



Energy Delivery Operations

# AEP Transmission Operator Data Specification

Effective Date: 7/2/2021

Supersedes AEP Transmission Operator Data Specification Rev. 2.0

Description: The data and terms described in this document serve as a comprehensive listing of the information required by the AEP TOP as stipulated by NERC Standard TOP-003-4

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Subject Matter Expert:	Copyright 2016, 2021		EDOPS.01.999.30_SPEC
Feng Tu	American Electric Power Company, Inc.	Rev. 3.0	Page 1 of 18







## Document Control

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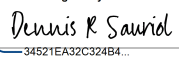
### Preparation

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### Approval

Approved By:	Title	Signature	Date
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### Implementation

Effective Date	7/2/2021
Review Frequency	3 Years
Retention Period	6 Years



## Revision History

Rev.	Description of Change(s)	By	Date
1.0	Original Issue. Created as standalone document for AEP TOP-003-3	Ronald E. Allen	12/21/2016
2.0	Conversion to new template, content copyedits	Robert M. Valasek	06/26/2018
3.0	Conversion to new template. Added columns for OPA/RTA/RTM to clarify how different data is used. Added language clarifying compliance.	Courtney Wright	07/02/2021



## Table of Contents

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Document Control .....	2
Preparation .....	2
Review.....	2
Approval.....	2
Implementation .....	2
Revision History.....	3
Table of Contents .....	4
1.0 Purpose.....	5
2.0 Scope .....	5
3.0 References .....	5
4.0 Terms and Definitions .....	5
5.0 Process for Resolving Data Conflicts .....	7
6.0 Data Specification .....	7
6.1 Real-Time Data .....	7
6.2 Operational Planning Data.....	13
6.3 System Modeling and Parameters.....	15



## 1.0 Purpose

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The data and terms described in this document serve as a comprehensive listing of the information required by the AEP Transmission Operator (TOP) as stipulated by NERC Standard TOP-003-4. Exchange all Real-time data via Inter Control-Center Communications Protocol (ICCP) unless specified otherwise. Exchange Operational Planning data and System modeling and parameter data through various agreed upon formats such as email, web-based applications, and/or secure electronic data exchange sites. This document identifies each data item and specifies its current or expected method of exchange.

## 2.0 Scope

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Identify data specifications needed for the AEP TOP to perform Real-time Monitoring (RTM), Real-time Assessments (RTA), and Operational Planning Analysis (OPA). Exceptions to these AEP TOP requirements exist where a functional agreement, such as ERCOT's Coordinated Functional Registration (CFR), releases AEP from TOP obligations to perform OPAs and RTAs.

## 3.0 References

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Document ID	Document Title
	NERC Reliability Standard TOP-003-4: Operational Reliability Data
	PJM Manual 01: Control Center and Data Exchange Requirements
	PJM Manual 03: Transmission Operations
	<a href="#">Required Data Specification for the SPP Reliability Coordinator and the SPP Balancing Authority (RDS)</a>
	ERCOT – Mapping Document Related to NERC Reliability Standards IRO-010-3 & TOP-003-4
TOPS.01.013.00_PRO	<a href="#">Outage Coordination Procedure</a>

## 4.0 Terms and Definitions

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Term	Description
AEP-T	AEP Transmission
AEP-G	AEP Generation



<b>Term</b>	<b>Description</b>
<b>TOP</b>	Transmission Operator
<b>RTU</b>	Remote Terminal Unit
<b>ICCP</b>	Inter Control-Center Communications Protocol
<b>TO</b>	Transmission Owner
<b>RC</b>	Reliability Coordinator
<b>DP</b>	Distribution Planning
<b>OPA</b>	Operational Planning Analysis
<b>RTA</b>	Real-time Assessment
<b>RTM</b>	Real-time Monitoring
<b>GOP</b>	Generation Operator
<b>Internal</b>	Directly connected to an AEP-T facility.
<b>External</b>	Not directly connected to an AEP-T facility.



## 5.0 Process for Resolving Data Conflicts

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If the Responsible Entity cannot meet one or more of the data specifications, then the Responsible Entity submits its exceptions and proposed solutions to AEP-T via email to [AEP\\_Operational\\_Reliability\\_Data@AEP.COM](mailto:AEP_Operational_Reliability_Data@AEP.COM).

AEP staff and the Responsible Entity coordinate to reach a mutually agreeable alternative or temporary solution. If AEP-T identifies information not being provided per the data specifications, AEP-T contacts the Responsible Entity to reach a mutually agreeable alternative or temporary solution. If the Responsible Entity is supplying data per the specifications and has otherwise not been contacted by AEP-T regarding data discrepancies, the Responsible Entity shall assume compliance with the AEP-T data specifications.

## 6.0 Data Specification

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### 6.1 Real-Time Data

Data Item	Data Providers	OPA	RTA	RTM	Periodicity	Deadline	Data Format
<b>Switching Device Status:</b> Real-time status for all available BES and necessary non-BES switching devices owned or operated by AEP-T (internal)	AEP-T		x	x	By exception	Real-time	RTU



Data Item	Data Providers	OPA	RTA	RTM	Periodicity	Deadline	Data Format
<b>Switching Device Status:</b> Real-time status for all available BES and necessary non-BES switching devices not owned or operated by AEP-T (external) as deemed necessary by AEP-T	RC		x		By exception	Real-time	ICCP
<b>Line/Transformer Flows:</b> Real-time MW/MVAR flows on all available BES and necessary non-BES transmission lines/transformers owned or operated by AEP-T (internal)	AEP-T		x	x	10 Seconds	Real-time	RTU
<b>Line/Transformer Flows:</b> Real-time MW/MVAR flows on all available BES and necessary non-BES transmission lines/transformers not owned or operated by AEP-T (external) as deemed necessary by AEP-T	DP, RC		x		30 seconds	Real-time	ICCP





Data Item	Data Providers	OPA	RTA	RTM	Periodicity	Deadline	Data Format
<b>Voltages:</b> Real-time voltage magnitude as available for all available BES and necessary non-BES equipment owned or operated by AEP-T (internal)	AEP-T		x	x	10 Seconds	Real-time	RTU
<b>Voltages:</b> Real-time voltage magnitude for all available BES and necessary non-BES equipment not owned or operated by AEP-T (external) as deemed necessary by AEP-T  <b>Note:</b> *In the ERCOT region, Voltage data is used for Real-time Monitoring per Nuclear Plant Interface Requirement.	DP, RC		x	x*	30 seconds	Real-time	ICCP
<b>Loads:</b> MW/MAR values of Loads connected to AEP-T (internal)	AEP-T		x	x	10 Seconds	Real-time	RTU



Data Item	Data Providers	OPA	RTA	RTM	Periodicity	Deadline	Data Format
<b>Loads:</b> MW/MAR values of Loads external to AEP-T as deemed necessary by AEP-T.	RC		x		30 seconds	Real-time	ICCP
<b>Unit Status:</b> Real-time status of generation connection devices for internal units as deemed necessary by AEP-T.	RC, GOP		x	x	By exception	Real-time	ICCP, RTU
<b>Unit Status:</b> Real-time status of generation connection devices for external units as deemed necessary by AEP-T.	RC, GOP		x		By exception	Real-time	ICCP, RTU
<b>Unit Output:</b> Real-time generator gross or net MW/MVAR output for internal units as deemed necessary by AEP-T.	RC, GOP		x	x	30 seconds	Real-time	ICCP, RTU



Data Item	Data Providers	OPA	RTA	RTM	Periodicity	Deadline	Data Format
<b>Unit Output:</b> Real-time generator gross or net MW/MVAR output for external units that impact AEP-T.	RC, GOP		x		30 seconds	Real-time	ICCP, RTU
<b>Unit AVR &amp; PSS Status:</b> Real-time status of Unit AVR and PSS for units as deemed necessary by AEP-T.	RC, GOP		x	x	By exception (per status change) via voice and 30 seconds for analog (upon availability)	Real-time	Voice, ICCP
<b>Weather Data:</b> Real-time weather data used for temperature adjusted limits and overall situational awareness by AEP-T.	AEP-T	x	x	x	5 minutes	Real-time	Multiple formats (applications, websites, etc)
<b>GMD Transformer DC Amps:</b> Real-time transformer DC Amp values used for GMD monitoring as deemed necessary by AEP-T.	AEP-T			x	10 seconds	Real-time	RTU



Data Item	Data Providers	OPA	RTA	RTM	Periodicity	Deadline	Data Format
<b>Frequency:</b> Real-time frequency measurements used for situational awareness as deemed necessary by AEP-T.	AEP-T			x	10 seconds	Real-time	RTU
<b>Remedial Action Schemes</b> (internal to AEP-T) as deemed necessary by AEP-T.	AEP-T		x	x	By exception for status, 10 second for analog	Real-time	RTU
<b>Remedial Action Schemes</b> (external to AEP-T) as deemed necessary by AEP-T	RC, TOP, GOP		x	x	By exception for status, 30 second for analog	Real-time	ICCP, Voice
<b>Protections System Changes</b> (internal to AEP-T)	AEP-T		x	x	By exception for status, 10 second for analog	Real-time	RTU
<b>Protections System Changes</b> (external to AEP-T)	RC, TOP, GOP		x	x	By exception	Real-time	Verbal notification per PRC-001



## 6.2 Operational Planning Data

Data Item	Data Providers	OPA	RTA	RTM	Periodicity	Deadline	Data Format
<b>Load Forecast Data for AEP TOP</b> (containing at least 3 days of data)	AEP Production Ops/Load Forecasting, RC	x			Daily	By 7:00 AM EPT (Eastern Prevailing Time) daily	Multiple formats as agreed upon (websites, email, etc.)
<b>Load Forecast Data external to AEP-T</b> (containing at least 3 days of data)	RC, NERC SDX	x			Daily	By 7:00 AM EPT daily	Multiple formats as agreed upon (websites, email, etc.)
<b>Generation Outages (AEP Owned)</b>	GOP, NERC SDX	x			Daily	Per the deadline specified in the applicable RC outage coordination procedures	Multiple formats as agreed upon (websites, email, RC outage management applications)
<b>Generation Outages (non- AEP Owned)</b>	GOP, NERC SDX, RC	x			Daily	Per the deadline specified in the applicable RC outage coordination procedures	Multiple formats as agreed upon (websites, email, RC outage management applications)



Data Item	Data Providers	OPA	RTA	RTM	Periodicity	Deadline	Data Format
<b>Transmission Outages</b> (internal to AEP-T): BES and non-BES outages (69 kV and above)	AEP-T	x			As needed	Per the deadline specified in the applicable RC outage coordination procedures	Multiple formats as agreed upon (AEP & RC outage management applications)
<b>Transmission Outages</b> (external to AEP-T) BES and non-BES elements external to AEP TOP as deemed necessary by AEP	RC, NERC SDX	x			Daily	Per the deadline specified in the applicable RC outage coordination procedures	Multiple formats as agreed upon (websites, RC outage management applications)
<b>Weather Forecast Data</b>	AEP-T	x			Daily	Daily AM and updates as required	Multiple formats as agreed upon (websites, email)
<b>Remedial Action Schemes</b> (internal to AEP-T)	AEP-T	x			As needed	By 9:00 AM EPT daily	Email or as agreed upon
<b>Remedial Action Schemes</b> (external to AEP-T as deemed necessary)	RC, TOP, GOP	x			As needed	Per the deadline specified in the applicable RC outage coordination procedures	Multiple formats as agreed upon (RC manuals, procedures, studies)



Data Item	Data Providers	OPA	RTA	RTM	Periodicity	Deadline	Data Format
<b>Protections System Changes</b> (internal to AEP-T)	AEP-T	x			As needed	Per deadlines established in applicable RC outage coordination procedures, AEP's Transmission Outage Coordination Procedures document and Failure or Disabling of Protection Systems Procedure	Multiple formats as agreed upon (AEP & RC outage management applications)
<b>Protections System Changes</b> (external to AEP-T as deemed necessary)	TOP, GOP	x			As needed	Per deadlines established in applicable RC outage coordination procedures	Multiple formats as agreed upon (email, RC outage management applications)

### 6.3 System Modeling and Parameters

Data Item	Data Providers	OPA	RTA	RTM	Periodicity	Deadline	Data Format
<b>Line, Breaker, Switch, Transformer Equipment:</b> BES and non-BES parameters and topology for elements owned and operated by AEP-T (internal)	AEP-T	x	x		As needed	45 days	Multiple formats as agreed upon



Data Item	Data Providers	OPA	RTA	RTM	Periodicity	Deadline	Data Format
<b>Line, Breaker, Switch, Transformer Equipment:</b> BES and non-BES parameters and topology for elements not owned or operated by AEP-T as deemed necessary by AEP-T (external)	RC, TOP	x	x		As needed	Quarterly per manual request	Multiple formats as agreed upon
<b>Generation Equipment:</b> Generator modeling data for generators connected to AEP transmission system	RC, AEP-G, GOP	x	x		As needed	45 days	Multiple formats as agreed upon
<b>Generation Equipment:</b> Generator modeling data for generators external to AEP area as deemed necessary by AEP	RC, TOP	x	x		As needed	Quarterly per manual request	Multiple formats as agreed upon
<b>Generator Capability:</b> Generator capability modeling data for generators as deemed necessary by AEP-T.	RC, GOP	x	x	x	As needed	Quarterly per manual request	Multiple formats as agreed upon
<b>Loads:</b> Load model for AEP-T area footprint (Internal)	AEP	x	x		As needed	45 days	Multiple formats as agreed upon





Data Item	Data Providers	OPA	RTA	RTM	Periodicity	Deadline	Data Format
<b>Loads:</b> Load model for load external to AEP-T footprint as deemed necessary by AEP-T	RC, TOP	x	x		As needed	Quarterly per manual request	Multiple formats as agreed upon
<b>Limits:</b> Limits for BES and non-BES elements owned/operated by AEP-T (internal)	AEP-T	x	x	x	As needed	45 days	Multiple formats as agreed upon
<b>Limits:</b> Limits for BES and non-BES elements not owned/operated by AEP-T (external) but deemed necessary by AEP-T and agreed upon.	RC, TOP	x	x		As needed	Quarterly per manual request	Multiple formats as agreed upon
<b>SE Contingency Definitions:</b> Parameters for BES elements and non BES elements as deemed necessary by AEP-T.	AEP-T	x	x		As needed	45 days	Multiple formats as agreed upon



Data Item	Data Providers	OPA	RTA	RTM	Periodicity	Deadline	Data Format
<b>External SE Contingency Definitions:</b> Parameters for BES elements and non-BES elements as deemed necessary by AEP-T.	TOP	x	x		As needed	45 days	Multiple formats as agreed upon