AESO STAKEHOLDER ENGAGEMENT

PARTICIPANT-RELATED COSTS FOR DFOs (SUBSTATION FRACTION) AND DFO COST FLOW-THROUGH

SESSION 2A

PROPOSAL OF FORTISALBERTA INC.

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May 14, 2020

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Outline of Presentation

1.0 Overview:
Contribution Allocation Method for DFO-contracted PODs

- For all DFO-contracted PODs, the AESO should abandon its existing substation fraction method

- Replace it with a more direct allocation method:

  Average Supply-related Interconnection Contribution ("ASIC")

- Requires decoupling of the load (DTS) and supply (STS) side of the ISO tariff's customer contribution policy
  - DFO's load side carries on as is but with a DTS fraction = 1.0

Contribution Timing, Process and Flow-through to DCG

- AESO to determine and assess ASIC at the time of DCG grid entry
  - @ time of establishment, or any change to, the STS contract capacity at the interconnecting POD (in excess of 1 MW), along with GUOC, STS losses, Distribution interconnection costs

- ASIC: Full flow-through the DFO's distribution tariff & charged to DCG:
  - Retains the integrity of the transmission contribution price signal that the AESO wishes to send to supply
  - Supports cost causation, parity with treatment of transmission-connected generation (TCG)

- ASIC amounts paid by DCG would be returned to the TFO via the ISO and distribution tariffs, resulting in an offset to TFO rate base
  - AESO/TFO to design a DTS POD-specific credit rider to be returned to load

Determination of Magnitude/Level of ASIC Contribution to DCG

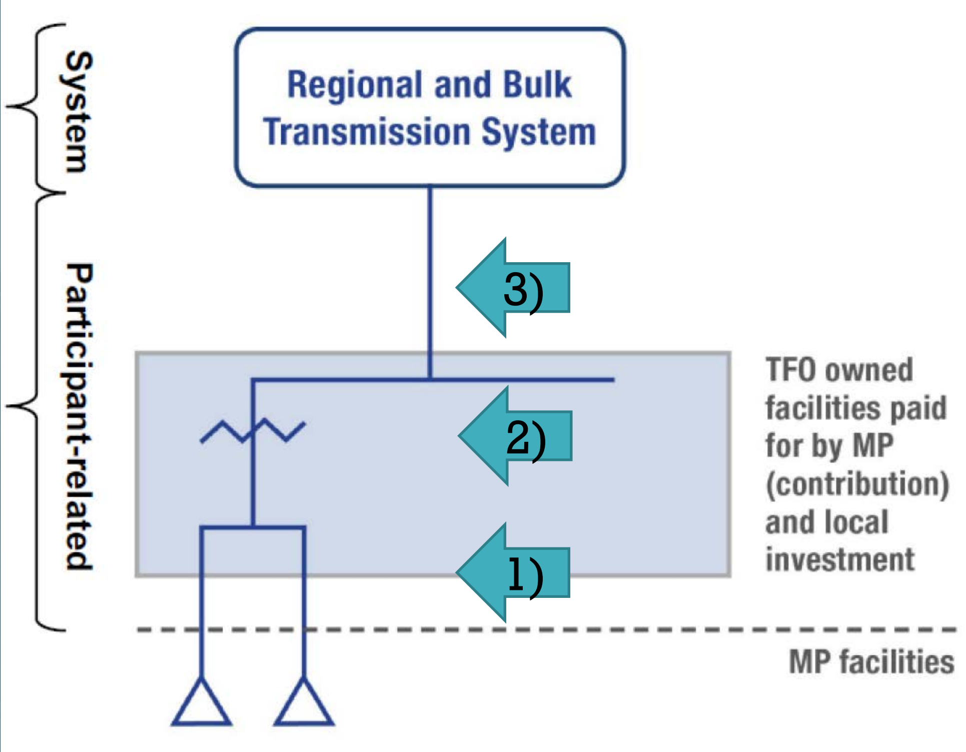
- AESO designs ASIC to satisfy the principles of cost causation & attaining parity between DCG and TCG

- Based on a case-by-case technical cost analysis and allocation (direct assignment) at the time of DCG grid entry (STS contracting)

- AESO should work with the TFOs and DFOs to develop an average province-wide supply-related contribution schedule
  - per unit ASIC $ /supply-related capacity (MW)

- Forms part of the ISO tariff and could be reviewed/adjusted annually in the AESO's annual tariff update applications

Determination of Magnitude/Level of ASIC Contribution to DCG

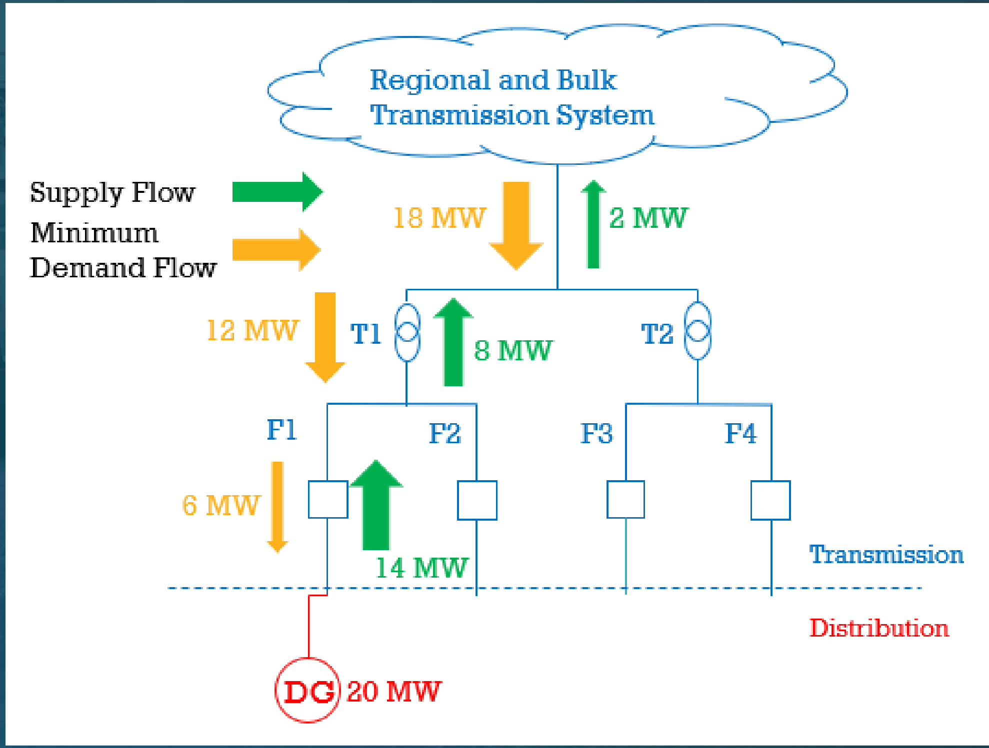


- ASIC schedule could be comprised of two or three local transmission cost components, based on supply's (DCG's) use of participant-related facilities:
  1) the distribution voltage feeder breaker and bus;
  2) the POD substation transformer, breakers and bus; and
  3) the local transmission line* that connects the POD substation to the AIES bulk and regional transmission system.

* Included for illustration, not recommended for inclusion by FAI

Determination of Magnitude/Level of ASIC Contribution to DCG

- AESO supported by TFOs and DFOs to determine these average POD costs by component and determine the forecast reverse power flows (i.e. Supply's (DCG's) use of each of the POD components).
- Projected power flows for supply and demand through each POD component considering average load factors and supply capacity factors through each component.
- Consistent with the levels used in the establishment of the STS contract capacity levels at the interconnecting POD as per the ISO tariff.



2.0 Principles

- Principles by stakeholders largely aligned with ratemaking principles applied for tariff design throughout the regulated utility industry.
- AESO overarching principle - should facilitate a fair, efficient and openly competitive market (FEOC).
- Leading to the principles that contributions should reflect cost causation, parity between the transmission interconnection costs calculation for transmission-connected customers and distribution-connected customers, both in terms of fairness and providing effective price signals.
- FortisAlberta agrees with this principle and as such, its proposal is designed to meet the objective of achieving parity between transmission and distribution-connected generation when assessing transmission contributions for DCG.

3.1 Timing

- DCG customers should be provided with a transparent preliminary supply-related POD cost allocation price signal during the initial project planning stages of their DCG projects.

- Costs should not be, subsequently, added to the upfront supply-related price signals provided at the time of DCG connection.

- Similarly, additional costs should not be allocated to DCG customers as a result of local transmission system upgrades, driven by load, after the interconnection of the DCG.
  - An exception to this would be when a DCG proponent implements an increase in exported power onto the grid.

3.2 Process Flow

- (1) determination by the DFO of the forecast magnitude of reverse power flow on individual local transmission system components;
- (2) determination by the DFO of historical load factors for individual local transmission system infrastructure components;
- (3) determination by the AESO of forecast capacity factor of the individual DCG;
- (4) determination by the AESO in collaboration with TFOs average installed costs of the individual local transmission system infrastructure components;
- (5) determination by the AESO in collaboration with TFOs the average reverse power flow capability of the individual local transmission system components;
- (6) calculation of a supply-related cost allocation per MW for individual local transmission system infrastructure components.

3.2 Process Flow

- ASIC Calculation

- $ASIC = ASIC_{breaker} + ASIC_{trans}$
- $ASIC = [(RP_{breaker} \times \$/MW_{breaker}) \times UF_{breaker}] + [(RP_{trans} \times \$/MW_{trans}) \times UF_{trans}]$

- Where:
- RP = Reverse power flow on transmission component
- $/MW = Average cost per MW of reverse power flow on transmission component
- UF = Utilization factor on transmission component

3.2 Process Flow

- Utilization Factor Calculation

- $UF = (CF_{DCG} \times MRP)/[(CF_{DCG} \times MRP)+(LF \times PL)]$

- Where:
- UF = Utilization factor of the transmission component
- CF_{DCG} = Capacity Factor of the DCG
- MRP = Maximum reverse power on transmission component
- LF = Load factor on transmission component
- PL = Peak load on transmission component

3.2 Process Flow

Upon application of DCG to interconnect and establish STS:

- AESO provides a supply-related contribution document similar to a CCD that identifies the total required supply-related contribution.
- AESO/TFO invoices DFO, for all supply-related contributions required.
- DFO invoices the DCG developer for all supply-related contributions prior to connection and energization of DCG.
- AESO/ TFO establishes a POD specific credit rider for ASICs paid to be returned to DTS load customers.

3.3 Example

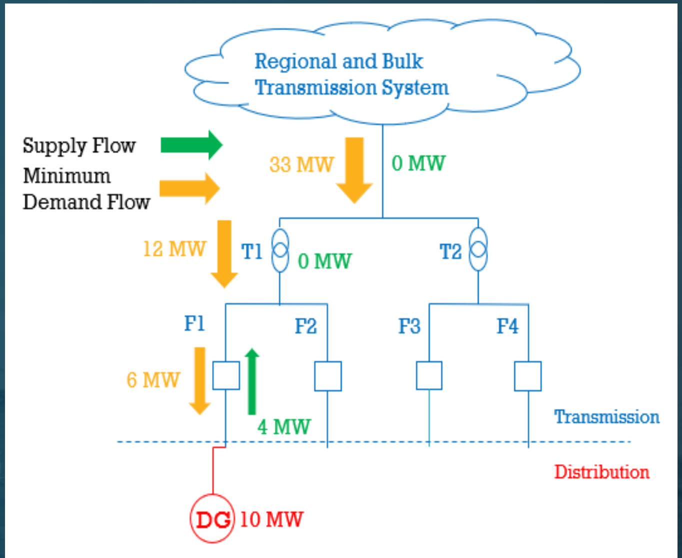
- The example assumptions used to monetize the DCG usage include:

Transmission Component	Average cost	Average maximum reverse power flow capacity
Distribution voltage feeder breaker and bus	$1.0M	25 MW
Substation stepdown transformer, breakers and bus	$3.6M	40 MW

* Numbers are for illustrative purposes only.

3.3 Example #1 – Breaker Level Reverse Power

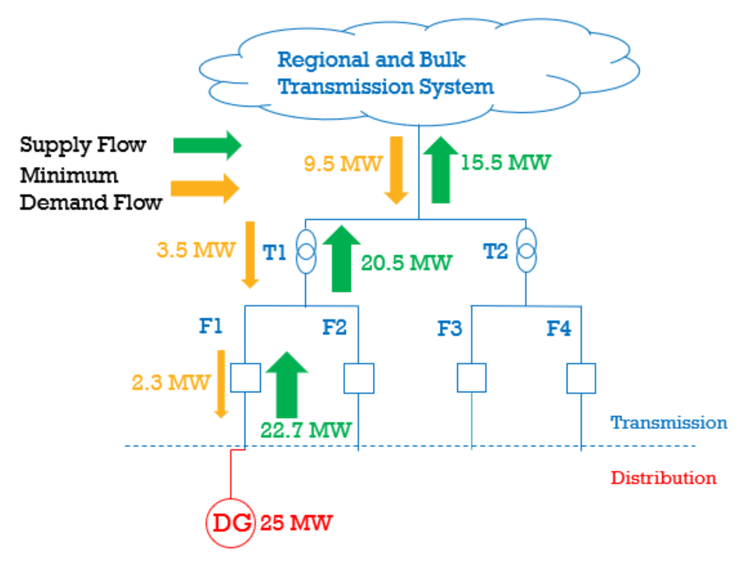
Component	(w)	(x)	(y)	(z)	(w*x)/[(w*x)+(y*z)]
	Maximum Component Reverse Power (MW)	DCG Capacity Factor	Peak Component Load	Load Factor	Utilization Factor
(1) Distribution voltage feeder breaker	4.0	0.33	12.0	0.64	0.15
(2) POD Substation Transformer	0.0	0.33	27.0	0.77	0.00



Component	(a) Step 1	(b) step 4	(c) Step 5**	(d) Step 6	(e) Step 7 (c/d)	(e) Step 8 (a x b x e)
	Magnitude of Reverse Power flow (MW)	Utilization Factor	Ave installed cost ($k)	Capacity (MW)	Installed cost per MW ($k)	Required DCG Usage Contribution ($k)
(1) Distribution voltage feeder breaker	4.0	0.15	$1,000	25	$40	$24
(2) POD Substation Transformer	0.0	0.14	$3,600	40	$90	$0
Total required DCG usage contribution of all components ($k)						$24

3.3 Example #2 – POD Level Reverse Power

Component	(w)	(x)	(y)	(z)	(w*x)/[(w*x)+(y*z)]
	Maximum Component Reverse Power (MW)	DCG Capacity Factor	Peak Component Load	Load Factor	Utilization Factor
(1) Distribution voltage feeder breaker	22.7	0.33	5.0	0.71	0.68
(2) POD Substation Transformer	20.5	0.33	12.0	0.87	0.39



Component	(a) Step 1	(b) step 4	(c) Step 5	(d) Step 6	(e) Step 7 (c/d)	(e) Step 8 (a x b x e)
	Magnitude of Reverse Power flow (MW)	Utilization Factor	Ave installed cost ($k)	Capacity (MW)	Installed cost per MW ($k)	Required DCG Usage Contribution ($k)
(1) Distribution voltage feeder breaker	22.7	0.68	$1,000	25	$40	$616
(2) POD Substation Transformer	20.5	0.39	$3,600	40	$90	$725
Total required DCG usage contribution of all components ($k)						$1,342

4.0 Implementation of Proposal

4.1 Benefits

- Provides a pathway for the AESO to effectively resolve the stated DFO/DCG concerns.
- Improves harmonization and timing of transmission price signals sent by ISO tariff for flow-through distribution tariffs to end-use DCG customers.
- Eliminates the risk, and the resulting adverse impact on DCG development.
- Provides investor and cost certainty for DCG proponents and confirms full DFO flow-through with respect to transmission costs.
- Eliminates the possibility of transmission contributions being assessed to DCG after they have interconnected or the local investment claw-back to DFO load customers.

4.2 Risks

- Risks are primarily implementation risks and costs associated with the AESO's implementation of the ASIC proposal and tariff mechanisms.
- AESO would also have to design POD specific riders in its ISO tariff as a means to compensate the DFO's load customers in the form of lower DTS POD charges for the DCGs' payment of ASIC (offsetting TFO rate base at these DFO-contracted PODs).
- Transition plan required for application to DCGs in queue / connected.
- Helpful for the AESO to develop an Information Document (ID) to make its CCD timing and contracting practices and policies more clear, consistent and transparent for its DFO and DCG customers.

4.3 Impacts on Stakeholders

- **DCG:** Removes the risk and the resulting adverse impact on DCG development, that was imposed by the AESO's current practice of applying its substation fraction approach

- **DFOs:** Harmonizes and synchronizes timing of transmission price signals sent by the ISO tariff to DCG;
  - Confirms flow-through treatment of transmission costs per s.47(a) of *T- Reg*.
  - Requires DFOs to assist AESO in identifying reverse power flows by component

4.3 Impacts on Stakeholders

- **AESO:** Requires amendments and approvals to ISO tariff to
  - Differentiate between the application of its customer contribution policy to DFO-contracted PODs versus non-DFO-contracted PODs
  - Codify the ASIC levels and mechanism, and POD-specific credit riders, in its tariff
  - Transition / Grandfathering Plan to ASIC mechanism
  - Develop an Information Document (ID) re: same.

- **TFOs:** Requires TFOs to assist the AESO to determine the average transmission costs by component and POD-specific credit riders for DCG payment of ASIC contributions.

End