

**Title:** Payment of Customer Contribution on Staged Loads

**Preamble:** The AESO's proposed Articles 9.2 and 9.7 contemplate determining the customer contribution for projects with staged loads at the start of the project, requiring customer contributions to be paid before the start of the construction of transmission facilities to provide the requested service and adjusting the customer contribution if the expected increases in contract load do not occur as expected.

**Reference:** Application, Section 6, p. 11-13

**Request:**

- (a) Has the AESO considered allowing customer contribution payments for staged loads to be phased consistent with the addition of each staged load (i.e., the customer would pay contributions in stages, with the amount of any particular contribution reflecting the cost of the connection facilities that are required at a given time)?
- (b) If the response to (a) above is no, then provide a detailed explanation of why the AESO did not consider this approach.
- (c) If the response to (a) above is yes, then provide a detailed explanation of the analysis undertaken by the AESO in that regard and the conclusions reached, including a detailed discussion as to why the AESO decided to reject that approach in favour of the approach proposed in the Application.
- (d) Provide a detailed explanation of the AESO's or its predecessors' past practices with respect to the timing of customer contribution payments for staged load.

**Response:**

- (a-c) The design for the interconnection facilities accounts for the staged contractual load. Transmission facilities required to meet both the initial contracted load along with all future contracted load increases are constructed at once. Generally it is more economically efficient to have all the necessary facilities constructed at once rather than over time. As all the facilities are constructed at once and the present value of incremental investment resulting from the contract capacity increases is included in the customer contribution calculation, the AESO considers the collection of the contribution prior to construction and not over time to be reasonable. Please also see the response to Information Request TCE.AESO-064 for further information.
- (d) The collection of the customer contribution prior to construction has been a consistent requirement of the AESO's tariff since at least the year 2000.

**Title:** RGUCC

**Preamble:** The AESO has proposed a new Section 14.6 with respect to Regulated Generating Units and RGUCC.

**Reference:** Application, Section 6, p. 38-39

**Request:**

- (a) Provide a detailed explanation of the methodology used for the calculation of RGUCC under the AESO's approved tariffs.
- (b) Confirm that RGUCC as originally developed was intended to represent a generic, not a site-specific, connection cost for Regulated Generating Units. If the requested confirmation cannot be provided, then provide a detailed explanation of what the RGUCC was intended to represent.
- (c) When was the RGUCC originally implemented?
- (d) Under the proposed section 14.6(c)(ii), will RGUCC be calculated from the date of re-energization until the end of the base life year, or from the date the Regulated Generating Unit was de-energized until the end of the base life year, or from the date when RGUCC was first charged respecting the Regulated Generating Unit until the end of the base life year, or over some other period of time? Provide a detailed explanation of your response, including the rationales behind your proposed approach.
- (e) Under the proposed section 14.6(c)(iii), will RGUCC be calculated from the Commercial Operating Date of the non-regulated Generating Unit until the end of the base life year, or from the date the Regulated Generating Unit was deenergized until the end of the base life year, or from the date when RGUCC was first charged respecting the Regulated Generating Unit until the end of the base life year, or over some other period of time? Provide a detailed explanation of your response, including the rationales behind your proposed approach.
- (f) Under the proposed sections 14.6(c)(ii) and 14.6(c)(iii), will RGUCC be calculated based on a per MW charge for the MWs of the re-energized facility or the non-regulated Generating Unit, as applicable, rather than the MWs of the original Regulated Generating Unit? Provide a detailed explanation of your response, including the rationales behind your proposed approach.
- (g) Under the proposed section 14.6(c)(iii), describe the AESO's treatment of a nonregulated generator ("Generator A") who adds additional capacity at a site within the base life of the original Regulated Generating Unit formerly located at the site, assuming the following fact scenario: A 600 MW Regulated Generating Unit is retired three years before the end of its base life year. Generator A then builds a non-regulated generating

unit having 100 MW of capacity on the site, and the capacity comes on line 2 years prior to the end of the base life year. Following that, Generator A constructs a second 100 MW non-regulated generating unit on the site which comes on line 1 year prior to the end of the base life year. Finally, Generator A constructs a third 100 MW non-regulated unit on the site which comes on line at the end of the base life year. Confirm that the RGUCC charged to Generator A under the proposed section 14.6(c)(iii) would be calculated based on 100 MW for 2 years (i.e., the first unit) and 100 MW for one year (i.e., the second unit), with no RGUCC being charged in respect of the 100 MW of capacity provided by the third unit. If this interpretation is incorrect, provide a detailed explanation of the RGUCC calculation for the fact scenario provided.

- (h) Provide a detailed explanation of the AESO's position and underlying rationale for charging RGUCC to non-regulated Generating Units under the proposed section 14.6(c)(iii).
- (i) Has the AESO considered alternative approaches to that referenced in (h) above such as charging RCN or the incremental cost of connecting the non-regulated Generating Unit to the system? If not, explain why not. If so, provide a detailed explanation of the analysis undertaken by the AESO in that regard and the conclusions reached, including a detailed discussion as to why the AESO decided to reject those approaches in favour of the approach proposed in the Application.
- (j) Does the AESO agree that it would be inappropriate, and inconsistent with ratemaking principles, to charge non-regulated generating units two interconnection charges, one based on a system average cost (e.g., RGUCC) and the other based on a site-specific incremental cost (e.g., RCN or incremental cost of connecting)? If not, explain why not.

**Response:**

- (a) The methodology employed by the AESO stems from EUB Decision 2000-1 dated February 2, 2000. Please refer to the response to Information Request BR.AESO-018 (a) for additional information.
- (b) Confirmed.
- (c) RGUCC was established as a placeholder in EUB Decision U97065 (pp 645-662) and confirmed as reasonable in EUB Decision 2000-1 (p 119).
- (d) Under section 14.6(c)(ii) of the proposed Terms and Conditions in the Application, RGUCC will apply from the date of re-energization until the end of the base life year. This is intended to align with the primary intent of the RGUCC — that is, to “level the playing field” for all generators participating in the energy market (as noted on page 37 of section 6 in the Application). On that basis, the RGUCC should only apply when the generator is operating, and not beyond the pre-determined base life year.
- (e) Under the proposed section 14.6(c)(iii), the AESO intended that the RGUCC would apply from the start up date of the non-regulated Generating Unit until the end of the base life year for the previous regulated generator at that site. The intent was simply to ensure that any ‘re-used’ interconnection facilities would attract RGUCC charges, in order to both contribute to offsetting transmission rates for all consumers (as the costs

associated with previously regulated generator's interconnection facilities are still part of TFO ratebase) and also to put the new generator on a level playing field with other generators, as noted above.

Since filing the Application, however, the AESO was faced with a request from EPCOR to deal with precisely the circumstances it had intended to address with the provisions of 14.6(c)(iii) - those circumstances being a new generator constructed on a 'brownfield' site, making use of the interconnection facilities previously utilized by a regulated generating unit that had decommissioned prior to its base life year. Given the actual case, and an opportunity to further consider what would be appropriate for such a new generator, the AESO established that instead of continuing with RGUCC in respect of the re-used interconnection facilities, it would be more logical and equitable to charge the generator the replacement costs less depreciation (RCN-D) for the re-used facilities. This was considered to be more consistent with the treatment of new generators, who are required to pay for the cost of actual interconnection facilities, and removed the need to continue with the proxy interconnection costs provided by the RGUCC.

The AESO accordingly intends to revise its proposed Article 14.6(c) to reflect this approach. The revision will be filed shortly.

- (f) Under the proposed section 14.6(c)(ii), RGUCC will be calculated based on a per MW of Maximum Rated Capacity (MCR) of the re-energized facility. This is in accordance with Rate Schedule STS, and is the same treatment that would apply had the generator not stopped operating for some period of time.
- (g) When the AESO filed its Application, it had intended that the treatment of the generator in the example provided would be that the RGUCC charged to Generator A would be applied to 100 MW for 2 years (i.e., the first unit) and 100 MW for one year (i.e., the second unit), with no RGUCC being charged in respect of the 100 MW of capacity provided by the third unit. However, as noted in (e) above, the AESO is of the view it is more equitable to apply RCN-D for the re-used facilities, instead of applying RGUCC to the new non-regulated generator.
- (h-i) Please see part (e) above.
- (j) Yes. Please also see part (e) above.

**Title:** Reactive Power Requirements of New Interconnection Standard

**Preamble:** The AESO issued a new Generation and Load Interconnection Standard ("Interconnection Standard") on October 25, 2006, that includes enhanced tariff obligations for generators with respect to reactive power performance.

**Reference:** Generation and Load Interconnection Standard (October 25, 2006)  
[http://www.aeso.ca/files/Cover\\_Letter\\_Rev\\_1.pdf](http://www.aeso.ca/files/Cover_Letter_Rev_1.pdf)  
[http://www.aeso.ca/files/Generation\\_and\\_Load\\_Standard\\_Rev1.pdf](http://www.aeso.ca/files/Generation_and_Load_Standard_Rev1.pdf)  
Obsolete Technical Requirements for Connecting Generators (1999)  
<http://www.aeso.ca/files/GenerationStandardForPlan.pdf>  
AESO Letter re. Reactive Power from Generating Units (October 27, 2006)  
[http://www.aeso.ca/files/Oct06\\_Letter\\_on\\_website2.pdf](http://www.aeso.ca/files/Oct06_Letter_on_website2.pdf)  
AESO Letter re. Reactive Power from Generating Units (November 2, 2006)  
[http://www.aeso.ca/files/Reactive\\_Power\\_letter\\_Nov\\_2.pdf](http://www.aeso.ca/files/Reactive_Power_letter_Nov_2.pdf)

**Request:**

- (a) Provide a detailed description of the AESO's analysis of the implications of the proposed changes to the Interconnection Standards relating to reactive power, including a list of all implications considered and a detailed discussion of the rationale(s) behind the AESO's decision to implement and enforce new standards for reactive power.
- (b) Does the AESO believe that its proposed approach is the optimal solution to achieving stability and adequacy on the system? If so, provide a detailed explanation of the basis for the AESO's position, including an analysis of each potential alternative approach considered and the AESO's reasons for rejecting those alternatives in favour of the proposed approach.
- (c) Has the AESO considered what the system-wide or location-based reactive power requirements for the AIES are? If so, are the reactive power requirements necessary to maintain stability on the AIES equivalent to the total reactive power requirements imposed on generators under the proposed Interconnection Standard? If not, are these requirements higher or lower and by how much?
- (d) Has the AESO considered a location-based solution to the reactive power problem, ensuring that sufficient reactive power is available from a specific location (e.g., the Genesee-Keephills-Wabamun area), without enforcing unit by- unit requirements? If not, provide a detailed explanation as to why the AESO did not consider a solution of this nature. If so, then provide a detailed explanation of the location-based solution, including a detailed explanation as to why it was rejected by the AESO in favour of the proposed approach.

- (e) Has the AESO considered the potential adverse impacts that the proposed reactive power requirements could have on the AIES? For example, does the AESO have an estimate of the energy loss to the AIES if the proposed reactive power requirements are enforced? Provide a detailed discussion of all such potential adverse impacts considered by the AESO and their implications for adequacy on the system.
- (f) Has the AESO considered the option of paying certain generators for the provision of reactive power as an alternative to requiring all generators to meet the new standard? If not, provide a detailed explanation as to why not. If so, has the AESO considered the cost of such an option against the cost of the potential loss of energy if the proposed requirements are enforced? Provide a detailed response.
- (g) Is the AESO's intent with the new Interconnection Standard to actually enforce the requirements or to determine how much reactive power each generator can provide without compromising delivery of energy to the system? If so, does the AESO intend to modify the new Interconnection Standard to reflect the capability of each generating unit? If not, provide a detailed explanation as to why not.
- (h) If capital cost investments are required for generators to meet the reactive power standards under the new Interconnection Standard, has the AESO considered the issue of who should bear these costs in relation to PPA units? In the AESO's view, should these costs be borne by PPA Owners, PPA Buyers or the AESO (system as a whole)? Provide a detailed explanation of the basis for your response.
- (i) Has the AESO considered the commercial implications of enforcing the reactive power requirements in the new Interconnection Standard with respect to the PPAs? If so, provide a detailed discussion of the AESO's analysis in this regard, including its conclusions.
- (j) Does the AESO see the proposed reactive power requirements as being necessary to meet ERO standards and, if so, on what basis? For example, do the NERC ERO standards require these levels of reactive power or do they simply require each jurisdiction to internalize any impact resulting from compromised reliability? Provide a detailed response.

**Response:**

The Generation and Load Interconnection Standard is established by the AESO and amended from time to time, and, although referred to in the AESO tariff, is not specifically part of the tariff. As such, in this Application the AESO is not seeking approval of the Interconnection Standard issued on October 25, 2006. The AESO does not believe that the information sought is relevant to the relief requested in paragraph 10 of section 1 of the GTA.

Nevertheless, the AESO provides the following response.

- (a-j) The AESO is responsible for maintaining the overall reliability of the Alberta Interconnected Electric System (AIES) while ensuring that the electricity market is operated in a fair, efficient and openly competitive manner.

In general, the AIES is planned and operated under the assumption that all generating units can comply with AESO interconnection standards and technical requirements,

including reactive power requirements under a full range of operation. The reactive power capability of generating units is critical to maintaining system voltages and reliable and efficient AIES operation under all operating conditions.

Reactive power affects system-wide performance in terms of reliability criteria and power transfer levels. Insufficient reactive power capability has been a major or critical factor in many regional blackouts. Because of the importance of reactive support for reliability and operability of the AIES, it is critical that generating units comply with the Reactive Power Requirements under the full range of operating conditions.

The supply of reactive power is fundamental to system reliability and it must be supplied in a manner that is fair to all market participants. In this respect, the Reactive Power Requirements are a minimum obligation for all interconnected generators in competitive market.

The AESO approved a revised Generation and Load Interconnection Standard on October 25th, 2006. Stakeholder consultation on the revised standard began in late 2005 and revised drafts of the new standard and stakeholder comments are posted on the AESO website. The previous generator and load standards were revised and approved in 1998. The revised Generation and Load Interconnection Standard was modified to clearly define aspects related to power quality and generator reactive power.

During the stakeholder consultation on the generator standard, stakeholders raised concerns regarding the application of the standard to existing generating units, particularly generators which are subject to the legislated power purchase arrangements. While the AESO initially considered that the revised standard would apply to all generators, PPA generator owners and buyers considered that the inherent reactive power capability provided at the MW output equal to the PPA committed capacity plus some amount of excess capacity was the capability envisioned in the PPAs.

Subsequently, as indicated in the AESO's October 25, 2006 letter, the AESO stated that the PPA committed capacity would be respected when considering reactive power requirements.

The AESO is in the process of working with the industry on the reactive power capabilities of generating units that connected prior to the 1998 standard.

**Title:** Investment Function

**Preamble:** The AESO is proposing a linear investment function in the 2007 GTA.

**Reference:** Application, Appendix F, p. 3-29

**Request:**

- (a) Given the EUB's concern, as set out in Decision 2005-096, Direction 13A(2), that the AESO's 2005-2006 GTA investment function is "overly simple", did the AESO consider implementing a non-linear investment function for the 2007 GTA? If not, explain why not. If so, provide a detailed explanation of the nonlinear function(s) considered and explain why the AESO chose a linear function over a non-linear function.
- (b) Did the AESO consider intergenerational equity in its analysis and development of an appropriate investment function, and its ultimate decision to propose a linear as opposed to a non-linear investment function? If not, explain why not. If so, provide a detailed explanation of how the AESO considered intergenerational equity in its analysis and development of the proposed investment function, and describe the implications from an intergenerational equity standpoint of using the proposed linear investment function.
- (c) Confirm that customer contributions are essentially intended to provide a balance between what new customers pay, through contributions, and what existing customers will pay through the tariff, to ensure intergenerational equity over time. If the requested confirmation cannot be provided, then provide a detailed explanation as to why.
- (d) Confirm that the 80/20 rule is intended as a conceptual guideline for application over long-term investment cycles, and is not amenable to numeric analysis over a short timeframe like the two years the AESO has employed. If the requested confirmation cannot be provided, then provide a detailed explanation as to why.
- (e) Confirm that a guideline, such as the 80/20 rule, should be balanced against the primary principle of intergenerational equity in the determination of an appropriate investment function. If the requested confirmation cannot be provided, then provide a detailed explanation as to why.

**Response:**

- (a) As outlined in Section 6.5.3 the AESO conducted non-linear regression analysis on the data which did not provide any better regression coefficients than the linear analysis. As the non-linear approach did not produce any better results, the AESO choose the linear approach for ease of implementation and coordination between rates and the investment policy along with adhering to the general rate design principles of developing rates that uphold attributes of simplicity, certainty, ease of understanding, and public acceptability. Notwithstanding, the AESO's multi-part linear function, with a lesser slope applicable to

larger (>7.5 MW) contract capacities, reflects economies of scale that are expected from a non-linear function as expressed by the EUB in Decision 2005-096 (page 57); that is, it reflects “the reduced rate at which interconnection project costs increase as peak load rises.”

- (b-e) As noted in Section 6.5.3, pages 26-29 of the Application, the AESO did account for intergenerational equity in the recommendation of the investment function. The AESO believes continuing to apply the “80/20 rule” preserves the principle of intergenerational equity where most new customers will not see a different cost of system interconnection than existing customers, and existing customers should not bear any extraordinary costs of system expansion. Table 4 on page 29 of the Application clearly demonstrates intergenerational *inequity* occurs when the “80/20” principle is *not* accounted for in the investment policy. As noted on page 28, the AESO feels returning the investment function to the “80/20” level ensures intergenerational equity is maintained. The EUB also supported this approach in Decision 2001-6 and further reaffirmed that position in Decision 2005-096, Directive 13A, both of which are provided below.

EUB Decision 2001-6 (pages 69,70) – emphasis added:

*The Board notes that EAL’s proposal was not challenged on the basis of the level of the Roll-in Ceiling. The Board also notes that EAL claimed that the formula, combined with the simplified system definition, was expected to result in an overall level of customer contributions comparable with previous utility policies. In the response to information request ENMAX-EAL-10, EAL confirmed that the amount of the Roll-in Ceiling was developed by comparing the results obtained by the proposed policy to the contributions produced by the application of existing DISCO contribution policies. **The level of the Roll-in Ceiling appears to have been chosen as the result of a heuristic process in order to best harmonize with DISCO contribution policies and so that 80% of system expansion projects would not require a contribution.***

***The Board considers this to be a fair manner to set the roll-in level as it preserves a balance between the need of new customers for service without a need for subsidy from existing customers. Most new customers will not see a different cost of system connection than existing customers. Existing customers should not bear any extraordinary costs of system expansion. Accordingly, the Board approves the level of the Roll-in Ceiling.***

EUB Decision 2005-096 Directive 13A (page 58) – emphasis added:

*In respect of the longer term beyond 2006, the Board directs the AESO to conduct further study so that it may devise a more comprehensive investment function proposal which avoids the Board’s concerns with the AESO’s 2006 Application and reflects the design principles described by the Board in this Decision. The Board considers that this task will involve several distinct steps, as reflected in the following list of Board directions:*

1. *The Board hereby directs the AESO to conduct a study for the purpose of devising a simplified maximum investment function. Such study to be completed in time for review no later than the 2008 GTA proceeding. The study should incorporate a sufficient number and diversity of data points to enable the study to consider the current costs of several different interconnection project sizes.*

*Interconnection project costs for the purposes of the investment function study should only reflect the costs of standard facilities as described in the AESO Standard Facilities definition approved by the Board in this decision.*

2. *On the basis of the results of the study described in the preceding direction, the AESO shall recommend an investment function that represents the average cost per MW of capacity. The Board expects that the resulting interconnection cost function derived will exhibit significant economies of scale and, as a result, may be non-linear in nature. For the purposes of the remaining steps of the Board's maximum investment function directions, the average cost function derived in accordance with this step will be referred to as the "Raw Interconnection Project Cost Function".*
3. *In accordance with the notion of a tolerance as discussed in the argument of IPCAA, the Board directs the AESO to analyze the results of the above study for the purposes of determining an appropriate multiplier such that approximately 80% of the projects included have a cost greater than implied by the Raw Interconnection Project Cost Function fall within the selected tolerance multiplier.*