

Available Transfer Capability Implementation Document  
(ATCID)



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## 1 Background

This document serves as OVEC’s Available Transmission System Capability Implementation Document as required by NERC. The document describes OVEC’s method of calculating ATC and accounts for how the ATC calculated values are to be shared with appropriate parties. In addition, this document describes all assumptions made in the ATC calculation.

OVEC has a signed contract with the Southwest Power Pool (SPP) ) for the calculation and posting of ATC as required. This relationship is detailed in Section 3.2 below.

## 2 Responsible Department

### 2.1 Background

North American Electric Reliability Corporation (NERC) Standard MOD-001 requires Transmission Service Providers to prepare an Available Transfer Capability Implementation Document (ATCID) which describes how the selected NERC Standard MOD-001 ATC calculation methodologies are implemented by the TSP. This document constitutes the ATCID developed by Ohio Valley Electric Corporation (OVEC) (R3). MOD-001 requires that the Transmission Service Provider prepare and keep current an ATCID that includes processes, procedures and assumptions used in determining Available Transfer Capability (ATC). For OVEC, additional requirements in MOD-030 (Flowgate Methodology) are also covered in the ATCID.

### 2.2 Notifications (R4) and Availability (R5)

OVEC shall notify the following entities before implementing a new or revised ATCID:

- Each Planning Coordinator, each Reliability Coordinator, and each Transmission Operator associated with OVEC’s TSP area.
- Each Planning Coordinator, each Reliability Coordinator, and each Transmission Operator adjacent to -OVEC’s TSP area.

In addition, OVEC, as the Transmission Service Provider, shall make the current ATCID available to all entities listed above.

### 2.3 Responsibilities (R3)

OVEC’s System Operations section is responsible for maintenance of this document. Via contractual arrangements to be described later, the SPP calculates and posts ATC consistent with the contract between OVEC and SPP. The document review criteria are detailed in Section 5 below.

## 3 Determining ATC

### 3.1 ATC Methodology Selection – Flowgate Methodology (R1)

OVEC is required to select one of three methods of calculating ATC, the Area Interchange Methodology, the Rated System Path Methodology, or the Flowgate Methodology. In accordance with its published Tariff, OVEC uses the Flowgate Methodology which is fully described in

Attachment C to the OVEC Open Access Transmission Tariff.<sup>1</sup> (The OVEC Tariff has Capacity Benefit Margin correctly set to zero (0) in order for OVEC to match the “public OASIS information”. Transmission Reliability Margin (TRM) is set to zero (0) also.)

### **3.2 Posting of ATC Calculated Values (R2)**

OVEC has a contractual relationship with SPP to calculate and post the calculated values of ATC.<sup>2</sup> This data is posted on the OVEC OASIS site for use by appropriate entities.

Data required by SPP for the calculation of ATC is obtained from numerous sources, including the MMWG Base Case model, dynamic outage data from NERC SDX, and confirmed reservations from OASIS (see Section 3.4 below). Per its agreement with OVEC, SPP posts the Available Transmission Capability on an hourly basis (covering the first 48 hours), on a daily basis (for the next 35 days), and on a monthly basis (for the next 18 months, that is months 2 – 18, as well as for the current month).

### **3.3 Accounting for Counterflow (R3.2)**

SPP performs calculation services for OVEC and relies on certain input data be provided by OVEC. (The flowgate analysis and assignment of counterflow percentages is not currently something that SPP performs.)

The expected Interchange and internal counterflows are addressed in the AFC calculations used in both the firm and non-firm ATC calculations as follows: (R3.2.1)

- Counterflow from expected Interchange in the base case in the opposite direction is included at 100%.
  - Rationale: (R3.2.2) Counterflow for the impact of firm and non-firm reservations has been set at the default as defined in the base case.
- The description of how confirmed and accepted Transmission reservations, expected Interchange and internal counterflow are addressed in firm and non-firm ATC or AFC calculations is included below:
  - Firm reservations impact on firm reservations in the opposite direction
  - Firm reservations impact on non-firm reservations in the opposite direction
  - NonFirm reservations impact on nonfirm reservations in the opposite direction
- The impact of transactions and internal dispatch creating internal counterflows (R3.2.1) is included in the base case at 100% in the opposite direction and may represent expected firm reservations or transactions creating internal reservations.

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<sup>1</sup> See Footnote 4.

<sup>2</sup> “ATC Calculation Agreement between Ohio Valley Electric Corporation and Southwest Power Pool, Inc. Dated 09/04/2008. See specifically Attachment 1 and the associated Annexes 1, 2, and 3.

- Rationale: (R3.2.2) Counterflow from expected Interchange and the impact of transactions creating internal counterflows is 100% due to the nature of including these in the model used in AFC. This treatment results in every transaction being included at its full value.

### **3.4 Identity of Parties from which OVEC Receives Data (R3.3)**

SPP utilizes two PowerGEM software packages in the ATC calculation process, the Transmission and Reliability Analysis (TARA), and the PowerGEM ATC and AFC Calculator (PAAC).

PAAC is a large scale flowgate-based AFC/ATC calculator for several large ISOs/RTOs in the United States, including PJM, TVA, MISO, SPP, Progress Energy, and Entergy.

For the TARA tool, OVEC (SPP) receives data as follows:

- Model Data: secured from the MMWG base case depository
- SDX Data:
  - Midwest Independent System Operator (MISO)
  - PJM Interconnections (PJM)
  - Tennessee Valley Authority (TVA)
- NERC Tag Dump

For the PAAC tool, OVEC (SPP) receives data as follows:

- Reservations:
  - MISO
  - PJM
  - TVA
  - OVEC
- Overrides:
  - MISO
  - PJM
  - TVA
  - Louisville Gas and Electric (LGEE) / ITO

### **3.5 Identity of Parties to whom OVEC Provides Data (R3.4)**

OVEC provides data to the entities listed in Section 3.4 above, through the submission of outage requests to the RC's outage coordination tools (which, in turn, submits the data to the NERC SDX), electronic transaction tags, submission of data to the MMWG model, and OASIS reservations. In addition, for clarity, OVEC provides necessary data to SPP for the calculation and posting of ATC values.

### 3.6 Description of Allocation Processes (R3.5)

OVEC as the TSP employs the FERC-approved Congestion Management Process (CMP) to allocate transfer or Flowgate capabilities between TSPs and to address issues such as forward-looking congestion management and seams coordination.

Since OVEC has not had any requests for service from any entities other than OVEC's own affiliated Purchasing-Selling Entity (PSE) since the implementation of Regional Transmission Organizations (RTOs), OVEC, through its Operating Committee comprised of representatives from its Owners/Sponsors, has developed procedures to allocate the transfer of OVEC's generating output through OVEC's interfaces with its Sponsors during periods of ATC shortage.

#### **Reserving and Scheduling Transmission Service for Delivery of Available Power and Energy:**

##### **1. Initial Long-Term Firm Transmission Reservations**

OVEC Energy Scheduling personnel are responsible for making the necessary Long-Term Transmission Reservations on the OVEC Transmission System for delivery of Available Power and Energy. Yearly Firm Transmission Reservations are made based on the following Sponsor Power Participation Ratios (PPR) of the anticipated maximum Available Power:

Based on the delivery priorities set forth in Section 9.02 of the Agreement, *Modification of Delivery Schedules Based on Available Transmission Capability*, Long-Term Firm Transmission Reservations on the OVEC Transmission System will be made for AEP, Buckeye, DPL, FE, and Mon (or their successors and permitted assignees) for delivery to PJM and for Cinergy, LGEE, and SI (or their successors and permitted assignees) for delivery to MISO<sup>3</sup>. These delivery points shall be deemed the "Primary Delivery Point" for such Sponsor (or their successors and permitted assignees), and any alternative delivery point shall be deemed a "Secondary Delivery Point". No Long-Term Firm Reservations shall be made by OVEC for deliveries to Secondary Delivery Points.

##### **2. Short-Term Transmission Reservations**

OVEC Energy Scheduling Personnel will make short-term transmission reservations on the OVEC Transmission System as necessary to (i) support the sale of released Available Power to any Secondary Delivery Point, (ii) if OVEC's generating capacity exceeds [the reserved amount], or (iii) for sales of released Available Power and Energy not otherwise covered by the existing Long-Term Firm Reservations; provided that, the amount of Long-Term Firm Reservations will be offered for resale for that day as necessary to avoid OVEC holding reservations of Firm ATC in excess of its generating capability.

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<sup>3</sup> If a Sponsor ceases membership with the referenced organization the Primary Delivery Point will revert to that specified in Sections 9.01 and 9.02 of the Agreement.

**a. Next-Day Transmission Reservations**

- i) Short-Term Transmission Reservations on the OVEC Transmission System may be made by OVEC Energy Scheduling personnel on a Daily basis for Next-Day Scheduling.
- ii) In the event that Short-Term *Firm* Transmission Reservations On the OVEC Transmission System cannot be made due to the unavailability of Available Transfer Capability (ATC), Short-Term *Non-Firm* Transmission Reservations will be made, if available. This would include both Daily Non-Firm and Hourly Non-Firm.
- iii) The Short-Term Reservations on the OVEC Transmission System will be requested by OVEC Energy Scheduling personnel at least 30 minutes prior to the market closing time in order to allow OVEC System Operations personnel time to act on the Short-Term Reservation request and to allow E-tags to be in effect.

**b. Same-Day Transmission Reservations**

- i) Short-Term Transmission Reservations on the OVEC Transmission System may be made by OVEC Energy Scheduling personnel on a Daily basis for Same-Day Scheduling.
- ii) In the event that Short-Term *Firm* Transmission Reservations on the OVEC Transmission System cannot be made due to the unavailability of ATC, Short-Term *Non-Firm* Transmission Reservations will be made, if available. This would include both Daily Non-Firm and Hourly Non-Firm.

**c. Delivery Points**

If short-term transmission reservations are needed to support sales to more than one Sponsor and there is limited ATC available, the reservations will be made on a pro-rata basis. There will be no priority given to primary verses secondary delivery points in determining the pro-rata share of the available ATC.

**3.7 Consideration of Outages (R3.6)**

Planned transmission and generation outages of the system are typically studied in advance to assess the impact an outage may have for the expected conditions during the outages. Outages are entered into the SDX database based on the known or scheduled start date and time through the estimated restoration date and time.

The following discussion of the consideration of transmission and generation outages is excerpted from the OVEC/IKEC FERC Electric Tariff.<sup>4</sup>

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<sup>4</sup> “Ohio Valley Electric Corporation / Indiana-Kentucky Electric Corporation; FERC Electric Tariff; Original Volume No. 1; Open Access Transmission Tariff; Original Sheet No. 140B,” Issued on May 2, 2008. Filed to comply with letter order of the Federal Energy Regulatory Commission, Docket No. OA07-85-000, issued April 2, 2008.

Transmission and generation outages are included in a power flow base case if they are expected to continue through 50% or more of the time period for which the ATC value is desired.

An outage that is in effect for 50% or more of the time period of 12pm noon through 4pm would be included in the calculation. An outage that is in effect for 50% or more of the month would be included in the calculation.

Outages from other TSPs that meet criteria for inclusion in ATC calculation studies that cannot be mapped to the transmission model are not used to calculate AFC or Flowgate capability until possibly the next model build, which is currently twice a year in coordination with the MMWG or ERAG and subsequent IDC models.

## 4 Flowgate Methodology

### 4.1 Criteria to Identify Flowgates

OVEC identifies Flowgates as described in its Attachment C to the FERC approved Tariff.<sup>5</sup> (MOD-030-2 R1.1) As defined in that document, “A flow gate is a transmission facility or associated group of transmission facilities and a critical facility outage if it is a contingency flow gate, or no outage if it is a base case flow gate.”

### 4.2 Accounting for Source and Sink (MOD-030-2 R1.2)

In accounting for source and sink for transmission service, OVEC incorporates the following approaches:

The source used for AFC and ATC calculations is obtained from the Point of Receipt (POR) field of the transmission reservation.

Likewise, the sink used for AFC and ATC calculations is obtained from the Point of Delivery (POD) field of the transmission reservation.

Transmission service is defined as reservations received from those entities as referenced in Section 3.4 and is used for AFC and ATC calculations. The POR is used as the source for all reservations as appropriate, and the POD is used as the sink for all reservations, also as appropriate. Any valid POR or POD that is to be used but cannot be mapped is assigned an alias name for mapping purposes.

OVEC does not currently use a grouping of generators but models each facility in a standalone manner.

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<sup>5</sup> See footnote 3.



## 5 Supporting Information

### 5.1 References

- NERC Reliability Standard MOD-001-1a, mandatory implementation date 04/01/2011.
- NERC Reliability Standard MOD-030-2, mandatory implementation date 04/01/2011.

### 5.2 Definitions

**Available Flowgate Capability (AFC)** is a measure of the flow capability remaining on a defined Flowgate for further commercial activity over and above already committed uses. It is defined as follows: Total Flowgate Capability (TFC) less Existing Transmission Commitments (ETC) less a Capacity Benefit Margin (CBM) less a Transmission Reliability Margin (TRM) plus Postbacks and Counterflows.

$$\text{AFC} = \text{TFC} - \text{ETC} - \text{CBM} - \text{TRM} + \text{Postbacks} + \text{Counterflows}$$

**Available Transfer Capability (ATC)** is a measure of the transfer capability remaining in the physical transmission network for further commercial activity over and above already committed uses. It is defined as Total Transfer Capability (TTC) less ETC (including retail customer service) less CBM less a TRM plus Postbacks and Counterflows.

$$\text{ATC} = \text{TTC} - \text{ETC} - \text{CBM} - \text{TRM} + \text{Postbacks} + \text{Counterflows}$$

**Capacity Benefit Margin (CBM)** is the amount of firm transmission transfer capability preserved by the transmission provider for Load Serving Entities (LSEs) whose loads are located on the Transmission Provider's system. Since OVEC does not have native load beyond a small load associated with one delivery point, OVEC's CBM is always set to zero.

**Counterflows** are committed uses of the Transmission Provider's Transmission System considered when determining ATC or AFC.

**Postbacks** are positive adjustments to ATC or AFC.

**Flowgate** is a mathematical construct comprised of one or more monitored transmission facilities and optionally one or more contingency facilities, used to analyze the impact of power flows upon the bulk electric system. Flowgates are identified as a selected power transmission element or group of elements that act as a proxy for the power transmission system capability and represent potential thermal, voltage, stability, and/or contractual system limits to power transfer. Once a set of transmission facilities have been identified as potential transfer constraints, they can be grouped with their related components and identified as unique Flowgates. The rating of the Flowgate is called the TFC of the Flowgate and is monitored and used for evaluation of all viable transfers for commerce. The TFC values are consistent with those used for planning purposes.

**Power Transfer Distribution Factor (PTDF)** is a measure, in the pre-contingency configuration of the Transmission Provider’s system, of the responsiveness or change in electrical loadings on transmission system facilities due to a change in electric power transfer from one area to another, expressed in percent (up to 100%) of the change in power transfer.

**Transmission Reliability Margin (TRM)** is the amount of transmission transfer capability necessary to provide reasonable assurance that the interconnected transmission network will be secure. TRM accounts for the inherent uncertainty in system conditions and the need for operating flexibility to ensure reliable system operation as system conditions change.

**5.3 Forms**

None required for this procedure.

**6 Periodic Review Procedure**

**6.1 Review Criteria**

The following represents items to be addressed during any review of the ATCID (this is not intended to be an all-inclusive list):

- Review the NERC Reliability Standards and determine whether any changes to the applicable standards require changes in the ATCID.
- Review the contractual relationship with both SPP and the Reliability Coordinator and determine whether there are any changes to the documents that should be reflected in the ATCID.
- Based on the current and enforceable NERC Reliability Standards conduct a self assessment of the ATCID and determine whether any gaps exist in the documentation or evidence.

**6.2 Incorporation of Changes**

Any changes identified in the reviews will be made and indicated in the Version History section of this document.

**7 Version History**

**Version History**

<b>REVISION</b>	<b>DATE</b>	<b>REVISED/REVIEWED BY</b>	<b>PURPOSE</b>
<b>1.0</b>	<b>03/31/11</b>	<b>SRC, RJM, GWB</b>	<b>Initial issue due to NERC Reliability Standard</b>

			<b>Implementation - MOD-001-1a and MOD-030-2</b>
<b>2.0</b>	<b>05/01/12</b>	<b>SRC, RJM, GWB</b>	<b>Improve clarity per SPP comments, revised for MISO RC</b>