



Energy Delivery Operations

AEP Transmission Operator Data Specification

Effective Date: 3/24/2023

Supersedes AEP Transmission Operator Data Specification Rev. 3.0. Effective Date 7/2/2021

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.

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

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Document Control

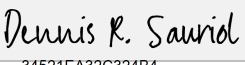
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Implementation

Effective Date	3/24/2023
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	Bob Valasek	6/26/2018
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	7/2/2021
4.0	Added new section 6.4 Generating Unit(s) Requirements (Cold Weather) and subsections 6.4.1 – 6.4.4.	EDOps	3/24/2023

Compliance Information

Compliance Documentation Required by a NERC Standard	
Required Per Standard	NERC Mandated Review Date / Date Following Event
TOP-003	No NERC-required date for document; annual review schedule only

Name or Dept	Title	Entity	Submittal Information	Required Submittal Date	Comments
EDOS O&P	NERC Compliance Spec, EDOS Reliability Support	All entities providing AEP data required by this document.	TOP-003 standard requires AEP to distribute this document to all entities providing AEP data required by this document.	Distribution of this document after each update to all entities providing AEP data required by this document.	This document will also be posted externally.

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1.0 Purpose

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. 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

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

Document ID	Document Title
	ERCOT's Coordinated Functional Registration (CFR): NERC IRO-010 and TOP-003 Mapping Document V11
	MISO Reliability Data Specification, Version No. 10
	NERC Reliability Standards: <ul style="list-style-type: none"> NERC Reliability Standard TOP-003-5: Operational Reliability Data
TOPS.01.013.00_PRO	Outage Coordination Procedure
	PJM Manuals: <ul style="list-style-type: none"> PJM Manual 01: Control Center and Data Exchange Requirements PJM Manual 03: Transmission Operations
	Required Data Specification for the SPP Reliability Coordinator & the SPP Balancing Authority (BA) in the Eastern Interconnection (RDSEI)

4.0 Terms and Definitions

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

5.0 Process for Resolving Data Conflicts

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.



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

6.1 Real-Time Data

Data Item	Data Providers	OPA	RTA	RTM	Periodicity	Deadline	Data Format
Switching Device Status: 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
Switching Device Status: 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
Line/Transformer Flows: 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
Line/Transformer Flows: 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
Voltages: 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



Data Item	Data Providers	OPA	RTA	RTM	Periodicity	Deadline	Data Format
<p>Voltages: 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</p> <p>Note: *In the ERCOT region, Voltage data is used for Real-time Monitoring per Nuclear Plant Interface Requirement.</p>	DP, RC		x	x*	30 seconds	Real-time	ICCP
<p>Loads: MW/MAR values of Loads connected to AEP-T (internal)</p>	AEP-T		x	x	10 Seconds	Real-time	RTU
<p>Loads: MW/MAR values of Loads external to AEP-T as deemed necessary by AEP-T.</p>	RC		x		30 seconds	Real-time	ICCP
<p>Unit Status: Real-time status of generation connection devices for internal units as deemed necessary by AEP-T.</p>	RC, GOP		x	x	By exception	Real-time	ICCP, RTU
<p>Unit Status: Real-time status of generation connection devices for external units as deemed necessary by AEP-T.</p>	RC, GOP		x		By exception	Real-time	ICCP, RTU
<p>Unit Output: Real-time generator gross or net MW/MVAR output for internal units as deemed necessary by AEP-T.</p>	RC, GOP		x	x	30 seconds	Real-time	ICCP, RTU
<p>Unit Output: Real-time generator gross or net MW/MVAR output for external units that impact AEP-T.</p>	RC, GOP		x		30 seconds	Real-time	ICCP, RTU

Data Item	Data Providers	OPA	RTA	RTM	Periodicity	Deadline	Data Format
Unit AVR & PSS Status: 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
Weather Data: 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.)
GMD Transformer DC Amps: Real-time transformer DC Amp values used for GMD monitoring as deemed necessary by AEP-T.	AEP-T			x	10 seconds	Real-time	RTU
Frequency: Real-time frequency measurements used for situational awareness as deemed necessary by AEP-T.	AEP-T			x	10 seconds	Real-time	RTU
Remedial Action Schemes (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
Remedial Action Schemes (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
Protections System Changes (internal to AEP-T)	AEP-T		x	x	By exception for status, 10 second for analog	Real-time	RTU
Protections System Changes (external to AEP-T)	RC, TOP, GOP		x	x	By exception	Real-time	Verbal notification

6.2 Operational Planning Data

Data Item	Data Providers	OPA	RTA	RTM	Periodicity	Deadline	Data Format
Load Forecast Data for AEP TOP (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.)
Load Forecast Data external to AEP-T (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.)
Generation Outages (AEP Owned)	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)
Generation Outages (non-AEP Owned)	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)
Transmission Outages (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)

Data Item	Data Providers	OPA	RTA	RTM	Periodicity	Deadline	Data Format
Transmission Outages (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)
Weather Forecast Data	AEP-T	x			Daily	Daily AM and updates as required	Multiple formats as agreed upon (websites, email)
Remedial Action Schemes (internal to AEP-T)	AEP-T	x			As needed	By 9:00 AM EPT daily	Email or as agreed upon
Remedial Action Schemes (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)
Protections System Changes (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)



Data Item	Data Providers	OPA	RTA	RTM	Periodicity	Deadline	Data Format
Protections System Changes (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
Line, Breaker, Switch, Transformer Equipment: 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
Line, Breaker, Switch, Transformer Equipment: 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
Generation Equipment: 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
Generation Equipment: 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
Generator Capability: 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

Data Item	Data Providers	OPA	RTA	RTM	Periodicity	Deadline	Data Format
Loads: Load model for AEP-T area footprint (Internal)	AEP	x	x		As needed	45 days	Multiple formats as agreed upon
Loads: 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
Limits: 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
Limits: 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
SE Contingency Definitions: 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
External SE Contingency Definitions: 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



6.4 Generating Unit(s) Requirements (Cold Weather)

6.4.1 PJM

Data Items	Data Providers	OPA	RTA	RTM	Periodicity	Deadline	Data Format
<p>Limits:</p> <ul style="list-style-type: none"> • Capability and availability • Fuel supply and inventory concerns • Fuel switching capabilities • Environmental constraints <p>Minimums:</p> <ul style="list-style-type: none"> • Design temperature • Historical operating temperature • Current cold weather performance temperature determined by an engineering analysis 	BA	X	X		As defined in PJM Manual 01: Control Center and Data Exchange Requirement, Attachment A	As defined in PJM Manual 01: Control Center and Data Exchange Requirement, Attachment A	Stored in eDART, accessible to TOs

6.4.2 SPP

Data Item	Data Providers	OPA	RTA	RTM	Periodicity	Deadline	Data Format
<p>Limits:</p> <ul style="list-style-type: none"> • Capability and availability • Fuel supply and inventory concerns • Fuel switching capabilities • Environmental constraints <p>Minimums:</p> <ul style="list-style-type: none"> • Design temperature • Historical operating temperature • Current cold weather performance temperature determined by an engineering analysis 	BA	X	X		As defined in Required Data Specification for the SPP Reliability Coordinator & the SPP Balancing Authority (BA) in the Eastern Interconnection (RDSEI), Version 9.0	As defined in Required Data Specification for the SPP Reliability Coordinator & the SPP Balancing Authority (BA) in the Eastern Interconnection (RDSEI), Version 9.0	Multiple formats as agreed upon



6.4.3 ERCOT

See ERCOT’s Coordinated Functional Registration (CFR): [NERC IRO-010 and TOP-003 Mapping Document V11](#); This document references TOP-003-5 R1.3 Provisions for notification of BES generating unit(s) during local forecasted cold weather, assigning full responsibility to ERCOT.

6.4.4 MISO

Data Item	Data Providers	OPA	RTA	RTM	Periodicity	Deadline	Data Format
<p>Limits:</p> <ul style="list-style-type: none"> • Capability and availability • Fuel supply and inventory concerns • Fuel switching capabilities • Environmental constraints <p>Minimums:</p> <ul style="list-style-type: none"> • Design temperature • Historical operating temperature • Current cold weather performance temperature determined by an engineering analysis 	BA	X	X		As defined in MISO Reliability Data Specification, Version No. 10	As defined in MISO Reliability Data Specification, Version No. 10	As defined in MISO Reliability Data Specification, Version No. 10