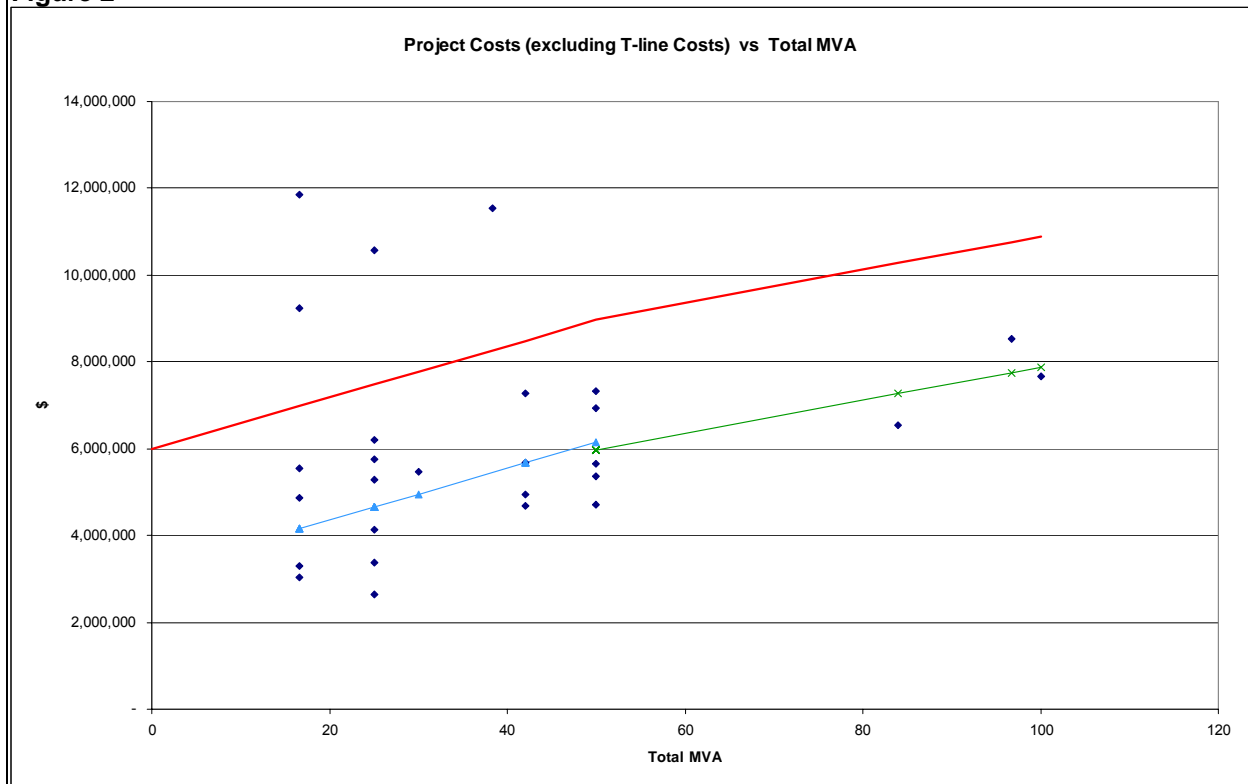
Figure 1



Likewise, POD specific costs (i.e. transformers, breakers) are normally sized according to MVA requirements not peak MW requirements. Furthermore, the MVA sizing appears to often relate to the standardization of equipment. This creates a step-wise relationship that is not consistent with the AESO's attempt to fit a linear (straight line curve) between DTS contracts and POD costs. Instead, we suggest the AESO investigate the relationship between POD specific costs and the total MVA capacity of the new POD.

Figure 2 illustrates this relationship using 27 of the 28 reported projects (Project #230 – Kinosis, is omitted due to the extraordinarily high MVA rating of 250 MVA in comparison to the DTS contract amount of 18MW). As can be seen in Figure 2, most projects are constructed using common MVA capacity of 16.6, 25, 30, 42, or 50 MVA. There is a mildly linear relationship, but situation specific circumstances appears to create a dispersion of costs at each standard size. Using this linear relationship and an appropriate intercept value, an envelop curve can be created to encompass the majority of projects (Note the slope of the curve is reduced after 50 MVA to reflect what appear to be economies of scale. However, a small sample of three data points is insufficient to be conclusive and it is suggested that the AESO investigate the costs relationship directly through discussion with the TFO planners and cost estimators.)

Figure 2



In light of these relationships, it is suggested that the AESO examine an alternative approach to the investment policy by creating an aggregate investment level derived from radial transmission line and POD costs. For instance, the combine investment could be comprised of an allowance of \$2 Million

(reflecting approximately the 80% percentile of the observed transmission line costs) plus an envelope curve similar to that in Figure 2. (Since the above relationship is based on total project costs, the investment level would than be reduced by the amount of optional facilities.)

4. Highest Correlation of Single Linear Function

If a single linear function is desired, the study supports the following average cost function between standard facility costs and DTS contract capacity:

Cost = \$3.877 million + (\$0.133 × DTS MW).

- Support
- Oppose
- Indifferent

Reasons for Stakeholder Position:

See comments for item 3. It is premature to conclude that the linear relationship estimated by the AESO is reasonable. Further analysis of the data quality and of the causes of “Local” (radial line +POD costs) is required. We suggest the AESO re-examine the driver of costs and the effect of standardized equipment selection on the resulting costs.

4. Highest Correlation of Two-Segment Linear Function

If a two-segment linear function is desired, the study supports the following two-segment average cost function between standard facility costs and DTS contract capacity:

For DTS MW ≤ 13 MW, Cost = \$0.429 million + (\$0.545 × DTS MW).

For DTS MW > 13 MW, Cost = -\$2.201 million + (\$0.404 × DTS MW).

- Support
- Oppose
- Indifferent

Reasons for Stakeholder Position:

See comments for item 3 and 4.

Additional Comments

While the AESO is correct to adhere to the Board's directions, those direction should not prevent the AESO from investigating casual relationships that provide a better understanding of cost drivers and hence a more sound approach to constructing a formula for investment levels (and accordingly contribution levels). The Board is always interested in the best available information. Hence, the AESO should seek to fulfill the Board's direction to develop a simple "average cost per MW of capacity" representation of costs, but it should not stop at this view alone if it is aware of a more appropriate formulae for investment levels and contribution calculations. As suggested herein, a further avenue should be to examine the causes of POD-specific costs and radial lines and to build an investment level in recognition that such costs are caused for different reasons.

We recommend that the AESO hold a stakeholder conference in conjunction with the release of the next version of the study.

Please return this form with your comments by May 30, 2006, to:

Lee Ann Leduc
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Fax: (403) 539-2524

**AESO 2006 Customer Contribution Study
May 11, 2006 Preliminary Results — Stakeholder Comment Form**

Comments From: EPCOR Utilities Inc.
Date: May 31, 2006
Contact: Richard Stout
Phone: (780) 412-3017
E-mail: rstout@epcor.ca

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| 1. Incorporation of Sufficient Data Points | |
| The data used by the AESO for 28 substations (comprising all load-only substations interconnected from 1999 to 2006 for which adequate data exists) is appropriate for the determination of an average project cost function. | <input type="checkbox"/> Support <input type="checkbox"/> Oppose <input checked="" type="checkbox"/> Indifferent |
| Reasons for Stakeholder Position: The chosen final sample size appears to be quite small, which could potentially skew the data towards extreme outliers. However, EPCOR agrees that the chosen data set is the best available data at this time. | |

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| 2. Data Analysis and Findings | |
| The AESO analyzed a number of variables and possible relationships, and presented those with the highest correlation values in the study document. Correlation factors were generally low for many of the possible relationships, and provided limited support for a causal relationship between the examined variables. | <input type="checkbox"/> Support <input type="checkbox"/> Oppose <input checked="" type="checkbox"/> Indifferent |
| Reasons for Stakeholder Position: EPCOR agrees with the position that correlation factors are low and provide limited support for a causal relationship. | |

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| 3. Calculation of a Raw Interconnection Project Cost Function | |
| Given the information collected as part of this study, the cost functions developed by the AESO appropriately represent the data examined. | <input type="checkbox"/> Support <input type="checkbox"/> Oppose <input checked="" type="checkbox"/> Indifferent |
| Reasons for Stakeholder Position: The developed cost functions seem reasonable given the data set. | |

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| 4. Highest Correlation of Single Linear Function | |
| If a single linear function is desired, the study supports the following average cost function between standard facility costs and DTS contract capacity: Cost = \$3.877 million + (\$0.133 × DTS MW). | <input type="checkbox"/> Support <input type="checkbox"/> Oppose <input checked="" type="checkbox"/> Indifferent |
| Reasons for Stakeholder Position: EPCOR agrees that the single linear function presented in the study best describes the relationship between standard facility costs and DTS contract capacity. However, due to the low correlation factor and the increases in the investment levels | |

(\$1.377 million in minimum investment allowance and \$33,000 per MW of project capacity) from the Direction 13 directive, EPCOR feels this is the best of limited alternatives.

5. Highest Correlation of Two-Segment Linear Function

If a two-segment linear function is desired, the study supports the following two-segment average cost function between standard facility costs and DTS contract capacity:

For DTS MW \leq 13 MW, Cost = \$0.429 million + (\$0.545 \times DTS MW).

For DTS MW $>$ 13 MW, Cost = -\$2.201 million + (\$0.404 \times DTS MW).

- Support
- Oppose
- Indifferent

Reasons for Stakeholder Position: EPCOR agrees that this two-segment linear function best describes the relationship between standard facility costs and DTS contract capacity, as presented in the study, and that its correlation factor is the most balanced throughout the data set (and better than the single linear function describe above). However, the correlation factor is still relatively low and the dual segment linear function incites customers to build larger projects as their contributions are the same for a both a $>$ 13MW and $<$ 13 MW project but they get the benefit of greater MW. Two-segment linear function is preferred over the single-segment linear function as it would provide the smaller projects with some benefits, a lower initial investment outlay as compared to that for the larger projects.

However, the above set of 2-segment equations seems to pose some problem with the “step” change between the smaller and larger size projects, as the result would suggest a substantial reduction in contribution requirement from the larger projects than from the smaller projects. For example, if two projects with size of 12 MW and 14 MW, the respected contribution is calculated as \$6.97 million and \$3.46 million, almost 2-fold difference in contribution cost over a 2 MW increment.

Additional Comments

EPCOR is conscious of the Board directions given to the AESO in Decision 2005-096, and understand that they must be satisfied. Notwithstanding these directives, EPCOR urges the AESO to reconsider contribution policy from first principles in its next application. The purpose of a Contribution Policy is to address fairness in cost responsibility between new customers (requiring extensions) and existing customers whose rates are affected by the costs that are “systemized” but who themselves were once new and benefited from an existing system.

The determination of fair treatment in these circumstances is essentially an arbitrary one, for which statistical analysis may be supportive but not determinative. Given this purpose of Contribution Policy, the overarching principles of rate design that are most relevant for are fairness, stability and predictability over time and ease of administration. EPCOR is concerned that the pursuit of statistical precision not be substituted for appropriate consideration of the relevant rate design principles and in particular the stability, predictability and consistency of Contribution Policy application over time.

Please return this form with your comments by May 30, 2006, to:

Lee Ann Leduc
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E-mail: leeann.leduc@ieso.ca
Phone: (403) 539-2741
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**AESO 2006 Customer Contribution Study
May 11, 2006 Preliminary Results — Stakeholder Comment Form**

Comments From: IPCAA
 Date: May 24, 2006
 Contact: Ron Mikkelsen / Dan Macnamara
 Phone: (403) 263-3326 / 266-3180
 E-mail: consult@drazen.com / dmacnamara@shaw.ca

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| 1. Incorporation of Sufficient Data Points | |
| The data used by the AESO for 28 substations (comprising all load-only substations interconnected from 1999 to 2006 for which adequate data exists) is appropriate for the determination of an average project cost function. | <input type="checkbox"/> Support <input type="checkbox"/> Oppose <input checked="" type="checkbox"/> Indifferent |
| Reasons for Stakeholder Position: | |

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|---|--|
| 2. Data Analysis and Findings | |
| The AESO analyzed a number of variables and possible relationships, and presented those with the highest correlation values in the study document. Correlation factors were generally low for many of the possible relationships, and provided limited support for a causal relationship between the examined variables. | <input type="checkbox"/> Support <input checked="" type="checkbox"/> Oppose <input type="checkbox"/> Indifferent |
| Reasons for Stakeholder Position: | |
| A significant review of the data should preclude any analysis to ensure consistency. Next, the purpose of the analysis should be clearly stated and related policy questions identified and addressed. Neither of these steps appear to have been taken. | |
| Preliminary review of the data indicates some issues with respect to the data collected. For example: (i) a number of projects have significant transmission line costs but for a number the length of the transmission line is shown as zero km (IPL is shown with a transmission line cost of nearly \$3 million, but a length of zero), (ii) the transmission line costs for five projects from 20 to 50 km of line are shown as roughly \$100,000 (iii) the MVA rating of Kinosis is shown as 250 MVA (highest of all substations), (iv) Kinosis is shown as having 2 transformers although Decision 2006-046 indicates a single transformer installation, (v) a transformer at Britnell was moved from Paintearth – how was the cost for this recorded? (vi) why is the Ellis transformation cost so high relative to other substations? | |
| There may be issues related to consistency of costs that are being compared. For example: (a) a number of projects have overhead costs included in the components (i.e. the overhead subtotal is zero), for others it is shown separately, (b) the overhead costs for Ribstone are nearly three times the next highest value, why? (c) at PODs where there are optional facilities, were the optional facilities included or excluded from substation costs?, (d) the Mariana substation has the lowest substation cost and the lowest customer cost for its DTS capacity, but 75% of its costs were deemed system costs. Did the allocation between system and customer distort the analysis? | |
| Additional data may be required, for example the substation capability including only standard | |

costs. It is not clear if the second transformer at many installations is an optional facility.

3. Calculation of a Raw Interconnection Project Cost Function

Given the information collected as part of this study, the cost functions developed by the AESO appropriately represent the data examined.

- Support
 Oppose
 Indifferent

Reasons for Stakeholder Position:

Some fundamental questions as to what the study is intended to achieve were not addressed. For example, the question of whether the analysis should be undertaken on the basis of capacity of the POD or the DTS contract level was not discussed. Based on the data, the larger the MVA rating of the substation the lower the DTS contract capacity as a % of MVA rating. Stated another way, is the analysis meant to establish the cost of the facilities built or the cost of the facilities utilized? The answer to this would impact the analysis undertaken.

A related question may be the impact of voltage level on substation costs. The three highest cost substations and two of highest cost transformer installations are 240 kV facilities. While the voltage level appears to impact the costs, it may or may not be appropriate to alter the investment level based on voltage level.

4. Highest Correlation of Single Linear Function

If a single linear function is desired, the study supports the following average cost function between standard facility costs and DTS contract capacity:

Cost = \$3.877 million + (\$0.133 × DTS MW).

- Support
 Oppose
 Indifferent

Reasons for Stakeholder Position:

Analysis is premature pending data validation and reconciliation.

4. Highest Correlation of Two-Segment Linear Function

If a two-segment linear function is desired, the study supports the following two-segment average cost function between standard facility costs and DTS contract capacity:

For DTS MW ≤ 13 MW, Cost = \$0.429 million + (\$0.545 × DTS MW).

For DTS MW > 13 MW, Cost = -\$2.201 million + (\$0.404 × DTS MW).

- Support
 Oppose
 Indifferent

Reasons for Stakeholder Position:

Analysis is premature pending data validation and reconciliation.

**AESO 2006 Customer Contribution Study
May 11, 2006 Preliminary Results — Stakeholder Comment Form**

Comments From: Kinder Morgan Canada Inc. (KMC) part of
Pipeline Power Group & Associates (PPGA)

Date: May 31, 2006

Contact: Neall Banner (KMC), Ed de Palezieux/Jamie Shand (PPGA)
Phone: 403-514-6552, 403-650-4544
E-mail: neall_banner@kindermorgan.com : ed.depalezieux@shaw.ca

| 1. Incorporation of Sufficient Data Points | |
|--|---|
| <p>The data used by the AESO for 28 substations (comprising all load-only substations interconnected from 1999 to 2006 for which adequate data exists) is appropriate for the determination of an average project cost function.</p> | <p>X Support <input type="checkbox"/> Oppose <input type="checkbox"/> Indifferent</p> |
| <p>Reasons for Stakeholder Position:</p> <p>Generally, KMC is supportive of strong quantitative analysis. In cases where there is a lack of data or the data quality is poor, KMC is supportive of using other principles of cost allocation, such as minimizing rate shock and rate equity. However, in this instance, the AESO must build a contribution function with a relatively small data set. KMC is supportive of the AESO's efforts but has several concerns over the data.</p> <p>First, KMC highlights the limited amount of data that is present for the analysis. Since 1999 only 28 projects qualify for the analysis. This relatively small data set makes it difficult to reliably breakdown overall costs into their subcomponents. Smaller subsets of the 28 POD's will create even less data in each subset, and a less reliable analysis.</p> <p>KMC also believes that the data provided by the AESO remains only partially complete, with questionable allocation of costs between cost categories. For example, when a cost/km calculation is made from the data, based upon the transmission costs and the km line length by POD, the data reveals a range of costs on 138 kV lines from \$0/km to \$0.88 Million/km. While the overall project costs seem reasonable, the cost category breakdowns appear questionable.</p> <p>Finally, KMC is concerned over the inflation adjustments made to the base data. For the past few years, Alberta's economy has been more robust than the rest of the nation and construction costs have increased more in Alberta than the national average. KMC believes that the inflation adjustments provided by the AESO are inadequate and therefore the associated cost functions created by the AESO are at a lower than appropriate level.</p> <p>In summary, KMC is supportive of using the data provided by the AESO, because it is the only data available, however KMC recommends that the AESO:</p> <ul style="list-style-type: none"> - utilize the entire data set as opposed to it's sub-components - adjust for an "Alberta" specific inflation index. | |

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2. Data Analysis and Findings

The AESO analyzed a number of variables and possible relationships, and presented those with the highest correlation values in the study document. Correlation factors were generally low for many of the possible relationships, and provided limited support for a causal relationship between the examined variables.

- Support
 Oppose
 Indifferent

Reasons for Stakeholder Position:

As stated in the first response, KMC agrees with the AESO that the correlation values are less than ideal. However, a cost function must be developed and the data used by the AESO is the only available data.

3. Calculation of a Raw Interconnection Project Cost Function

Given the information collected as part of this study, the cost functions developed by the AESO appropriately represent the data examined.

- Support
 Oppose
 Indifferent

Reasons for Stakeholder Position:

KMC is generally supportive of the cost functions developed by the AESO that are based on the entire data set, not smaller subsets of the data.

4. Highest Correlation of Single Linear Function

If a single linear function is desired, the study supports the following average cost function between standard facility costs and DTS contract capacity:

Cost = \$3.877 million + (\$0.133 × DTS MW).

- Support
 Oppose
 Indifferent

Reasons for Stakeholder Position:

KMC supports this single linear function as the best fit regression line to the available data. As stated previously, KMC is supportive of this function since it is based upon the entire data set. KMC reiterates its view that the inflation adjustments made to the base data do not reflect the Alberta market. Therefore, KMC supports efforts by the AESO to use an Alberta specific inflation adjustment and create a new regression analysis on this new data.

4. Highest Correlation of Two-Segment Linear Function

If a two-segment linear function is desired, the study supports the following two-segment average cost function between standard facility costs and DTS contract capacity:

For DTS MW ≤ 13 MW, Cost = \$0.429 million + (\$0.545 × DTS MW).

For DTS MW > 13 MW, Cost = -\$2.201 million + (\$0.404 × DTS MW).

- Support
 Oppose
 Indifferent

Reasons for Stakeholder Position:

KMC is not supportive of the two-segment linear function. First, the relatively small sample size does not lend itself to further dissection of costs. Additionally, KMC is unsure of how the breakpoint of 13MW was determined, and how one breakpoint was chosen, as opposed to many distinct breakpoints. Generally, KMC is not supportive of rate change breakpoints that are chosen for the sake of convenience, or that are based upon an insufficient number of data points. Second, the two-segment function leads to issues for POD's that contract at/near the breakpoint.

Additional Comments

Please return this form with your comments by May 30, 2006, to:

Lee Ann Leduc
Senior Regulatory Analyst
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May 30, 2006



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Dear Ms. Leduc

SUBJECT: AESO 2007 Tariff — Preliminary Customer Contribution Policy Study

Further to your May 12th letter, I am responding on behalf of the Cities of Red Deer and Lethbridge to your invitation for comment. The Cities have reviewed the AESO's preliminary report and have observed that the AESO is not yet in a position to recommend a course of action. Given the weaknesses of the current maximum investment formula noted by the AESO, we expect that you will be proposing alternative(s) with a recommendation for the 2007 tariff application.

Based on the AESO's preliminary report, however, the Cities also expect that the issue may not be fully resolved in time for the 2007 tariff application. We draw this conclusion from the AESO's report, which suggests that a customer's contract demand can explain no more than 25% of a project's standard facilities cost or its customer-related cost. With the remaining 75% unexplained, one cannot assess the feasibility or appropriateness of incorporating additional, but currently unknown factors into a maximum investment function. Thus, it would appear that additional study is required to first obtain additional data points (i.e. general project characteristics) and test hypotheses.

Given the data limitations described in the AESO's preliminary report, additional time will be required to either 'scrub' existing data for more information or to begin collecting new data on a go forward basis. This suggests that to fully comply with the spirit and intentions of the Board's directions, the AESO should develop a long-term work plan to identify actions and timelines that will lead to improvements to the 'Raw Interconnection Project Cost Function.' In the interests of transparency and credibility, we would highly recommend that the AESO include this work-plan in its 2007 tariff application. This will also promote discussion in a public forum and guidance from the Board.

Sincerely,

<sent by email>

Nigel Chymko
President

**AESO 2006 Customer Contribution Study
May 11, 2006 Preliminary Results — Stakeholder Comment Form**

Comments From: TransCanada Energy
Date: June 6, 2006
Contact: Cheryl Terry / Dan Levson
Phone: 920-2092 / 920-2095
E-mail: Chery_Terry@TransCanada.com / Dan_Levson@TransCanada.com

| | |
|--|--|
| 1. Incorporation of Sufficient Data Points | |
| The data used by the AESO for 28 substations (comprising all load-only substations interconnected from 1999 to 2006 for which adequate data exists) is appropriate for the determination of an average project cost function. | <input checked="" type="checkbox"/> Support <input type="checkbox"/> Oppose <input type="checkbox"/> Indifferent |
| Reasons for Stakeholder Position: TransCanada supports a greater emphasis on actual costs. While the scenario approach used in the 2006 GTA produced more data points, the data points were not independent of each other and that reduces their value from a statistical perspective. | |

| | |
|---|--|
| 2. Data Analysis and Findings | |
| The AESO analyzed a number of variables and possible relationships, and presented those with the highest correlation values in the study document. Correlation factors were generally low for many of the possible relationships, and provided limited support for a causal relationship between the examined variables. | <input checked="" type="checkbox"/> Support <input type="checkbox"/> Oppose <input type="checkbox"/> Indifferent |
| Reasons for Stakeholder Position: While disappointed that the correlations are quite low, it appears that the AESO has undertaken a reasonably detailed examination of possible correlations. The only additional comparisons that might improve the correlations between cost and DTS capacity, for AESO consideration, are (1) examine transmission costs per km of construction for different voltage levels. (2) examine costs versus capacity for all of the projects for each of the TFOs (or at least the largest two TFOs). | |

| | |
|--|--|
| 3. Calculation of a Raw Interconnection Project Cost Function | |
| Given the information collected as part of this study, the cost functions developed by the AESO appropriately represent the data examined. | <input type="checkbox"/> Support <input type="checkbox"/> Oppose <input checked="" type="checkbox"/> Indifferent |
| Reasons for Stakeholder Position: TransCanada was unable to confirm the statistical analysis conducted by the AESO and therefore cannot support or oppose the validity of the analysis at this time. | |

4. Highest Correlation of Single Linear Function

If a single linear function is desired, the study supports the following average cost function between standard facility costs and DTS contract capacity:

$$\text{Cost} = \$3.877 \text{ million} + (\$0.133 \times \text{DTS MW}).$$

- Support
 Oppose
 Indifferent

Reasons for Stakeholder Position: TransCanada cannot support this linear function at this time as there is insufficient evidence that it properly represents the average cost function.

TransCanada recommends the AESO consider conducting the following analysis:

1. Examine four to six of the largest outliers in Figure 6 to see if they can be removed from the analysis as anomalies to see if the remaining points produce a reasonable correlation.
2. Consider reproducing Figure 6 by individual TFO.
3. Consider adjusting the raw data using an electric utility index specific to Alberta and using forecasts that reflects the large cost increases being experienced in late 2005, in 2006 and expected for 2007.
4. Check the amounts used in the analysis (apparently, at least one project that TransCanada is familiar with is off by about \$1 million) and update the amounts, where possible, with actual costs or more recent forecasts.

Also, TransCanada wonders if \$0.133 (i.e. 13.3 cents) per DTS MW is the correct number or whether this number should be multiplied by \$1 million. The same comment applies to the formulas in section 5 below.

5. (formerly 4.) Highest Correlation of Two-Segment Linear Function

If a two-segment linear function is desired, the study supports the following two-segment average cost function between standard facility costs and DTS contract capacity:

$$\text{For DTS MW} \leq 13 \text{ MW, Cost} = \$0.429 \text{ million} + (\$0.545 \times \text{DTS MW}).$$

$$\text{For DTS MW} > 13 \text{ MW, Cost} = -\$2.201 \text{ million} + (\$0.404 \times \text{DTS MW}).$$

- Support
 Oppose
 Indifferent

Reasons for Stakeholder Position: The two-segment linear function is impractical from a rate making perspective as it results in a discontinuity in pricing at 13 MW. Such an approach should be based on a best fit to the data using two lines that intersect at some fixed DTS demand, such as 13 or 15 MW. TransCanada understands that the AESO has searched for such a representative function and there are none with a reasonable level of correlation.

Additional Comments

TransCanada urges the AESO to:

1. Propose a new investment policy in the 2007 GTA and not wait until the 2008 GTA. Assuming the initial findings of the AESO, that the current investment policy is insufficient, are confirmed in the current study, there are intergenerational inequities that will grow the longer the current policy is left in place.
2. On page 5 of the Issues list, clarify that the 40% of projects that are described as requiring customer contributions are probably closer to 80% per the analysis presented on page 13 for DTS Contract Capacities and Standard Costs (see Figure 2 and following note below).
3. TransCanada's understanding of the policies of the integrated utilities, ISO past practices and Board decisions is that the target for customer contributions should be 80% of projects being covered by investment. TransCanada therefore supports the AESO investment level target that "80% of projects do not pay a contribution" (per item 3 on page 7).
4. TransCanada requests the AESO provide the electric utility index (including forecasts of inflation when used) used to adjust prices to 2007 dollars (per page 8).

Please return this form with your comments by May 30, 2006, to:

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