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Mathematical Algorithms for the Calculation of ATC/TTC For Non-PTF Facilities under Schedule 21-VEC (Revision 2 dated 10-17-11)

Pursuant to 18 CFR 37.6(b)(1)(i) of the FERC Regulations, Transmission Providers are obligated to calculate and post TTC and ATC for each Posted Path.

All Defined Terms are as set out in the ISO-NE OATT, Schedule 21-VEC, Attachment A:

For all Firm Algorithms, $CBM = 0$ and $TRM = 0$
For all Non-Firm Algorithms, $CBM_S = 0$ and $TRM_U = 0$

ATC for the Planning Horizon (PH):

ATC_F in the PH = $TTC - ETC_F$ (Postbacks_F and counterflows_F not considered)

ATC_{NF} in the PH = $TTC - ETC_F - ETC_{NF}$ (Postbacks_F and counterflows_F not considered)

ATC in the Operating Horizon (OH):

ATC_F in the OH = $TTC - ETC_F$ (Postbacks_F and counterflows_F not considered)

ATC_{NF} in the OH = $TTC - ETC_{F+} - Postbacks_{NF}$ (counterflows_{NF} not considered)

ATC in the Scheduling Horizon (SH):

ATC_F in the SH = not offered = zero (-0-)

ATC_{NF} in the SH = ATC_{NF} in the OH

Calculation of ATC for VEC's Local Facilities:

VEC uses a contract path method to calculate Firm and Non-Firm Available Transfer Capability (ATC). As described below, ATC for transactions relating to VEC's Transmission System will be determined for a path in the direction of the transfer. Path calculations are determined based on the two types of facilities on VEC's Transmission System that are covered under this Schedule 21-VEC: (1) non-Pool Transmission Facilities (Non-PTF) that do not involve the use of rights for

deliveries from Hydro Quebec, and (2) Non-PTF that do involve the use of rights for deliveries from Hydro Quebec. Pre-OATT grandfathered Transmission Service deliveries from Hydro Quebec are pursuant to the non-FERC jurisdictional Block Loading Facilities Transmission Agreement (BLFTA). ATC for any specific contract path represents the amount of unused capacity after consideration of reliability requirements to meet obligations of existing and pending valid Applications for Network Service including VEC's existing use of such service to serve its native load; and obligations under existing firm and pending valid Applications for Firm Point-to-Point Transmission Service or other existing agreements predating this Tariff and Local Service Schedule.

NERC Standards MOD-001-1 - Available Transmission System Capability and MOD-029-1 - Rated System Path Methodology defines the required items to be identified when describing a transmission provider's ATC methodology.

All of VEC's Schedule 21-VEC transmission facilities are Non-PTF and used to serve its native loads and the connected loads of its Transmission Customers. VEC has obligations to serve its native loads and the connected loads of grandfathered Transmission Customers under Vermont Public Service Board jurisdictional transmission agreements. One of these non-OATT agreements is the BLFTA. BLFTA obligations will affect the contract path determination of ETC's. The availability of load for Block Loading limits the transferability of energy from Hydro Quebec. VEC also has long-term firm OATT Schedule 21-VEC reservations to provide local point to point transmission for generation which is located within the Block Loading area.

For paths affected by Hydro-Quebec Block Loading, VEC prioritizes ETC_F components such that ETC_F cannot exceed the TTC. The prioritization order is as follows:

1. PTP_F generation located within the block load path that utilizes Firm Long-Term Schedule 21-VEC service.
2. GF_F Hydro-Quebec Block Load third-party reservations submitted pursuant to the BLFTA.
3. NL_F VEC's native load committed to accept VEC's Hydro-Quebec Block Load schedule reservations.
4. NITS_F firm capacity reserved for network integration service serving load.
5. ROR_F firm capacity reserved for Roll-over rights for contracts granting the 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.
6. OS_F firm capacity reserved for any other service(s), contract(s), or agreement(s).

The Block Loading ETC_F algorithm expressed in the order of prioritization is:

$$\text{Block Loading ETC}_F = \text{PTP}_F + \text{GF}_F + \text{NL}_F + \text{NITS}_F + \text{ROR}_F + \text{OS}_F$$

Where: the Block Loading ETC_F cannot exceed the Block Loading TTC

If the sum of the Block Loading ETC_F component reservations exceeds the TTC the availability will be curtailed in the reverse prioritization order. For example, OS_F would be curtailed first; ROR_F would be curtailed second; etc. If curtailments are required within a prioritization group and there are multiple Transmission Customers within the group the reductions will be made pro rata.

For Non-PTF transmission paths unaffected by Hydro-Quebec Block Loading the ratings of the radial transmission paths are always higher than the transmission requirements of the Transmission Customers connected to that path. As such, transmission services over these posted paths are considered to be always available. Common practice is not to calculate, recalculate, or post firm and non-firm ATC values for the non-PTF assets described above, on any given interval as set out in Reliability Standard MOD-1, as ATC is positive and listed as 9999. Transmission customers are not restricted from reserving firm or non-firm transmission service on Non-PTF transmission paths that are unaffected by Hydro-Quebec Block Loading.

As Real-Time approaches, ISO-NE utilizes the Real-Time energy market rules to determine which of the submitted energy transactions will be scheduled in the coming hour. Basically, the ATC of the Non-PTF transmission paths that are unaffected by Hydro-Quebec Block Loading is almost always positive. The ATC is equal to the amount of net energy transactions that ISO-NE will schedule on an interface for the designated hour. With this simplified version of ATC, there is no detailed algorithm to be described or posted other than, for Non-PTF transmission paths that are unaffected by Hydro-Quebec Block Loading: ATC equals TTC. Thus, for those Non-PTF transmission paths that unaffected by Hydro-Quebec Block Loading VEC has posted the ATC as 9999, consistent with industry practice. ATC on these paths varies depending on the time of day. However, it is posted with an ATC of "9999" to reflect the fact that there are no restrictions on these paths for commercial transactions.