

**Unitil Energy Systems, Inc. (UES) Available Transfer Capability Implementation
Document (ATCID)**

Records of Revisions

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1 Introduction

ISO-NE is the regional transmission organization (RTO), serving the New England Control Area. ISO is responsible for the development, oversight, and fair administration of New England's wholesale market, management of the bulk electric power system and wholesale markets planning processes. The ISO serves as the Balancing Authority for the New England Control Area. The New England Control Area is comprised of PTF, Non-PTF, OTF, MTF, and is interconnected to three neighboring Balancing Authority Areas (BAA) with various interface types.

As part of its RTO responsibilities, the ISO is registered with the North American Electric Reliability Corporation (NERC) as several functional model entities that have responsibilities related to the calculation of ATC as defined in the following NERC Standards: MOD-001 ó Available Transmission System Capability (MOD-001), MOD-004 ó Capacity Benefit Margin (MOD-004), and MOD-008 ó Transmission Reliability Margin Calculation Methodology (MOD-008). The extent of those responsibilities is based on various Commission approved transmission operating agreements and the provisions of the ISO New England Operating Documents.

While the ISO is the Transmission Provider of RNS and Through or Out Service over PTF, certain Participating Transmission Owners (PTOs) also provide local transmission service over Non-PTF within the RTO footprint and are responsible for calculating TTC and ATC associated with Local Service provided under Schedule 21. UES is a Transmission Provider of Local Service under Schedule 21-UES in accordance with the Transmission Operating Agreement (TOA). Pursuant to CFR§37.6(b) of the FERC Regulations which states the available transfer capability on the Transmission Provider's system (ATC) and the total transfer capability (TTC) of that system shall be calculated and posted for each Posted Path. The Transmission Provider's are obligated to calculate and post TTC and ATC for each Posted Path accordingly.

As stated in §37.6(b)(1)(i) Posted Path means any control area to control area interconnection; any path for which service is denied, curtailed or interrupted for more than 24 hours in the past 12 months; and any path for which a customer requests to have ATC or TTC posted. For this last category, the posting must continue for 180 days and thereafter until 180 days have elapsed from

the most recent request for service over the requested path. For purposes of this definition, an hour includes any part of any hour during which service was denied, curtailed or interrupted.

Non-PTF facilities are primarily radial paths that provide transmission service directly to interconnected generators. It is possible, in the future that a particular path may interconnect more nameplate capacity generation than the path's TTC. However, for UES's Non-PTF modeled by the ISO or the Local Control Center (LCC), the ISO or the LCC will only dispatch an amount of generation interconnected to such path so as not to incur a reliability violation on the subject path consistent with ISO's economic, security constrained dispatch methodology.

UES does not currently have a Posted Path based on the above definition. However, should UES have any Posted Path(s) in the future, UES will calculate TTC using NERC MOD-029-1 Rated System Path Methodology as outlined below.

1.1 Applicability of this ATCID

This ATCID describes the ATC methodology for which UES as the Transmission Provider of Local Point-to-Point Transmission service over Non-PTF pursuant to this Schedule 21-UES, the TOA, and the ISO OATT calculates ATC. UES applies MOD-029 since that is the standard used by the Transmission Operator to calculate the TTC.

As explained in Section 2, TTC and ATC are required to be calculated only for certain Non-PTF internal Posted Paths over which Local Point-to-Point transmission service is provided under Schedule 21-UES. TTC and ATC is not calculated by UES for Local Network Service because ISO employs a market model for economic, security constrained dispatch of generation, and advanced reservations are not required for network service.

2 Transmission Service in the New England Markets

Since the inception of the OATT for New England, the process by which generation located inside New England supplies energy to the bulk electric system has differed from the Commission pro forma OATT. The fundamental difference is that internal generation is dispatched in an economic, security constrained manner by the ISO rather than utilizing a system of physical rights, advance reservations and point-to-point transmission service. Through this

process, internal generation provides offers that are utilized by the ISO in the Real-Time Energy Market dispatch software. This process provides the least-cost dispatch to satisfy Real-Time load on the system.

In addition to offers from generation within New England, entities may submit External Transactions to move energy into the New England Control Area, out of the New England Control Area or through the New England Control Area. The Real-Time Energy Market clears these External Transactions based on forecast Locational Marginal Pricing (LMPs) and the transfer capability of the associated external interfaces. With those External Transactions in place, the Real-Time Energy Market dispatches internal generation in an economic, security constrained manner to meet Real-Time load within the region. This process for submitting External Transactions into the Real-Time Energy Market does not require an advance physical reservation for use of the PTF. In the event that the net of the economic External Transactions is greater than the transfer capability of the associated external interface, the External Transactions selected to flow are selected based on the rules specified in the Tariff. For any External Transactions that are confirmed to flow in Real-Time based on the economics of the system, a transmission reservation for RNS and Through or Out Service is created after-the-fact to satisfy the transparency needs of the market.

The process described above is applicable to the PTF within the ISO Area, and non-PTF Local Facilities utilized for Local Network Service by generation or load. However, UES provides service over Non-PTF over which advance transmission service reservations for firm or non-firm transmission service may be required. On those Local Facilities, the market participant must obtain a transmission service reservation under Schedule 21-UES prior to delivery of energy into the New England Wholesale Market. This document addresses the calculation of ATC and TTC for the non-PTF internal paths.

3 Calculation of ATC for UES's Local Facilities - General Description

NERC Standards MOD-001-1 ó Available Transmission System Capability and MOD-029-1 ó Rated System Path Methodology define the required items to be identified when describing a Transmission Provider's ATC methodology. As a practical matter, the ratings of the Non-PTF 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 or post firm and non-firm ATC values for UESø Non-PTF described above, as ATC is positive and listed as 9999. Transmission Customers are not restricted from reserving firm or non-firm transmission service on UESø Non-PTF.

As Real-Time approaches, the ISO 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 in the New England market is almost always positive. With this simplified version of ATC, there is no detailed algorithm to be described or posted. Thus, for those Non-PTF facilities that serve as a path for the UES Schedule 21-UES Local Point-to-Point Transmission Customers, UES 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.

3.1 Calculation of Firm ATC (ATC_F)

3.1.1 Calculation of ATC_F in the Planning Horizon (PH)

For purposes of this Attachment C PH is any period before the Operating Horizon.

Consistent with the NERC definition, ATC_F is the capability for Firm transmission reservations that remain after allowing for TRM, CBM, ETC_F , $Postbacks_F$ and $counterflows_F$.

As discussed above, TRM and CBM are zero. Firm Transmission Service over Schedule 21-UES that is available in the Planning Horizon (PH) includes: Yearly, Monthly, Weekly, and Daily. $Postbacks_F$ and $counterflows_F$ of Schedule 21-UES transmission reservations are not considered in the ATC calculation. Therefore, ATC_F in the PH is equal to the TTC minus ETC_F .

3.1.2 Calculation of ATC_F in the Operating Horizon (OH)

For purposes of this Attachment C OH is noon eastern prevailing time each day. At that time, the OH spans from noon through midnight of the next day for a total of 36 hours. As time progresses

the total hours remaining in the OH decreases until noon the following day when the OH is once again reset to 36 hours.

Consistent with the NERC definition, ATC_F is the capability for Firm transmission reservations that remain after allowing for ETC_F , CBM, TRM, $Postbacks_F$ and $counterflows_F$.

As discussed above, TRM and CBM is zero. Daily Firm Transmission Service over Schedule 21-UES is the only firm service offered in the Operating Horizon (OH). $Postbacks_F$ and $counterflows_F$ of Schedule 21-UES transmission reservations are not considered in the ATC_F calculation. Therefore, ATC_F in the OH is equal to the TTC minus ETC_F .

3.1.3 Firm transmission service is not offered in the Scheduling Horizon (SH) therefore ATC_F in the SH is zero.

3.2 Calculation of Non-Firm ATC (ATC_{NF})

3.2.1 Calculation of ATC_{NF} in the PH

ATC_{NF} is the capability for Non-Firm transmission reservations that remain after allowing for ETC_F , ETC_{NF} , scheduled CBM (CBM_S), unreleased TRM (TRM_U), Non-Firm Postbacks ($Postbacks_{NF}$) and Non-Firm counterflows ($counterflows_{NF}$).

As discussed above, the TRM and CBM for Schedule 21-UES is zero. Non-Firm ATC available in the PH includes: Monthly, Weekly, Daily and Hourly. TRM_U , $Postbacks_{NF}$ and $counterflows_{NF}$ of Schedule 21-UES transmission reservations are not considered in this calculation. Therefore, ATC_{NF} in the PH is equal to the TTC minus ETC_F and ETC_{NF} .

3.2.2 Calculation of ATC_{NF} in the OH

ATC_{NF} available in the OH includes: Daily and Hourly.

As discussed above TRM and CBM for Schedule 21-UES are zero. TRM_U , $counterflows_{NF}$ and ETC_{NF} are not considered in this calculation. Therefore, ATC_{NF} in the OH is equal to the TTC minus ETC_F , and ETC_{NF} plus $postbacks_{NF}$.

3.3 Negative ATC

As stated above, 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. The Non-PTF facilities are primarily radial paths that provide transmission service to directly interconnected generators.

It is possible, in the future that a particular radial path may interconnect more nameplate capacity generation than the path's TTC. However, for UES's Non-PTF modeled by ISO or the LCC, the ISO will only dispatch an amount of generation interconnected to such path so as not to incur a reliability or stability violation on the subject path consistent with ISO's economic, security constrained dispatch methodology. Therefore, ATC in the PH, OH and SH may become zero, but will not become negative.

3.4 Posting of ATC

3.4.1 Location of ATC Posting

ATC values are posted on OASIS in accordance with NAESB Standards. Fitchburg Gas and Electric Light Company ("Fitchburg") has a waiver from OASIS and standard of conduct requirements detailed in Order 889. However, Fitchburg is committed to providing pertinent information to interested potential Transmission Customers on a timely and accurate basis. If you are a potential Transmission Customer, then please contact Kevin E. Sprague by phone at (603) 773-6554 or by e-mail at sprague@unitil.com.

3.4.2 Updates To ATC

When any of the variables in the ATC equations change, the ATC values are recalculated and immediately posted.

3.4.3 Coordination of ATC Calculations

Schedule 21-UES non-PTF has no external interfaces. Therefore it is not necessary to coordinate the values.

4 Total Transfer Capability (TTC)

The Total Transfer Capability (TTC) is the amount of electric power that can be moved or transferred reliably from one area to another area of the interconnected transmission systems by way of all transmission lines (or paths) between those areas under specified system conditions. TTC for Schedule 21-UES is calculated using NERC Standard MOD-029-1 Rated System Path Methodology and posted on Unitil.com.

UES will calculate and post TTC on OASIS for all Non-PTF Posted Paths that are eligible for Local Point-to-Point transmission service reservations. The TTC on UES's Non-PTF eligible for Local Point-to-Point transmission service reservations are relatively static values. UES thus calculates the TTC for Non-PTF Posted Paths equal to the rating of the particular transmission path.

5 Existing Transmission Commitments, Firm (ETC_F)

The ETC_F are those confirmed Firm transmission reservation (PTP_F) plus any rollover rights for Firm transmission reservations (ROR_F) that have been exercised. There are no allowances necessary for Native Load forecast commitments (NL_F), Network Integration Transmission Service (NITS_F), grandfathered Transmission Service (GF_F) and other service(s), contract(s) or agreement(s) (OS_F) to be considered in the ETC_F calculation.

5.1 Existing Transmission Commitments, Non-Firm(ETC_{NF})

The (ETC_{NF}) are those confirmed Non-Firm transmission reservations (PTP_{NF}). There are no allowances necessary for Non-Firm Network Integration Transmission Service (NITS_{NF}), Non-Firm grandfathered Transmission Service (GF_{NF}) or other service(s), contract(s) or agreement(s) (OS_{NF}).

6 Capacity Benefit Market (CBM) and Transmission Reliability Margin TRM

As defined in the UES CBMID and UES TRMID, the values for CBM and TRM for Non-PTF Posted Paths are set to zero.