MATL LLP

For the

Montana Alberta Tie Line (MATL)

AVAILABLE TRANSFER CAPABILITY
IMPLEMENTATION DOCUMENT
(ATCID)

Effective on 1 April 2013

Version 1.0
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Available Transfer Capability Implementation Document (ATCID)

1. Purpose:

This document provides the required information as specified for a Transmission Operator (TOP) and Transmission Service Provider (TSP) under the North American Electric Reliability Corporation (NERC) Reliability Standards MOD-001-1a and MOD-029-1a. This Available Transfer Capability Implementation Document (ATCID) explains MATL’s calculation methodology and information sharing of Available Transfer Capability (ATC).

2. General:

1.1. MATL is an independent merchant transmission-only company based in Calgary, Alberta, Canada doing business in Canada as Montana Alberta Tie LTD and in the United States as MATL LLP, collectively referred to as “MATL”. The MATL Transmission System is a 214 mile (345 kilometers) 230 kV international transmission line connecting the incumbent transmission systems of the Alberta Interconnected Electric System (AIES) through AltaLink near Lethbridge, Alberta, Canada with NorthWestern Energy near Great Falls, Montana, USA. There are unique attributes to MATL’s FERC approved Open Access Transmission Tariff (Tariff). For example, MATL is not a Load Serving Entity (LSE) and has no load to designate as network load, and furthermore, there is no load directly connected to the MATL Transmission System. Therefore, MATL’s FERC approved Tariff provides only Point-to-Point Transmission Service with no provisions for Network Integration Transmission Service.

1.2. MATL has retained TransServ International, Inc to perform various OATT and OASIS functions as a tariff administrator. This includes such functions as performing the role of responding to inquiries concerning posted ATC values on the MATL OASIS site. Questions regarding ATC on the MATL Transmission System, including OASIS access, can be submitted to the Support Staff at:

   By Phone to: Support at 763-205-7099, or
   By E-mail to: Support@transervinternational.net
3. Available Transfer Capability Methodology (MOD-001-1a R1)

MATL has selected the MOD-029-1a (Rated System Path Methodology) for determining Total Transfer Capability (TTC) and Available Transfer Capability (ATC) for each posted ATC Path and in all ATC time horizons.

4. Calculation of ATC

4.1 Calculation of Hourly Values (MOD-001-1a/R2.1)

MATL calculates hourly values for the next 168 hours, which exceeds the requirement of 48 hours stated in MOD-001-1a.

4.2 Calculation of Daily Values (MOD-001-1a/R2.2)

MATL calculates daily values from the end of hourly calculations above through the end of the “next” month. This will always exceed the requirement of MOD-001-1a.

4.3 Calculation of Monthly Values (MOD-001-1a/R2.3)

MATL calculates monthly values at least to month 13 which meets the minimum for the next 12 months in accordance with MOD-001-1a.

5. Required Available Transfer Capability Implementation Information

5.1 Implementation of MOD-029-1a (MOD-001-1a/R3.1)

MATL implements the firm and non-firm calculations as specified in MOD-029-1a. However, the TTC value may be lowered seasonally based on MATL’s seasonal studies reviewed by NOPSG (Northwest Operational Planning Study Group) and approved by the WECC RC. The TTC values may also be adjusted in the near-term, due to operating allocations and operating conditions discussed in Attachment 2. The input parameters to the ATC calculations can vary depending on the timing horizon (Operating or Planning) in which the ATC is being calculated. The specific mathematical algorithms utilized are illustrated in the Attachments 3 and 4 to this ATCID.
5.1.1 Operating Horizon

The Operating Horizon is from the current time through the end of the day for which schedules are submitted; this is either the end of the current day or the end of the next day. The Operating Horizon is automatically shifted at 12:00 (noon) each day. The Operating Horizon ATC calculation evaluates all transmission requests with a curtailment priority of 2 or less, which includes hourly non-firm and secondary non-firm service. The Operating Horizon ATC calculation also evaluates hourly firm requests having a curtailment priority of 7.

5.1.2 Planning Horizon

The Planning Horizon is defined as the end of the Operating Horizon through the next 36 months. Planning Horizon ATC calculations evaluate all transmission requests that have a priority of 3 or higher.

5.2 Counter Flows (MOD-001-1a/R3.2, R3.2.1, R3.2.2)

Counter Flows are defined as energy scheduled values utilizing either firm or non-firm transmission service scheduled to flow in the opposite direction for which ATC is being calculated. This type of adjustment to ATC calculations has merit for multiple path systems where the flows are dispersed over other paths, including parallel flows over adjacent systems, e.g., expected interchange. The MATL system does not have such characteristics. The MATL system is a single path and more importantly it is a controlled flow path with a phase-shifting transformer. Counter flows are not a meaningful attribute on a single controlled path and could result in over selling ATC, since the unscheduled capacity is already released for non-firm ATC. Therefore, MATL does not apply counter flows to either firm or non-firm ATC calculations.

5.3 ATC Data Received from Others (MOD-001-1a/R3.3)

MATL receives data from the Alberta Electric System Operator (AESO), AltaLink and NorthWestern Energy’s Montana division (NWMT).

5.4 TTC Data Provided to Others (MOD-001-1a/R3.4)

MATL provides data to the Alberta Electric System Operator (AESO), AltaLink and NorthWestern Energy’s Montana division (NWMT).
5.5 TTC Allocation Processes (MOD-001-1a/R3.5)

The process for allocating transfer capability over the MATL Transmission System Path or sub-paths is based on reliability limits and tariff service agreement obligations.

5.5.1 Allocation across Multiple Lines or Sub-paths

The TTC across the MATL Transmission System is based on a simultaneous transfer limit as established by the WECC rating process. The path has interconnections on the north end with AESO through AltaLink in Alberta, Canada and on the south end with NorthWestern Energy in Montana, USA.

The MATL Transmission System Path (MATL Path or Path 83) is segmented into two discrete primary sections (sub-paths) between Alberta (AESO BA Area) and Montana (NWMT BA Area) as follows:

- The Alberta portion (north-end) from MATL Sub 120S interconnection with AltaLink near Lethbridge, Alberta southward 81 miles (130 km) to the Canada-USA Border; and
- The Montana portion (south end) from the Canada-USA Border southward 133 miles (215 km) to NorthWestern Energy’s Great Falls Substation existing as the south-end.

The Montana portion of the MATL Transmission System Path (MATL Path or Path 83) is further segmented into two discrete sections (sub-paths) as follows:

- From the Canada-USA border southward 13 miles (24 km) to Hay Lake Substation in Montana; and
- Hay Lake Substation southward 120 miles (191 km) to NorthWestern Energy’s Great Falls Substation existing as the south-end.

The Path Operator for the entire path is the AESO. The AESO determines an Operating Horizon inter-tie allocation for the aggregate of all inter-ties with the Albert Interconnected Electric System. For MATL this AESO inter-tie allocation determines the scheduling limits over the north-end of the MATL Transmission System for flows into and out of Alberta, Canada. The Alberta inter-tie allocation can be a value that is equal to or lower than the path TTC. Schedules are approved by the AESO up to the inter-tie allocation limit. The schedules are controlled by a phase-shifting transformer located at MATL’s
north-end Substation 120S. The AESO inter-tie allocation does not apply during the Planning Horizon.

5.5.2 Allocation among multiple Owners or Users of an ATC Path

The MATL Transmission System is wholly-owned by MATL. MATL provides use over the MATL Transmission System through service agreements under the provisions of a FERC approved Open Access Transmission Tariff (OATT).

5.5.3 Allocation to Address Issues for Forward Looking Congestion Management and Seams Coordination

MATL does not utilize forward looking congestion management and seams coordination processes.

5.6 Consideration of Generation and Transmission Outages (MOD-001-1a/R3.6)

5.6.1 Consideration of Generation Outages

MATL does not own or control any generation resources and there is no situation upon which MATL would report or adjust for generation outages. MATL transmission customers that own generation will report generation outages to their respective Balancing Authority. MATL transmission customers that have generation resources may use their transmission capacity for replacement energy schedules when their own resource is outaged. Therefore, MATL can not make assumptions based on a transmission customer’s reported generator outage or generation reduction. Nevertheless, when a MATL transmission customer reports to MATL during normal business hours that their transmission capacity can be “released” due to a generation outage or for any other reason, MATL will adjust ATC values to reflect the amount of transmission capacity a transmission customer releases and for the time duration that such a release is to be applicable through a TSR recall or partial recall, whichever is appropriate for the circumstance.

5.6.2 Consideration of Transmission Outages

Transmission outages will reduce the TTC of a path which will impact both firm and non-firm transmission. The MATL transmission line, described in Section 5.5.1 above, is a linear line with no parallel sub-paths as opposed to a large utility with a network grid. The operation of the MATL transmission system requires that the entire MATL Line be opened at both ends for any and all planned and unplanned outages. Therefore, transmission outages on the MATL Line will reduce the TTC to
zero for the entire ATC Path, including any sub-paths, for the duration of the outage. However, further studies are investigating the potential to keep the line in service at reduced TTC values when certain ancillary equipment such as shunt capacitors or series capacitors encounters an outage.

5.6.2.1 Daily Calculation Impact (MOD-001-1a/R3.6.1)

A transmission outage in effect for part of the immediate Operating Horizon impacts TTC/ATC calculations for the hours the outage is in effect. When reducing TTC capacity for an outage scheduled to take place from the next hour until midnight the next day, the capacity is reduced for the hours during which the outage occurs.

When considering Daily TTC/ATC calculations Outages that are in effect for part of a day are assumed to last the whole day in the MATL ATC calculator.

5.6.2.2 Monthly Calculation Impact (MOD-001-1a/R3.6.2)

An outage in effect for part of a month impacts monthly calculations for the days and hours the outage is in effect. When posting outages and reducing TTC capacity, the capacity is reduced for the hours during which the outage is scheduled to take place.

5.6.2.3 Outages External to MATL’s System (MOD-001-1a/R3.6.3)

Outages external to MATL’s system are accounted for by operating studies and security analysis performed by the Reliability Coordinator (WECC) and the Path Operator (AESO). Any operating restrictions can be imported for the MATL Transmission System Path as a new or updated SOL or IROL. A transmission customer’s schedules are also subject to the adjacent interconnected transmission service provider’s outage adjustments, when the schedule leaves the MATL Transmission System.

6. Notifications of ATCID Revisions (MOD-001-1a/R4, R5)

MATL will notify the following reliability entities before implementing a new or revised ATCID. The notification will be sent by e-mail with a command for “Request a Delivery
6.1 Each Planning Coordinator associated with the Transmission Provider’s area.

- TBD

6.2 Each Reliability Coordinator associated with the Transmission Provider’s area.

- WECC

6.3 Each Transmission Operator associated with the Transmission Provider’s area.

- AltaLink
- NorthWestern Energy, Montana

6.4 Each Planning Coordinator adjacent to the Transmission Provider’s area.

- AESO
- NorthWestern Energy, Montana

6.5 Each Reliability Coordinator adjacent to the Transmission Provider’s area.

- None

6.6 Each Transmission Service Provider whose area is adjacent to the Transmission Provider’s area.

- AESO
- NorthWestern Energy, Montana

7. Calculation Assumptions and Periodicity (MOD-001-1a/R6, R7, R8)

7.1 Assumptions for Calculating TTC (MOD-001-1a/R6)

When calculating TTC, MATL use assumptions no more limiting than those used in the planning of operations for the corresponding time period studied, providing such
planning of operations has been performed for that time period. Since MATL has no load serving obligations and no generation resources, MATL’s planning of operations is primarily for testing the reliability integrity of its transmission system. There is no disparity between assumptions as MATL’s planning for transmission customer requests are governed by MATL’s open access tariff which comports with FERC’s non-preferential and non-discriminatory criteria with MATL itself not being a user of the MATL transmission system.

7.2 Assumptions for Calculating ATC (MOD-001-1a/R7)

When calculating ATC, MATL use assumptions no more limiting than those used in the planning of operations for the corresponding time period studied, providing such planning of operations has been performed for that time period. Since MATL has no load serving obligations and no generation resources, MATL’s planning of operations is primarily for testing the reliability integrity of its system. There is no disparity between assumptions as MATL’s planning for transmission customer requests are governed by MATL’s open access tariff which comports with FERC’s non-preferential and non-discriminatory criteria with MATL itself not being a user of the MATL transmission system.

7.3 Periodicity for Updating Calculations (MOD-001-1a/R8)

MATL uses the computer model webTrans for calculating ATC values. The following provides the periodicity for which calculations are provided for the following values:

1.2.1. Hourly Values – Once per hour. (Conforms to minimum requirement of once per hour.)

1.2.2. Daily Values – Minimum recalculation will be once per day. (Meets minimum required of once per day.)

1.2.3. Monthly Values – Minimum recalculations will be once per day. (Exceeds minimum required of once per week.)

8. Request for Data (MOD-001-1a/R9)

Following the date of its commercial operations MATL will provide, if it is maintained by MATL, the data specified in MOD-001-1a, Requirement R9, solely for the requestor’s ATC calculations, provided that the requestor is a registered reliability entity in the NERC Registry for one of the allowed functional entities below as specified in Requirement R9.
• Transmission Service Provider
• Reliability Coordinator
• Planning Coordinator
• Transmission Operator

Written requests must be submitted to:

Attn: Robert Stade
MATL LLP
3000,425 – 1st Street S.W.
Calgary, Alberta T2P 3L5
Attachment 1: TTC Model Criteria

The following describes the TTC model criteria in accordance with MOD-029-1a/R1. The model shall:

1. Include at least:
   • *The MATL Transmission Operator area*. The MATL transmission system is modeled in its entirety, i.e., both the Alberta portion and the Montana portion are included. Equivalent representation of radial lines and facilities 161kV or below is allowed, but not applicable to MATL at this time, as MATL has no transmission facilities below the 230 kV voltage class.

   • *All Transmission Operator areas contiguous with the Transmission Operator area*. The models include the two contiguous Transmission Operator areas that the MATL Line connects to. The north end of the MATL Line connects to AltaLink in Alberta, Canada (under AESO operational control) and the south end connects to NorthWestern Energy in Montana, USA. (Equivalent representation is allowed.)

   • *Any other Transmission Operator area linked to the Transmission Operator’s area by joint operating agreement*. (Equivalent representation is allowed.) At this time, there are no other Transmission Operator Areas that are "linked" to the MATL Transmission Operator area, other than AltaLink and NorthWestern as noted above.

   • *Models all system elements as in-service for the assumed initial conditions*. Study conditions have all system elements as in-service for initial conditions. Study conditions are further identified in the final study reports.

   • *Models all generation (may be either a single generator or multiple generators) that is greater than 20 MVA at the point of interconnection in the studied area*. Present models for MATL path studies provide scenarios with 300 MW of wind generation injected into the MATL transmission at Hay Lake Substation.

   • *Models phase-shifters in non-regulating mode, unless otherwise specified in this ATCID*. The initial ATC postings result from studies performed with MATL’s Substation 120S phase-shifting transformer adjusted for sending 325 MW from sending end in order to receive 300 MW at the receiving end, for either south to north flows or for north to south flows.

   • *Uses Load forecast by Balancing Authority*. Studies for the MATL path use WECC peak and off-peak cases which have been derived by including load forecast input from
NorthWestern Energy which represents the Balancing Authority for the Montana portion of the MATL System and Alberta load forecast by AESO.

- **Uses transmission facility additions and retirements.** Study reports provide transmission line project assumptions.

- **Uses generation facility additions and retirements.** Studies of the MATL transmission path provide scenarios with 300 MW of wind generation injected into the MATL transmission at Hay Lake Substation. Studies include generation additions that have been identified in a Large Generator Interconnection Agreement (LGIA) under the MATL tariff. Interconnected generators are required to provide MATL an annual ten year forecast of facility changes, including any retirements. Known retirements will be reflected in any studies.

- **Uses Special Protection System (SPS) models where currently existing or projected for implementation within the studied time horizon.** MATL RAS timing and contingency requirements” can be obtained on page 16 and page A-480 (Appendix-14) of the Phase II – 2012 Study Report. The 2007 and 2012 path rating studies assumed that the MATL RAS would operate within 26 cycles and 44 cycles respectively to meet WECC System Performance Criteria and NERC Reliability Standards under certain conditions. The RAS studies, performed in 2012, verified the adequacy of final RAS design by accurately modeling the MATL local RAS as designed for actual implementation. These studies verified the tripping time of MATL by utilizing similar cases and conditions that were used in the earlier Path Rating studies.

- **Models series compensation for each line at the expected operating level unless specified otherwise in this ATCID.** There are two series capacitors on the MATL 230kV transmission system. A 146 MVAr series capacitor is at Hay Lake Substation on the line extending northward into Alberta. A 93 MVAr series capacitor is at Marias Substation on the line extending southward to NorthWestern's Great Falls Substation.

- **Includes any other modeling requirements or criteria specified in this ATCID.** Studies are required to evaluate any effects on WECC designated paths.

2. **Use facility ratings as provided by Transmission Owner and Generator Owners.** Transmission facility ratings are available upon request from the Transmission Owner (MATL) in a spreadsheet titled, “MATL PSSE model data” dated 5/14/2012.
Attachment 2: Determining TTC

The following describes the determination of Total Transfer Capability (TTC) values in accordance with MOD-029-1a/R2. The TTC shall be determined in accordance with:

1. *Except where otherwise specified within MOD-029-1,* (which is the case for MATL in recognition that the MATL line is transformer limited with a 330 MVA phase-shifting transformer at the north terminal, MATL Substation 120S), *adjust base case generation and load levels within the updated power flow model to determine the TTC (maximum flow or reliability limit) that can be simulated on the ATC Path while at the same time satisfying all planning criteria contingencies listed below in this section.* The MATL transmission line is terminated at the north end with a 330 MVA phase-shifting transformer. Studies were performed to support an accepted path rating for sending 325 MW from sending end in order to receive 300 MW at the receiving end, for either south to north flows or for north to south flows.

- *When modeling normal conditions, all transmission elements will be modeled at or below 100% of their continuous rating.* MATL's Phase 2 - 2012 Study Report, page 13, "Study Criteria" states, "All line and transformer loadings must be at or below normal continuous ratings."

- *When modeling contingencies the system shall demonstrate transient, dynamic and voltage stability, with no transmission element modeled above its emergency rating.* The following referenced studies have been completed and accepted by appropriate regional committees: Non-Simultaneous Analysis: Phase 2 - 2007 Study Report, pages 29-37. Simultaneous Analysis - Path 1: Phase 2 - 2007 Study Report, page 51 "Post-transient Results"; page 55 "Transient Stability Results". Simultaneous Analysis - Path 3: Phase 2 - 2007 Study Report, page 59, "Post-transient Results"; page 60 "Transient Stability Results".

- *Uncontrolled separation shall not occur.* The following referenced studies have been completed and accepted by appropriate regional committees: 1. MATL’s Phase 2 - 2007 Study Report, Page 6 "Conclusions": (i) non-simultaneous study meets NERC/WECC planning and reliability standards; (ii) mid-page 7, "simultaneous operation limits (nomograms) or other mitigation are required to meet NERC/WECC planning criteria. 2. "Studies in Support of Remedial Action Scheme Design", dated June 5, 2012.

2. *Where it is impossible to actually simulate a reliability-limited flow in a direction counter to prevailing flows (on an alternating current transmission line), set the TTC for the non-prevailing direction equal to the TTC in the prevailing direction. If the TTC in the prevailing flow direction is dependant on a Special Protection System (SPS), set the TTC for the non-prevailing flow direction equal to the greater of the maximum flow that can*
be simulated in the non-prevailing flow direction or the maximum TTC that can be achieved in the prevailing flow direction without use of a SPS. Due to the MATL Line being a controlled inter-tie with a phase-shifting transformer, the Phase 2 Studies were able to simulate flows in both directions.

3. **For an ATC Path whose capacity is limited by contract, set TTC on the ATC Path at the lesser of the maximum allowable contract capacity or the reliability limit as determined by step 1 above.** MATL is a party to the Coordinated Operating Agreement among AESO, NorthWestern and MATL. MATL is required to abide by the AESO (Alberta Electric System Operator) operating procedure for monitoring and controlling the aggregate of the inter-ties into Alberta. The AESO will post the next approaching hour’s permissible TTC for the MATL line every hour at T-85 minutes. MATL will adjust its TTC so not to exceed the permissible TTC posted by AESO. This will occur by an automated process expected to be achieved in a sub-minute time frame. The AESO is the Path Operator of the entire MATL Transmission System and is the Balancing Authority for the Alberta portion of the MATL System.

4. **For an ATC Path whose TTC varies due to simultaneous interaction with one or more other paths, develop a nomogram describing the interaction of the paths and the resulting TTC under specified conditions.** For intertie flows into and out of Alberta, Canada, the MATL path will be subject to an inter-tie allocation provided by the AESO based on nomograms, developed and implemented by the AESO for the aggregate of simultaneous power flows into and out of Alberta, Canada. The MATL path may also be subject to simultaneous limitation with other paths (e.g., Path 1 and Path 3). For the MATL path the lowest TTC resulting from the above two interactions (AESO allocation and simultaneous interactions) will be used.

5. **The Transmission Operator shall identify when the TTC for the ATC Path being studied has an adverse impact on the TTC value of any existing path.** Do this by modeling the flow on the path being studied at its proposed new TTC level simultaneous with the flow on the existing path at its TTC level while at the same time honoring the reliability criteria outlined in step 1 above. The Transmission Operator shall include the resolution of this adverse impact in its study report for the ATC Path. 1. MATL’s Phase 2 - 2007 Study Report, Page 6 "Conclusions": (i) non-simultaneous study meets NERC/WECC planning and reliability standards; (ii) mid-page 7, "simultaneous operation limits (nomograms) or other mitigation are required to meet NERC/WECC planning criteria; 2."Studies in Support of Remedial Action Scheme Design", dated June 5, 2012; and 3. MATL “Remedial Action Scheme Design” dated June 29, 2012.
6. Where multiple-ownership of transmission rights exists on an ATC Path, allocate TTC of that ATC Path in accordance with the contractual agreement made by the multiple owners of that ATC Path. MATL is sole owner of the MATL Transmission System.

7. MATL will cause a study report to be created that describes the steps (1-6) above that were undertaken, including the contingencies and assumptions used, when determining the TTC and the results of the study. Where three phase fault damping is used to determine stability limits, the report shall also identify the percent used and include justification for use unless specified otherwise in the ATCID. Montana-Alberta Tie Ltd., Phase 2 Study Report, Accepted on July 24, 2007 supplemented by Montana - Alberta Tie Ltd. Wind Addition Phase 2 Study Report of 2012. MATL does not currently utilize fault damping to determine stability limits when calculating TTC.

8. MATL establishes the TTC at the lesser of the value calculated in steps 1 – 6 above (MOD-019-1a/R2) or any System Operating Limit (SOL) for that ATC Path. In instances where there is a difference in derived limits the TTC is always set to the most limiting parameter. (IRO-005-3a/R10)

9. Within seven calendar days of the finalization of the study report, the Transmission Operator shall make available to the Transmission Service Provider of the ATC Path, the most current value for TTC and the TTC study report documenting the assumptions used and steps taken in determining the current value for TTC for that ATC Path. At this time, MATL is both the Transmission Operator and the Transmission Service Provider. The MATL TTC information and study reports are concurrently made known to both the Transmission Operator function and the Transmission Service Provider function with no time delay.
Attachment 3: ETC Equations (MOD-029-1a/R5 and R6)

The algorithm for calculating firm Existing Transmission Commitments (ETC_F) for a specified time period for the ATC Path:

\[ \text{ETC}_F = \text{NL}_F + \text{NITS}_F + \text{GF}_F + \text{PTP}_F + \text{ROR}_F + \text{OS}_F \]

Where:

- \( \text{NL}_F \) is zero (“0”) since MATL is not a load serving entity and has no Native Load. \( \text{NL}_F \) normally represents the firm capacity set aside to serve peak Native Load forecast commitments for the time period being calculated, to include losses, and Native Load growth, not otherwise included in Transmission Reliability Margin or Capacity Benefit Margin.
- \( \text{NITS}_F \) is zero (“0”) since there is no load on the MATL Transmission System and no NITS service is provided. \( \text{NITS}_F \) normally represents the firm capacity reserved for Network Integration Transmission Service serving Load, to include losses, and Load growth, not otherwise included in Transmission Reliability Margin or Capacity Benefit Margin.
- \( \text{GF}_F \) is the firm capacity set aside for grandfathered Transmission Service and contracts for energy and/or Transmission Service, where executed prior to the effective date of a Transmission Service Provider’s Open Access Transmission Tariff or “safe harbor tariff.”
- \( \text{PTP}_F \) is the firm capacity reserved for confirmed Point-to-Point Transmission Service.
- \( \text{ROR}_F \) is the firm capacity reserved for Roll-over rights for contracts granting Transmission Customers the right of first refusal to take or continue to take Transmission Service when the Transmission Customer’s Transmission Service contract expires or is eligible for renewal.
- \( \text{OS}_F \) is the firm capacity reserved for any other service(s), contract(s), or agreement(s) not specified above using Firm Transmission Service as specified in the ATCID.

The algorithm for calculating non-firm Existing Transmission Commitments (ETC_NF) for all time horizons for the ATC Path:

\[ \text{ETC}_\text{NF} = \text{NITS}_\text{NF} + \text{GF}_\text{NF} + \text{PTP}_\text{NF} + \text{OS}_\text{NF} \]

Where:

- \( \text{NITS}_\text{NF} \) is zero (“0”) since there is no load on the MATL Transmission System and no NITS service is provided. \( \text{NITS}_\text{NF} \) normally represents the non-firm capacity set aside for Network Integration Transmission Service serving Load (i.e., secondary service), to include losses, and load growth not otherwise included in Transmission Reliability Margin or Capacity Benefit Margin.
- \( \text{GF}_\text{NF} \) is the non-firm capacity set aside for grandfathered Transmission Service and contracts for energy and/or Transmission Service, where executed prior to the effective date of a Transmission Service Provider’s Open Access Transmission Tariff or “safe harbor tariff.”
- \( \text{PTP}_\text{NF} \) is non-firm capacity reserved for confirmed Point-to-Point Transmission Service.
- \( \text{OS}_\text{NF} \) is the non-firm capacity reserved for any other service(s), contract(s), or agreement(s) not specified above using non-firm transmission service as specified in the ATCID.
Attachment 4: ATC Equations

The algorithm for calculating firm ATC for a specified time period for the ATC Path:

\[ \text{ATC}_F = \text{TTC} - \text{ETC}_F - \text{CBM} - \text{TRM} + \text{Postbacks}_F + \text{counterflows}_F \]

Where:

- \( \text{ATC}_F \) is the firm Available Transfer Capability for the ATC Path for that period.
- \( \text{TTC} \) is the Total Transfer Capability of the ATC Path for that period.
- \( \text{ETC}_F \) is the sum of existing firm commitments for the ATC Path during that period.
- \( \text{CBM} \) is zero (“0”) for the ATC Path at this time as there no Capacity Benefit Margin set aside on the MATL Transmission System.
- TRM is zero (“0”) for the MATL ATC Path. Refer to MATL’s Transmission Reliability Margin Identification Document (TRMID).
- Postbacks\(_F\) are changes to firm Available Transfer Capability due to a change in the use of Transmission Service for that period, as defined in Section 5.6.1 of this ATCID and in MATL’s Business Practices.
- counterflows\(_F\) are adjustments to firm Available Transfer Capability as specified in the ATCID Sections 5.2 and 5.2.1.

The algorithm for calculating non-firm ATC for a specified time period for the ATC Path:

\[ \text{ATC}_{NF} = \text{TTC} - \text{ETC}_F - \text{ETC}_{NF} - \text{CBM}_S - \text{TRM}_U + \text{Postbacks}_{NF} + \text{counterflows}_{NF} \]

Where:

- \( \text{ATC}_{NF} \) is the non-firm Available Transfer Capability for the ATC Path for that period.
- \( \text{TTC} \) is the Total Transfer Capability of the ATC Path for that period.
- \( \text{ETC}_F \) is the sum of existing firm commitments for the ATC Path during that period.
- \( \text{ETC}_{NF} \) is the sum of existing non-firm commitments for the ATC Path during that period.
- \( \text{CBM}_S \) is zero (“0”) for the ATC Path at this time as there is no Capacity Benefit Margin set aside on the MATL Transmission System that could be scheduled.
- TRM\(_U\) is zero (“0”) as there is no TRM on the MATL ATC Path in accordance with MATL’s TRMID. TRM\(_U\) 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.
- Postbacks\(_{NF}\) are changes to non-firm Available Transfer Capability due to a change in the use of Transmission Service for that period, as defined in Section 5.6.1 of this ATCID and in MATL’s Business Practices.
- counterflows\(_{NF}\) are adjustments to non-firm Available Transfer Capability as specified in the ATCID Sections 5.2.
# Revision History

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<th>Description</th>
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<td>22 Jan. 2013</td>
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<td>TranServ</td>
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## MATL Approval

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<tr>
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