Notice

In accordance with its mandate to operate in the public interest, the AESO will be audio and video recording this session and making the recording available to the general public at www.aeso.ca. Video recording will be limited to shared screen presentation slides. The accessibility of these discussions is important to ensure the openness and transparency of this AESO process, and to facilitate the participation of stakeholders. Participation in this session is completely voluntary and subject to the terms of this notice.

The collection of personal information by the AESO for this session will be used for the purpose of capturing stakeholder input for the Participant-Related Costs for DFOs (Substation Fraction) and DFO Cost Flow-Through Technical Session (1). This information is collected in accordance with Section 33(c) of the *Freedom of Information and Protection of Privacy Act*. If you have any questions or concerns regarding how your information will be handled, please contact the Director, Information and Governance Services at 2500, 330 – 5th Avenue S.W., Calgary, Alberta, T2P 0L4 or by telephone at 403-539-2528.

Participant-Related Costs for DFOs (Substation Fraction) and DFO Cost Flow-Through Technical Session (1)

Feb. 27, 2020

Welcome and Introductions

Morning agenda

Time	Agenda Item	Presenter
9:00 – 9:05	Welcome, introduction, purpose and session objectives	Stack'd / AESO
9:05 - 9:30	Overview of engagement process: • Share overall approach and schedule for engagement • Clarify what stakeholders can expect as we move through the process • Discussion on approach and schedule	AESO
9:30 – 10:45	Level-setting: Getting to a common understanding • AESO to present on legislation, terminology, purpose and application of the treatment of participant-related costs for DFOs • Discussion period to follow presentation	AESO All
10:45 – 11:00	Break	
11:00 – 11:45	Level-setting: Getting to a common understanding • FortisAlberta to present on participant-related cost impact and DFO flow-through of costs • Discussion period to follow presentation	FortisAlberta All
11:45 – 12:15	Lunch	

Afternoon agenda

Time	Agenda Item	Presenter

12:15 – 1:45	Level-setting: Getting to a common understanding
	• The following to present on participant-related cost impact and DFO flow-through of costs:
	  ○ BluEarth Renewables
	  ○ Innogy Renewables Canada
	  ○ Siemens Energy
	• Discussion period to follow presentations
		BluEarth Renewables, Innogy Renewables, Siemens Energy, All

1:45 – 2:00	Break	
2:00 – 3:45	Present initially identified principles (AESO) Discussion on any missing, duplicative or unnecessary principles (All) Instructions for breakout discussions (Stack'd) Breakout discussion on principles (All) Group report back	All
3:45 – 4:00	Session close out and next steps	Stack'd / AESO

Objectives of the overall engagement

- Objectives of the technical sessions(s) include facilitation of:
  i. a common understanding of the purpose and application of the substation fraction formula;
  ii. agreement on high-level principles applicable to the substation fraction formula including, for instance, cost certainty for DCGs, parity between TCGs and DCGs regarding local interconnection costs, and certainty for DFOs regarding the flow-through of costs to be attributed to DCGs; and
  iii. a common understanding of the financial impacts associated with the substation fraction and any associated flow-through of local interconnection costs to different stakeholder groups, including DCGs, transmission connected generation (TCGs), DFOs, and ratepayer.

Purpose of this session

- Purpose
  - Build a common understanding of the purpose and application of participant-related costs for DFOs (substation fraction formula) and DFO cost flow-through; and
  - Develop and identify high-level principles applicable to participant-related costs for DFOs and DFO cost flow-through.

Overview of Engagement Process

AESO Stakeholder Engagement Framework

Overall approach

- The AESO intends to:
  - engage with stakeholders regarding the issues to be examined and the action items to be undertaken, as identified in the technical session(s)
  - work towards the development of a joint proposal with distribution facility owners (DFOs) and distribution connected generation (DCGs) regarding a path forward based on the feedback gathered at the technical session(s)
- A joint proposal, if achieved, or individual proposals regarding the attribution and flow-through of transmission costs to DCGs would then be filed in the consolidated proceeding for consideration and determination by the Commission

Overview of process schedule

Session 1 *Feb. 27, 2020*	Session 2 *March/April 2020*	Session 3 *April 2020*	Session 4 *If required*
Session objectives: • Clarify intent and understanding of participant-related costs for DFOs (Substation Fraction) and DFO cost flow-through • Review and collect input on high-level principles	**Session objectives:** • Review high-level principles • Discuss and evaluate proposals for participant-related costs for DFOs (Substation Fraction) and DFO cost flow-through	**Session objectives:** • Final discussion and evaluation of proposals • Share process for preparation of report for the AUC	*Session objectives to be shared if required* *This session would likely be held via webinar.*

Stakeholder participation

The participation of everyone here is critical to the engagement process. To ensure everyone has the opportunity to participate, we ask you to:

- Listen to understand others' perspectives
- Disagree respectfully
- Speak one at a time
- Balance airtime fairly
- Keep an open mind

Level-setting: Getting to a Common Understanding – AESO

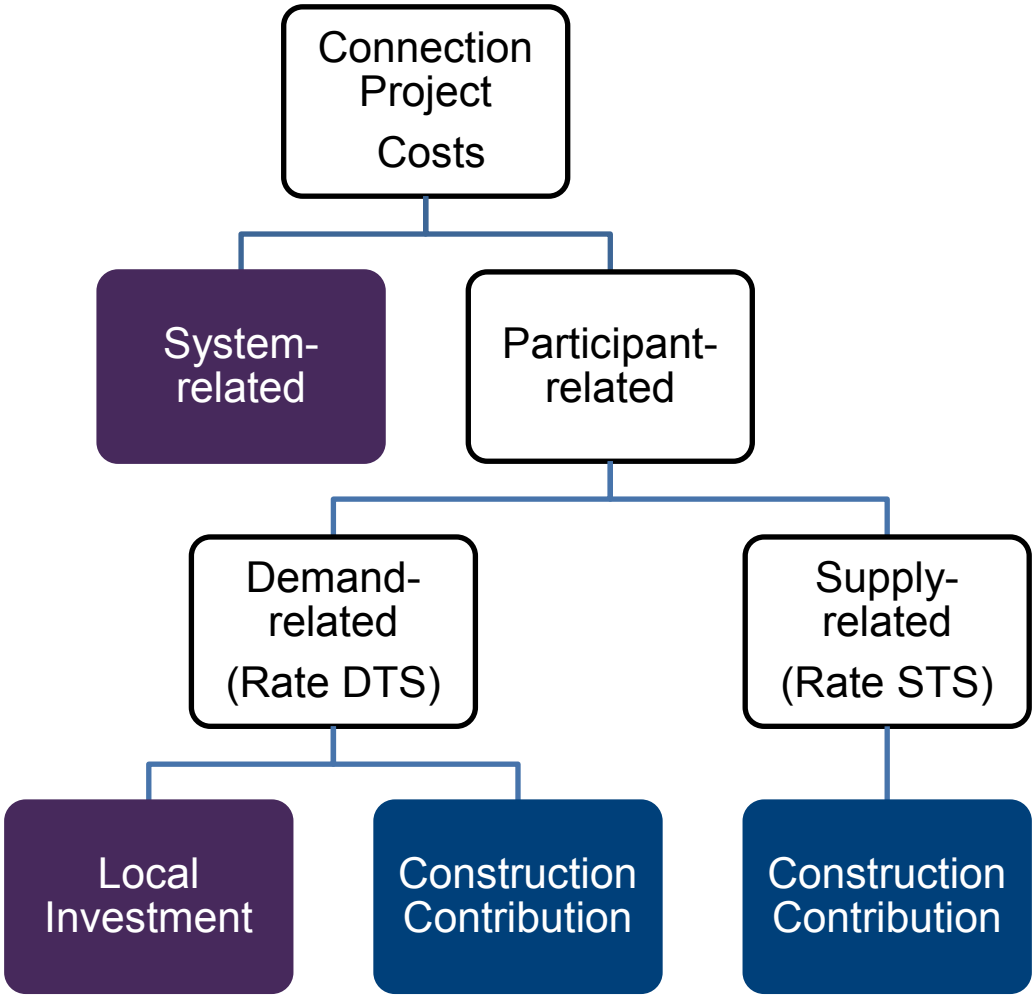
Cost recovery as per Transmission Regulation – loads

- Loads pay for most costs:
  - Non-radial/networked transmission costs, through monthly charges for system access
- Bulk system, regional system, and point-of-delivery (POD) charges
  - Participant-related (radial transmission facility) costs, through upfront contribution payment and investment
  - Ancillary services costs and the AESO's own costs, through monthly charges
- DFOs pay for the just and reasonable costs of the transmission system, to the extent required by the ISO tariff
  - DFOs do not pay "local interconnection costs"

Cost recovery as per Transmission Regulation – generation

- Generators pay for fewer costs:
  - Participant-related (radial transmission facility) costs, through upfront contribution payment
    - aka "**local interconnection costs**"
    - no investment available to generator connections
  - Generating unit owner's contribution, through upfront contribution payment which is refundable over time based on performance
  - Line losses, through monthly charges

Connection project costs classification



Transmission facility owner (TFO) incurs connection project costs which are “paid back”

Costs classified as system-related or participant-related

Average substation fraction methods are used to determine:
(1) cost allocation for shared facilities; and
(2) for load, eligibility for investment

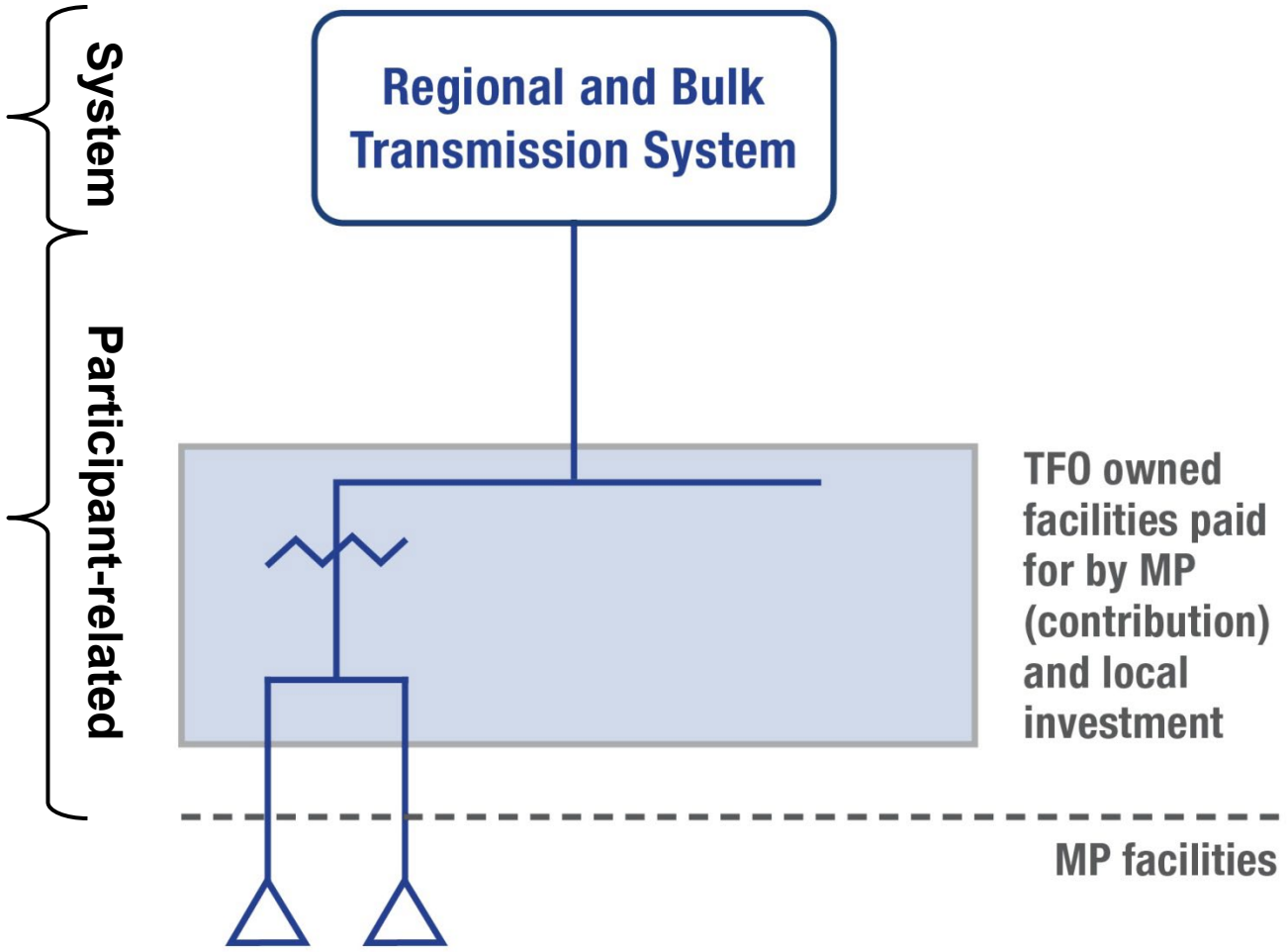
Local investment is only available for load; costs exceeding local investment are paid through upfront contribution (by market participant)

System versus participant-related costs

System costs, or **system-related costs**, are non-radial/network transmission costs paid by rate payers

Connection project costs classified as **participant-related** are paid by market participants (MP) and local investment (for load)

The substation fraction used only to allocate **participant-related** costs

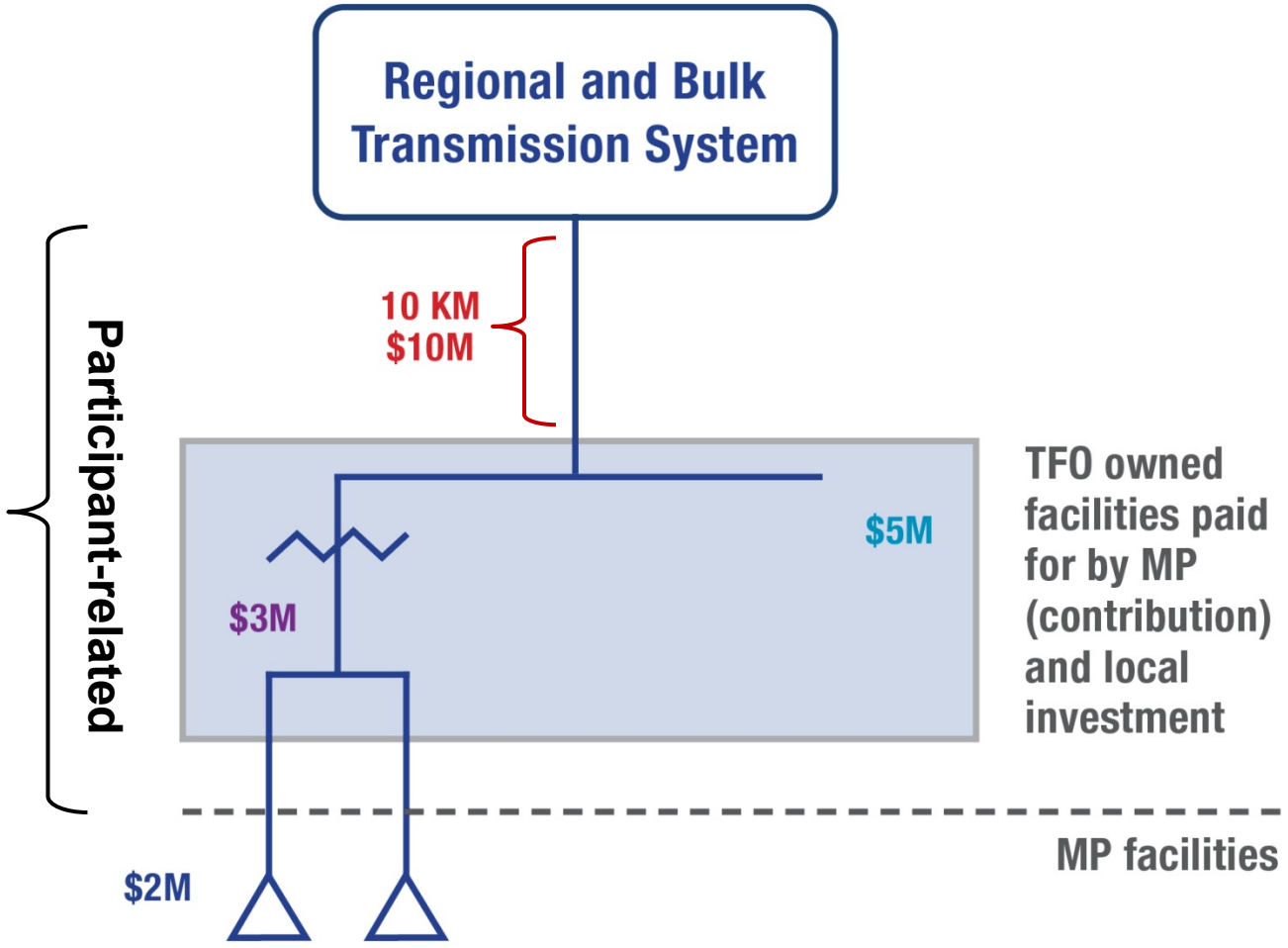


Example 1a: Current practice for determining participant-related costs (Non-DFO)

TFO incurs costs that are paid back by MP and local investment:
$10M transmission line
+ $5M substation
+ $3M transformer
=$18M

The portion of $18M not covered by local investment is paid by the MP via a construction contribution

Costs for MP facilities:
$2M

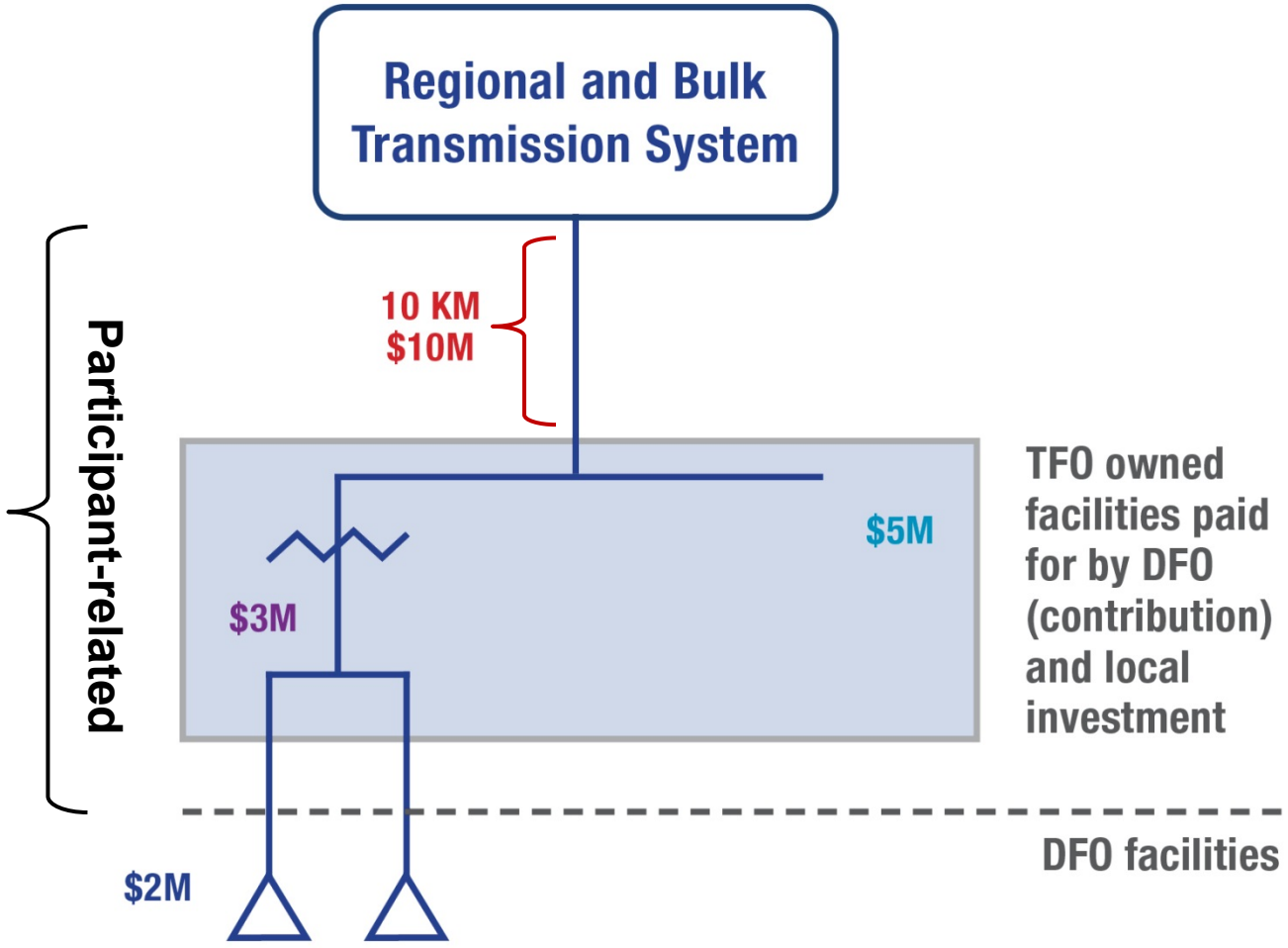


Example 1b: Current practice for determining participant-related costs (DFO)

TFO incurs costs that are paid back by DFO and local investment:
$10M transmission line
+ $5M substation
+ $3M transformer
=$18M

The portion of $18M not covered by local investment is paid by the DFO via a construction contribution

Costs for DFO facilities:
$2M



Load is eligible for local investment

- Load market participants taking service under Rate DTS are eligible for “local investment”
  - available for participant-related costs deemed demand-related
- Investment dollars are an economic incentive provided to load customers by transmission ratepayers to manage the upfront costs of connecting to the grid
- Investment is recovered from all load market participants through the monthly POD charge in Rate DTS
  - amount is based on capacity
  - investment levels are based on contribution policy
- Generators are not eligible for investment; Rate STS does not have a monthly “repayment” element

Local investment – how is it calculated?

Column A	Column B	Column C
Tier	Investment for Service Under Rate DTS	Investment for Service Under Rate DTS with Rate PSC
(c) **Substation fraction** (for new **points of delivery** only)	$79 900/year	$16 780/year
(d) First (7.5 × **substation fraction**) MW of **contract capacity**	$32 350/MW/year	$6 790/MW/year
(e) Next (9.5 × **substation fraction**) MW of **contract capacity**	$20 250/MW/year	$4 250/MW/year
(f) Next (23 × **substation fraction**) MW of **contract capacity**	$14 150/MW/year	$2 970/MW/year
(g) All remaining MW of **contract capacity**	$9 150/MW/year	$0/MW/year

Changes to construction contribution – single market participant

- As per the current ISO tariff, when a market participant requests a change to Rate DTS contract capacity, the AESO adjusts the construction contribution decision (CCD) for the last construction project within 20 years:
  - if DTS capacity increases, the market participant may be eligible for additional local investment (i.e., a refund of prior construction contribution)
  - if DTS capacity decreases, the AESO may “claw-back” local investment (i.e., the market participant will be required to pay an additional construction contribution amount)

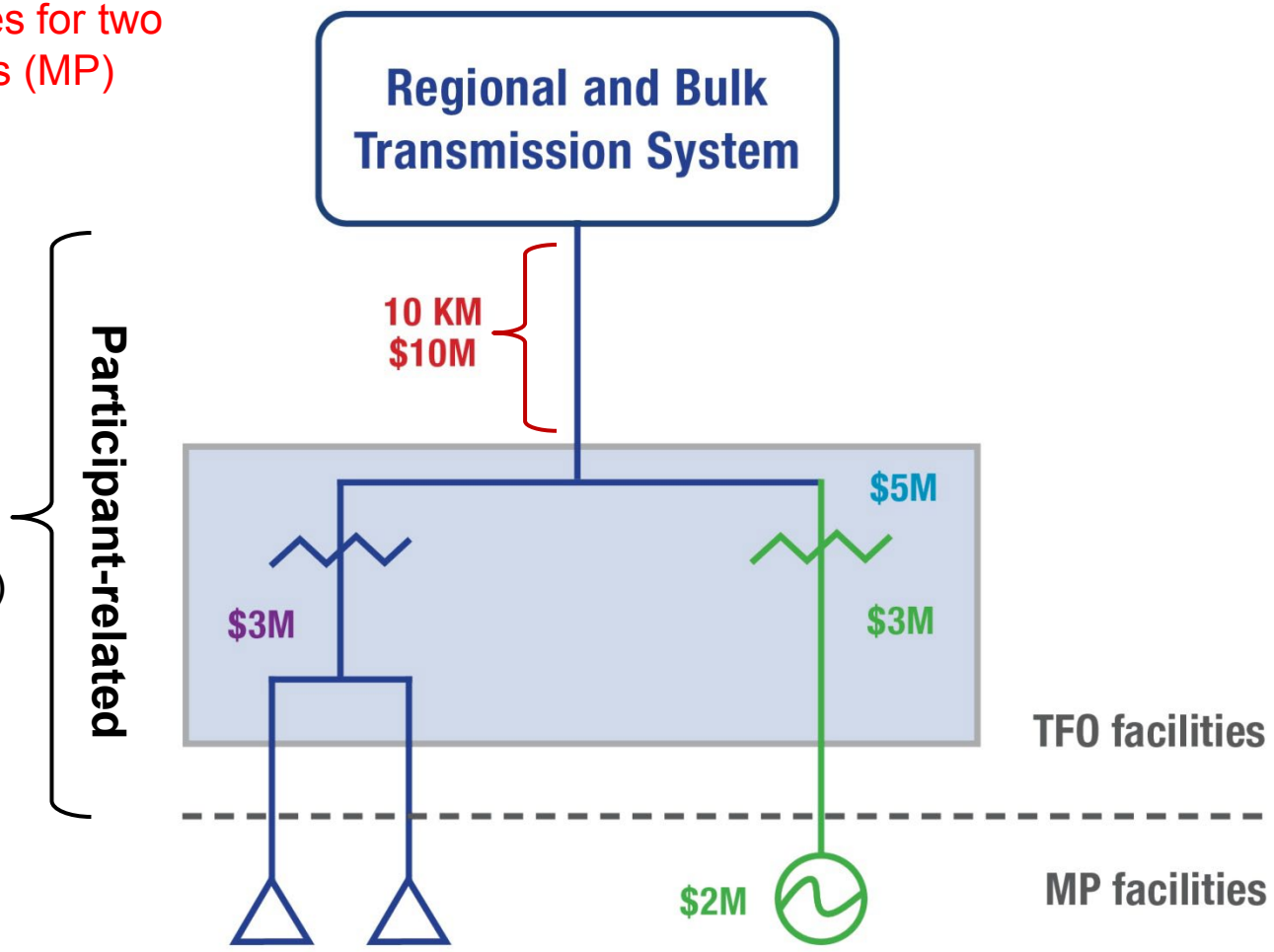
Changes to construction contribution(s) – multiple market participants

- When a market participant obtains system access service through facilities that have already been paid for by another market participant, the ISO tariff provides that the participant-related costs of that access are **not** limited to the incremental costs of connecting
  - instead, the participant-related costs will also **include** a portion of the shared costs previously paid by the other market participant for existing transmission facilities
- To allocate participant-related costs used by multiple market participants, the ISO tariff requires the AESO to calculate the **average substation fraction** over a 20-year period for each market participant

Example 2a: Multiple market participants

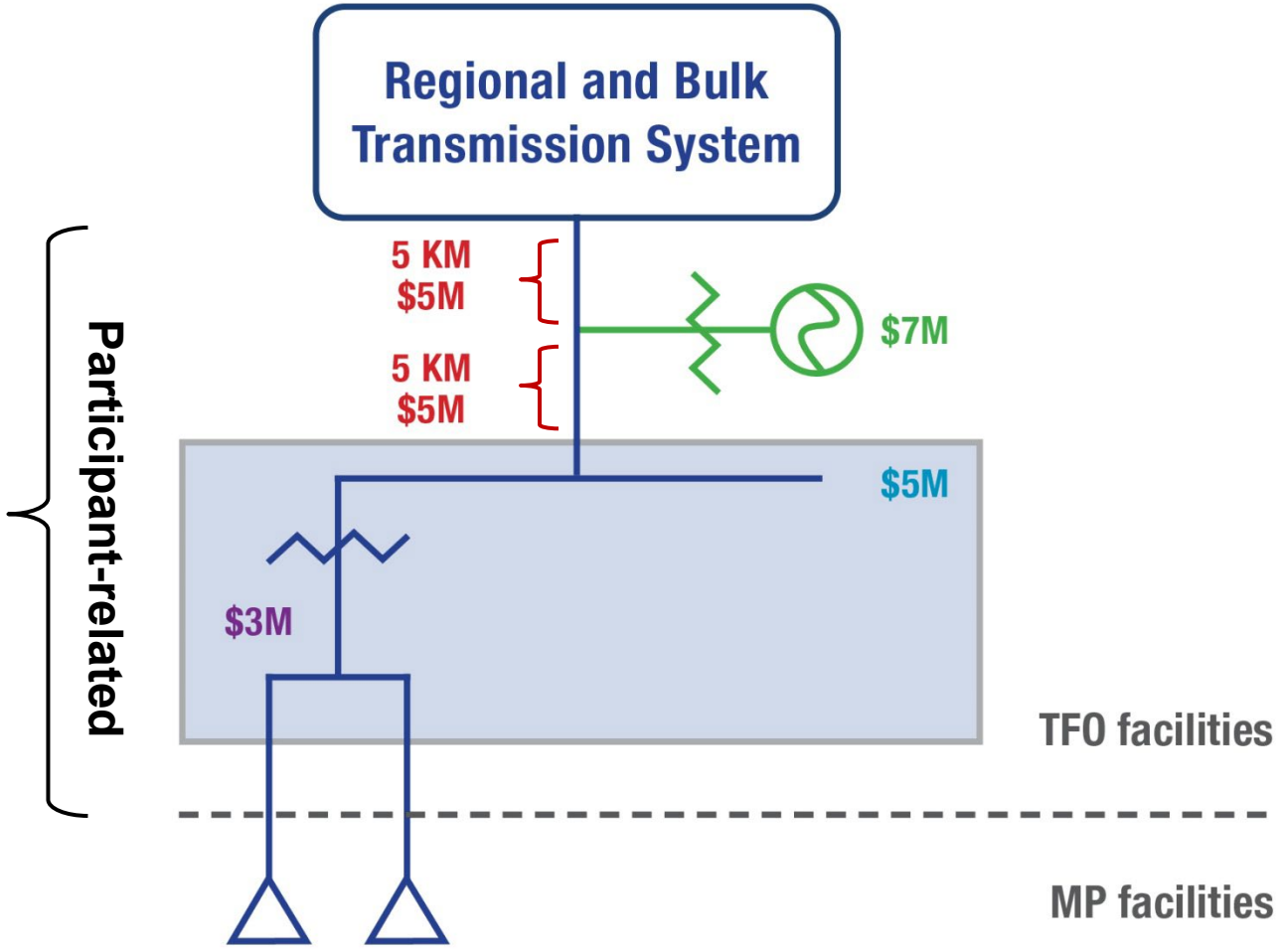
There is a provision for the shared costs of transmission facilities for two (or more) market participants (MP)

Generator to "share" substation:
$3M transformer addition
+ $2M other generator costs
+ Share of $15M
(capacity and time weighted) for radial transmission line and substation



Example 2b: Multiple market participants

Generator connects to transmission line:
$7M new generator facilities
+ Share of $5M (capacity and time weighted) for 5km portion of radial transmission line



The substation fraction definition

- The “substation fraction” definition, and the requirement to allocate costs using the substation fraction, has not changed since the 2005 ISO tariff:
  - A substation fraction is “**the share of a substation's capacity attributable to a market participant under Rate DTS or Rate STS, calculated by dividing the contract capacity of the individual system access service by the sum of all contract capacities of all system access services provided at the same substation under Rate DTS and Rate STS.**”

How is the substation fraction used

- The AESO uses the substation fraction to:
  - calculate the POD portion of Rate DTS monthly charges
  - calculate the amount of local investment available
- The practice of calculating and applying the substation fraction is straightforward when:
  - the market participant requests both Rate STS and Rate DTS on day one (SASR – System Access Service Request)
  - Rate STS service is not contracted for at a POD
  - determining the shared costs at a POD with multiple market participants

What happens to the substation fraction when Rate STS capacity is introduced?

- No longer straightforward
- The addition of Rate STS contract capacity at a POD affects the substation fraction, which is an input to determining local investment
- Changing the substation fraction by adding Rate STS capacity results in:
  - an increase in supply-related costs; the corresponding decrease in demand-related costs means that less participant-related costs are eligible for local investment (i.e. market participant pays additional construction contribution)
- There is only one way to calculate the substation fraction, but different approaches to allocating demand and supply-related costs can be taken in these circumstances

Cost allocation – incremental methodology

- Previous versions (before 2019) of the AESO's Contribution Calculator Information Document ("ID") used an "incremental substation fraction" method to calculate the demand and supply-related cost allocation and construction contribution
- The "incremental" approach:
  - only looks at the incremental cost to connect (point-in-time); and
  - was used at a time when the addition of Rate STS service to a DFO POD was not contemplated (historically, we only had straightforward scenarios)
- The AESO determined that the incremental methodology doesn't capture the full share of costs reasonably attributed to DCG

Incremental methodology does not capture all participant-related costs

- To determine the share of costs for facilities already constructed and reasonably attributable to DCG, the AESO refined the methodology to:
  - reflect a time-weighted average to account for changing contract capacities over time
  - account for historical costs and not just the point-in-time incremental costs of connection / capacity changes
- The AESO reflected this refinement in the calculation of demand and supply related costs in its 2019 Contribution Calculator ID
  - however, CCDs based on prior versions of the ID were manually adjusted on a case-by-case basis to reflect the concepts above

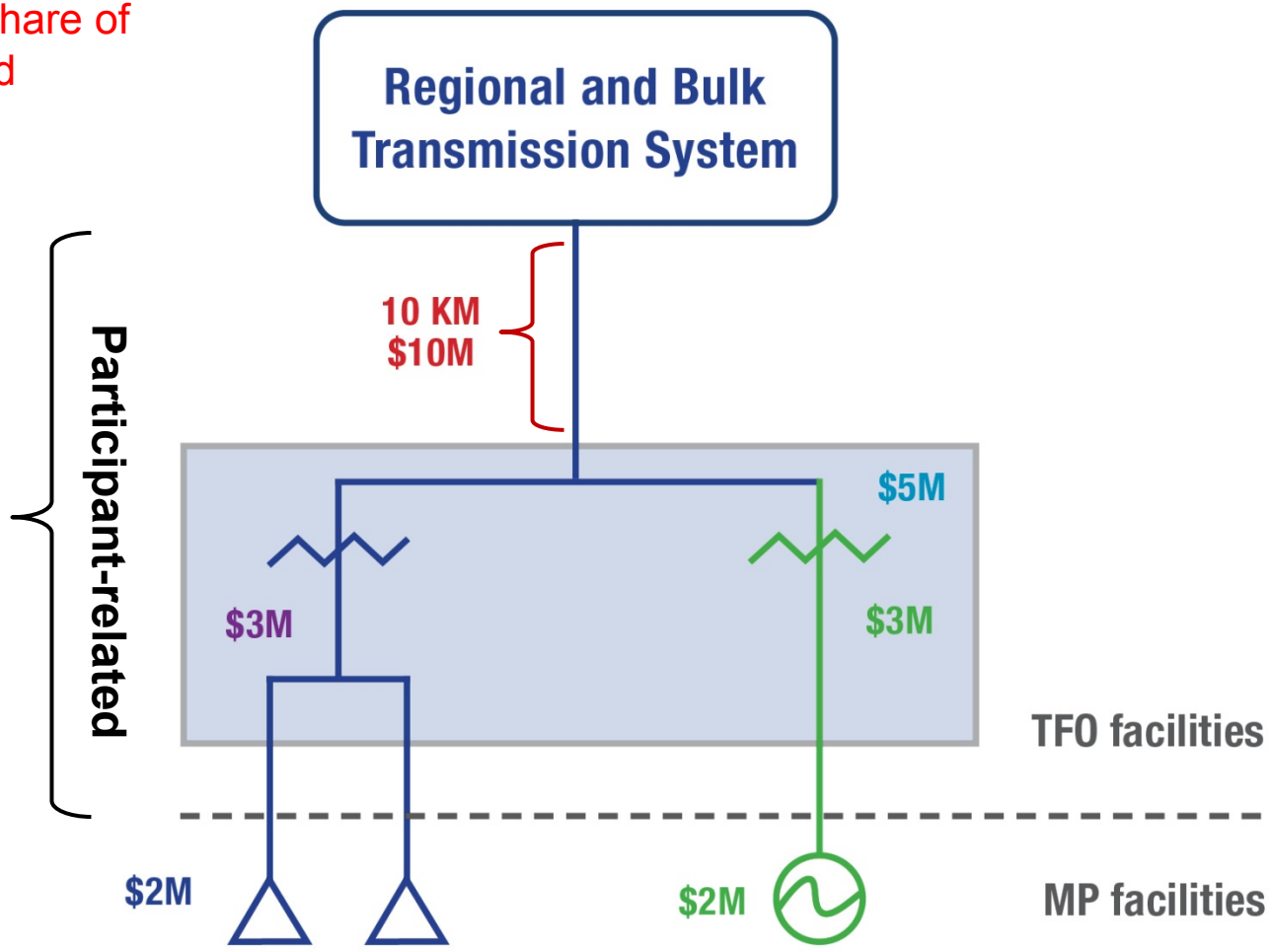
Refining the substation fraction for DCG

- To better allocate the costs of services being obtained by a single market participant such as a DFO, the AESO refined the demand and supply-related cost methodology, to address and reflect the increase in DCGs
- Under the refined cost methodology, a market participant pays for a share of the historical cost of facilities that have already been constructed:
  - certain events, including changes to contract capacity, warrant adjustments to a market participant's previous CCD
  - instead of replicating the shared facilities concepts by accounting for all costs in the previous 20 years, the AESO limited the historical look-back to the last construction project in the last 20 years

Example 3a: One market participant

Shared facilities provision provides that MPs should pay for a share of facilities already constructed

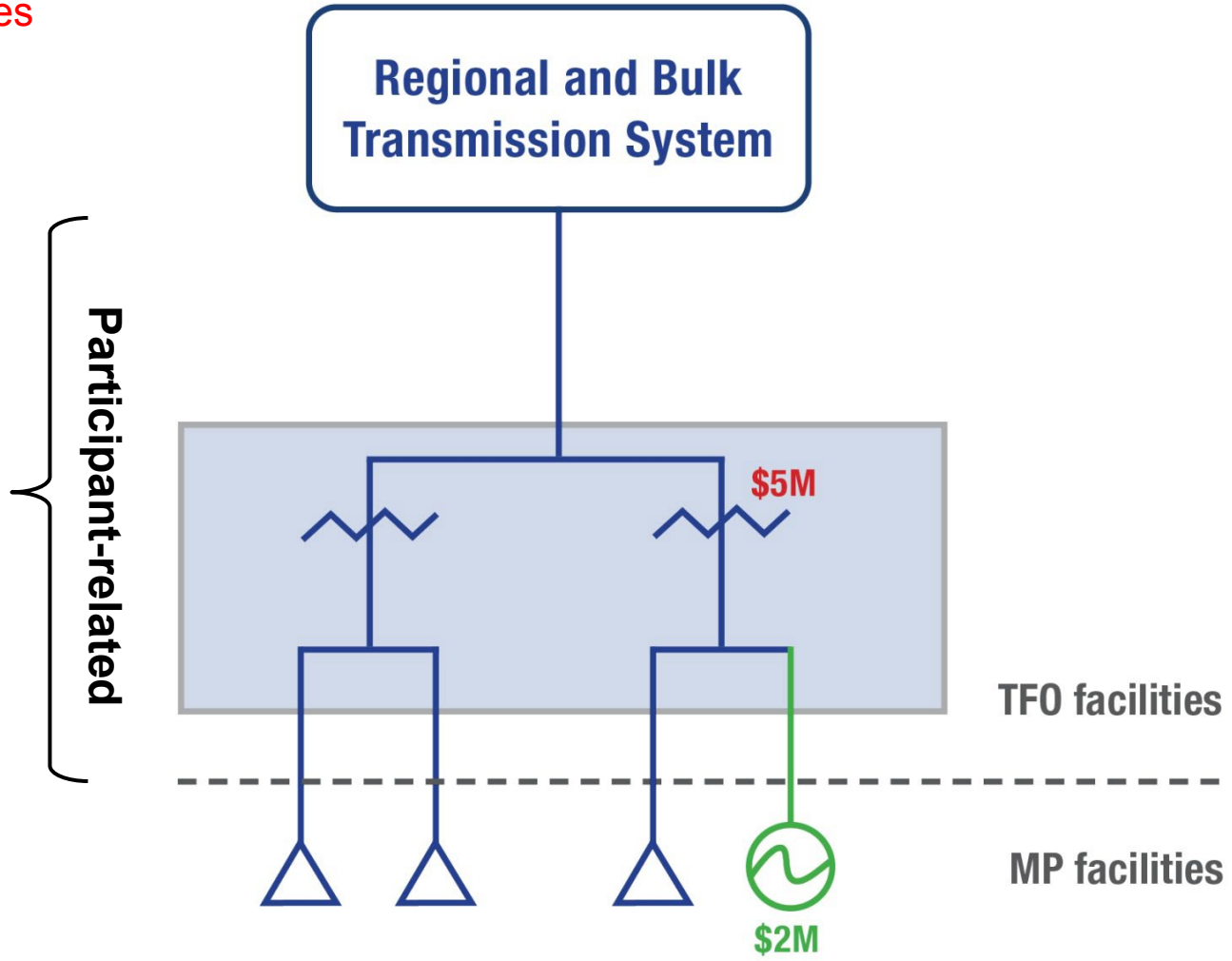
Generator to "share" substation:
$3M transformer addition
+ $2M other generator costs
+ Share of $15M (capacity and time weighted) for radial transmission line and substation



Example 3b: One market participant

Current ISO Tariff provides that changes to contract capacities warrant an adjustment to a previous (most recent) construction contribution

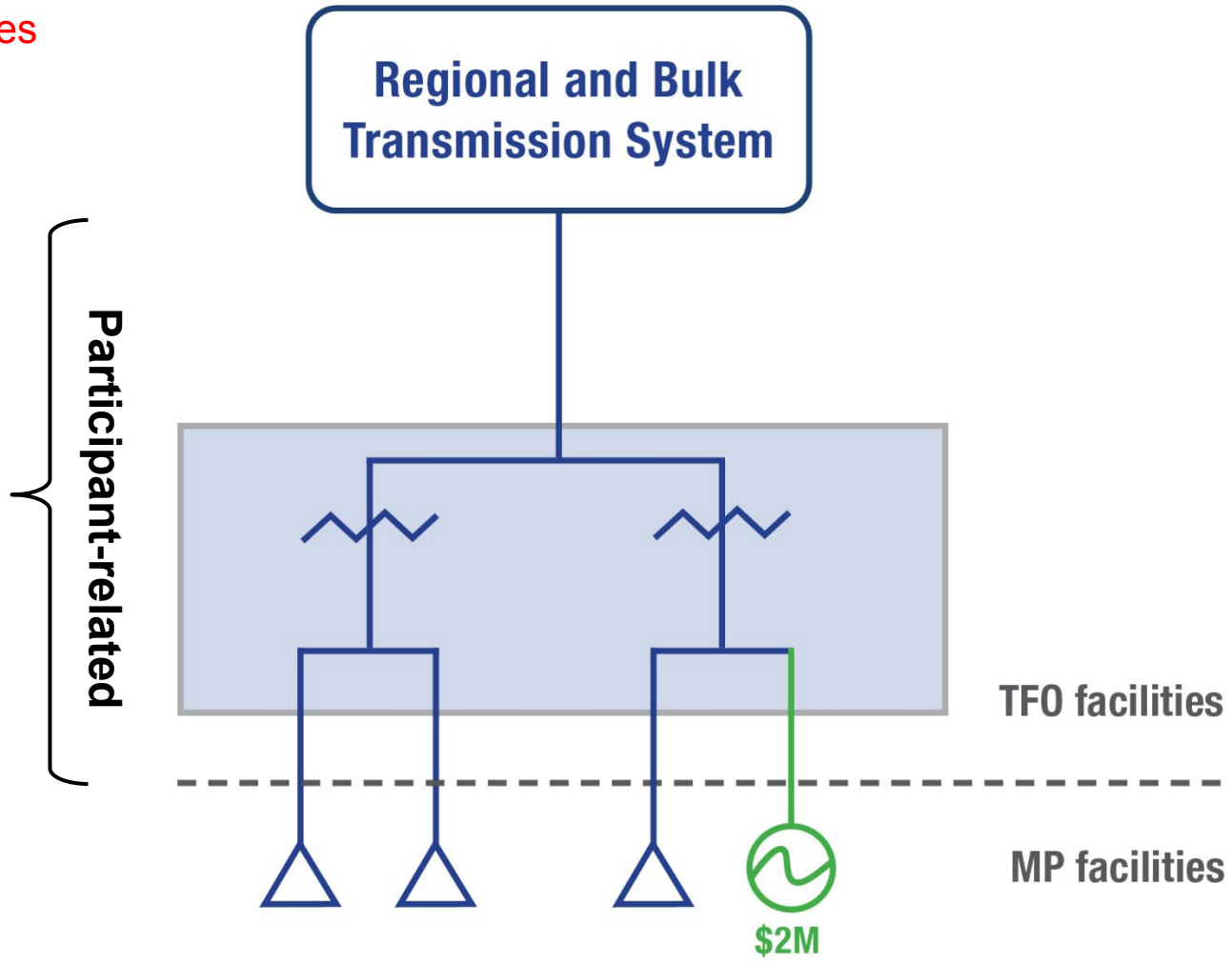
No transmission build:
$2M other generator costs
+ Share of $5M (capacity and time weighted) for a transformer addition 5 years ago



Example 3c: One market participant

Current ISO Tariff provides that changes to contract capacities warrant an adjustment to a previous (most recent) construction contribution

No transmission build:
$2M other generator costs
+ Share of $0 since no construction in the last 20 years



Changes to costs eligible for local investment – adding DCG

- Changing the substation fraction by adding DCG leads to an increase in supply-related costs
  - ultimately results in the market participant paying additional construction contribution
- A fair allocation of demand- and supply-related costs should reflect that DCGs are using DFO facilities previously paid for by transmission ratepayers. The reduction of participant-related costs eligible for local investment safeguards against the subsidization of generation by transmission ratepayers.
  - DFOs are responsible for the increase in construction contribution but can determine what costs should be flowed-through to end customer and/or paid for by distribution ratepayers

Additional considerations for discussion – contract change

Contract change:

1. It is the AESO's practice to go back to the last construction project at the DFO sub to recalculate investment and determine supply-related costs.
   i. Is this appropriate if it is a load reliability project? (e.g., a DFO reliability project with a cost of $20M)
   ii. Or any upgrade project (breaker, transformer, etc.)?
2. Should we go back to the actual POD construction if in the last 20 years?
3. If there has not been any construction in the last 20 years, there is no recalculation of contribution. Is this reasonable?
4. Where the radial sub is a TFO asset, the DFO/DFO customers pay for the asset by way of contribution and DTS contract. Is this reasonable?
5. The calculator is not built to allocate costs when there is more than one DCG at a POD

Additional considerations for discussion – adding transmission assets

Adding transmission assets:

1. Charged a contribution for the asset
2. Could be a breaker, could be a transformer?
3. Recalculate contribution from last construction project (additional contribution required from DFO)

Break

Level-setting: Getting to a Common Understanding – FortisAlberta

Lunch Break

Level-setting: Getting to a Common Understanding – DCGs

Break

Breakout Discussions

Initial cost allocation principles – for discussion

1. Parity between transmission interconnection costs calculation for transmission connected customers and distribution connected customers
   - **Fairness, effective price signals**
2. Market participants should be responsible for an appropriate share of the costs of transmission facilities that are required to provide them with access to the transmission system (may include paying a contribution towards facilities paid for by other customers and refund to the customer that paid)
   - **Fairness, cost causation**
3. Costs should not be allocated to a DCG customer after the DCG has energized, if the DCG is not directly causing those costs
   - **Certainty of future costs, stability**
4. DFOs should be provided with reasonable certainty re: cost treatment/recovery
   - **Certainty of future costs, stability**

Thank you

Background

Appendix 1: Example CCD

- AESO Project 1495: Fortis Hayter 277S 42MVA Transformer and 25kV Breaker Add
- Reliability project, therefore no requested increase to Rate DTS contract capacity of 29.3 MW
  - Upgrade project not eligible for local investment because no change to Rate DTS contract capacity
  - Construction contribution is 100% of the project costs
  - Fortis paid approximately $5M; costs ultimately borne by Fortis load customers
- ISD September 2015

CCD: No DCG at Hayer 277S (1)

Attachment A2: Contribution Determination

Participant:	**FortisAlberta Inc.**			Tariff:	AESO 2013
Project:	**Fortis Hayter 277S 42MVA Transformer and 25kV Breaker Add**			Effective:	1 Oct 2013
Number:	1495	Type:	DTS Only	To:	Current
Prepared by:	Ilice Tan	Date:	March 8, 2016	Version:	2013.0.1

Line	Description	Reference	Amount	Section
(a)	Cost of New Facilities	Final Cost Report	$4,998,437	8:2
(b)	Plus: Shared Cost of Existing Facilities		$0	8:3(2)(c)
(c)	Less: System-Related Costs		$0	8:3(3)
(d)	Participant-Related Costs	(a) + (b) – (c)	$4,998,437	8:3(2)
(e)	Less: Facilities in Excess of Good Practice		$0	8:4
(f)	Less: Reduction for Replaced Transformer		$0	8:5(2)
(g)	**Balance of Participant-Related Costs**	(d) – (e) – (f)	**$4,998,437**	8:6(1)

			Required Facilities		In Excess of Good Practice	
Line	Description	Reference	Demand-Related	Supply-Related		Section
(h)	Participant-Related Costs	From (g) and (e)	$4,998,437		$0	8:6(3)
(i)	Operations and Maintenance Charge	Estimated by Market Participant	NA		$0	8:9
(j)	**Total Costs Allocated to Market Participant**	(h) + (i)	**$4,998,437**		**$0**	8:6
(k)	Substation Fractions	Other Participant NA	1.00000	0.00000	NA	8:6(3)
(l)	Allocated Costs (j) × (k)	Other Participant NA	$4,998,437	$0	$0	8:6
(m)	Less: Maximum Local Investment	Investment Term of 20 Years	$0	NA	NA	8:8
(n)	Construction Contribution Required	(l) – (m)	$4,998,437	$0	$0	8:7
(o)	**Total Construction Contribution Required**		**$4,998,437**			8:7
(p)	Construction Contribution Previously Paid for Project		$6,042,411			5:2(8) or 9:2(2)
(q)	**Construction Contribution to be Refunded**		**($1,043,974)**			5:2 or 9:4

CCD: No DCG at Hayter 277S (2)

Attachment A3: Allocation of Costs and Substation Fractions

Participant:	**FortisAlberta Inc.**		Tariff: AESO 2013
Project:	**Fortis Hayter 277S 42MVA Transformer and 25kV Breaker Ad**		Effective: 1 Oct 2013
Number:	1495	Type: DTS Only	To: Current

ALLOCATION OF COSTS TO SERVICES AT SUBSTATION

Participant-Related Costs of Required Facilities	**$4,998,437**

Contract Stages			Incremental Contract Capacity			Incremental Substation Fractions		
	Start	Duration	This Participant		Other	This Participant		Other
No	Date	Years	DTS	NA	Participant	DTS	NA	Participant
(1)	Sep 2015	20.00	0.00	0.00	0.00	1.00000	0.00000	0.00000
Total		**20.00**	**Duration-Weighted Average**			**1.00000**	**0.00000**	**0.00000**
Allocation of Participant-Related Costs						**$4,998,437**	**$0**	**$0**

SUBSTATION FRACTIONS FOR DETERMINATION OF MAXIMUM INVESTMENT

Contract Stages			Contract Capacity After Project			Substation Fractions After Project		
	Start	Duration	This Participant		Other	This Participant		Other
No	Date	Years	DTS	NA	Participant	DTS	NA	Participant
(1)	Sep 2015	20.00	29.30	0.00	0.00	1.00000	0.00000	0.00000
Total		**20.00**						

Addition of DCG at Hayter 277S

- Along comes DCG, 10MW STS
- The addition of a distribution connected generator, which didn't require the construction of transmission facilities, triggers a contract change in the CCD
- In this case the CCD was used to calculate the GUOC
- Construction contribution of $0

CCD: Following Addition of DCG (1)

Attachment A3: Allocation of Costs and Substation Fractions

Participant:	**FortisAlberta Inc.**			Tariff:	AESO 2013
Project:	**Fortis Hayter 277S 42MVA Transformer and 25kV Breaker Ad**			Effective:	1 Oct 2013
Number:	1607/1608 from P1495	Type:	DTS and STS (Dual-Use)	To:	Current

ALLOCATION OF COSTS TO SERVICES AT SUBSTATION

Participant-Related Costs of Required Facilities	**$4,998,437**

Contract Stages			Incremental Contract Capacity			Incremental Substation Fractions		
	Start	Duration	This Participant		Other	This Participant		Other
No	Date	Years	DTS	STS	Participant	DTS	STS	Participant
(1)	Sep 2015	0.25	0.00	0.00	0.00	1.00000	0.00000	0.00000
(2)	Dec 2015	19.75	0.00	10.00	0.00	0.00000	1.00000	0.00000
Total		**20.00**	**Duration-Weighted Average**			**0.01250**	**0.98750**	**0.00000**

Allocation of Participant-Related Costs	**$62,480**	**$4,935,957**	**$0**

SUBSTATION FRACTIONS FOR DETERMINATION OF MAXIMUM INVESTMENT

Contract Stages			Contract Capacity After Project			Substation Fractions After Project		
	Start	Duration	This Participant		Other	This Participant		Other
No	Date	Years	DTS	STS	Participant	DTS	STS	Participant
(1)	Sep 2015	0.25	29.30	0.00	0.00	1.00000	0.00000	0.00000
(2)	Dec 2015	19.75	29.30	10.00	0.00	0.74555	0.25445	0.00000
Total		**20.00**						

CCD: Following Addition of DCG (2)

Attachment A2: Contribution Determination

Participant: **FortisAlberta Inc.**
Project: **Fortis Hayter 277S 42MVA Transformer and 25kV Breaker Add**
Number: 1607/1608 from P1495 Type: DTS and STS (Dual-Use)
Prepared by: Ilice Tan Date: May 4, 2017

Tariff: AESO 2013
Effective: 1 Oct 2013
To: Current
Version: 2013.0.1

Line	Description	Reference	Amount	Section
(a)	Cost of New Facilities	P1495 Final Cost Report	$4,998,437	8:2
(b)	Plus: Shared Cost of Existing Facilities		$0	8:3(2)(c)
(c)	Less: System-Related Costs		$0	8:3(3)
(d)	Participant-Related Costs	(a) + (b) – (c)	$4,998,437	8:3(2)
(e)	Less: Facilities in Excess of Good Practice		$0	8:4
(f)	Less: Reduction for Replaced Transformer		$0	8:5(2)
(g)	**Balance of Participant-Related Costs**	(d) – (e) – (f)	**$4,998,437**	8:6(1)

			Required Facilities		In Excess of Good Practice	
Line	Description	Reference	Demand-Related	Supply-Related		Section
(h)	Participant-Related Costs	From (g) and (e)	$4,998,437		$0	8:6(3)
(i)	Operations and Maintenance Charge	Estimated by Market Participant	NA		$0	8:9
(j)	**Total Costs Allocated to Market Participant**	(h) + (i)	**$4,998,437**		**$0**	8:6
(k)	Substation Fractions	Other Participant NA	0.01250	0.98750	NA	8:6(3)
(l)	Allocated Costs (j) × (k)	Other Participant NA	$62,480	$4,935,957	$0	8:6
(m)	Less: Maximum Local Investment	Investment Term of 20 Years	$0	NA	NA	8:8
(n)	Construction Contribution Required	(l) – (m)	$62,480	$4,935,957	$0	8:7
(o)	**Total Construction Contribution Required**		**$4,998,437**			8:7
(p)	Construction Contribution Previously Paid for Project		$4,998,437			5:2(8) or 9:2(2)
(q)	**Construction Contribution to be Refunded**		**$0**			5:2 or 9:4

			Generating Unit Owner's Contribution			
Line	Description	Region/Policy	STS MW	Amount/MW	Contribution	Section
(r)	**Owner's Contribution to be Paid**	**Central 2014-2015**	**10.00**	**$22,400**	**$224,000**	10:3
(s)	Generating Unit Owner's Contribution Previously Paid for Project				$224,000	10:3
(t)	**Generating Unit Owner's Contribution to be Refunded**				**$0**	10:3

CCD - Hayter

- STS at Hayter is staged, adding STS in increments
- October 2017 CCD issued
- Construction contribution is $0

CCD - Hayter

Attachment A2: Contribution Determination

Participant: **FortisAlberta Inc.**
Project: **FortisAlberta 277S Hayter Contract Change**
Number: 1988 Type: DTS and STS (Dual-Use)
Prepared by: Ilice Tan Date: October 16, 2017

Tariff: AESO 2017
Effective: 1 Jan 2017
To: Current
Version: 2017.0.1

Line	Description	Reference	Amount	Section
(a)	Cost of New Facilities	1495 Final Cost Repport	$4,998,437	8:2
(b)	Plus: Shared Cost of Existing Facilities		$0	8:3(2)(c)
(c)	Less: System-Related Costs		$0	8:3(3)
(d)	Participant-Related Costs	(a) + (b) – (c)	$4,998,437	8:3(2)
(e)	Less: Facilities in Excess of Good Practice		$0	8:4
(f)	Less: Reduction for Replaced Transformer		$0	8:5(2)
(g)	**Balance of Participant-Related Costs**	(d) – (e) – (f)	**$4,998,437**	8:6(1)

			Required Facilities		In Excess of Good Practice	
Line	Description	Reference	Demand-Related	Supply-Related		Section
(h)	Participant-Related Costs	From (g) and (e)	$4,998,437		$0	8:6(3)
(i)	Operations and Maintenance Charge	Estimated by Market Participant	NA		$0	8:9
(j)	**Total Costs Allocated to Market Participant**	(h) + (i)	**$4,998,437**		**$0**	8:6
(k)	Substation Fractions	Other Participant NA	0.00000	1.00000	NA	8:6(3)
(l)	Allocated Costs (j) × (k)	Other Participant NA	$0	$4,998,437	$0	8:6
(m)	Less: Maximum Local Investment	Investment Term of 20 Years	$0	NA	NA	8:8
(n)	Construction Contribution Required	(l) – (m)	$0	$4,998,437	$0	8:7
(o)	**Total Construction Contribution Required**		**$4,998,437**			8:7
(p)	Construction Contribution Previously Paid for Project		$4,998,437			5:2(8) or 9:2(2)
(q)	**Construction Contribution to be Refunded**		**$0**			5:2 or 9:4

			Generating Unit Owner's Contribution			
Line	Description	Region/Policy	STS MW	Amount/MW	Contribution	Section
(r)	**Owner's Contribution to be Paid**	**Central 2014-2015**	**5.30**	**$22,400**	**$118,720**	10:3

CCD - Hayter

Attachment A3: Allocation of Costs and Substation Fractions

Participant:	**FortisAlberta Inc.**			Tariff:	AESO 2017
Project:	**FortisAlberta 277S Hayter Contract Change**			Effective:	1 Jan 2017
Number:	1988	Type:	DTS and STS (Dual-Use)	To:	Current

ALLOCATION OF COSTS TO SERVICES AT SUBSTATION

Participant-Related Costs of Required Facilities	**$4,998,437**

Contract Stages			Incremental Contract Capacity			Incremental Substation Fractions		
	Start	Duration	This Participant		Other	This Participant		Other
No	Date	Years	DTS	STS	Participant	DTS	STS	Participant
(1)	Aug 2018	20.00	0.00	5.30	0.00	0.00000	1.00000	0.00000
	Total	**20.00**	**Duration-Weighted Average**			**0.00000**	**1.00000**	**0.00000**

Allocation of Participant-Related Costs	**$0**	**$4,998,437**	**$0**

SUBSTATION FRACTIONS FOR DETERMINATION OF MAXIMUM INVESTMENT

Contract Stages			Contract Capacity After Project			Substation Fractions After Project		
	Start	Duration	This Participant		Other	This Participant		Other
No	Date	Years	DTS	STS	Participant	DTS	STS	Participant
(1)	Aug 2018	20.00	29.30	25.30	0.00	0.53663	0.46337	0.00000
	Total	**20.00**						

CCD - Hayter

- Refined demand and supply-related cost allocation
  - Time weighted
- Construction contribution is $0

CCD – Hayter

Attachment A2: Contribution Determination

Participant: **FortisAlberta Inc.** Tariff: AESO 2013
Project: **Fortis Hayter 277S 42MVA Transformer and 25kV Breaker Add** Effective: 1 Oct 2013
Number: 1495/1607/1608/1921/1988 Type: DTS and STS To: Current
Prepared by: Ilice Tan Date: October 15, 2018 Version: 2013.0.1

Line	Description	Reference	Amount	Section
(a)	Cost of New Facilities	P1495 Tx and Breaker Add	$4,998,437	8:2
(b)	Plus: Shared Cost of Existing Facilities		$0	8:3(2)(c)
(c)	Less: System-Related Costs		$0	8:3(3)
(d)	Participant-Related Costs	(a) + (b) – (c)	$4,998,437	8:3(2)
(e)	Less: Facilities in Excess of Good Practice		$0	8:4
(f)	Less: Reduction for Replaced Transformer		$0	8:5(2)
(g)	**Balance of Participant-Related Costs**	(d) – (e) – (f)	**$4,998,437**	8:6(1)

			Required Facilities		In Excess of Good	
Line	Description	Reference	Demand-Related	Supply-Related	Practice	Section
(h)	Participant-Related Costs	From (g) and (e)	$4,998,437		$0	8:6(3)
(i)	Operations and Maintenance Charge	Estimated by Market Participant	NA		$0	8:9
(j)	**Total Costs Allocated to Market Participant**	(h) + (i)	**$4,998,437**		**$0**	8:6
(k)	Allocated Ratio	Other Participant NA	0.56461	0.43539	NA	8:6(3)
(l)	Allocated Costs (j) × (k)	Other Participant NA	$2,822,151	$2,176,286	$0	8:6
(m)	Less: Maximum Local Investment	Investment Term of 20 Years	$0	NA	NA	8:8
(n)	Construction Contribution Required	(l) – (m)	$2,822,151	$2,176,286	$0	8:7
(o)	**Total Construction Contribution Required**		**$4,998,437**			8:7
(p)	Construction Contribution Previously Paid for Project		$4,998,437			5:2(8) or 9:2(2)
(q)	**Construction Contribution to be Refunded**		**$0**			5:2 or 9:4

			Generating Unit Owner's Contribution			
Line	Description	Region/Policy	STS MW	Amount/MW	Contribution	Section
(r)	**Owner's Contribution to be Paid**	**Central 2014-2015**	**25.30**	**$22,400**	**$566,720**	10:3
(s)	Generating Unit Owner's Contribution Previously Paid for Project				$566,720	10:3
(t)	**Generating Unit Owner's Contribution to be Refunded**				**$0**	10:3

CCD - Hayter

Attachment A3: Allocation of Costs and Substation Fractions

Participant:	**FortisAlberta Inc.**			Tariff:	AESO 2013
Project:	**Fortis Hayter 277S 42MVA Transformer and 25kV Breaker Ad**			Effective:	1 Oct 2013
Number:	1495/1607/1608/1921/1988	Type:	DTS and STS (	To:	Current

ALLOCATION OF COSTS TO SERVICES AT SUBSTATION

Participant-Related Costs of Required Facilities	**$4,998,437**

Contract Stages			Incremental Contract Capacity			Incremental Substation Fractions		
	Start	Duration	This Participant		Other	This Participant		Other
No	Date	Years	DTS	STS	Participant	DTS	STS	Participant
(1)	Sep 2015	0.25	0.00	0.00	0.00	1.00000	0.00000	0.00000
(2)	Dec 2015	1.92	0.00	10.00	0.00	0.00000	1.00000	0.00000
(3)	Nov 2017	0.75	0.00	20.00	0.00	0.00000	1.00000	0.00000
(4)	Aug 2018	17.08	0.00	25.30	0.00	0.00000	1.00000	0.00000
	Total	**20.00**		**Duration-Weighted Average**		**0.01250**	**0.98750**	**0.00000**
Allocation of Participant-Related Costs						**$62,480**	**$4,935,957**	**$0**

SUBSTATION FRACTIONS FOR DETERMINATION OF MAXIMUM INVESTMENT

Contract Stages			Contract Capacity After Project			Substation Fractions After Project		
	Start	Duration	This Participant		Other	This Participant		Other
No	Date	Years	DTS	STS	Participant	DTS	STS	Participant
(1)	Sep 2015	0.25	29.30	0.00	0.00	1.00000	0.00000	0.00000
(2)	Dec 2015	1.92	29.30	10.00	0.00	0.74555	0.25445	0.00000
(3)	Nov 2017	0.75	29.30	20.00	0.00	0.59432	0.40568	0.00000
(4)	Aug 2018	17.08	29.30	25.30	0.00	0.53663	0.46337	0.00000
	Total	**20.00**		**Duration-Weighted Average**		**0.56461**	**0.43539**	**0.00000**
						$2,822,151	**$2,176,286**	**$0**