

# BC Hydro OATT - Balancing Area Transmission Service Workshop

January 20, 2014



FOR GENERATIONS

# AGENDA

Topic	Time	Speaker
Welcome and Introduction	09:00 – 09:15	Gord Doyle
Background	09:15 – 10:00	Martin Huang
Enforcement Mechanism to Prevent Unauthorized Use of the Transmission System by the AESO	10:00 – 10:15	Justin Miedema
Break	10:15 – 10:30	
Balancing Area Transmission Service Tariff *Structure *Unreserved Use penalty *Allocation to PTP transmission customers	10:30 – 11:15	Justin Miedema
Timeline and Next Steps	11:15 – 11:30	Gord Doyle
Discussion and Questions	11:30 – 12:00	Gord Doyle
Adjourn	12:00	

# Background – previous consultation

- Today's meeting builds on the consultation session held June 24, 2013 in which BC Hydro discussed the benefits of the BC-AB Intertie. Specifically:
  - How recent developments in Alberta, including the introduction of AESO's ATC Allocation Rule, are impacting BC Hydro's OATT customers and ratepayers.
  - Options which BC Hydro may have to protect the interests of its OATT Customers and ratepayers.
  
- Stakeholder Feedback - Key themes
  - *The AESO should stop using the BC-AB intertie as a “free” resource*
  - *The intertie should operate near its path rating*
  - *BC Hydro should explore mechanisms to charge the AESO for setting aside transmission capacity on the BC Hydro system.*

# BC Hydro's Objectives for the Intertie

- Prevent the unauthorized use of the BC Hydro transmission system
- The BC-AB Intertie should operate near its path rating
  - Little progress has been made despite a legislated requirement in Alberta to restore it to 2004 levels.
- Restore the benefits of the intertie to B.C.
  - Restore the ability of owners of Transmission Service on the B.C. portion of the BC-AB Intertie to transact with confidence based on transmission capacity they have purchased.
  - Restore the operation of the BC-AB Intertie to a partnership arrangement where the impacts of actions on both sides of the B.C. – Alberta border are considered when making decisions that affect the intertie.

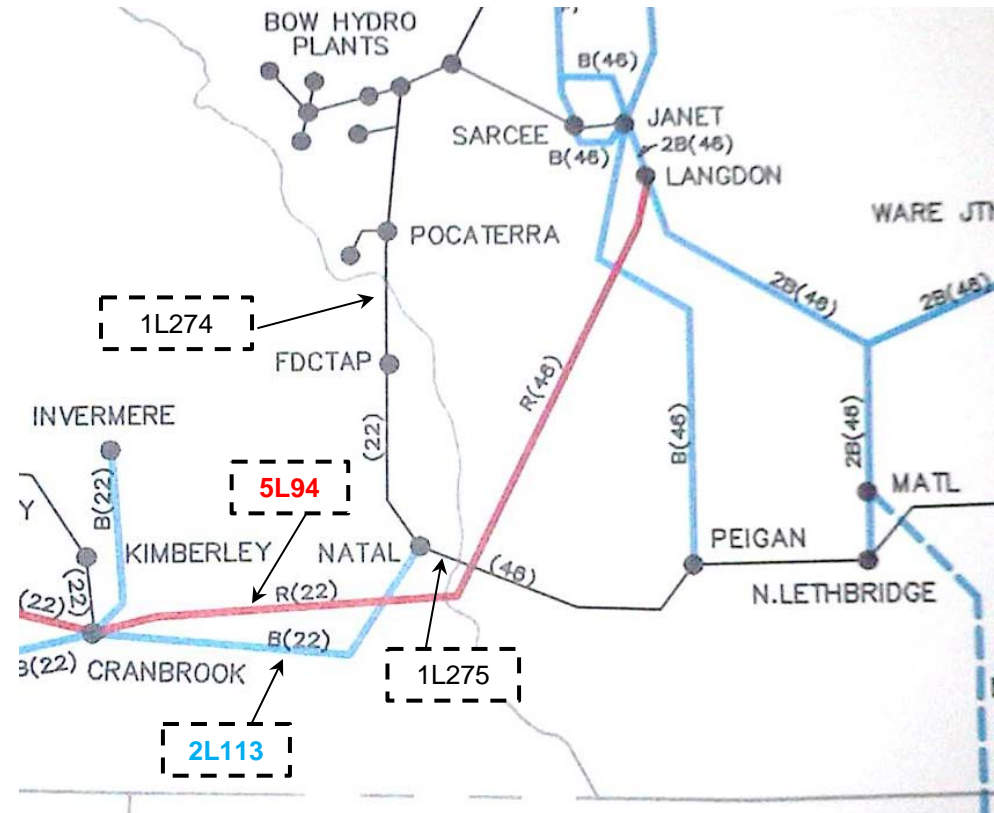
# Background

- The BC-AB Intertie
- The Benefits of the BC-AB Intertie to Alberta and to B.C.
- How the AESO uses BC Hydro's transmission system
- Impacts of this use on BC Hydro's OATT Customers and ratepayers

# BC-AB Intertie - Current Operations

The BC-AB Intertie consists of:

- Two 138kV lines – built in the 1950's; and
- One 500kV line – built in the 1980's



The BC-AB Intertie Path Rating is:

- 1,200 MW from B.C. to Alberta
- 1,000 MW from Alberta to B.C.

# BC Hydro-AESO Interconnection Agreement

- BC Hydro and the AESO are parties to an interconnection agreement for the BC-AB Intertie.
- The interconnection agreement is a high level agreement that provides operating protocols for the intertie.
- The material being discussed today is outside the scope of the interconnection agreement.

# Benefits derived from the BC-AB Intertie

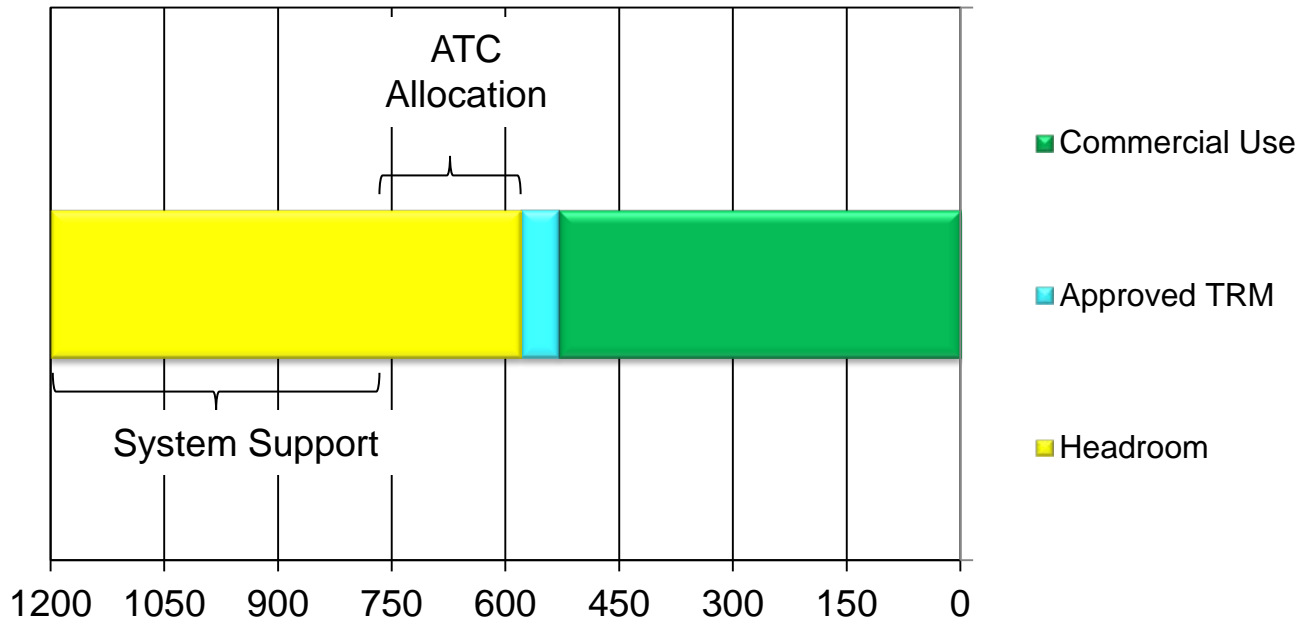
- Mutual Benefits from the BC-AB Intertie include:
  - Operational reliability
  - Load diversity
  - Generation diversity
  - Commercial



# Headroom

- AESO effectively sets aside transmission capacity on BC Hydro's system for reliability and other purposes.
  - The AESO does this by setting a lower TTC or a higher TRM

Example:



# How is Headroom Set Aside?

## Example:

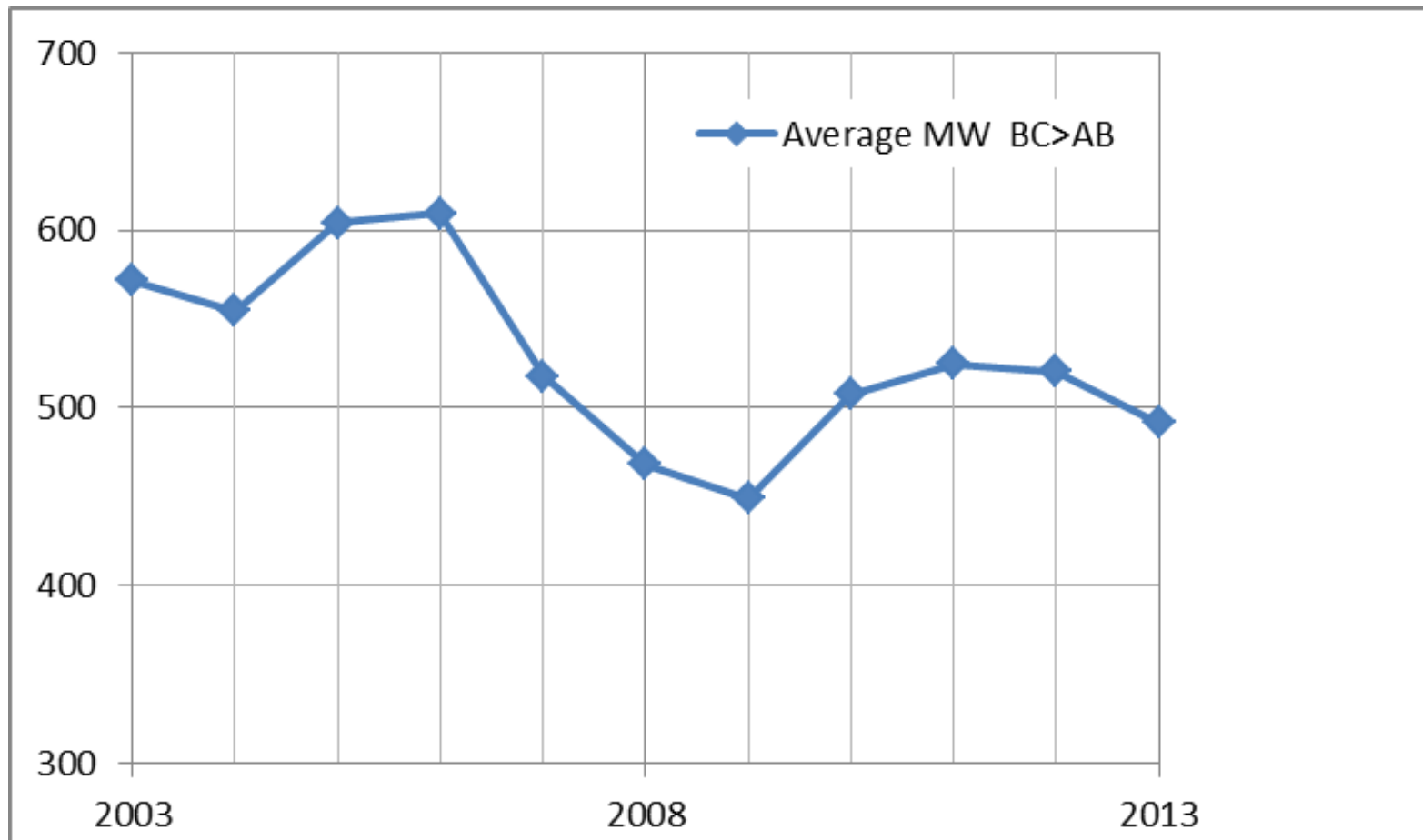
The path rating is 1200 MW. For a given hour, the Path ATC for B.C. to Alberta is set as follows:

- If AESO's TTC is 780 MW and BC Hydro's TTC is 850 MW, the Path TTC is set at the lower of the AESO and BC Hydro TTC values, or 780 MW.
- If AESO sets TRM at 250 MW (50 MW for load fluctuation and 200 MW under the ATC allocation rule) and BC Hydro does not set a TRM, the Path TRM is set at the higher of the AESO and BC Hydro TRM values or 250 MW.

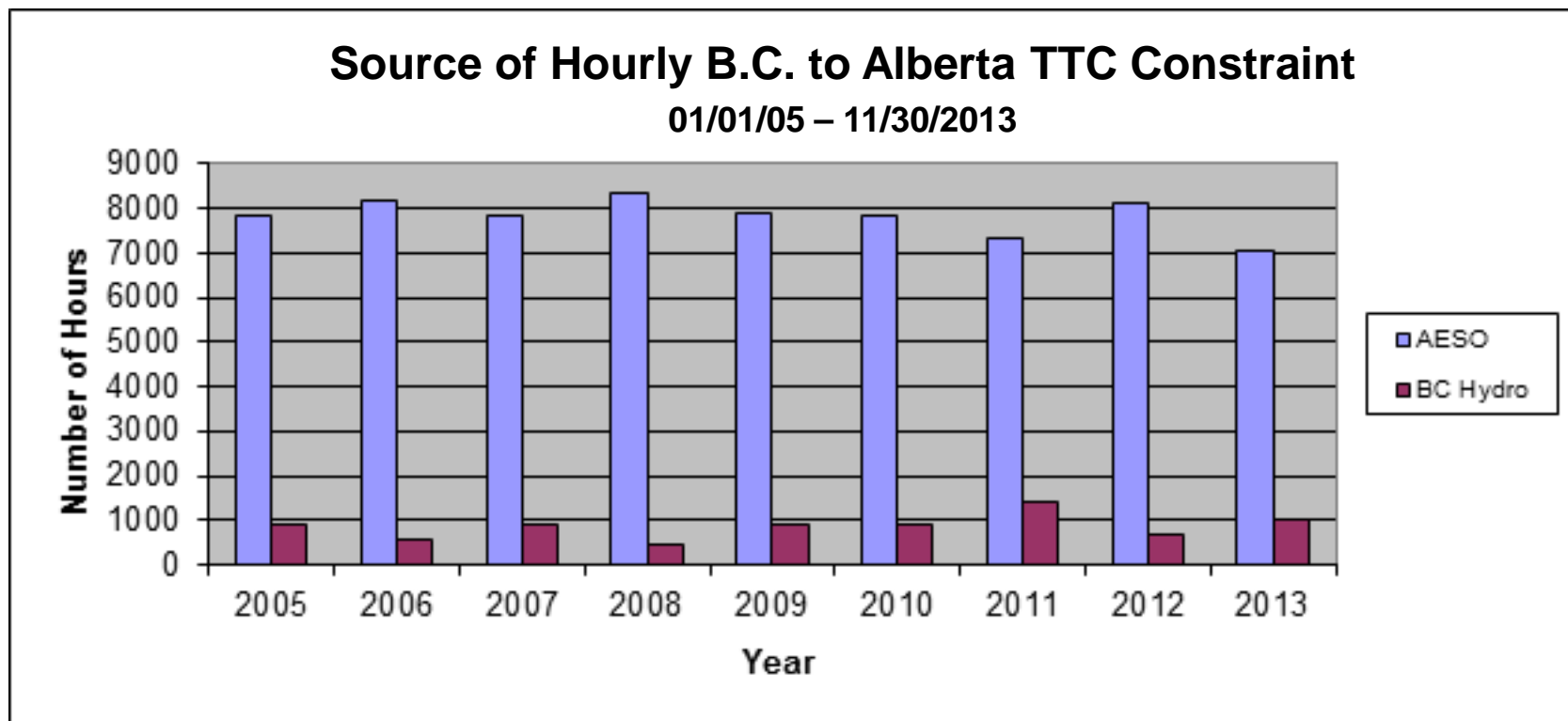
Therefore, the Path ATC is  $780 \text{ MW} - 250 \text{ MW} = 530 \text{ MW}$  and the Headroom Set aside is  $1200 \text{ MW} - 530 \text{ MW} - \text{Approved TRM (50 MW)} = \mathbf{620 \text{ MW}}$

- 420 MW For AESO's system support needs
  - 200 MW For the AESO's Allocation Rule
- 620 MW**

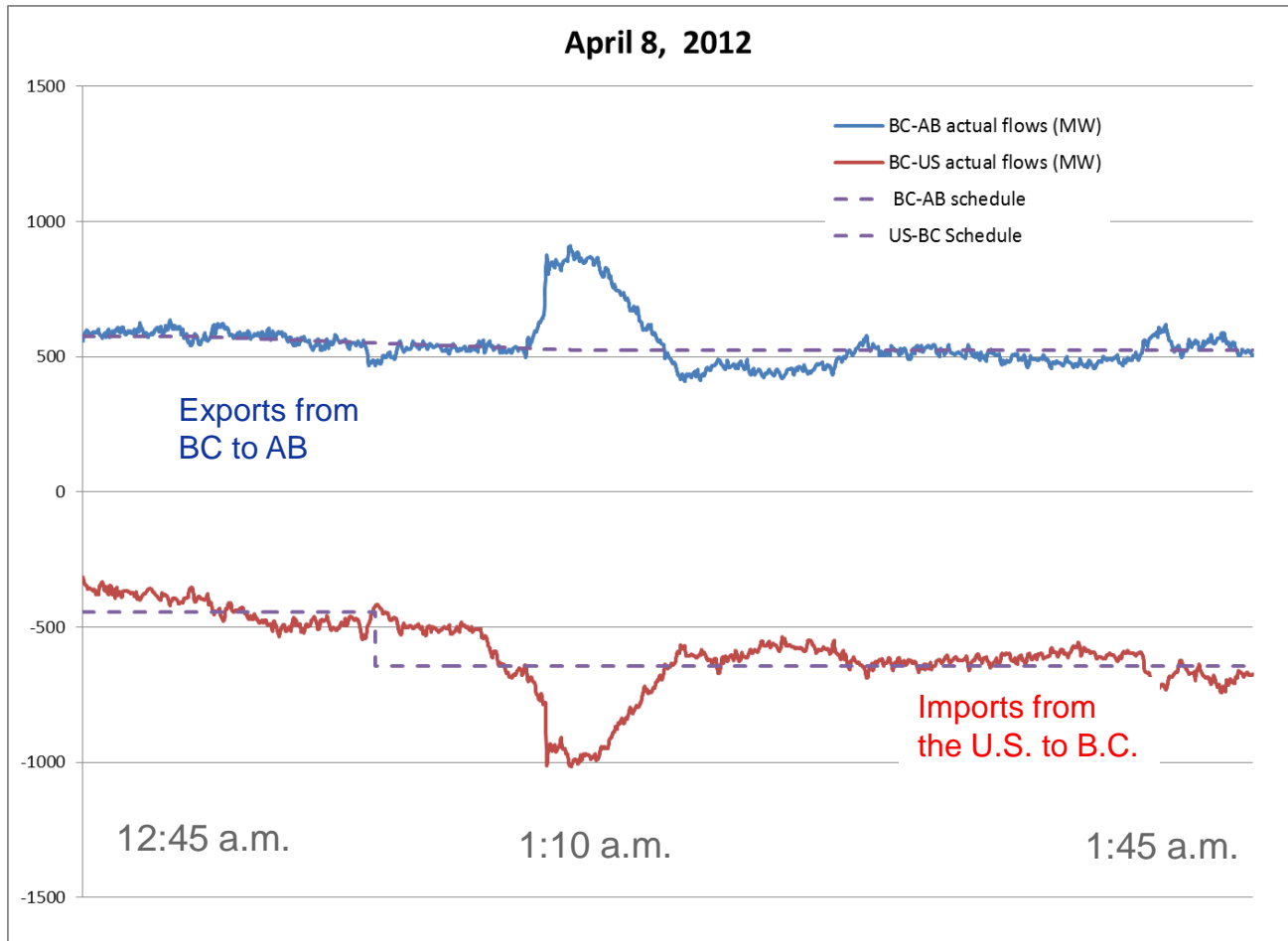
# Historical BC-Alberta Intertie Export Available Transfer Capability (ATC) 2003 – 2013



# Source of Hourly B.C. Export TTC Constraints



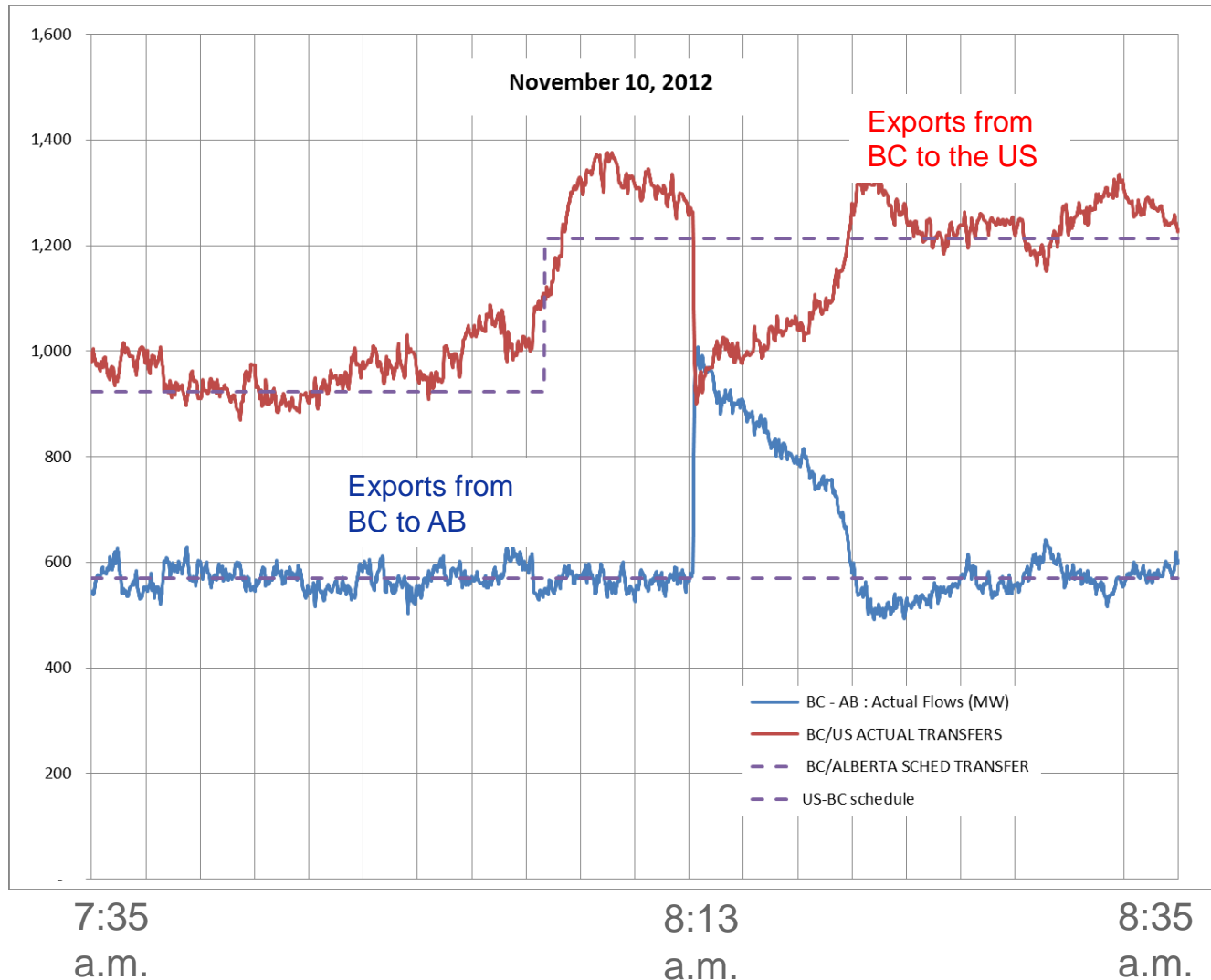
# Example 1



- Genesee 3 tripped at 1:10 a.m. PST on April 8, 2012. Exports from B.C. to Alberta spiked by about 300 MW to a peak of 908 MW.
- Imports from the U.S. simultaneously spiked by about 300 MW to a peak of 1,000 MW.

The AESO uses BC Hydro's transmission system to transmit energy from the U.S. to support the Alberta system and they set aside transmission capacity to deal with anticipated flows.

# Example 2



- Genesee 3 tripped at 8:13 a.m. PST on November 10, 2012.
- Exports from B.C. to Alberta increased by about 350 MW.
- There was a corresponding decrease in exports from B.C. to the U.S.

# Enforcement Mechanism to Prevent Unauthorized Use of BC Hydro's Transmission System

# Physical Limits on Intertie

- The AESO sets aside transmission capacity and is an unauthorized user of BC Hydro's transmission system.
  - The AESO has not reserved transmission capacity or entered the queue under BC Hydro's OATT
- BC Hydro's enforcement mechanism would give BC Hydro the authority to physically limit the intertie if the AESO continues to use BC Hydro's transmission capacity without taking service under a BCUC approved tariff.



## Enforcement Mechanism

- Enforce the rights to BC Hydro transmission capacity that have been obtained in accordance with BC Hydro's OATT and queue priority.
- Enforcement will automatically open the BC-AB Intertie if actual flows exceed certain thresholds.
- Planning studies and engineering work are ongoing to create an implementation plan.
- This physical limit, if triggered, would result in interruptions to any OATT customers using the intertie.

# Balancing Area Transmission Service

# Balancing Area Transmission Service Tariff

- BC Hydro has developed a rate schedule that provides the terms and conditions under which it would provide the AESO with Balancing Area Transmission Service to become a customer under BC Hydro's OATT
- The Balancing Area Transmission Service tariff would provide a mechanism to charge the AESO for its use of the BC Hydro transmission system

# Balancing Area Transmission Service

- The AESO becomes a BC Hydro customer under the OATT
- Entitles the AESO to set aside transmission capacity on BC Hydro's transmission system to allow flows of energy to Alberta for the AESO's operational needs
- Does not guarantee the provision of energy to the AESO
- This service is only available to the AESO.

# Key Tariff Components

The proposed tariff has the following key components:

- 1) Balancing Area Transmission Service to AESO – including volumes and rates
- 2) Unreserved Use – if the AESO uses BC Hydro’s transmission capacity and doesn’t nominate a sufficient volume of capacity, an Unreserved Use Rate will be charged and this rate will include a premium
- 3) Revenue Allocation to OATT Customers – to the extent BC Hydro’s Firm PTP OATT customers have their transmission rights interrupted, BC Hydro will allocate certain revenues collected under the tariff back to them.

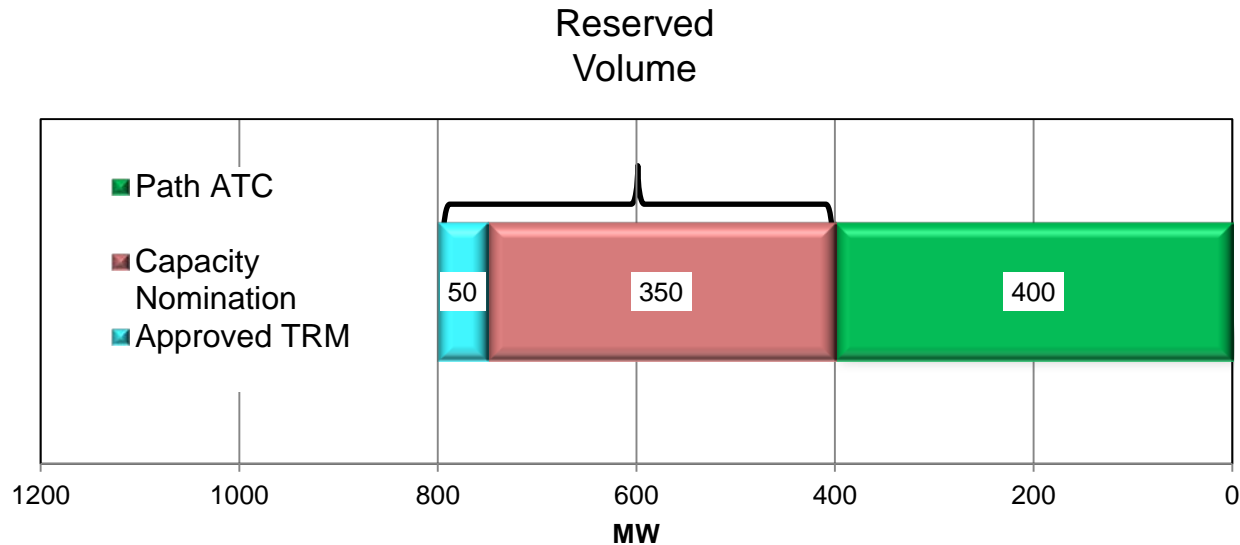
# Balancing Area Transmission Service Capacity Nomination (Volume)

Under the proposed tariff:

- Every hour the AESO will make a capacity nomination
- Every hour the AESO will be charged for its full capacity nomination.
- The Capacity Nomination will be equal to the amount of capacity the AESO reserves in excess of Approved TRM.
- If the AESO does not nominate enough capacity, it will be subject to Unreserved Use Penalties.

# Capacity Nomination:

The AESO's Capacity Nomination will be the reserved volume in excess of Approved TRM



Example:

- To reserve 400 MW, the AESO would make a 350 MW capacity nomination

# Tariff Volumes

- The hourly capacity nomination has two volume components:
  - **The Hourly Interrupted Volume** – this is the portion of the total transmission capacity used by AESO that in effect prevents BC Hydro’s Firm PTP OATT customers from using their transmission capacity.
  - **The General Volume** – this is the difference between the AESO’s capacity nomination and the Hourly Interrupted Volume



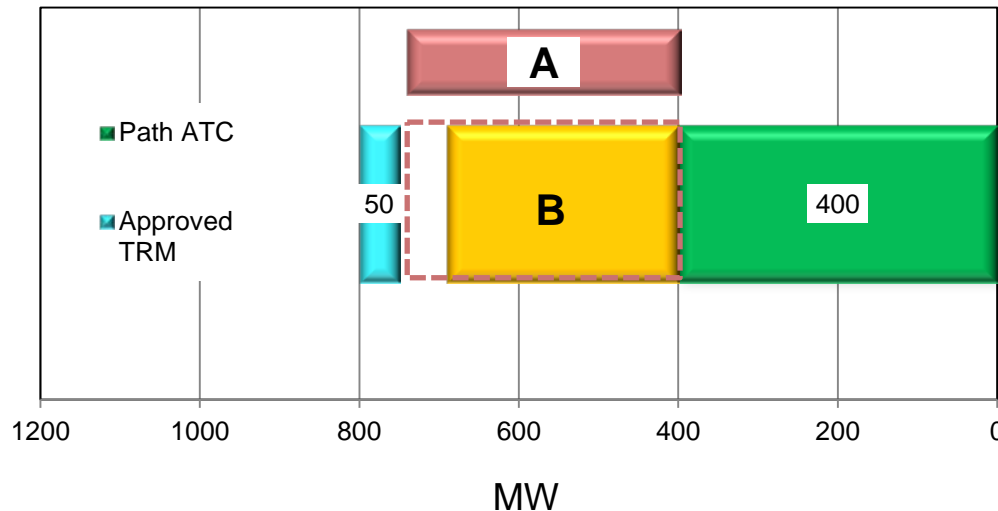
# Hourly Interrupted Volume

- The volume is determined as follows:
  - Determine the minimum of:
    - The Hourly Capacity Nomination
  - The difference between the Existing Committed Capacity and the Alberta Import ATC
    - **Existing Committed Capacity** is currently 690 MW of firm PTP including 480 MW of Long Term Firm and 210 MW of Conditional Firm Service.
    - **Approved TRM** is 50 MW
    - **AB Import ATC** is the difference between the final effective TTC and TRM, as determined by BC Hydro, for imports into Alberta in a given hour.

# Tariff Volumes – Example 1

Step 1: Calculate the Interrupted Volume:

- Minimum of the capacity nomination or the Existing and Committed capacity minus the AB Import ATC.



A = Capacity Nomination  
= 350 MW

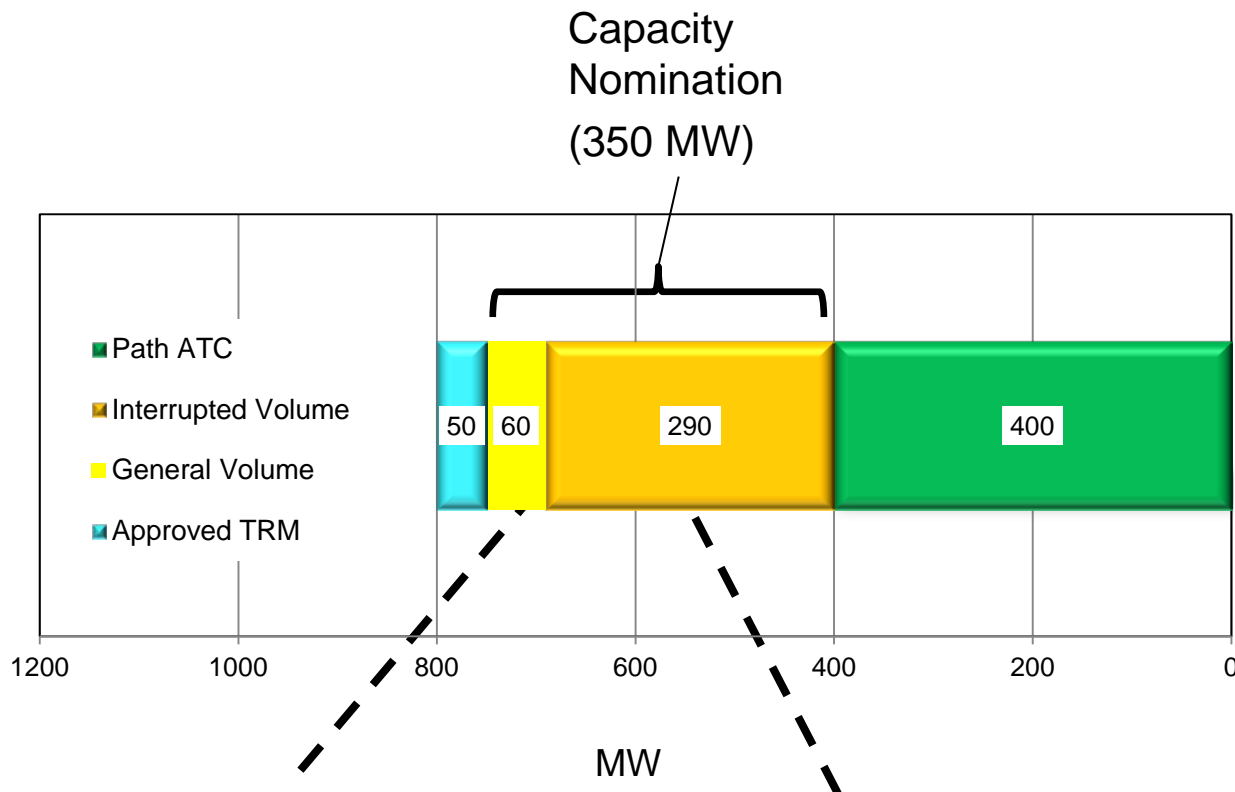
B = 690 – AB ATC (400)  
= 290 MW

**B is less than A**

Interrupted Volume = 290 MW

The General Volume is the difference between the Capacity Nomination and the Interrupted Volume or  $350 \text{ MW} - 290 \text{ MW} = 60 \text{ MW}$

# Application of Rates – Example 1

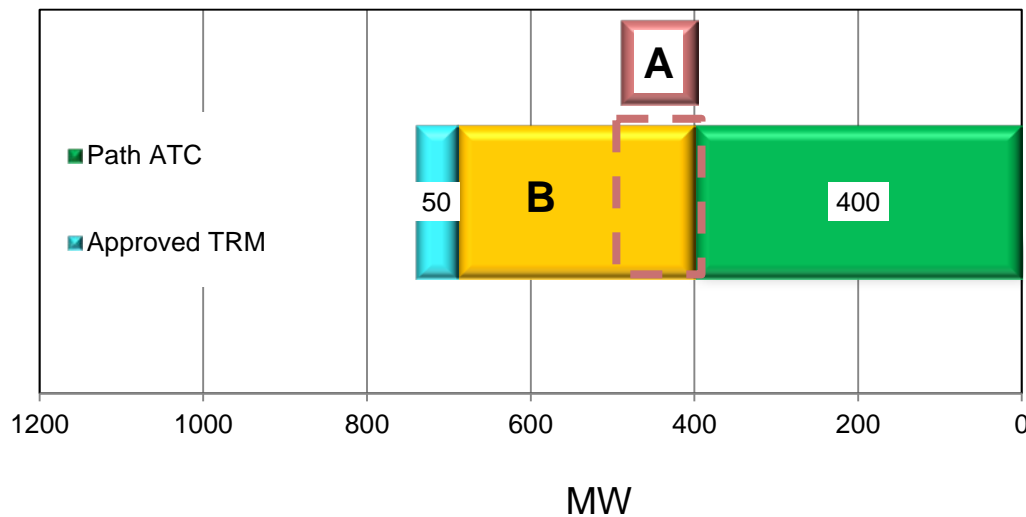


General Volume: Priced at the Long term Firm PTP rate (currently \$5.97 / MW per hour).

Interrupted Volume: Priced at the higher of the General Rate or the Interruption Rate (hourly Spread between Mid C and the AB pool price).

# Tariff Volumes – Example 2

Now assume the AESO makes a capacity nomination of 100 MW



A = Capacity Nomination  
= 100 MW

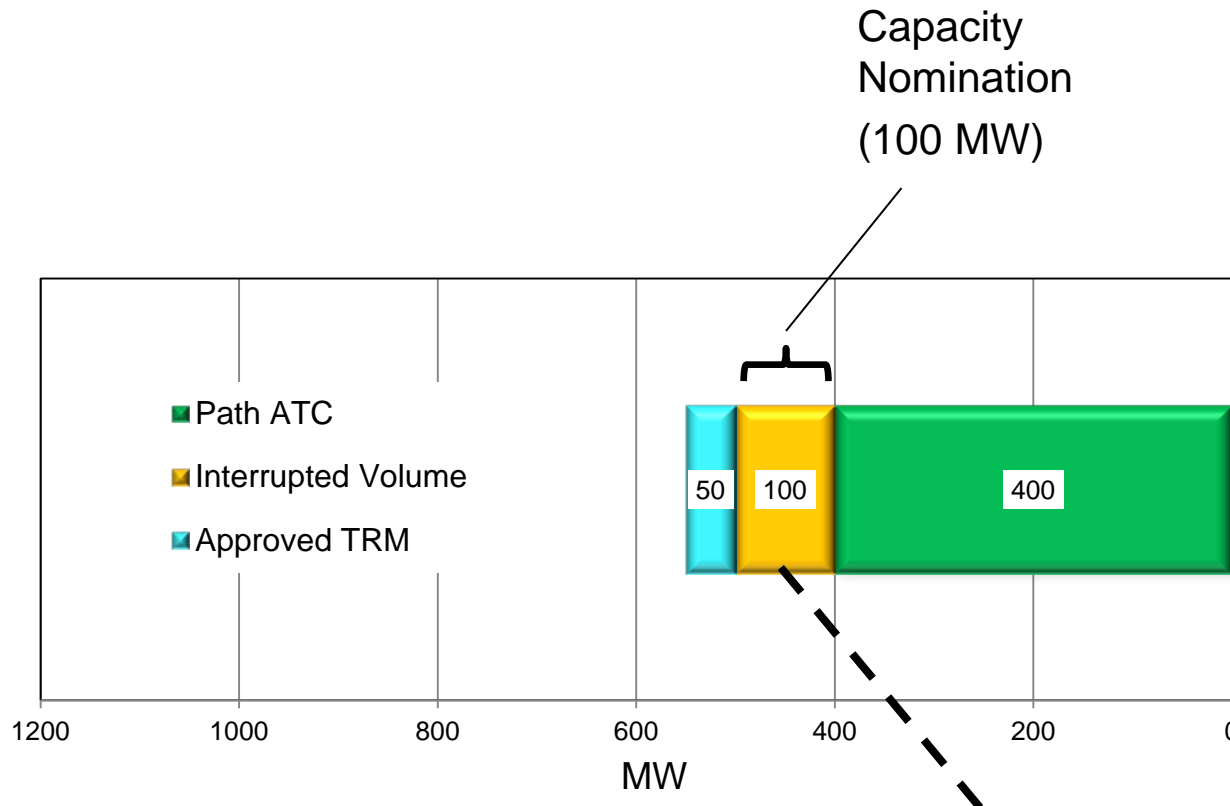
B = 690 – AB ATC (400)  
= 290 MW

**A is less than B**

Interrupted Volume = 100 MW

The General Volume is the difference between the Capacity Nomination and the Interrupted Volume or  $100 \text{ MW} - 100 \text{ MW} = 0 \text{ MW}$

# Application of Rates – Example 2



There is no General Volume.

Interrupted Volume:  
Priced at the higher of the General Rate or the Interruption Rate (hourly Spread between Mid C and the AB pool price).

# Unreserved Use - Overview

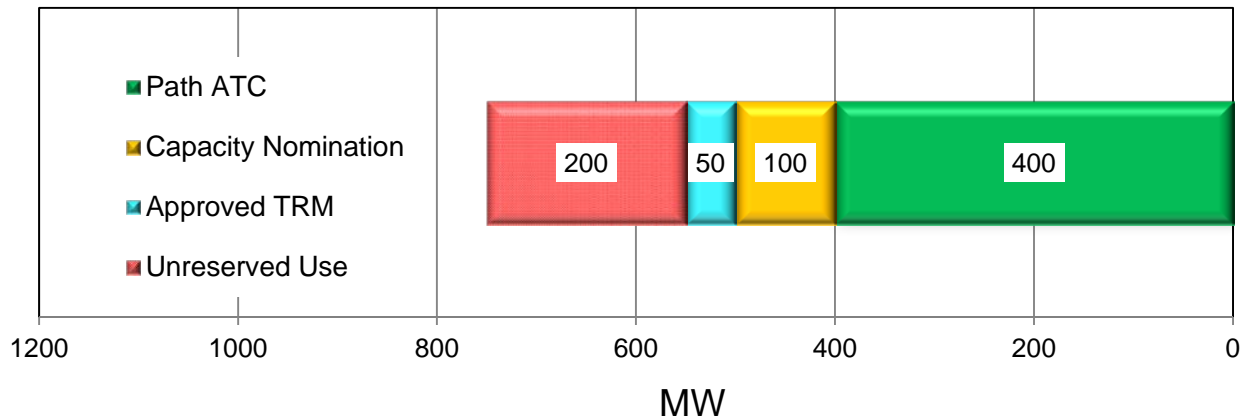
- The unreserved use charges (UUC) under the Proposed Tariff are meant to be a deterrent.
- The UUCs will be charged when AESO uses transmission capacity on BC Hydro's transmission system without reserving it.

# Unreserved Use - Terms

- Designed to encourage an accurate Capacity Nomination.
- In each instance of unreserved use, the unreserved use charge is the **product** of:
  - unreserved usage (MW)
  - 8,760 hours
  - the Firm PTP Hourly rate (\$5.97/MWh)
  - 200%

# Unreserved Use – Using Example 2

- AESO use of BC Hydro transmission beyond its Capacity Nomination plus Approved Margin constitutes unreserved Use.
- Proper nominations will avoid instances of unreserved Use.





# Revenue Allocation

- The revenues collected by BC Hydro in respect of the Hourly Interrupted Volume will be allocated to Firm PTP OATT customers.

# BC Hydro Allocation

- The revenues collected by BC Hydro in respect of the General Volume will be allocated to BC Hydro and ultimately to the NITS customer.
  - This approach is consistent with current practice where incremental PTP revenue offsets charges to the NITS customer.
- A lower NITS charge benefits all BC Hydro ratepayers

# Summary of the Tariff

- The tariff will send a price signal to the AESO for the use of BC Hydro's system.
- The AESO's use of the BC Hydro transmission system in front of firm PTP customers results in frequent curtailments to BC Hydro's Point-to-Point OATT customers despite the fact that these customers pay for 100% of the capacity they reserve under the OATT.
- The tariff will compensate BC Hydro and its Point-to-Point OATT customers for the AESO's use of BC Hydro's transmission system.

## Next Steps

- Comment period open until January 31, 2014.
- If you have written comments, you can email them to [bchydroregulatorygroup@bchydro.com](mailto:bchydroregulatorygroup@bchydro.com)
- We encourage your feedback!
- BC Hydro plans to file the Enforcement mechanism and Balancing Area Transmission Service tariff for BCUC approval as early as late February 2014.

# Discussion and Questions

Thank You!