Alberta Electric System Operator
2018 ISO Tariff Application

Proceeding 22942

AESO Consultation on 12 Coincident-Peak Method

Submitted on behalf of:

The Office of the Utilities Consumer Advocate (UCA)

March 9, 2018

Introduction

1. The AESO, in its January 30, 2018 letter[1], proposed a consultation process on the allocation of transmission costs, and in particular the 12CP cost allocator used in the tariff setting process. the AESO described the intent of this specific consultation process as follows:

   (a) engage with interested parties;

   (b) provide participants with the opportunity, but not an obligation, to share their views and, if they wish, explain the reasons for holding those views;

   (c) consider any analysis that participants may have conducted to this point;

   (d) provide participants with the opportunity to ask questions and gain clarity regarding the concerns or positions of other participants;

   (e) provide the opportunity to request additional data from the AESO;

   (f) provide the opportunity to request that the AESO conduct and provide analysis; and

   (g) assist, in the most efficient and timely manner and having regard to the views of participants, the AESO in developing its position regarding the 12 CP and DFO customer contribution issues and prepare and file evidence regarding those matters.

2. In this submission the UCA responds in particular to the AESO's offer (b) to share its views and explain the reason for holding those views; and (f) to request that the AESO conduct and provide analysis of alternative approaches to the attribution of transmission costs inherent in the use of a 12CP allocator.

The Basic Transmission Cost Allocation Issue

1. Altalink, in its September 28, 2017 letter[2], and other parties including EDTI[3], CCA[4], the UCA[5] , ATCO Electric[6] and the Cities of Red Deer and Lethbridge[7] had expressed concerns over the AESO's transmission cost allocation approach that forms the basis of its proposed transmission tariff design. Concerns over the fairness and stability of tariff

[1] Exhibit 22942-X0114
[2] Exhibit 22942-X0036
[3] Exhibit 22942-X0055
[4] Exhibit 22942-X0063
[5] Exhibit 22942-X0064
[6] Exhibit 22942-X0066
[7] Exhibit 22942-X0071

revenues have been presented as a desire to modify the 12CP allocator used to allocate that portion of transmission costs defined as comprising the high voltage "bulk" system.

2. The process of allocating the costs of a single and fully integrated transmission system into portions that will be recovered by specific elements of the final tariff from the various customer classes is known as a fully allocated cost of service study. Within the cost of service study there are three dependent and closely related and sequential steps:

    a) Functionalization of total cost into the defined service provided by each element;
    b) Classification of the functionalized cost as being driven by power demanded (MW), energy volume consumed (MWh) or the number of customers served; and
    c) Allocation of the classified cost to be recovered by a specific tariff design.

3. The selection of the specific allocator used in the final step of the three step process of cost allocation must be informed by the preceding steps. The relative merit of any particular allocator such as a multiple CP in all of its possible variants cannot be determined without examining the manner in which the portion of costs operated on by that allocator are functionalized and classified in the preceding steps of the cost allocation process.

4. In terms of allocated transmission "wire" costs, the UCA does not have any concerns over the currently used classification methodology that define costs in relation to power demand, energy volumes, and administrative costs or losses. The UCA does however have significant concerns over the functionalization procedure forming the very first step of the wire-cost allocation process as explained below.

5. In short we believe that the role of transmission wire costs currently functionalized for cost allocation purposes[8] as "bulk" system and "area" or regional systems need to be reconsidered in the light of the current industry structure and recent transmission system developments. Such reconsideration requires a fresh approach to functionalization and the selection of singular or multiple CP or NCP allocators.

Historical Background and Explanation of Concerns

6. The justification of allocating demand related costs using various forms of singular or multiple coincident peak (CP), or non-coincident peak (NCP) allocators was developed in the early 20th Century for application to vertically integrated and centrally planned utilities, many years prior to the development of today's desegregated retail electricity markets.

[8] The system may be functionalized slightly differently for regulatory purposes other than cost allocation such as the application of mandatory reliability standards.

7. In this vertically integrated monopoly model, all generation, transmission and distribution costs were planned and built by the same entity to serve end-use loads. All costs were therefore deemed to be "caused" solely by the end-use customer placed conceptually at the foot of a stack of costs ascending to the generation sources. A convenient topological fiction running linearly from generators via transmission and distribution systems to terminate at loads was then employed for cost allocation purposes. This conceptual model for cost allocation bore little relationship to the physical disposition and operation of the integrated system elements.

8. In this conceptual model, the transmission and distribution network were assumed to radiate from a single representative bus where all cumulative generation on the system was injected. As the adequacy of system generation capacity is determined by coincident system load demands, the generation costs functionalized as demand related were generally allocated using some form of single or multiple CP. At the other end of this conceptually radial system, the more local and lower voltage delivery wires, sized to carry the maximum demand regardless of peak generation coincidence, were allocated on an NCP basis.

9. Within the vertically integrated utility, the transmission system provided the nexus between the CP allocated generation and the NCP allocated distribution. The appropriate method of transmission allocation was therefore considered to shift from a CP relationship at the "sending" end of this linear model to NCP at the "receiving" end where substations provided the distribution system interface.

10. At the time these universal functionalization and allocation procedures were developed there was little in the way of distributed or independent generation, and the entire system was centrally planned and integrated. There was therefore little need to parse out the transmission system itself based on a more realistic topology or functionalization, or to examine allocators that better matched cost causation for a desegregated and more broadly distributed market system serving both independent generators and load distribution systems.

11. Alberta now has a desegregated system where generation is not centrally planned and has become more widely distributed, connected by a regional transmission network that connects a number of regional load centres and is not consistent with the centrally located source and radial transmission nexus that lingers as the conceptual basis for a cost allocation model.

An Improved Cost Allocation Model

12. Following the Alberta industry restructuring the fully de-segregated transmission system has been considered to comprise a central high voltage "bulk" system connecting independent generators at points of supply (POS) and load distribution centres at points of delivery (POD) with these dualities driven by market rather than central planning considerations.

13. In the current conceptual cost model, load POD are considered to be connected to the bulk system via a significant local regional system, while generator POS are considered to connect directly to the bulk system without need of an intervening regional transmission system. This functional and allocation model may have been influenced by legislated directions to not impose transmission wire costs beyond the local POS on independent generators in order to encourage the rapid development of new generation following Alberta industry restructuring.

14. Unfortunately, the cost paradigm shift to a decentralized market system is not complete. It does not recognize that generators are no longer planned to connect directly to the bulk system and are more widely distributed than the old vertically integrated model. This is reflected in the functionalization of regional transmission cost responsibility entirely to POD with the bulk system interface beginning at POS producing an asymmetrical functionalization of bulk system costs. The concept that generators always feed directly into the "upstream" bulk system as if the network is completely radial has been retained, even though the de-centralized system that integrates new generation is now far more regional in nature.

15. The advent of two North to South HVDC lines in 2015 was a major physical and economic change that greatly increased the transmission rate base and completed the transition of the Alberta system to a market based model reliant on broadly distributed generation and cross-border trade. This significantly changed role with the displacement of 240KV lines to fulfil a more regional purpose now requires reconsideration of the definition of "bulk" and "area" transmission for purely cost allocation purposes, and how these common costs are to be fairly and stably functionalized and allocated in accordance with principles of cost causation.

16. The UCA therefore proposes that the AESO develop and file a new cost of service model and resultant tariffs where only HVDC lines and AC transmission in ***excess*** of 240KV are considered to be bulk transmission and these transmission costs are allocated using a modified multiple CP that reflects the current use of system as described below.

17. Transmission lines designed to be operated at 240KV or below would be functionalized as regional, reflecting the evolution of this transmission as more local wire services intended to integrate both loads and more distributed generation sources. The allocator chosen would also be NCP to better reflect the more non-coincident nature of local cost causation.

Request for the AESO to conduct and provide analysis

18. In summary the UCA views the current approach to transmission cost functionalization and allocation based on vertically integrated utility concepts and monopoly characteristics to be outdated and inconsistent with the evolving nature of the de-

segregated transmission system that now provides the armature for a growing distributed generation and market system.

19. The UCA requests the AESO to please provide three sensitivity analyses showing how the fully allocated cost of service model, resultant tariff and billing distribution between types of customer would change if:

    a) The cost of the bulk transmission system is redefined as comprising the HVDC system and AC lines operated above 240KV, all allocated to POD on the current 12CP basis.

    All AC lines operating at 240KV or below are considered to be area or regional transmission and allocated to POD on an NCP basis.

    b) Without any change to the definition of bulk or area transmission, allocate all bulk costs using a 12CP allocator ***where the peak contribution for each of the 12 months is determined as the mean of the 12 highest aggregate peak demand hours within each calendar month.***

    c) ***Both*** of the bulk/area functionalization definition, and the determination of the 12CP contributions in A and B above are combined.

20. By incorporating the suggested changes the AESO would develop and file an updated transmission cost allocation model better reflecting current topology and functionality, where only HVDC lines and AC transmission in *excess* of 240KV are functionalized as bulk, and allocated using a form of 12 CP stabilized using 12 hourly averages.

21. Transmission lines designed to be operated at 240KV or below would be functionalized as regional, reflecting their evolution as regional wire services intended to integrate both loads and more local distributed generation sources. The appropriate allocator would be NCP to better reflect the more non-coincident nature of more local cost causation.

22. The UCA looks forward to reviewing the revised cost of service studies and is available to discuss and provide clarifications where necessary.