



# **AVAILABLE TRANSFER CAPABILITY IMPLEMENTATION DOCUMENT (ATCID)**

Electric System Planning

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## 1 PURPOSE

This document describes Lakeland Electric's (LAK's) implementation of a methodology for calculating ATC and provides information related to LAK's calculation of ATC as a Transmission Service Provider. This document includes or references applicable documentation that demonstrates LAK's compliance with the requirements of the NERC standards for an ATC Implementation Document. LAK is the sole Transmission Service Provider (TSP) and Transmission Operator (TOP) within LAK's transmission system's footprint.

## 2 INTRODUCTION

### 2.1 APPLICABILITY

- LAK as NERC Registered Transmission Operator
- LAK as NERC Registered Transmission Service Provider

### 2.2 REFERENCE

- NERC Reliability Standards MOD-001, -028, -029, and -030.
- OATI FTTCS TTC/ATC CALCULATION REFERENCE DOCUMENT ("Methodology Document")

### 2.3 EFFECTIVE DATE

- March 31, 2011

## 3 BACKGROUND

The NERC definition of an Available Transmission Capability Implementation Document (ATCID) is a document that describes the implementation of a methodology for calculating ATC or AFC, and provides information related to a Transmission Service Provider's calculation of ATC or AFC.

LAK's Available Transfer Capability Implementation Document (ATCID) documentation is contained in this document and is reviewed at least annually (Prior to December 31). LAK's ATCID is available on its FLOASIS<sup>1</sup> and its public website.

The NERC MOD standards MOD-001 Available Transmission System Capability and MOD-028 Area Interchange Methodology describe the requirements and details for an ATCID. Standard MOD-001 requires the TSP to prepare and keep current an ATCID that includes processes, procedures, and assumptions used in the determination of Available Transmission Capability for

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<sup>1</sup> FLOASIS – Florida Open Access Same Time Information System. LAK's ATCID will be posted on its FLOASIS upon activation of its FLOASIS account.

each Path. Standard MOD-028 requires the TSP to include additional information regarding determination of Total Transfer Capability (TTC) and ATC.

The Florida Transmission Capability Determination Group (FTCDG), formed by 10 FRCC entities of which LAK is a member, has contracted with Open Access Technology International (OATI) to develop and maintain a Florida Transmission Transfer Capability System (FTTCS or Engine). The Engine is an ATC module of OATI's WebTrans. The Methodology Document, available on request, to those that have a reliability related need, describes the implementation of the methodology. By contract, the algorithms and components used are consistent with those described in NERC MOD-001 and MOD-028.

The FTCDG has contracted with OATI to perform transfer capability analysis to determine TTC. The TTC information automatically inputs into the WebTrans and determines ATC values. The FTCDG members provided the FRCC planning load flow model to OATI as a base model. The method utilized is the Area Interchange Method where Incremental Transfer Capability (ITC) is determined for a POR/POD pair by adjusting generation in economic merit order until a contingency/monitor pair results in an overload with greater than or equal to a 5% distribution factor<sup>2</sup>. Once ITC has been determined the TTC and ATC can be determined using the ATC Algorithms listed in MOD-028-1, R8 to R11.

### Inputs

Each entity supplies to OATI the following data either through a file upload or via the graphical user interface of the Engine.

- 1.) Load forecast file(s) that spans hourly, daily, weekly and monthly data. LAK's BA provides this information.
- 2.) A list of contingencies that specifies to OATI what contingencies to run in the TTC calculations.
- 3.) A list of monitored facilities with summer and winter season ratings to be respected in the TTC calculations.
- 4.) A list of resources and their merit order for adjusting the base case for various load levels, for redispatch for planned generator outages and for determining the transfer economic priorities for the TTC calculations.
- 5.) A TSR List for Interchange that included firm transactions, network designations, etc that OATI uses to build models at various load levels.

### TTC/ATC Outputs

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<sup>2</sup> Individual TSP/TOPs may alter this number for their facilities consistent with MOD-028.

- 1.) The Engine calculates hourly TTC values for the Hours 1-72. ATC values are continuously updated when reservations are processed.
- 2.) In the Engine, Daily TTC values for Days 1-7 are determined by the most restrictive of the hourly values for that day. Daily TTC values are calculated for Days 8 to 395 in STP horizon. ATC values are continuously updated when reservations are processed.
- 3.) The Engine calculates daily values for month 2-13. Monthly values are derived from these calculations based on the most restrictive day of the month. ATC values are continuously updated when reservations are processed.

## 4 ATCID REQUIREMENTS

### 4.1 ATCID MOD-001 REQUIREMENTS (MOD-001-1 R3)

REQUIREMENT OWNER: TRANSMISSION PLANNER

*R3. EACH TRANSMISSION SERVICE PROVIDER SHALL PREPARE AND KEEP CURRENT AN AVAILABLE TRANSFER CAPABILITY IMPLEMENTATION DOCUMENT (ATCID) THAT INCLUDES, AT A MINIMUM, THE FOLLOWING INFORMATION:*

*M3. EACH TRANSMISSION OPERATOR SHALL PROVIDE EVIDENCE, INCLUDING SCHEDULED OUTAGES, FACILITY ADDITIONS AND RETIREMENTS, (SUCH AS WRITTEN DOCUMENTATION, LOGS, AND DATA) THAT THE DATA DESCRIBED IN R3 AND R4 WERE INCLUDED IN THE DETERMINATION OF TTC AS SPECIFIED IN THE ATCID.*

LAK's Available Transfer Capability Implementation Document (ATCID) document is contained within paragraph 4 and its subparagraphs in this document and is reviewed at least annually (prior to December 31). LAK's ATCID is available on its FLOASIS<sup>3</sup> and its public website. Paragraph 5 provides additional data not directly related to the ATCID that may provide additional clarity.

During outages of the TTC Engine or WebTrans OASIS, a Backup ATCID supersedes this primary ATCID. The Backup ATCID is located in Attachment A.

#### 4.1.1 DESCRIPTION OF ATC METHODOLOGY (MOD-001 R3.1)

REQUIREMENT OWNER: TRANSMISSION PLANNER

*R3.1 INFORMATION DESCRIBING HOW THE SELECTED METHODOLOGY (OR METHODOLOGIES) HAS BEEN IMPLEMENTED, IN SUCH DETAIL THAT, GIVEN THE SAME INFORMATION USED BY THE TRANSMISSION SERVICE PROVIDER, THE RESULTS OF THE ATC OR AFC CALCULATIONS CAN BE VALIDATED.*

LAK has elected to apply the Area Interchange Methodology, as described in NERC MOD-028, as the calculation methodology for ATC. LAK uses the Engine described in "Background" paragraph to calculate TTC and ATC. This methodology applies to all LAK ATC

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<sup>3</sup> FLOASIS – LAK's ATCID will be available on the FLOASIS site upon LAK's account activation.

paths, by direction, for all time periods. The methodology found within the Backup ATCID, Attachment A, supersedes portions of this methodology when the Engine is unavailable.

#### **4.1.2 ACCOUNTING FOR COUNTERFLOW (MOD-001 R3.2)**

REQUIREMENT OWNER: TRANSMISSION PLANNER

*R3.2. A DESCRIPTION OF THE MANNER IN WHICH THE TRANSMISSION SERVICE PROVIDER WILL ACCOUNT FOR COUNTERFLOWS INCLUDING:*

*3.2.1. HOW CONFIRMED TRANSMISSION RESERVATIONS, EXPECTED INTERCHANGE AND INTERNAL COUNTERFLOW ARE ADDRESSED IN FIRM AND NON-FIRM ATC OR AFC CALCULATIONS.*

*3.2.2. A RATIONALE FOR THAT ACCOUNTING SPECIFIED IN R3.2.*

Confirmed, long-term, firm transmission reservations, as well as firm contracted interchange transactions and internal Balancing Area flows resulting from expected load and generation dispatch levels, are included in the base models used to calculate TTC. Therefore, all flows and counterflows resulting from these items are reflected in the TTC powerflow modeling calculations.

A counterflow adder of 0 MW is added within all ATC calculations. This applies to all firm and non-firm ATC calculations. That is, Counterflows made available from the short-term and non-firm transmission reservations are not reflected in posted ATC, due to the level of uncertainty<sup>4</sup> associated with the scheduling of such reservations and the possible impact on system reliability.

#### **4.1.3 MODEL DATA EXCHANGE (MOD-001 R3.3)**

REQUIREMENT OWNER: TRANSMISSION PLANNER

*R3.3. THE IDENTITY OF THE TRANSMISSION OPERATORS AND TRANSMISSION SERVICE PROVIDERS FROM WHICH THE TRANSMISSION SERVICE PROVIDER RECEIVES DATA FOR USE IN CALCULATING ATC OR AFC.*

Modeling data is provided by registered Transmission Operators through the FRCC Planning Process. Outage data is received from Transmission Service Providers through the Florida Transaction Management System (FTMS). The following TSPs and TOPS or their agents may provide data for use in calculating ATC:

- Florida Keys Electric Cooperative Assn
- Florida Power & Light Co.
- Gainesville Regional Utilities
- Homestead, City of
- JEA
- Kissimmee Utility Authority
- Lakeland Electric

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<sup>4</sup> As there is no mechanism to ensure the scheduled transaction is not canceled and therefore the beneficial effect of counterflow is canceled and may cause reliability issues

- Lee County Electric Cooperative, Inc
- New Smyrna Beach, Utilities Commission of
- Orlando Utilities Commission
- Progress Energy Florida
- Seminole Electric Cooperative
- Tallahassee, City of
- Tampa Electric Company
- Vero Beach, City of
- Southern Company

This list includes all FRCC entities in the NERC registry registered as TSPs and TOPs as of this document's applicability date. The NERC registry may be updated at any time.

#### **4.1.4 MODEL DATA EXCHANGE (MOD-001 R3.4)**

REQUIREMENT OWNER: TRANSMISSION PLANNER

*R3.4. THE IDENTITY OF THE TRANSMISSION SERVICE PROVIDERS AND TRANSMISSION OPERATORS TO WHICH IT PROVIDES DATA FOR USE IN CALCULATING TRANSFER OR FLOWGATE CAPABILITY.*

LAK provides data to the entities listed in the response to R3.3 in paragraph 4.1.3. through the Equipment status report (ESR), FTMS, e-mail and updates to the input documents listed in the "Background" paragraph.

#### **4.1.5 ALLOCATION PROCESSES (MOD-001 R3.5)**

REQUIREMENT OWNER: TRANSMISSION PLANNER

*R3.5. A DESCRIPTION OF THE ALLOCATION PROCESSES LISTED BELOW THAT ARE APPLICABLE TO THE TRANSMISSION SERVICE PROVIDER:*

- *PROCESSES USED TO ALLOCATE TRANSFER OR FLOWGATE CAPABILITY AMONG MULTIPLE LINES OR SUB-PATHS WITHIN A LARGER ATC PATH OR FLOWGATE.*

LAK does not allocate ATC within a larger path.

- *PROCESSES USED TO ALLOCATE TRANSFER OR FLOWGATE CAPABILITIES AMONG MULTIPLE OWNERS OR USERS OF AN ATC PATH OR FLOWGATE.*

LAK does not participate in any multiple owner ATC PATH

- *PROCESSES USED TO ALLOCATE TRANSFER OR FLOWGATE CAPABILITIES BETWEEN TRANSMISSION SERVICE PROVIDERS TO ADDRESS ISSUES SUCH AS FORWARD LOOKING CONGESTION MANAGEMENT AND SEAMS COORDINATION.*

LAK has no instances where ATC is allocated among multiple TSPs

#### **4.1.6 ALLOCATION PROCESSES (MOD-001 R3.6)**

REQUIREMENT OWNER: TRANSMISSION PLANNER

*R3.6. A DESCRIPTION OF HOW GENERATION AND TRANSMISSION OUTAGES ARE CONSIDERED IN TRANSFER OR FLOWGATE CAPABILITY CALCULATIONS, INCLUDING:*

*R3.6.1. THE CRITERIA USED TO DETERMINE WHEN AN OUTAGE THAT IS IN EFFECT PART OF A DAY IMPACTS A DAILY CALCULATION.*

For the first seven days, daily ATC is derived by using the minimum ATC for all hours that day, so a partial day outage may affect ATC for that day. Beyond seven days, only outages that impact the peak hour TTC impact the daily ATC calculations, be they full-day or partial-day outages.

*R3.6.2. THE CRITERIA USED TO DETERMINE WHEN AN OUTAGE THAT IS IN EFFECT PART OF A MONTH IMPACTS A MONTHLY CALCULATION.*

Monthly ATC is derived by using the lowest calculated daily value for that month. Therefore an outage that causes a single day to have a low ATC values will cause the monthly ATC to have that same value.

*R3.6.3. HOW OUTAGES FROM OTHER TRANSMISSION SERVICE PROVIDERS THAT CAN NOT BE MAPPED TO THE TRANSMISSION MODEL USED TO CALCULATE TRANSFER OR FLOWGATE CAPABILITY ARE ADDRESSED.*

TSPs (OR THEIR AGENTS) CAN MAP OUTAGES ON THEIR TRANSMISSION AND GENERATION SYSTEMS TO THE TRANSMISSION MODEL. THE TRANSMISSION MODEL INCLUDES ALL OF FLORIDA AND THE SERC REGION. ALL RELEVANT OUTAGES ARE MAPPED TO THE TRANSMISSION MODEL.

## **4.2 ATCID MOD-028 ALLOCATION PROCESSES (MOD-028 R1)**

REQUIREMENT OWNER: TRANSMISSION PLANNER

*R1. EACH TRANSMISSION SERVICE PROVIDER SHALL INCLUDE IN ITS AVAILABLE TRANSFER CAPABILITY IMPLEMENTATION DOCUMENT (ATCID), AT A MINIMUM, THE FOLLOWING INFORMATION RELATIVE TO ITS METHODOLOGY FOR DETERMINING TOTAL TRANSFER CAPABILITY (TTC):*

See paragraph 4.1 ATCID (MOD-001-1 R3) and “Background” above for general TTC/ATC calculation information.

### **4.2.1 TTC VALIDATION (MOD-028 R1.1)**

REQUIREMENT OWNER: TRANSMISSION PLANNER

*R1.1. INFORMATION DESCRIBING HOW THE SELECTED METHODOLOGY HAS BEEN IMPLEMENTED, IN SUCH DETAIL THAT, GIVEN THE SAME INFORMATION USED BY THE TRANSMISSION OPERATOR, THE RESULTS OF THE TTC CALCULATIONS CAN BE VALIDATED.*

See paragraph 4.1.1 Description of ATC Methodology (MOD-028 R3.1) above for information concerning TTC calculations.

### **4.2.2 INTERCHANGE SCHEDULE IN TTC (MOD-028 R1.2)**

REQUIREMENT OWNER: TRANSMISSION PLANNER

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*R1.2. A DESCRIPTION OF THE MANNER IN WHICH THE TRANSMISSION OPERATOR WILL ACCOUNT FOR INTERCHANGE SCHEDULES IN THE CALCULATION OF TTC.*

In the calculation of TTC, the long-term firm interchange and network interchange schedules are included in the TTC calculation and input to the process through “TSR List for Interchange” as described in the Methodology Document. The TSR List for Interchange contains the firm transactions maximum megawatt amount and by load level percentage, an assumption based on the collective experience of the regions controls areas, of the expected usage of each transaction at the lower load levels. These transactions and assumptions are modeled explicitly as interchange in the base model between POD and POR.

#### **4.2.3 CONTRACTUAL OBLIGATIONS IN TTC (MOD-028 R1.3)**

REQUIREMENT OWNER: TRANSMISSION PLANNER

*R1.3. ANY CONTRACTUAL OBLIGATIONS FOR ALLOCATION OF TTC.*

LAK has no instances of contractual obligations for allocation of TTC.

#### **4.2.4 CONTINGENCY ANALYSIS (MOD-028 R1.4)**

REQUIREMENT OWNER: TRANSMISSION PLANNER

*R1.4. A DESCRIPTION OF THE MANNER IN WHICH CONTINGENCIES ARE IDENTIFIED FOR USE IN THE TTC PROCESS.*

All LAK BES facilities (Transmission lines, Generation, etc.) and 230/69 kV transformers are identified for contingency simulations. These facilities are identified as they will be the facilities through which any transfer would flow. Contingency analysis is also performed on all facilities specified by neighboring system provider/operators that are submitted to OATI for calculations.

Any facility determined or known to appreciably reduce transfer capability will also be added to the contingency list.

The master list of contingencies used in the TTC process uses the same criteria as that used for FRCC Operations Planning studies. LAK’s Operations Planning contingencies are essentially all transmission facilities 100kV and above, and critical 69kV facilities as identified by FRCC as having an impact on the Bulk Electric System. Note that there are no LAK 69kV facilities identified as critical at this time.

#### **4.2.5 SOURCE AND SINK ACCOUNTING (MOD-028 R1.5)**

REQUIREMENT OWNER: TRANSMISSION PLANNER

*R1.5. THE FOLLOWING INFORMATION ON HOW SOURCE AND SINK FOR TRANSMISSION SERVICE IS ACCOUNTED FOR IN ATC CALCULATIONS INCLUDING:*

*R1.5.1. DEFINE IF THE SOURCE USED FOR AVAILABLE TRANSFER CAPABILITY (ATC) CALCULATIONS IS OBTAINED FROM THE SOURCE FIELD OR THE POINT OF RECEIPT (POR) FIELD OF THE TRANSMISSION RESERVATION*

ATC is calculated using the POINT OF RECEIPT (POR) as shown in the Methodology Document.

*R1.5.2. DEFINE IF THE SINK USED FOR ATC CALCULATIONS IS OBTAINED FROM THE SINK FIELD OR THE POINT OF DELIVERY (POD) FIELD OF THE TRANSMISSION RESERVATION*

ATC is calculated using the Point of Delivery (POD) as shown in the Methodology Document.

*R1.5.3. THE SOURCE/SINK OR POR/POD IDENTIFICATION AND MAPPING TO THE MODEL.*

List of identified POR/POD's for which LAK calculates ATC. This is the same list as is in the model.

PLK-TEC   PLK-FPC   FPC-PLK   FPC-PLK

ATC is calculated using the Point of Delivery as shown in the Methodology Document.

*R1.5.4 IF THE TRANSMISSION SERVICE PROVIDER'S ATC CALCULATION PROCESS INVOLVES A GROUPING OF GENERATION, THE ATCID MUST IDENTIFY HOW THESE GENERATORS PARTICIPATE IN THE GROUP.*

LAK uses models compiled by the FRCC for the ATC calculation process. Each generator is modeled individually and listed in the Generator Block and Priority spreadsheet, which is an input to the Engine and is discussed in the Methodology Document. To the extent that multiple generators within an area are assigned the same block and priority, these generators could be considered grouped. They would participate in the group proportionally.

## **5 MISCELLANEOUS (NOT RELATED TO ATCID)**

### **5.1 REVISION INSTRUCTIONS (MOD-001 R4)**

*R4. THE TRANSMISSION SERVICE PROVIDER SHALL NOTIFY THE FOLLOWING ENTITIES BEFORE IMPLEMENTING A NEW OR REVISED ATCID: [VIOLATION RISK FACTOR: LOWER] [TIME HORIZON: OPERATIONS PLANNING]*

LAK will notify the following entities before implementing a new or revised ATCID:

*R4.1 EACH PLANNING COORDINATOR ASSOCIATED WITH THE TRANSMISSION SERVICE PROVIDER'S AREA.*

LAK internal since LAK is registered as a Planning Coordinator.

*R4.2 EACH RELIABILITY COORDINATOR ASSOCIATED WITH THE TRANSMISSION SERVICE PROVIDER'S AREA.*

The FRCC Reliability Coordinator.

*R4.3 EACH TRANSMISSION OPERATOR ASSOCIATED WITH THE TRANSMISSION SERVICE PROVIDER'S AREA.*

LAK internal as LAK is the only TO associated with the TSP area.

*R4.4 EACH PLANNING COORDINATOR ADJACENT TO THE TRANSMISSION SERVICE PROVIDER'S AREA.*

Orlando Utilities Commission, Tampa Electric Co., and Progress Energy Florida aka FPC.

*R4.5 EACH RELIABILITY COORDINATOR ADJACENT TO THE TRANSMISSION SERVICE PROVIDER'S AREA.*

The FRCC Reliability Coordinator.

*R4.6 EACH TRANSMISSION SERVICE PROVIDER WHOSE AREA IS ADJACENT TO THE TRANSMISSION SERVICE PROVIDER'S AREA.*

Orlando Utilities Commission, Tampa Electric Co., and Progress Energy Florida aka FPC.

## **5.2 ATCID AVAILABILITY (MOD-001 R5)**

*R5. THE TRANSMISSION SERVICE PROVIDER SHALL MAKE AVAILABLE THE CURRENT ATCID TO ALL OF THE ENTITIES SPECIFIED IN R4.*

LAK will make available its current ATCID to all the entities specified in R4 by posting the document to its FLOAIS and to LAK's public website.

## **5.3 LIMITING ASSUMPTIONS (MOD-001 R6)**

*R6. WHEN CALCULATING TOTAL TRANSFER CAPABILITY (TTC) OR TOTAL FLOWGATE CAPABILITY (TFC) THE TRANSMISSION OPERATOR SHALL 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. [VIOLATION RISK FACTOR: LOWER] [TIME HORIZON: OPERATIONS PLANNING]*

Assumptions in operations planning and ATC calculations include consistent use of the following assumptions:

1. Generation Dispatch – a pseudo-economic merit dispatch using available units
2. Demand and Demand Pattern – same forecast data and load scaling
3. Facility characteristics, ratings and status
  - 3.1 Facility rating and characteristics – per FRCC MOD databank
  - 3.2 Status – Per FTMS
4. Scheduled interchange – per interchange spreadsheet

None of the assumptions in ATC planning will be more limiting than those used in ATC calculations for the corresponding time period studied, providing such planning of operations has been performed for that time period.

## 5.4 CALCULATION PERIODICITY (MOD-001 R8)

*R8. EACH TRANSMISSION SERVICE PROVIDER THAT CALCULATES ATC SHALL RECALCULATE ATC AT A MINIMUM ON THE FOLLOWING FREQUENCY, UNLESS NONE OF THE CALCULATED VALUES IDENTIFIED IN THE ATC EQUATION HAVE CHANGED: [VIOLATION RISK FACTOR: LOWER] [TIME HORIZON: OPERATIONS PLANNING]*

*R8.1. HOURLY VALUES, ONCE PER HOUR. TRANSMISSION SERVICE PROVIDERS ARE ALLOWED UP TO 175 HOURS PER CALENDAR YEAR DURING WHICH CALCULATIONS ARE NOT REQUIRED TO BE PERFORMED, DESPITE A CHANGE IN A CALCULATED VALUE IDENTIFIED IN THE ATC EQUATION.*

ATC values are continuously recalculated/updated when reservations are processed and when TTC is calculated. The Scheduling Horizon (next 4 hours), the engine recalculates TTC values hourly. The Operating Horizon, the engine calculates TTC values for hours 5 to 72 hourly.

*R8.2. DAILY VALUES, ONCE PER DAY.*

ATC values are continuously recalculated/updated when reservations are processed and when TTC is calculated. Daily TTC values for Day 1 to 7 are recalculated on a daily based on the most restrictive of the hourly values for that day. Daily TTC values are calculated for day 8 to 31 with a weekly update frequency.

*R8.3. MONTHLY VALUES, ONCE PER WEEK.*

ATC values are continuously recalculated/updated when reservations are processed and when TTC is calculated. Daily TTC values are calculated for Months 2 -13 with a weekly update frequency. Monthly TTC values are derived from these calculations based on the most restrictive day of the month.

## 5.5 CASE ASSUMPTIONS (MOD-001 R9)

REQUIREMENT OWNER: TRANSMISSION PLANNING

*R9 WITHIN THIRTY CALENDAR DAYS OF RECEIVING A REQUEST BY ANY TRANSMISSION SERVICE PROVIDER, PLANNING COORDINATOR, RELIABILITY COORDINATOR, OR TRANSMISSION OPERATOR FOR DATA FROM THE LIST BELOW SOLELY FOR USE IN THE REQUESTOR'S ATC OR AFC CALCULATIONS, EACH TRANSMISSION SERVICE PROVIDER RECEIVING SAID REQUEST SHALL BEGIN TO MAKE THE REQUESTED DATA AVAILABLE TO THE REQUESTOR, SUBJECT TO THE CONDITIONS SPECIFIED IN R9.1 AND R9.2:*

- *EXPECTED GENERATION AND TRANSMISSION OUTAGES, ADDITIONS, AND RETIREMENTS.*
- *LOAD FORECASTS.*
- *UNIT COMMITMENTS AND ORDER OF DISPATCH, TO INCLUDE ALL DESIGNATED NETWORK RESOURCES AND OTHER RESOURCES THAT ARE COMMITTED OR HAVE THE LEGAL OBLIGATION TO RUN, AS THEY ARE EXPECTED TO RUN, IN ONE OF THE FOLLOWING FORMATS CHOSEN BY THE DATA PROVIDER:*
  - *DISPATCH ORDER*
  - *PARTICIPATION FACTORS*

- *BLOCK DISPATCH*
- *AGGREGATED FIRM CAPACITY SET-ASIDE FOR NETWORK INTEGRATION TRANSMISSION SERVICE AND AGGREGATED NON-FIRM CAPACITY SET ASIDE FOR NETWORK INTEGRATION TRANSMISSION SERVICE (I.E. SECONDARY SERVICE).*
- *FIRM AND NON-FIRM TRANSMISSION RESERVATIONS.*
- *AGGREGATED CAPACITY SET-ASIDE FOR GRANDFATHERED OBLIGATIONS*
- *FIRM ROLL-OVER RIGHTS.*
- *ANY FIRM AND NON-FIRM ADJUSTMENTS APPLIED BY THE TRANSMISSION SERVICE PROVIDER TO REFLECT PARALLEL PATH IMPACTS.*
- *POWER FLOW MODELS AND UNDERLYING ASSUMPTIONS.*
- *CONTINGENCIES, PROVIDED IN ONE OR MORE OF THE FOLLOWING FORMATS:*
  - *A LIST OF ELEMENTS*
  - *A LIST OF FLOWGATES*
  - *A SET OF SELECTION CRITERIA THAT CAN BE APPLIED TO THE TRANSMISSION MODEL USED BY THE TRANSMISSION OPERATOR AND/OR TRANSMISSION SERVICE PROVIDER*
- *FACILITY RATINGS.*
- *ANY OTHER SERVICES THAT IMPACT EXISTING TRANSMISSION COMMITMENTS (ETCs).*
- *VALUES OF CAPACITY BENEFIT MARGIN (CBM) AND TRANSMISSION RELIABILITY MARGIN (TRM) FOR ALL ATC PATHS OR FLOWGATES.*
- *VALUES OF TOTAL FLOWGATE CAPABILITY (TFC) AND AFC FOR ANY FLOWGATES CONSIDERED BY THE TRANSMISSION SERVICE PROVIDER RECEIVING THE REQUEST WHEN SELLING TRANSMISSION SERVICE.*
- *VALUES OF TTC AND ATC FOR ALL ATC PATHS FOR THOSE TRANSMISSION SERVICE PROVIDERS RECEIVING THE REQUEST THAT DO NOT CONSIDER FLOWGATES WHEN SELLING TRANSMISSION SERVICE.*
- *SOURCE AND SINK IDENTIFICATION AND MAPPING TO THE MODEL.*

*R9.1. THE TRANSMISSION SERVICE PROVIDER SHALL MAKE ITS OWN CURRENT DATA AVAILABLE, IN THE FORMAT MAINTAINED BY THE TRANSMISSION SERVICE PROVIDER, FOR UP TO 13 MONTHS INTO THE FUTURE (SUBJECT TO CONFIDENTIALITY AND SECURITY REQUIREMENTS).*

*R9.1.1. IF THE TRANSMISSION SERVICE PROVIDER USES THE DATA REQUESTED IN ITS TRANSFER OR FLOWGATE CAPABILITY CALCULATIONS, IT SHALL MAKE THE DATA USED AVAILABLE*

*R9.1.2. IF THE TRANSMISSION SERVICE PROVIDER DOES NOT USE THE DATA REQUESTED IN ITS TRANSFER OR FLOWGATE CAPABILITY CALCULATIONS, BUT MAINTAINS THAT DATA, IT SHALL MAKE THAT DATA AVAILABLE*

*R9.1.3. IF THE TRANSMISSION SERVICE PROVIDER DOES NOT USE THE DATA REQUESTED IN ITS TRANSFER OR FLOWGATE CAPABILITY CALCULATIONS, AND DOES NOT MAINTAIN THAT DATA, IT SHALL NOT BE REQUIRED TO MAKE THAT DATA AVAILABLE*

*R9.2. THIS DATA SHALL BE MADE AVAILABLE BY THE TRANSMISSION PROVIDER ON THE SCHEDULE SPECIFIED BY THE REQUESTOR (BUT NO MORE FREQUENTLY THAN ONCE PER HOUR, UNLESS MUTUALLY AGREED TO BY THE REQUESTER AND THE PROVIDER).*

Within thirty calendar days of receiving a request by any Transmission Service Provider, Planning Coordinator, Reliability Coordinator, or Transmission Operator for data from the list above solely for use in the requestor's ATC or AFC calculations, LAK shall begin to make the requested data available to the requestor, subject to the conditions specified in MOD-001 R9.1 and R9.2

## **5.6 TRANSMISSION MODEL (MOD-028 R2)**

REQUIREMENT OWNER: TRANSMISSION PLANNING

*R2. WHEN CALCULATING TTC FOR ATC PATHS, THE TRANSMISSION OPERATOR SHALL USE A TRANSMISSION MODEL THAT CONTAINS ALL OF THE FOLLOWING:*

*R2.1 MODELING DATA AND TOPOLOGY OF ITS RELIABILITY COORDINATOR'S AREA OF RESPONSIBILITY. EQUIVALENT REPRESENTATION OF RADIAL LINES AND FACILITIES 161 KV OR BELOW IS ALLOWED.*

LAK, when calculating TTC for ATC Paths, uses a transmission model that contains modeling data and topology of the FRCC region. This loadflow model is developed annually by the FRCC regional planning process. The model contains all pertinent facilities, modeling data, and topology for TTC calculations.

*R2.2 MODELING DATA AND TOPOLOGY (OR EQUIVALENT REPRESENTATION) FOR IMMEDIATELY ADJACENT AND BEYOND RELIABILITY COORDINATION AREAS.*

LAK, when calculating TTC for ATC Paths, uses a transmission model that contains modeling data and topology (or equivalent representation) for SERC, which is an immediately adjacent and beyond the FRCC area. Beyond SERC the model is an equivalence of the remainder of the eastern interconnection.

*R2.3 FACILITY RATINGS SPECIFIED BY THE GENERATOR OWNERS AND TRANSMISSION OWNERS.*

LAK, when calculating TTC for ATC Paths, uses a transmission model that contains Facility Ratings specified by FRCC Generator Owners via the FRCC Planning Process. Thus, the generator ratings are in the base models. The ratings for lines and transformers are provided by the regional entities to the Engine. The rating data are in the "Monitored Branch Summary" section of the Engine.

## **5.7 TSP AREA DATA (MOD-028 R3)**

REQUIREMENT OWNER: TRANSMISSION PLANNING

*R3. WHEN CALCULATING TTCs FOR ATC PATHS, THE TRANSMISSION OPERATOR SHALL INCLUDE THE FOLLOWING DATA FOR THE TRANSMISSION SERVICE PROVIDER'S AREA. THE TRANSMISSION OPERATOR SHALL ALSO INCLUDE THE FOLLOWING DATA ASSOCIATED WITH FACILITIES THAT ARE EXPLICITLY REPRESENTED IN THE TRANSMISSION MODEL, AS*

*PROVIDED BY ADJACENT TRANSMISSION SERVICE PROVIDERS AND ANY OTHER TRANSMISSION SERVICE PROVIDERS WITH WHICH COORDINATION AGREEMENTS HAVE BEEN EXECUTED: [VIOLATION RISK FACTOR: LOWER] [TIME HORIZON: OPERATIONS PLANNING]*

*R3.1 FOR ON-PEAK AND OFF-PEAK INTRA-DAY AND NEXT-DAY TTCs, USE THE FOLLOWING (AS WELL AS ANY OTHER VALUES AND ADDITIONAL PARAMETERS AS SPECIFIED IN THE ATCID):*

*R3.1.1. EXPECTED GENERATION AND TRANSMISSION OUTAGES, ADDITIONS, AND RETIREMENTS, INCLUDED AS SPECIFIED IN THE ATCID.*

*R3.1.2. LOAD FORECAST FOR THE APPLICABLE PERIOD BEING CALCULATED.*

*R3.1.3. UNIT COMMITMENT AND DISPATCH ORDER, TO INCLUDE ALL DESIGNATED NETWORK RESOURCES AND OTHER RESOURCES THAT ARE COMMITTED OR HAVE THE LEGAL OBLIGATION TO RUN, (WITHIN OR OUT OF ECONOMIC DISPATCH) AS THEY ARE EXPECTED TO RUN.*

*R3.2 FOR DAYS TWO THROUGH 31 TTCs AND FOR MONTHS TWO THROUGH 13 TTCs, USE THE FOLLOWING (AS WELL AS ANY OTHER VALUES AND INTERNAL PARAMETERS AS SPECIFIED IN THE ATCID):*

*R3.2.1. EXPECTED GENERATION AND TRANSMISSION OUTAGES, ADDITIONS, AND RETIREMENTS, INCLUDED AS SPECIFIED IN THE ATCID.*

*R3.2.2 DAILY LOAD FORECAST FOR THE DAYS TWO THROUGH 31 TTCs BEING CALCULATED AND MONTHLY FORECAST FOR MONTHS TWO THROUGH 13 MONTHS TTCs BEING CALCULATED.*

*R3.2.3. UNIT COMMITMENT AND DISPATCH ORDER, TO INCLUDE ALL DESIGNATED NETWORK RESOURCES AND OTHER RESOURCES THAT ARE COMMITTED OR HAVE THE LEGAL OBLIGATION TO RUN, (WITHIN OR OUT OF ECONOMIC DISPATCH) AS THEY ARE EXPECTED TO RUN.*

LAK participates along with all entities within the FRCC region in a process whereby a database of planned and unplanned outage information spanning the next two years is maintained in a central repository. This repository is called FTMS and each entity supplies its input through a graphical web interface. OATI whose engine performs the TTC calculations for all time periods for LAK reads outage data from the FTMS repository automatically and adjusts the models before each calculation is performed. This process insures the latest outage data for lines, transformers and generators are always included in each calculation. LAK participates in a process along with all entities in FRCC in an Operations Planning Process whereby a document referred as the Equipment Status Report is maintained. This list documents the expected and actual in-service date of new equipment and generators that are expected in the next twelve months. Retirements are also documented in the list. LAK submits to OATI changes to the base model to reflect topology changes specified in the New Equipment List.

LAK's BA submits load data for TTC calculation in an automated process. The file is uploaded to the TTC engine each hour.

For MOD-028 R3 see ATCID (Paragraph 4) and Methodology Document for details.

## 5.8 ATC CONDITIONS (MOD-028 R4)

REQUIREMENT OWNER: TRANSMISSION PLANNING

*R4. WHEN CALCULATING TTCs FOR ATC PATHS, THE TRANSMISSION OPERATOR SHALL MEET ALL OF THE FOLLOWING CONDITIONS: [VIOLATION RISK FACTOR: LOWER] [TIME HORIZON: OPERATIONS PLANNING]*

LAK, as a Transmission Operator, meets all of the following conditions.

*R4.1 USE ALL CONTINGENCIES MEETING THE CRITERIA DESCRIBED IN THE ATCID.*

The list of contingencies used in the Engine includes facilities identified in the ATCID.

*R4.2 RESPECT ANY CONTRACTUAL ALLOCATIONS OF TTC.*

LAK does not have any contractual allocations of TTC.

*R4.3 INCLUDE, FOR EACH TIME PERIOD, THE FIRM TRANSMISSION SERVICE EXPECTED TO BE SCHEDULED AS SPECIFIED IN THE ATCID (FILTERED TO REDUCE OR ELIMINATE DUPLICATE IMPACTS FROM TRANSACTIONS USING TRANSMISSION SERVICE FROM MULTIPLE TRANSMISSION SERVICE PROVIDERS) FOR THE TRANSMISSION SERVICE PROVIDER, ALL ADJACENT TRANSMISSION SERVICE PROVIDERS, AND ANY TRANSMISSION SERVICE PROVIDERS WITH WHICH COORDINATION AGREEMENTS HAVE BEEN EXECUTED MODELING THE SOURCE AND SINK AS FOLLOWS:*

*IF THE SOURCE, AS SPECIFIED IN THE ATCID, HAS BEEN IDENTIFIED IN THE RESERVATION AND IT IS DISCRETELY MODELED IN THE TRANSMISSION SERVICE PROVIDER'S TRANSMISSION MODEL, USE THE DISCRETELY MODELED POINT AS THE SOURCE.*

*IF THE SOURCE, AS SPECIFIED IN THE ATCID, HAS BEEN IDENTIFIED IN THE RESERVATION AND THE POINT CAN BE MAPPED TO AN "EQUIVALENCE" OR "AGGREGATE REPRESENTATION" IN THE TRANSMISSION SERVICE PROVIDER'S TRANSMISSION MODEL, USE THE MODELED EQUIVALENCE OR AGGREGATE AS THE SOURCE.*

*IF THE SOURCE, AS SPECIFIED IN THE ATCID, HAS BEEN IDENTIFIED IN THE RESERVATION AND THE POINT CANNOT BE MAPPED TO A DISCRETELY MODELED POINT, AN "EQUIVALENCE," OR AN "AGGREGATE REPRESENTATION" IN THE TRANSMISSION SERVICE PROVIDER'S TRANSMISSION MODEL, USE THE IMMEDIATELY ADJACENT BALANCING AUTHORITY ASSOCIATED WITH THE TRANSMISSION SERVICE PROVIDER FROM WHICH THE POWER IS TO BE RECEIVED AS THE SOURCE.*

*IF THE SOURCE, AS SPECIFIED IN THE ATCID, HAS NOT BEEN IDENTIFIED IN THE RESERVATION, USE THE IMMEDIATELY ADJACENT BALANCING AUTHORITY ASSOCIATED WITH THE TRANSMISSION SERVICE PROVIDER FROM WHICH THE POWER IS TO BE RECEIVED AS THE SOURCE.*

*IF THE SINK, AS SPECIFIED IN THE ATCID, HAS BEEN IDENTIFIED IN THE RESERVATION AND IT IS DISCRETELY MODELED IN THE TRANSMISSION SERVICE PROVIDER'S TRANSMISSION MODEL, USE THE DISCRETELY MODELED POINT SHALL AS THE SINK.*

*IF THE SINK, AS SPECIFIED IN THE ATCID, HAS BEEN IDENTIFIED IN THE RESERVATION AND THE POINT CAN BE MAPPED TO AN "EQUIVALENCE" OR "AGGREGATE REPRESENTATION" IN THE TRANSMISSION SERVICE PROVIDER'S TRANSMISSION MODEL, USE THE MODELED EQUIVALENCE OR AGGREGATE AS THE SINK.*

*IF THE SINK, AS SPECIFIED IN THE ATCID, HAS BEEN IDENTIFIED IN THE RESERVATION AND THE POINT CANNOT BE MAPPED TO A DISCRETELY MODELED POINT, AN "EQUIVALENCE," OR AN "AGGREGATE REPRESENTATION" IN THE TRANSMISSION SERVICE PROVIDER'S TRANSMISSION MODEL, USE THE IMMEDIATELY ADJACENT BALANCING AUTHORITY ASSOCIATED WITH THE TRANSMISSION SERVICE PROVIDER TO WHICH THE POWER IS TO BE DELIVERED AS THE SINK.*

*IF THE SINK, AS SPECIFIED IN THE ATCID, HAS NOT BEEN IDENTIFIED IN THE RESERVATION, USE THE IMMEDIATELY ADJACENT BALANCING AUTHORITY ASSOCIATED WITH THE TRANSMISSION SERVICE PROVIDER TO WHICH THE POWER IS BEING DELIVERED AS THE SINK.*

The entities participating in the OATI engine provide all FIRM transactions via the "TSR List for Interchange". The TSR List for Interchange specifies the FIRM transactions that flow as interchange at load levels ranging from peak load to minimum loading. The TSR List for Interchange is arranged by POR/POD convention. All POR/PODs outlined in the transaction spreadsheet corresponds to BAs contained in the model used by the OATI engine. Each entity participating in the engine only provides FIRM transactions leaving the corresponding BA, thus eliminating duplicates.

## **5.9 TTC PER ATC PATH (MOD-028 R5)**

REQUIREMENT OWNER: TRANSMISSION PLANNING

*R5. EACH TRANSMISSION OPERATOR SHALL ESTABLISH TTC FOR EACH ATC PATH AS DEFINED BELOW:*

*R5.1 AT LEAST ONCE WITHIN THE SEVEN CALENDAR DAYS PRIOR TO THE SPECIFIED PERIOD FOR TTCs USED IN HOURLY AND DAILY ATC CALCULATIONS.*

The OATI engine will calculate LAK TTCs at least once within the seven calendar days prior to the specified period for TTCs used in hourly and daily ATC calculations.

*R5.2 AT LEAST ONCE PER CALENDAR MONTH FOR TTCs USED IN MONTHLY ATC CALCULATIONS.*

The OATI engine will calculate LAK TTCs at least once per calendar month for TTCs used in monthly ATC calculations.

*R5.3 WITHIN 24 HOURS OF THE UNEXPECTED OUTAGE OF A 500 kV OR HIGHER TRANSMISSION FACILITY OR A TRANSFORMER WITH A LOW-SIDE VOLTAGE OF 200 kV OR HIGHER FOR TTCs IN EFFECT DURING THE ANTICIPATED DURATION OF THE OUTAGE, PROVIDED SUCH OUTAGE IS EXPECTED TO LAST 24 HOURS OR LONGER.*

Note that LAK does not have transmission facilities that are 500 kV or higher or any transformers with a low-side voltage of 200 kV or higher.

## **5.10 ESTABLISH TTC PER PROCESS (MOD-028 R6)**

REQUIREMENT OWNER: TRANSMISSION PLANNING

*R6. EACH TRANSMISSION OPERATOR SHALL ESTABLISH TTC FOR EACH ATC PATH USING THE FOLLOWING PROCESS:*

LAK, as a Transmission Operator, Establishes TTC for Each ATC Path using the process outlined below (R6.1-6.4). The Methodology Document describes the processes in detail.

The OATI engine calculates LAK ATC by increasing generation on the source side and reducing generation on the sink side of the segment to be calculated. This process is performed until a SOL with a distribution factor of 5% or greater is reached on either BA involved or any adjacent system affected by the calculation. If a SOL cannot be reached via generation adjustment the constraint is listed as “maximum adjustment applied.”

Once the ITC plus the impact of FIRM transmission has been determined, this information is passed to the OATI WebTrans system where it is compared to a segment containing a static TTC value equal to the sum of the ties. (For any jointly owned paths, the sum of the ties is only equal to the contractual portion of the path.) The lesser of the two values is used for final TTC value posted to the associated path.

*R6.1 DETERMINE THE INCREMENTAL TRANSFER CAPABILITY FOR EACH ATC PATH BY INCREASING GENERATION AND/OR DECREASING LOAD WITHIN THE SOURCE BALANCING AUTHORITY AREA AND DECREASING GENERATION AND/OR INCREASING LOAD WITHIN THE SINK BALANCING AUTHORITY AREA UNTIL EITHER:*

- *A SYSTEM OPERATING LIMIT IS REACHED ON THE TRANSMISSION SERVICE PROVIDER’S SYSTEM, OR*
- *A SOL IS REACHED ON ANY OTHER ADJACENT SYSTEM IN THE TRANSMISSION MODEL THAT IS NOT ON THE STUDY PATH AND THE DISTRIBUTION FACTOR IS 5% OR GREATER<sup>5</sup>.*

*R6.2 IF THE LIMIT IN STEP R6.1 CANNOT BE REACHED BY ADJUSTING ANY COMBINATION OF LOAD OR GENERATION, THEN SET THE INCREMENTAL TRANSFER CAPABILITY BY THE RESULTS OF THE CASE WHERE THE MAXIMUM ADJUSTMENTS WERE APPLIED.*

If the limit in step R6.1 cannot be reached by adjusting any combination of load or generation, then set the incremental Transfer Capability by the results of the case where the maximum adjustments were applied.

*R 6.3 USE (AS THE TTC) THE LESSER OF:*

- *THE SUM OF THE INCREMENTAL TRANSFER CAPABILITY AND THE IMPACTS OF FIRM TRANSMISSION SERVICES, AS SPECIFIED IN THE TRANSMISSION SERVICE PROVIDER’S ATCID, THAT WERE INCLUDED IN THE STUDY MODEL, OR*
- *THE SUM OF FACILITY RATINGS OF ALL TIES COMPRISING THE ATC PATH.*

Once the ITC plus the impact of FIRM transmission has been determined, this information (TTC) is passed to the OATI WebTrans system where it is compared to a segment containing a static TTC value equal to the sum of the ties. The lesser of the two values is used for final TTC value posted to the associated path.

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<sup>5</sup> The Transmission operator may honor distribution factors other than 5% if desired and consistent with MOD-028.

*R6.4 FOR ATC PATHS WHOSE CAPACITY USES JOINTLY-OWNED OR ALLOCATED FACILITIES, LIMIT TTC FOR EACH TRANSMISSION SERVICE PROVIDER SO THE TTC DOES NOT EXCEED EACH TRANSMISSION SERVICE PROVIDER'S CONTRACTUAL RIGHTS.*

LAK does not have any ATC Paths whose capacity uses Jointly-Owned or Allocated Facilities and therefore does not exceed any TSP's contractual rights.

## **5.11 TTC DETERMINATION PERIODICITY (MOD-028 R7)**

REQUIREMENT OWNER: TRANSMISSION PLANNING

*R7. THE TRANSMISSION OPERATOR SHALL PROVIDE THE TRANSMISSION SERVICE PROVIDER OF THAT ATC PATH WITH THE MOST CURRENT VALUE FOR TTC FOR THAT ATC PATH NO MORE THAN:*

*R7.1 ONE CALENDAR DAY AFTER ITS DETERMINATION FOR TTCs USED IN HOURLY AND DAILY ATC CALCULATIONS.*

*R7.2 SEVEN CALENDAR DAYS AFTER ITS DETERMINATION FOR TTCs USED IN MONTHLY ATC CALCULATIONS.*

The OATI engine, OATI WebTrans, and OATI Oasis products are linked together in calculation and posting processes. The Engine calculates LAK's TTC's, passes the TTC calculation to WebTrans, and WebTrans passes the information to OASIS without intentional delay. This process occurs before the stipulated "one day after determination" for hourly ATC and the stipulated "seven day after determination" for monthly ATC. Thus, LAK, as a Transmission Operator, provides the TTC information to the Transmission Service Providers in the required time frame.

## **5.12 ETC FIRM CALCULATION (MOD-028 R8)**

REQUIREMENT OWNER: TRANSMISSION PLANNING

*R.8 WHEN CALCULATING EXISTING TRANSMISSION COMMITMENTS (ETCs) FOR FIRM COMMITMENTS (ETC<sub>F</sub>) FOR ALL TIME PERIODS FOR AN ATC PATH THE TRANSMISSION SERVICE PROVIDER SHALL USE THE FOLLOWING ALGORITHM: [VIOLATION RISK FACTOR: LOWER] [TIME HORIZON: OPERATIONS PLANNING]*

$$ETC_F = NITS_F + GF_F + PTP_F + ROR_F + OS_F$$

WHERE:

*NITS<sub>F</sub> IS THE FIRM CAPACITY SET ASIDE FOR NETWORK INTEGRATION TRANSMISSION SERVICE (INCLUDING THE CAPACITY USED TO SERVE BUNDLED LOAD WITHIN THE TRANSMISSION SERVICE PROVIDER'S AREA WITH EXTERNAL SOURCES) ON ATC PATHS THAT SERVE AS INTERFACES WITH OTHER BALANCING AUTHORITIES.*

*GF<sub>F</sub> IS THE FIRM CAPACITY SET ASIDE FOR GRANDFATHERED FIRM 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 ON ATC PATHS THAT SERVE AS INTERFACES WITH OTHER BALANCING AUTHORITIES.*

*PTP<sub>F</sub> IS THE FIRM CAPACITY RESERVED FOR CONFIRMED POINT-TO-POINT TRANSMISSION SERVICE.*

*ROR<sub>F</sub> IS THE CAPACITY RESERVED FOR ROLL-OVER RIGHTS FOR FIRM TRANSMISSION SERVICE 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.*

*OS<sub>F</sub> IS THE FIRM CAPACITY RESERVED FOR ANY OTHER SERVICE(S), CONTRACT(S), OR AGREEMENT(S) NOT SPECIFIED ABOVE USING FIRM TRANSMISSION SERVICE, INCLUDING ANY OTHER FIRM ADJUSTMENTS TO REFLECT IMPACTS FROM OTHER ATC PATHS OF THE TRANSMISSION SERVICE PROVIDER AS SPECIFIED IN THE ATCID.*

When determining the FIRM ETC to be used in the OATI engine for calculating LAK TTC, the afore mentioned components are identified through the TSR List for Interchange and summed together to derive the LAK ETC values. Also, as firm transactions are approved in real time, the ETCF component will increase and ATC will be appropriately deducted.

Currently, LAK's only ETC<sub>F</sub> is the grandfathered (GF<sub>F</sub>) 40 MW of firm capacity is set aside for wheeling of Ridge Generation Station Limited Partnership (Ridge) energy to PEF. LAK has no firm commitments for NITS, PTP, ROR or OS.

### **5.13 ETC NON-FIRM CALCULATION (MOD-028 R9)**

REQUIREMENT OWNER: TRANSMISSION PLANNING

*R9. WHEN CALCULATING ETC FOR NON-FIRM COMMITMENTS (ETC<sub>NF</sub>) FOR ALL TIME PERIODS FOR AN ATC PATH THE TRANSMISSION SERVICE PROVIDER SHALL USE THE FOLLOWING ALGORITHM: [VIOLATION RISK FACTOR: LOWER] [TIME HORIZON: OPERATIONS PLANNING]*

$$ETC_{NF} = NITS_{NF} + GF_{NF} + PTP_{NF} + OS_{NF}$$

WHERE:

*NITS<sub>NF</sub> IS THE NON-FIRM CAPACITY SET ASIDE FOR NETWORK INTEGRATION TRANSMISSION SERVICE (I.E., SECONDARY SERVICE, INCLUDING THE CAPACITY USED TO SERVE BUNDLED LOAD WITHIN THE TRANSMISSION SERVICE PROVIDER'S AREA WITH EXTERNAL SOURCES) RESERVED ON ATC PATHS THAT SERVE AS INTERFACES WITH OTHER BALANCING AUTHORITIES.*

*GF<sub>NF</sub> IS THE NON-FIRM CAPACITY RESERVED FOR GRANDFATHERED NON-FIRM 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 ON ATC PATHS THAT SERVE AS INTERFACES WITH OTHER BALANCING AUTHORITIES.*

*PTP<sub>NF</sub> IS NON-FIRM CAPACITY RESERVED FOR CONFIRMED POINT-TO-POINT TRANSMISSION SERVICE.*

*OS<sub>NF</sub> IS THE NON-FIRM CAPACITY RESERVED FOR ANY OTHER SERVICE(S), CONTRACT(S), OR AGREEMENT(S) NOT SPECIFIED ABOVE USING NON-FIRM TRANSMISSION SERVICE, INCLUDING ANY OTHER FIRM ADJUSTMENTS TO REFLECT IMPACTS FROM OTHER ATC PATHS OF THE TRANSMISSION SERVICE PROVIDER AS SPECIFIED IN THE ATCID.*

When determining the NON-FIRM ETC to be used in the OATI engine for calculating LAK TTC, the aforementioned components are utilized and summed together to derive the LAK ETC values. The ETC<sub>NF</sub> is deducted from appropriate path's ATC.

LAK uses the above formula to calculate ETC<sub>NF</sub>.

## 5.14 ATC FIRM CALCULATION (MOD-028 R10)

REQUIREMENT OWNER: TRANSMISSION PLANNING

*R10. WHEN CALCULATING FIRM ATC FOR AN ATC PATH FOR A SPECIFIED PERIOD, THE TRANSMISSION SERVICE PROVIDER SHALL UTILIZE THE FOLLOWING ALGORITHM: [VIOLATION RISK FACTOR: LOWER] [TIME HORIZON: OPERATIONS PLANNING]*

$$ATC_F = TTC - ETC_F - CBM - TRM + POSTBACKS_F + COUNTERFLOWS_F$$

WHERE:

*ATCF IS THE FIRM AVAILABLE TRANSFER CAPABILITY FOR THE ATC PATH FOR THAT PERIOD.*

*TTC IS THE TOTAL TRANSFER CAPABILITY OF THE ATC PATH FOR THAT PERIOD.*

*ETCF IS THE SUM OF EXISTING FIRM TRANSMISSION COMMITMENTS FOR THE ATC PATH DURING THAT PERIOD.*

*CBM IS THE CAPACITY BENEFIT MARGIN FOR THE ATC PATH DURING THAT PERIOD.*

*TRM IS THE TRANSMISSION RELIABILITY MARGIN FOR THE ATC PATH DURING THAT PERIOD.*

*POSTBACKSF ARE CHANGES TO FIRM ATC DUE TO A CHANGE IN THE USE OF TRANSMISSION SERVICE FOR THAT PERIOD, AS DEFINED IN BUSINESS PRACTICES.*

*COUNTERFLOWSF ARE ADJUSTMENTS TO FIRM ATC AS DETERMINED BY THE TRANSMISSION SERVICE PROVIDER AND SPECIFIED IN THE ATCID.*

When calculating firm ATC for an ATC Path for a specified period, LAK as a Transmission Service Provider, utilizes the algorithm above.

The FIRM ATC value for a given path is derived by the specified algorithm through the OATI WebTrans GUI. The TTC and ETC, will be provided by the OATI engine. CBM, TRM, and Postbacks will be performed through the OATI WebTrans interface. These inputs will be summed by the OATI WebTrans GUI to determine the ATC for the associated path. CBM, Postbacks<sub>F</sub> and counterflows = zero.

## 5.15 ATC NON-FIRM CALCULATION (MOD-028 R11)

REQUIREMENT OWNER: TRANSMISSION PLANNING

*WHEN CALCULATING NON-FIRM ATC FOR A ATC PATH FOR A SPECIFIED PERIOD, THE TRANSMISSION SERVICE PROVIDER SHALL USE THE FOLLOWING ALGORITHM: [VIOLATION RISK FACTOR: LOWER] [TIME HORIZON: OPERATIONS PLANNING]*

$$ATC_{NF} = TTC - ETC_F - ETC_{NF} - CBM_S - TRM_U + POSTBACKS_{NF} + COUNTERFLOWS_{NF}$$

WHERE:

*ATCNF IS THE NON-FIRM AVAILABLE TRANSFER CAPABILITY FOR THE ATC PATH FOR THAT PERIOD.*

*TTC IS THE TOTAL TRANSFER CAPABILITY OF THE ATC PATH FOR THAT PERIOD.*

*ETCF IS THE SUM OF EXISTING FIRM TRANSMISSION COMMITMENTS FOR THE ATC PATH DURING THAT PERIOD.*

*ETCNF IS THE SUM OF EXISTING NON-FIRM TRANSMISSION COMMITMENTS FOR THE ATC PATH DURING THAT PERIOD.*

*CBMS IS THE CAPACITY BENEFIT MARGIN FOR THE ATC PATH THAT HAS BEEN SCHEDULED WITHOUT A SEPARATE RESERVATION DURING THAT PERIOD.*

*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.*

*POSTBACKSNF ARE CHANGES TO NON-FIRM ATC DUE TO A CHANGE IN THE USE OF TRANSMISSION SERVICE FOR THAT PERIOD, AS DEFINED IN BUSINESS PRACTICES.*

*COUNTERFLOWSNF ARE ADJUSTMENTS TO NON-FIRM ATC AS DETERMINED BY THE TRANSMISSION SERVICE PROVIDER AND SPECIFIED IN THE ATCID.*

When calculating non-firm ATC for an ATC Path for a specified period, LAK as a Transmission Service Provider, utilizes the algorithm above.

The NON –FIRM ATC value for a given path is derived by the specified algorithm through the OATI WebTrans GUI. The TTC, ETC, and counterflows will be provided by the OATI engine. CBM, TRM, and Postbacks will be performed through the OATI WebTrans interface. These inputs will be summed by the OATI WebTrans GUI to determine the ATC for the associated path. CBMS, TRMU , counterflows = zero.

## **5.16 MOD-004 - CAPACITY BENEFIT MARGIN**

LAK has not elected to maintain Capacity Benefit Margin. See LAK's CBMID.

## **5.17 MOD-008 – TRANSMISSION RELIABILITY MARGIN CALCULATION METHODOLOGY**

See LAK's TRMID.

## **5.18 MOD-029 - RATED SYSTEM PATH METHODOLOGY**

Not applicable to LAK since LAK selected the Area Interchange Methodology to calculate TTCs and ATCs for ATC paths. See MOD-001 R1.

## **5.19 MOD-030 - FLOWGATE METHODOLOGY**

Not applicable to LAK since LAK selected the Area Interchange Methodology to calculate TTCs and ATCs for ATC paths. See MOD-001 R1.

# **6 DEFINITIONS**

The definitions below are official NERC definition unless it is otherwise noted.

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Operating Horizon – OATI Definition - In the Engine, this is a moving window that extends from the end of the Scheduling Horizon Interval to hour 24:00 of the next day. At hour 10:00 the Operating Interval expands to include all of the current day through hour 24:00 of the following day. On Fridays at 10:00 this expands to include all of the weekend and Monday until hour 00:00 of Tuesday. If the following day is a holiday the window expands further to include the entire holiday. This concept also applies if a holiday occurs anytime in the week.

Planning Horizon – OATI Definition - In the Engine, this window begins at the end of the Operating Interval and extends 13 months from the current date.

PUBLIC

## 7 REFERENCE DOCUMENTS/NOTES

Title/Description	Number
OATI FTTCS TTC/ATC Calculation Reference Document	OATI Project #971 – Current Version
Interim ATC Calculation, Posting and Transactions Approval Process	LAK-MOD-ATC PRO

Date	Notes	Author

## 8 AUDIT HISTORY

Date	Type	Response	Findings

## 9 REVISION HISTORY

Version	Date	Action	Reviewed/Approved By
1.0	2011.03.30	Original Document	Watt, Larry Tran, Phuong Velummylum, Ganesh

## ATTACHMENT A - BACKUP ATCID

As the ATC determination methodology necessarily changes during outages or unavailability of the TTC engine or OASIS, this backup ATCID (B-ATCID) is presented to document and describe the implementation of a backup methodology(s) for calculating ATC or AFC, and provides information related to LAK's calculation of ATC or AFC during outages or unavailability of the TTC engine (paragraph 2) or OASIS (paragraph 3).

### FOR UNAVAILABILITY OF OASIS

All sections and subsections in the primary ATCID, located in paragraph 4. "ATCID REQUIREMENTS", apply to the Backup ATCID as superseded herein during outages of the WebTrans (OATI product that Calculates ATC) or OASIS (OATI Product that makes ATC available). All subparagraphs of paragraph 2 assume that the TTC engine is functioning. Paragraph 3 and its subparagraphs describe non-Engine TTC calculations (I.E. hand calculations).

All data detailed in paragraph 4. "ATCID REQUIREMENTS" function as the framework for the B-ATCID. Superseded data of sections of paragraph 4 are described below.

#### **ATCID MOD-001 REQUIREMENTS (MOD-001-1 R3):**

REQUIREMENT OWNER: TRANSMISSION PLANNER

*THIS SUPERSEDES PARAGRAPH 4.1 IN THE MAIN BODY OF THIS DOCUMENT*

*R3. EACH TRANSMISSION SERVICE PROVIDER SHALL PREPARE AND KEEP CURRENT AN AVAILABLE TRANSFER CAPABILITY IMPLEMENTATION DOCUMENT (ATCID) THAT INCLUDES, AT A MINIMUM, THE FOLLOWING INFORMATION:*

*M3. EACH TRANSMISSION OPERATOR SHALL PROVIDE EVIDENCE, INCLUDING SCHEDULED OUTAGES, FACILITY ADDITIONS AND RETIREMENTS, (SUCH AS WRITTEN DOCUMENTATION, LOGS, AND DATA) THAT THE DATA DESCRIBED IN R3 AND R4 WERE INCLUDED IN THE DETERMINATION OF TTC AS SPECIFIED IN THE ATCID.*

LAK's Backup Available Transfer Capability Implementation Document (B-ATCID) document is contained within in paragraph 4. "ATCID REQUIREMENTS" with superseded sections described in paragraph 2 of Attachment A. The B-ATCID is available on its FLOASIS and its public website.

Using TTC data obtained from the TTC Engine LAK determines and makes available its ATC for bidirectional paths between LAK and Progress Energy Florida (FPC) and between LAK and Tampa Electric Co. (TECO)

A detailed ATC posting methodology is contained within LAK's "LAKELAND ELECTRIC'S INTERIM ATC CALCULATION, POSTING AND TRANSACTIONS APPROVAL PROCESS."

The calculation process will remain as described in the FTCS TTC/ATC CALCULATION REFERENCE DOCUMENT.

## **DESCRIPTION OF ATC METHODOLOGY (MOD-001 R3.1)**

REQUIREMENT OWNER: TRANSMISSION PLANNER

*THIS SUPERSEDES PARAGRAPH 4.1.1 IN THE MAIN BODY OF THIS DOCUMENT*

*R3.1 INFORMATION DESCRIBING HOW THE SELECTED METHODOLOGY (OR METHODOLOGIES) HAS BEEN IMPLEMENTED, IN SUCH DETAIL THAT, GIVEN THE SAME INFORMATION USED BY THE TRANSMISSION SERVICE PROVIDER, THE RESULTS OF THE ATC OR AFC CALCULATIONS CAN BE VALIDATED.*

LAK has elected to apply the Area Interchange Methodology, as described in NERC MOD-028, as the calculation methodology for ATC.

LAK will calculate TTC using the TTC Engine as described in the FTCS TTC/ATC CALCULATION REFERENCE DOCUMENT. LAK will calculate ATC and make available ATC as described in LAK's "LAKELAND ELECTRIC'S INTERIM ATC CALCULATION, POSTING AND TRANSACTIONS APPROVAL PROCESS."

## **ALLOCATION PROCESSES (MOD-001 R3.6)**

REQUIREMENT OWNER: TRANSMISSION PLANNER

*THIS SUPERSEDES PARAGRAPH 4.1.6 IN THE MAIN BODY OF THIS DOCUMENT*

*R3.6. A DESCRIPTION OF HOW GENERATION AND TRANSMISSION OUTAGES ARE CONSIDERED IN TRANSFER OR FLOWGATE CAPABILITY CALCULATIONS, INCLUDING:*

*R3.6.1. THE CRITERIA USED TO DETERMINE WHEN AN OUTAGE THAT IS IN EFFECT PART OF A DAY IMPACTS A DAILY CALCULATION.*

The first seven days (from posting date/time) of daily ATC is derived by using the minimum ATC for all hours that day, so a partial day outage may affect ATC for that day. Beyond the first seven days posted, only outages that impact the peak hour TTC impact the daily ATC calculations, be they full-day or partial-day outages.

*R3.6.2. THE CRITERIA USED TO DETERMINE WHEN AN OUTAGE THAT IS IN EFFECT PART OF A MONTH IMPACTS A MONTHLY CALCULATION.*

Monthly ATC is derived by using the lowest calculated daily value for that month. Therefore an outage that causes a single day to have a low ATC values will cause the monthly ATC to have that same value.

*R3.6.3. HOW OUTAGES FROM OTHER TRANSMISSION SERVICE PROVIDERS THAT CAN NOT BE MAPPED TO THE TRANSMISSION MODEL USED TO CALCULATE TRANSFER OR FLOWGATE CAPABILITY ARE ADDRESSED.*

TSPs (or their agents) can map outages on their transmission and generation systems to the transmission model. The transmission model includes all of Florida and the SERC region. All relevant outages are mapped to the transmission model.

## **ATCID MOD-028 ALLOCATION PROCESSES (MOD-028 R1)**

REQUIREMENT OWNER: TRANSMISSION PLANNER

*THIS SUPERSEDES PARAGRAPH 4.2 IN THE MAIN BODY OF THIS DOCUMENT*

*R1. EACH TRANSMISSION SERVICE PROVIDER SHALL INCLUDE IN ITS AVAILABLE TRANSFER CAPABILITY IMPLEMENTATION DOCUMENT (ATCID), AT A MINIMUM, THE FOLLOWING INFORMATION RELATIVE TO ITS METHODOLOGY FOR DETERMINING TOTAL TRANSFER CAPABILITY (TTC):*

See paragraph 2.2 & 2.2 of Attachment A

## **FOR UNAVAILABILITY OF TTC ENGINE**

All sections and subsections in the B-ATCID, located in paragraph 2 of attachment A apply except as amended herein during outages of the TTC Engine (Engine). Paragraph 3 describes non-Engine TTC calculations (I.E. hand calculations).

Amended data is described below.

## **ATCID MOD-001 REQUIREMENTS (MOD-001-1 R3):**

REQUIREMENT OWNER: TRANSMISSION PLANNER

*THIS SUPERSEDES PARAGRAPH 4.1 IN THE MAIN BODY OF THIS DOCUMENT*

*THIS SUPERSEDES PARAGRAPH 2.1 IN ATTACHMENT A*

*R3. EACH TRANSMISSION SERVICE PROVIDER SHALL PREPARE AND KEEP CURRENT AN AVAILABLE TRANSFER CAPABILITY IMPLEMENTATION DOCUMENT (ATCID) THAT INCLUDES, AT A MINIMUM, THE FOLLOWING INFORMATION:*

*M3. EACH TRANSMISSION OPERATOR SHALL PROVIDE EVIDENCE, INCLUDING SCHEDULED OUTAGES, FACILITY ADDITIONS AND RETIREMENTS, (SUCH AS WRITTEN DOCUMENTATION, LOGS, AND DATA) THAT THE DATA DESCRIBED IN R3 AND R4 WERE INCLUDED IN THE DETERMINATION OF TTC AS SPECIFIED IN THE ATCID.*

LAK has elected to apply the Area Interchange Methodology, as described in NERC MOD-028, as the calculation methodology for ATC.

LAK's Backup Available Transfer Capability Implementation Document (B-ATCID) document is contained within in paragraph 4. "ATCID REQUIREMENTS" with superseded sections described in paragraph 2 of Attachment A. The B-ATCID is available on its FLOASIS and its public website.

A detailed ATC posting methodology is contained within LAK's "LAKELAND ELECTRIC'S INTERIM ATC CALCULATION, POSTING AND TRANSACTIONS APPROVAL PROCESS."

TTC data is obtained using the following methodology:

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## MODEL DEVELOPMENT

LAK participates in the FRCC regional case building process by submitting timely facility and system information per the applicable regional procedure, process and methodology documents. These documents are available on the FRCC FTP or Reliability Only Group (ROG) websites. These documents include: (but are not limited to)

- Reliability Process for the FRCC Bulk Electric System
- FRCC REQUIREMENTS FOR SYSTEM MODELING DATA
- FRCC Requirements for the Maintenance and Distribution of the Steady-State and Dynamics Data as required by NERC Reliability Standards MOD-010-0, MOD-011-0, MOD-012-0 and MOD-013-1
- FRCC Requirements for the Development of Steady-State and Dynamics System Models as required by NERC Reliability Standards MOD-014-0 and MOD-015-0

The cases are further refined with area interchange and load (demand) forecast, facility outage data and generation dispatch data.

- An interchange spreadsheet is developed representing firm transmission rights of each TOP and TSP as well as Source/Sink information of GO/GOPs and LSEs. The summed interchange of each control area is populated in the case. Interchange is ramped in direct proportion to forecast demand.
- Long range forecast demand data is contained in the Bus, Load, and Generator (BLG) spreadsheet. This spreadsheet includes load and generation data forecast for summer and winter peak demand periods for the next 10 years. This data is used to build the shorter term operations (including ATC) cases. ATC and OPC Base Cases are built using this data. Additional base cases are built with load ramped up or down as appropriate to represent the range of forecast loads. During the operations timeframe, LAK's BA populates load forecast data into the Florida Transaction Management Production System (FTMS) web based database. The demand and generation appropriate base case is then selected as a study specific base case.
- TSPs, GOPs, and TOPs enter facility outage data into the FTMS database to ensure all outages (planned or forced) can be modeled as appropriate.

## BASE CASES

- 21 cases representative of three time periods for each day of a seven day period are developed as ATC Weekly cases.
- 28 cases representative of daily peak periods are developed for each day of a 28 day period as OPC 28 day study cases.

- 13 cases representative of “most constrained day of the month” monthly cases are developed for current-month and for each month of the next 12 months (2-13) as ATC monthly cases.

#### **MAPPING BASE CASE TO TTC**

- Hourly TTC is developed using the ATC Weekly Cases. Each case is representative of six to twelve hours of a particular day. TTC (and therefore ATC) for a particular hour is developed using the applicable case for each hour of a seven day period.
- Daily TTC is developed using a combination of OPC 28 day cases and Monthly Cases. Those days not covered by an OPC case is covered utilizing the applicable Monthly ATC case. Daily TTC is determined for the next 38 days.
- Monthly TTC is developed using Monthly ATC cases. Monthly TTC is calculated for months 1 through 13.

#### **TTC**

Using Siemens’ PSS/e - MUST (Managing and Utilizing System Transmission) software, a First Contingency Incremental Transfer Capability (FCITC) is determined for each path using the cases described above.

The contingency list is copied from the OPC case contingency list. This list includes all LAK’s BES facilities.

The incremental transfer process involves ramping up generation in the source control area and ramping down generation in the sink control area.

#### **CALCULATING ATC**

Firm and non-firm ATC is calculated according to the formulas below:

$$ATC_F = TTC - ETC_F - CBM - TRM + Postbacks_F + counterflows_F$$

#### **Where:**

**ATC<sub>F</sub>** is the firm Available Transfer Capability for the ATC Path for that period.

**TTC** is the Total Transfer Capability of the ATC Path for that period. This equals the FCITC determined above.

**ETC<sub>F</sub>** is the sum of existing firm Transmission commitments for the ATC Path during that period. This equals any firm transmission rights granted post-case development.

**CBM** is the Capacity Benefit Margin for the ATC Path during that period. LAK does not reserve CBM for use in ATC calculations. See LAK’s CBMID.

**TRM** is the Transmission Reliability Margin for the ATC Path during that period. Path specific TRM is included as detailed in LAK's TRMID.

**Postbacks<sub>F</sub>** are changes to firm ATC due to a change in the use of Transmission Service for that period, as defined in Business Practices. LAK does not include Postbacks in ATC calculations.

**counterflows<sub>F</sub>** are adjustments to firm ATC as determined by the Transmission Service Provider and specified in the ATCID. LAK does not use a counterflow adder in its ATC calculations.

$$ATC_{NF} = TTC - ETC_F - ETC_{NF} - CBM_S - TRM_U + Postbacks_{NF} + counterflows_N$$

**Where:**

**ATC<sub>NF</sub>** is the non-firm Available Transfer Capability for the ATC Path for that period.

**TTC** is the Total Transfer Capability of the ATC Path for that period. This equals the FCITC determined above.

**ETC<sub>NF</sub>** is the sum of existing non-firm Transmission commitments for the ATC Path during that period. This equals any non-firm transmission commitments granted post-case development.

**CBM<sub>S</sub>** is the Capacity Benefit Margin for the ATC Path that has been scheduled without a separate reservation during that period. LAK does not reserve CBM. See LAK's CBMID.

**TRM<sub>U</sub>** 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. Path specific TRM is included as detailed in LAK's TRMID.

**Postbacks<sub>NF</sub>** are changes to non-firm ATC due to a change in the use of Transmission Service for that period, as defined in Business Practices. Any ATC made available from unscheduled reservations is released as non-firm ATC (posted back) in the Scheduling Horizon<sup>6</sup>.

**counterflows<sub>NF</sub>** are adjustments to non-firm ATC as determined by the Transmission Service Provider and specified in the ATCID. LAK does not use a counterflow adder in its ATC calculations.

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<sup>6</sup> Scheduling Horizon (SCH): This horizon has a 4-Hour scope with hourly calculation steps. Therefore there are 4 steps in this horizon. The calculations (of TTC, ETC, ATC, and TDFs) for this horizon will be made with an hourly periodicity and will always compute values for the next 4-Hours with hourly increments. The network topology used in this calculation will be based on the application of all outages existing at the beginning of the hour. Where applicable, Area Interchange for this horizon will be computed based on the use of Scheduled Firm and Scheduled Non-Firm Electronic Tags (e-Tags).

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## **INTERCHANGE SCHEDULE IN TTC (MOD-028 R1.2)**

REQUIREMENT OWNER: TRANSMISSION PLANNER

*THIS SUPERSEDES PARAGRAPH 4.2.2 IN THE MAIN BODY OF THIS DOCUMENT*

*R1.2. A DESCRIPTION OF THE MANNER IN WHICH THE TRANSMISSION OPERATOR WILL ACCOUNT FOR INTERCHANGE SCHEDULES IN THE CALCULATION OF TTC.*

Long-term firm interchange is included in the TTC calculation and input to the process through a regional “Interchange spreadsheet.” Each area’s interchange is summed and entered into the model. This ensures the base model has all long term firm transactions modeled appropriately. As load levels change it is assumed that certain transactions result in interchange changes. This is captured in the interchange spreadsheet.

## **SOURCE AND SINK ACCOUNTING (MOD-028 R1.5)**

REQUIREMENT OWNER: TRANSMISSION PLANNER

*THIS SUPERSEDES PARAGRAPH 4.2.5 IN THE MAIN BODY OF THIS DOCUMENT*

*R1.5.1. DEFINE IF THE SOURCE USED FOR AVAILABLE TRANSFER CAPABILITY (ATC) CALCULATIONS IS OBTAINED FROM THE SOURCE FIELD OR THE POINT OF RECEIPT (POR) FIELD OF THE TRANSMISSION RESERVATION*

ATC is calculated using the POINT OF RECEIPT (POR).

*R1.5.2. DEFINE IF THE SINK USED FOR ATC CALCULATIONS IS OBTAINED FROM THE SINK FIELD OR THE POINT OF DELIVERY (POD) FIELD OF THE TRANSMISSION RESERVATION*

ATC is calculated using the Point of Delivery (POD).

*R1.5.3. THE SOURCE/SINK OR POR/POD IDENTIFICATION AND MAPPING TO THE MODEL.*

List of identified POR/POD’s for which LAK calculates ATC. This is the same list as is in the model.

PLK-TEC    PLK-FPC    FPC-PLK    FPC-PLK

ATC is calculated using the Point of Delivery and Point of Receipt.

*R1.5.4 IF THE TRANSMISSION SERVICE PROVIDER’S ATC CALCULATION PROCESS INVOLVES A GROUPING OF GENERATION, THE ATCID MUST IDENTIFY HOW THESE GENERATORS PARTICIPATE IN THE GROUP.*

LAK uses models compiled by the FRCC staff in conjunction with ATCWG and the OPC for the ATC calculation process. Each generator is modeled individually and grouped by control area. Each generator participates based on its output divided by the total area generation capability.