

TTC/ATC

In this section:

[Definitions](#)

[Total Transfer Capability \(TTC\)](#)

[Available Transfer Capability \(ATC\)](#)

[Counterflow ATC](#)

[Postbacks in Pre-schedule of Grandfathered Agreements](#)

[Real-Time Grant Remaining Capacity](#)

1.0 DEFINITIONS

Available Transfer Capability (ATC): – The amount of transfer capability remaining in the transmission network available over and above committed uses. Mathematically, ATC is defined as the Total Transfer Capability less the Transmission Reliability Margin, less the Capacity Benefit Margin and less the sum of existing transmission commitments. As defined under the Commission approved NERC Glossary of Terms.¹

System Operating Limit (SOL): The value (such as MW, MVar, Amperes, Frequency or Volts) that satisfies the most limiting of the prescribed operating criteria for a specified system configuration to ensure operation within acceptable reliability criteria. As defined under the Commission approved NERC Glossary of Terms.

Total Transfer Capability (TTC): The amount of electric power that can be transferred over the interconnected transmission network in a reliable manner while meeting all of a specific set of pre-defined pre- and post-contingency system conditions. As defined under the Commission approved NERC Glossary of Terms. This is further discussed in the Available Transfer Capability Implementation Document (ATCID)²

Transmission Reliability Margin (TRM): The amount of Total Transfer Capability necessary to ensure that the interconnected transmission network is secure under a possible range of uncertainties in system conditions. As defined under the Commission approved NERC Glossary of Terms. This is further discussed in the Transmission Reliability Margin Implementation Document (TRMID)³.

TRM is the Transmission Reliability Margin for the ATC Path during that period.

¹ NERC Glossary of Terms is available under [Compliance Information at Mandatory Reliability Standards | British Columbia Utilities Commission \(bcuc.com\)](#).

² ATCID is available at <https://www.bchydro.com/energy-in-bc/operations/transmission/transmission-system/atc-methodology.html>.

³ TRMID is available at <https://www.bchydro.com/energy-in-bc/operations/transmission/transmission-system/atc-methodology.html>.

Transmission Reliability Margin unreleased (TRMu): is the Transmission Reliability Margin for the ATC Path that has not been released for sale (unreleased) as non-firm capacity by the Transmission Service Provider during that period. As defined in the TRMID

2.0 Total Transfer Capability (TTC)

TTC is based on the physical requirements governing sound utility practice before, during and after network element outages. The method by which BC Hydro that determines the amount of Firm and Non-Firm TTC for operating purposes is discussed in BC Hydro's the Open Access Transmission Tariff (OATT) Attachment C⁴, and the ATCID. BC Hydro will use the TTC value from the ATCID. for each ATC Path shown in the table below to calculate ATC for that Path unless BC Hydro has determined that the System Operating Limit (SOL) for the respective ATC Path is lower than the TTC value, in which case BC Hydro will use the SOL as TTC.

ATC Path	TTC	TRM (MW)	TRMu (MW) ⁵
BC-Alberta	1200	Higher of (TTC – 850, 0), plus 65	65
Alberta-BC	1000	Higher of (TTC – 600, 0), plus 65	65
BC-US	3150	Higher of (TTC – 2400, 0), plus 50	50
US-BC	3000	Higher of (TTC – 2000, 0), plus 50	50
BCHA-FBC	811	0	0
FBC-BCHA	811	0	0

3.0 AVAILABLE TRANSFER CAPABILITY (ATC)

Consistent with the formulas shown in Attachment C of the OATT, BC Hydro's specific The mathematical algorithms for firm and non-firm ATC consist of the following formulas:

Pre-schedule

Firm ATC = TTC – TRM – Rreserved Firm Transmission Service + Postbacks (release of recalled grandfathered agreements) + Firm Counterflows

Network Economy (Secondary Network) ATC = TTC – TRMu – Rreserved Firm Transmission Service – Rreserved Network Economy Transmission Service + Postbacks (release of recalled grandfathered agreements) + Non-Firm Counterflows

Non-Firm ATC = TTC – TRMu - Rreserved Firm Transmission Service – Rreserved Network Economy Transmission Service – Rreserved Non-Firm Transmission Service + Postbacks (release of recalled grandfathered agreements) + Non-Firm Counterflows

⁴ OATT Attachment C is available at https://www.bchydro.com/toolbar/about/planning_regulatory/tariff_filings/oatt.html.

⁵ These values are typically used; however, TRM/TRMu may be adjusted up or down in real time depending on the system conditions of BC Hydro and/or adjacent Balancing Authorities.

Secondary Non-Firm ATC = TTC – TRMu - ~~R~~reserved Firm Transmission Service – ~~R~~reserved Network Economy Transmission Service – ~~R~~reserved Non-Firm Transmission Service – ~~R~~reserved Secondary Non-Firm Transmission Service + Postbacks (release of recalled grandfathered agreements) + [Non-Firm Counterflows](#)

Real-time

Firm ATC = TTC – TRM – ~~R~~reserved Firm Transmission Service + Postbacks (recalled credits) ± [Firm Counterflows](#)

Network Economy (Secondary Network) ATC = TTC – TRMu – ~~R~~reserved Firm Transmission Service – ~~R~~reserved Network Economy Transmission Service + Postbacks (unscheduled Firm transmission service) + [Non-Firm Counterflows](#)

Non-Firm ATC = TTC – TRMu - ~~R~~reserved Firm Transmission Service – ~~R~~reserved Network Economy Transmission Service – ~~R~~reserved Non-Firm Transmission Service + Postbacks (unscheduled transmission service of higher priority tiers) + [Non-Firm Counterflows](#)

Secondary Non-Firm ATC = TTC – TRMu - ~~R~~reserved Firm Transmission Service – ~~R~~reserved Network Economy Transmission Service – ~~R~~reserved Non-Firm Transmission Service – ~~R~~reserved Secondary Non-Firm Transmission Service + Postbacks (unscheduled transmission service of higher priority tiers) + [Non-Firm Counterflows](#)

[Please refer to BC Hydro Open Access Transmission Tariff for detail regarding the methodology for determining ATC.](#)

4.0 COUNTERFLOW ATC

4.1 Firm Counterflow

[Firm Counterflow adjustments are made to the Firm ATC in the opposite direction when energy, that is considered an assured delivery, on Firm Point-to-Point Transmission Service is scheduled. This determination is made by BC Hydro in its sole discretion and based on the Transmission Customer providing sufficient evidence as set out below. Firm ATC is available at the precise time the counterflow energy is scheduled.](#)

[Before Firm Counterflow adjustments are included in Firm ATC, BC Hydro will perform an assessment based on the information that is provided by the Transmission Customer requesting this provision. The submission must provide as much detail as possible including information regarding the assured delivery of the source and the transmission service that will be used between the Sending and Receiving Balancing Authority Areas. This type of information will help BC Hydro determine the feasibility of including Firm Counterflow adjustments to the Firm ATC calculation in the opposite direction. BC Hydro may request additional information if it determines the information provided is insufficient to determine if the energy is an assured](#)

delivery. BC Hydro will implement this Firm ATC change in the business systems provided the Transmission Customer submits the following:

- a. A written request, at least 30 days prior to the requested start date, to allow BC Hydro sufficient time for assessment.
- b. Detailed information, satisfactory to BC Hydro, of the energy source that will be used for delivery of the assured energy.
- c. Detailed information, satisfactory to BC Hydro, regarding Firm Point-to-Point Transmission Service that will be used to transfer energy from Source to Sink. This may include applicable monthly or yearly transmission service agreements, grandfathered agreements, and confirmed Firm Point-to-Point Transmission Service Reservation(s) (TSR(s)) with OASIS AREF numbers from all applicable Transmission Service Provider(s). Due to the assessment and implementation time required, Firm Counterflow does not apply to hourly, daily or weekly transmission service.
- d. The requested start and stop time of the Firm Counterflow provision, which must be within the start date and end date of the TSR(s) and not exceed the MW of the TSR(s).

If, at any time, a Transmission Customer fails to meet any of the eligibility requirements in this section or the energy deliveries that are assured fail to be delivered, except during reliability events and transmission outages, the Transmission Provider may immediately suspend the Firm Counterflow adjustment provision for this Transmission Customer.

Firm counterflow will not be offered on the BC-AB Path due to BCUC Order G-103-09. Conditional Firm Service does not qualify for Firm counterflow purposes because it is a conditional service subject to curtailment at 6-NN priority, which is lower priority than firm service (7-F).

4.2 Non-Firm Counterflow

Counterflow-Non-Firm ATC is available at the precise time the counterflow energy is scheduled.

5.0 POSTBACKS IN PRE-SCHEDULE OF GRANDFATHERED AGREEMENTS

5.1 Line 71

Teck Metals Ltd has up to 370 MW of firm scheduling rights on the BC – US intertie. Teck Metals Ltd may release those firm rights back to BC Hydro, which then makes the capacity available to the market on OASIS.

Teck Metals Ltd or its agent is to provide information to BC Hydro Grid Operations as follows for scheduling purposes:

- (a) 2 Working Days-Ahead - hourly amounts of transmission capacity within Teck Metals Ltd scheduling rights to be reserved for Teck Metals Ltd energy schedules on the second following working day, to be provided no later than 14:00 (PPT) 2 working days before the day of service. Note that on Wednesday, scheduling rights will be reserved for Teck Metals Ltd energy schedules for this same time frame but will also include Saturday. BC Hydro Grid Operations will postback the unscheduled capacity on or after 14:00 (PPT) to the market on OASIS.
- (b) Working Day-Ahead - hourly amounts of transmission capacity within Teck Metals Ltd scheduling rights to be reserved for Teck Metals Ltd energy schedules on the following working day, superseding but not exceeding the amounts provided on the 2 working day-ahead basis described above. Note that on Thursday, scheduling rights will be reserved for Teck Metals Ltd energy schedules for this same time frame but will also include Saturday. Teck Metals Ltd will provide this advice no later than 11:00 (PPT) 1 working day before the day of service. BC Hydro Grid Operations will postback the unscheduled capacity on or after 11:00 (PPT) to the market on OASIS.

5.2 Canadian Entitlement Agreement

BC Hydro has firm scheduling rights reserved on the US – BC intertie under its Network Integration Transmission Service for the return of energy under the Canadian Entitlement Agreement. BC Hydro or its agent is to provide BC Hydro Grid Operations the hourly amounts of transmission capacity to be reserved for the return of energy under the Canadian Entitlement Agreement, for scheduling purposes, no later than 11:00 (PPT) 1 working day before the day of service. BC Hydro will postback the unscheduled capacity available to the market on or after 11:00 (PPT) on OASIS.

6.0 REAL-TIME GRANT REMAINING CAPACITY

Real-time, pre-confirmed, hourly transmission service requests are granted remaining ATC if there is insufficient ATC to accept the Transmission Service Request (TSR), but there is still some ATC available.

A pre-confirmed TSR that is granted remaining capacity is given a COUNTEROFFER wherein the customer has 5 minutes to respond.

After pressing the Customer Update button, the Transmission Customer has four choices (REBID, CONFIRMED, WITHDRAWN, and COUNTEROFFER). The Transmission Customer can select CONFIRMED and press the Submit Changes button to confirm the transmission request. Or, the Transmission Customer can select WITHDRAWN to withdraw from the COUNTEROFFER. If the Customer selects REBID or COUNTEROFFER and then presses the Submit Changes button, the TSR will be INVALID or ignored and retracted, respectively. In addition, if the Transmission Customer does not respond within the allotted timeframe (5 minutes), the opportunity is lost and the TSR will be RETRACTED. If there is no ATC for the requested period, the TSR will be REFUSED due to insufficient ATC.

Note: If a Transmission Customer submits a pre-confirmed, hourly Non-Firm TSR in Real-time for the next hour after XX:00, the capacity granted will be Non-Firm ATC excluding the Transmission Customer's own unscheduled transmission or the requested capacity, whichever is less.

For example:

ATC	Unused Transmission	
	Customer A	Customer B
200 MW	50 MW	25 MW

If Customer B submits a TSR for 400 MW, COUNTEROFFER will be initiated and Customer B will be granted remaining capacity of 250 MW (200 ATC + 50 MW unscheduled transmission from Customer A) in which Customer B has 5 minutes to respond.

Note: If Customer A schedules energy on its original transmission rights, Customer B's transmission reservation of 250 MW will be curtailed to 200 MW (250 MW – 50 MW that Customer A scheduled energy on).

Document Change History

Issue	Reason for Issue	Date
7	Updated to include Firm Counterflow provisions and housekeeping items	TBD
6	Updated d TTC on US-BC path to 3000MW	February 3, 2016
5	Updated d hyperlinks to Attachment C under bchydro.com	July 23, 2015
4	Updated 450 under TRM(MW) on the Alberta-BC path to 600.	June 25, 2012
3	Amended Business Practice to align with OATT Attachment C.	November 30, 2011
2	Updated to modify an example of Non-Firm ATC calculation, and to reflect changes of Firm TTC from 1930MW to 2400MW on BC-US and LM-US paths, and from 1930MW to 2000MW on the US-BC path.	February 1, 2011
1	Updated procedures and template. Previously Business Practice 2.	November 1, 2010

[Back to Top of Section](#)