



November 5, 2007

Submitted via EUB Digital Data Submission System

Alberta Energy and Utilities Board
640 – 5th Avenue SW
Calgary, Alberta
T2P 3G4

Attention: Jamie Cameron, Application Officer

Dear Jamie:

Re: AESO Comments on EUB Approach to POD Cost Function

The Alberta Energy and Utilities Board (EUB) requested comments on an approach to the construct of the Point of Delivery (POD) cost function developed by EUB staff and described in a letter dated October 25, 2007. The AESO has reviewed the information provided by the EUB and offers the following comments.

1. The AESO considers it inappropriate to determine a cost function by performing regression analysis on data which combines points from the greenfield data set and points from the older TFO data set, for the following reasons.
 - (a) The older TFO data is static. If the proposed approach is expected to provide a foundation for future cost function determinations, the TFO data will effectively “lock” the small and large ends of the data set, since projects in these size ranges appear uncommon for current interconnections. “Locking” the ends of the data set will prevent the cost function from appropriately changing over time to reflect changing conditions.
 - (b) Combining the two data sets will likely introduce bias into the cost function analysis. Regression analysis generally relies on random selection from a population to provide confidence that the regression result is representative of the population as a whole. The proposed use of the two data sets introduces a non-random bias: one data set provides all mid-range (from 7.5 MW to 43 MW) data points while the other data set provides all small (from 0.1 MW to 6.6 MW) and large (from 47 MW to 123 MW) data points. Introducing such bias increases the likelihood that the regression results will not be representative of the underlying data.

- (c) Introducing the bias discussed above is particularly problematic when it is the comparative “shape” of the cost function that is important, rather than the particular levels of costs. As the same POD subfunction revenue requirement must be recovered regardless of the specific cost function used, it is the shape of the function that determines how much revenue each segment of the final cost function recovers. When different data sets are used for small, mid-size, and large data points, it is likely that the resultant segment for each range will not be appropriately comparable to other segments.
2. Even given the AESO’s concerns with the appropriateness of performing regression analysis on the combined data set, a non-zero intercept power curve provides a higher correlation coefficient than the proposed zero intercept power curve.

The AESO understands that the goal of the analysis is to determine which curve of those analyzed had the highest correlation coefficient (R^2 value). Of the five curves analyzed, the AESO notes that only the power curve intercepts the y-axis at zero, which suggests there should be no fixed cost component in the POD cost function. This does not align with the evidence on the record in this proceeding, nor with the premise of including a fixed cost component in the cost function. The AESO has therefore performed additional analysis of the 48-point combined data set used by the EUB, to determine the non-zero intercept power curve that would have the highest correlation coefficient:

$$\text{Costs} = 1,836,175 \times (MW + 0.3655)^{0.4342}$$

This curve has a correlation coefficient of $R^2 = 0.5122$ and a y-intercept of \$1,186,096. The curve is compared to the proposed zero intercept power curve in Figure 1 below.

3. The AESO has determined billing determinants and developed a DTS POD charge based on the proposed cost function. The derivation is provided in Schedule C-1, attached. A comparison of the monthly POD charges resulting from the EUB-proposed cost function and the cost function provided by the AESO in its Argument is provided in Figure 2 below.
4. The AESO has determined an investment function based on the proposed cost function and the requirement that the investment function be set at a level such that 80% of projects do not require a customer contribution. The AESO considers that this “80/20” rule should be tested against the greenfield data set only, since only that data set represents projects that are currently being constructed and to which the investment function will likely be applied. The derivation is provided in Schedules C-2 and C-3, attached. A comparison of the maximum investments resulting from the EUB-proposed cost function and from the cost function provided by the AESO in its Argument (both assuming 20-year contract terms) is provided in Figure 3 below.
5. Although the AESO has concerns with the appropriateness of performing regression analysis on the combined data set (as discussed in point 1 above) and although a non-zero intercept power curve provides a higher correlation coefficient (as discussed in point 2

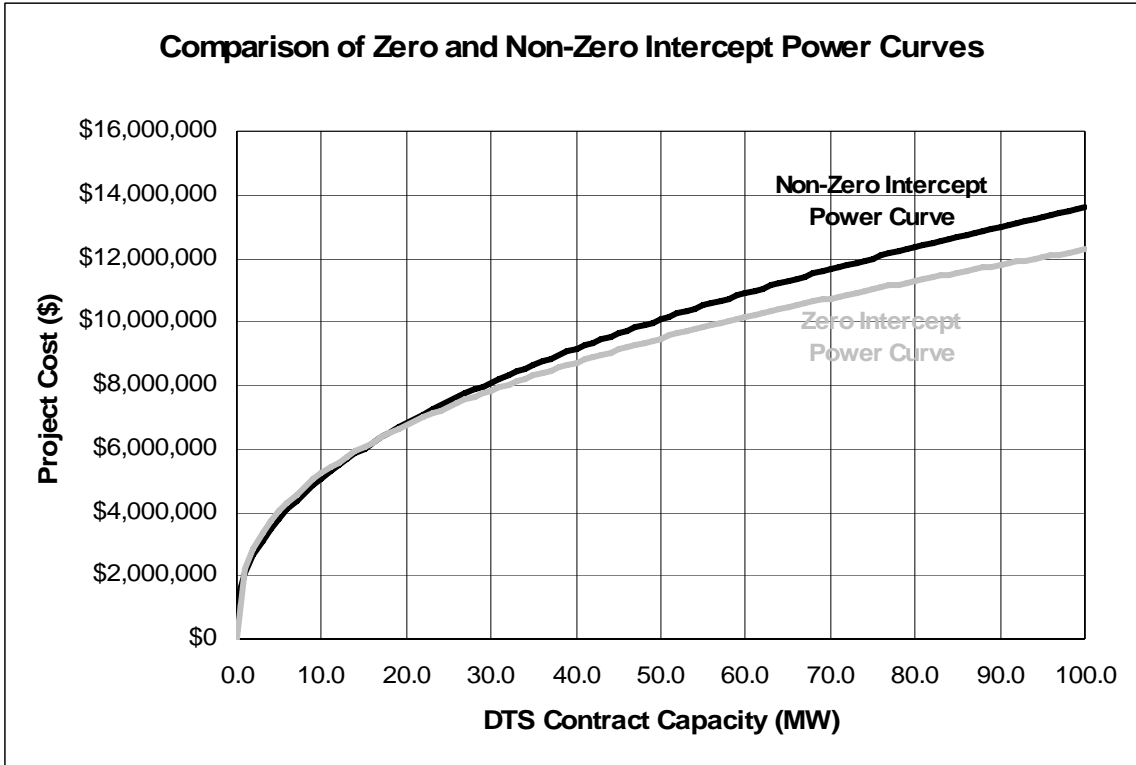


Figure 1: Comparison of Zero and Non-Zero Intercept Power Curves

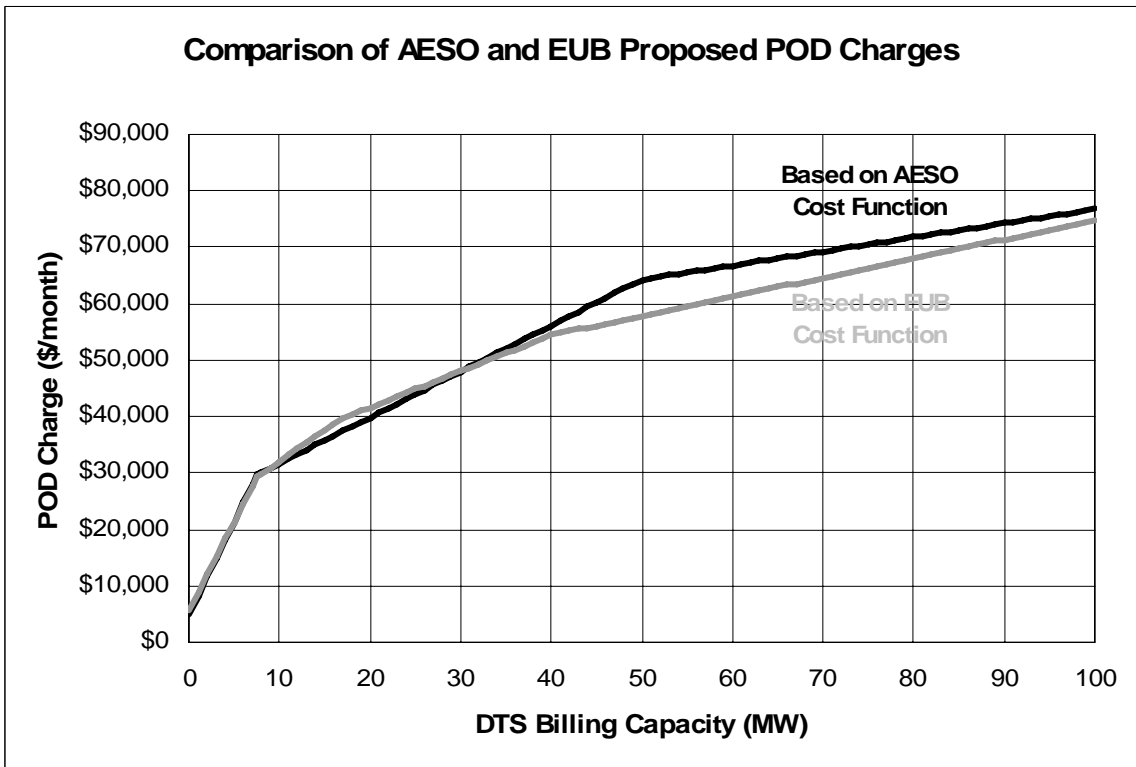


Figure 2: Comparison of AESO and EUB Proposed POD Charges

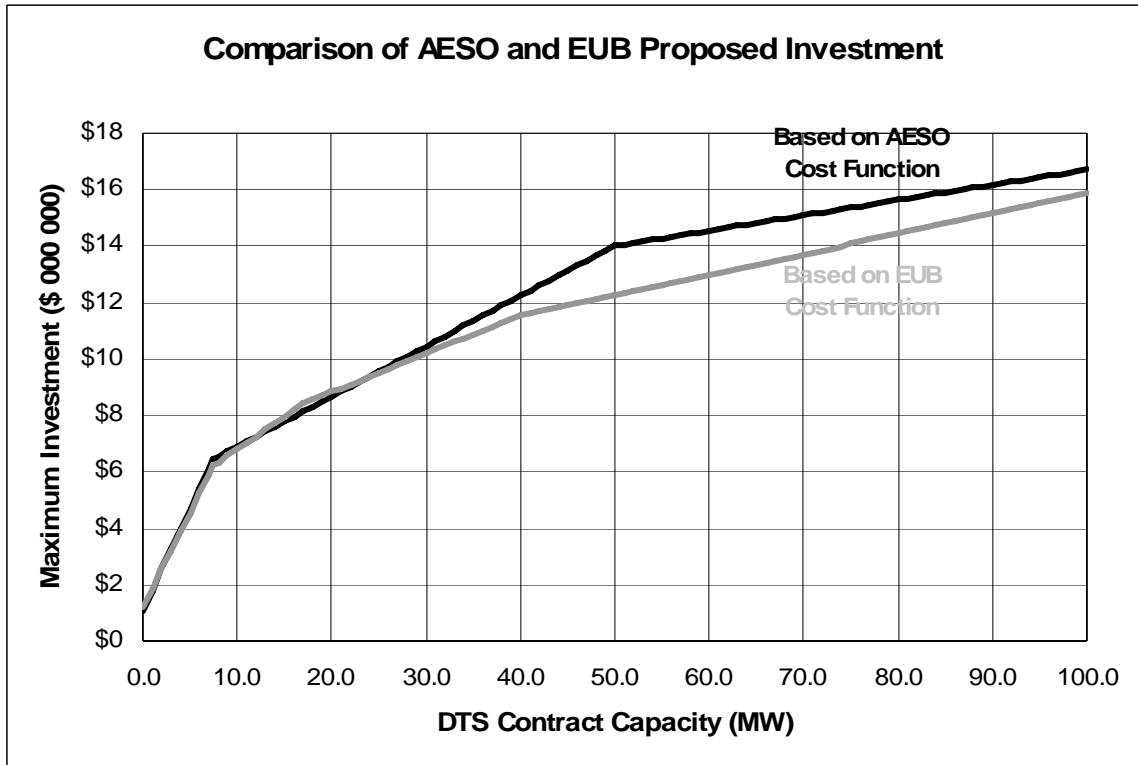


Figure 3: Comparison of AESO and EUB Proposed Investment

above), the AESO notes that the resulting POD charges and maximum investment levels up to 40 MW do not differ greatly from those resulting from the AESO proposed cost function, as illustrated by Figures 2 and 3 above. In particular, the AESO notes that the insertion of the 17 MW breakpoint does not substantially affect the POD charge and maximum investment from 7.5 MW to 40 MW. However, the insertion of the breakpoint does make both the rate and the investment function significantly more complex, increasing each from four components to five components. The AESO suggests this additional complexity for both billing and investment calculations is not warranted by the small changes introduced by the 17 MW breakpoint.

6. The AESO notes that during the GTA proceeding, the 40 MW breakpoint was proposed by the Dual Use Customers (DUC) based on judgment using data and analysis different from that used for the EUB-proposed cost function. The greenfield data set also includes a data point at 43.2 MW, which is beyond the 40 MW breakpoint level. As stated in the AESO’s argument, the AESO considers 50 MW to be a more appropriate breakpoint because long-term load below 50 MW can be supported by a single transformer at a substation, whereas above 50 MW multiple transformers are frequently required. The AESO therefore suggests that 50 MW would be a more appropriate breakpoint.
7. The EUB proposed cost function also intensifies the bill impacts arising from the AESO’s proposed rates. As demonstrated in the AESO’s response to Information Request BR.AESO-003 (a)-A1 Revised, smaller services typically receive greater bill increases

than larger services. The EUB proposed cost function will further increase POD charges for smaller services, while decreasing POD charges for larger services. For example, for billing capacities up to 30 MW, DTS POD charges from the EUB proposed cost function increase by up to 12%, with an average increase of 3%, compared to the AESO proposed cost function. At the same time, for billing capacities from 30 to 100 MW, DTS POD charges from the EUB proposed cost function decrease by up to 10%, with an average decrease of 6%, compared to the AESO proposed cost function.

The AESO notes that throughout these comments it has assumed the rates and investment functions would be developed from a single cost function based on the approaches proposed by the AESO in its tariff application. If such assumptions are incorrect, then the AESO's comments may not be applicable.

The AESO has provided the Microsoft Excel worksheets used to prepare the figures provided in these comments as an attachment.

If you have any questions on these comments or need additional information, please contact me at (403) 539-2465 or by e-mail to john.martin@aeso.ca.

Sincerely,

[original signed by]

John Martin
Director, Tariff Applications

Attachments

cc: Heidi Kirrmaier, Vice President, Regulatory, AESO