Proposed Changes to TADS Section 1600

Introduction

This document contains the proposed changes in the affected sections of the Transmission Availability Data System (TADS) Data Reporting Instructions (DRI). These changes will be integrated into the effective version of the TADS DRI after the Section 1600 Data Request has been approved by NERC's Board of Trustees.

These proposed changes, shown in red font in this document, include:

- Tables 3.x: Geographical data will be added to the transmission system inventory database to identify the longitude and latitude coordinates of TADS elements.
- Tables 4.x: Load loss data will be required when a transmission outage includes the loss of load as defined in the reporting criteria, as applicable to the outage forms.
- Table 6.1 and Appendix A: Equipment sub-cause codes will be added to enhance existing initiating and sustained equipment related cause codes, as applicable to the Automatic Outage Cause Code section.

Chapter 3: Element Inventory Data Forms

Form 3.1: AC and DC Inventory Data

Table 3.1 records the detailed inventory details for AC and DC Circuit Elements.

Table 3.1: AC Circuit and DC Circuit Detail Inventory Form (* Indicates Mandatory Fields)		
Column	**Form 3.1 Field Name**	**Form 3.1 Descriptor**
A	Unique Element Identifier*	A TO defined unique Element Identifier. Element Identifiers cannot be reused in any future reporting period for a different Element. If there are multiple owners of the Element, those TOs must agree on the Element Identifier.
B	Voltage Class*	The Element's Voltage Class: AC Circuit= phase-to-phase DC Circuit= phase-to-return The 400-599 kV Voltage Class can only be used if "AC" is selected in column C, and the 400-499 kV and 500-599 kV Voltage Classes can only be selected if "DC" is selected in column C. Data that does not conform to this requirement will be rejected and an error notice provided.
C	Circuit Type*	ACO = Overhead AC Circuit Element ACC = Underground AC Circuit Element DCO = Overhead DC Circuit Element DCC = Underground DC Circuit Element
D-F	From Bus, To Bus, and Tertiary Bus*	Data that provides a description of the physical location of the Element terminals. Terminals are those buses on the Element, behind which exist power sources. In general, these terminals will comprise the set of locations that need to open to clear faults on the Element. Buses connected to the Element that serve only load, without power sources available behind them are not considered terminals.

Table 3.1: AC Circuit and DC Circuit Detail Inventory Form (* Indicates Mandatory Fields)		
Column	**Form 3.1 Field Name**	**Form 3.1 Descriptor**
		AC Circuit = AC Substation Names (3 max)
D1, D2	From Bus Longitude and Latitude*	Coordinate that provides the longitudinal and latitudinal physical location of the Element terminal coming from the bus within one decimal.
E1, E2	To Bus Longitude and Lattitude*	Coordinate that provides the longitudinal and latitudinal physical location of the Element terminal going to the bus within one decimal.
F1, F2	Tertiary Bus Longitude and Lattitude*	Coordinate that provides the longitudinal and latitudinal physical location of the Element terminal going to the tertiary bus within one decimal.
G	Circuit Miles*	The Circuit Mileage of the Element. For TADS purposes, a DC Circuit is assumed to have 2 poles. For example, a one mile-long, DC tower line that carries two DC poles would equate to two Circuit Miles.
H	Number of Terminals*	The number of terminals that the Element connects to.
I	Conductors per Phase	The number of conductors on the Element per Phase.
J	Overhead Ground Wire	The number of overhead ground wires on the Element.
K	Insulator Type	The type of insulator used on at least 80% of the Element. If multiple types are used such that at least 80% of the Element does not comprise one type, selected “Mixed”. CEP = Ceramic Post CES = Ceramic Suspension POP = Polymer Post POS = Polymer Suspension GLS = Glass Suspension MXD = Mixed OTH = Other
L	Cable Type	The type of cable used on the Element. SWD = Solid with conduit SND = Solid with no conduit OWD = Oil filled with conduit OND = Oil filled with no conduit GWD = Gas filled with conduit GND = Gas filled with no conduit.
M	Structure Materials	The type of structure materials used on at least 80% of the Element. If multiple types are used such that at least 80% of the Element does not comprise one type, selected “Mixed”. AL = Aluminum CN = concrete

Table 3.1: AC Circuit and DC Circuit Detail Inventory Form (* Indicates Mandatory Fields)		
Column	**Form 3.1 Field Name**	**Form 3.1 Descriptor**
		FG = fiberglass ST = steel WD = wood CM = composite OT = other MX = mixed.
N	Structure Types	The type of structure materials used on at least 80% of the Element. If multiple types are used such that at least 80% of the Element does not comprise one type, selected “Mixed”. DLC = Double Lattice Column HFR = H Frame KFR = K Frame LAT = Lattice Tower SPG = Single Pole Guyed SPU = Single Pole Un-guyed DOP = Double Pole SLC = Single Lattice Column YTY = Y Type OTH = Other MXD = Mixed
O	Circuits per Structure	The number of circuits per structure on the Element.
P	Terrain	The type of structure materials used on at least 80% of the Element. If multiple types are used such that at least 80% of the Element does not comprise one type, selected “Mixed”. If multiple types are applicable, pick the type the most influences outages. CO = Coastal DS = Desert MT = Mountains FR = Forest UR = Urban PR = Prairie MX = Mixed
Q	Elevation	Enter the range of elevation that the circuit traverses. 1 = less than 2000 feet 2 = 2001 to 4000 feet 3 = 4001 to 6000 feet. 4 = 6001 to 8000 feet 5 = 8001 to 10000 feet 6 = 10001 to 12000 feet 99 = elevation varies more than 2000 feet

Table 3.1: AC Circuit and DC Circuit Detail Inventory Form (* Indicates Mandatory Fields)		
Column	**Form 3.1 Field Name**	**Form 3.1 Descriptor**
R	Change/Reconfiguration Date*	Enter the date (mm/dd/yyyy) that the Element last changed or the initial in-service date.
S	Retirement Date*	If applicable to the Element, the date the Element became out-of-service.
T	Precursor Element Identifier*	The Unique Element Identifier that precedes the Element. This is used to maintain a parent/child relationship as Elements are modified.
U	BES Exempted Flag*	If the Element was reported in a prior reporting year and is now no longer considered within the BES, this flag should be be TRUE. Also, the retirement date should be set to the date that the Element was Exempted from the BES.

Form 3.2: Transformer Detailed Inventory Data

Table 3.2 records the detailed inventory details for Transformer Elements. The inventory details should be updated with the fourth quarter reporting. If entering an outage on a circuit not in the inventory detail, the identifier should be entered to allow validation of the Element.

Table 3.2: Transformer Detail Inventory Form (* Indicates Mandatory Fields)		
Column	**Form 3.2 Field Name**	**Form 3.2 Descriptor**
A	Unique Element Identifier*	A TO defined unique Element Identifier. Element Identifiers cannot be reused in any future reporting period for a different Element. If there are multiple owners of the Element, those TOs must agree on the Element Identifier.
B	Located at (AC Substation Name)*	The substation name where the transformer is located.
C	High-Side Voltage Class*	The Transformer Primary-Side's Voltage Class.
D	Low-Side Voltage Class*	The Transformer Secondary's Voltage Class
E	Phasing	The phasing of the Transformer. Single = Composed of a single 3-Phase bank transformer Single Phase of 3-Phase Bank = Composed of 3 single phase transformers
F	Three Phase Rating	The rating, in MVA, of the Transformer (all 3-phases combined).
G	Change/Reconfiguration Date*	Enter the date (mm/dd/yyyy) that the Element last changed or the initial in-service date. For transformers in general, the initial transformer in-service date would be used. If the change involves replacing the transformer with a new transformer (or transformers), then that would constitute a new Element.
H	Retirement Date*	If applicable to the Element, the date the Element became out-of-service.

Table 3.2: Transformer Detail Inventory Form (* Indicates Mandatory Fields)		
Column	**Form 3.2 Field Name**	**Form 3.2 Descriptor**
I	Precursor Element Identifier*	The Unique Element Identifier that precedes the Element. This is used to maintain a parent/child relationship as Elements are modified.
J	BES Exempted Flag*	If the Element was reported in a prior reporting year and is now no longer considered within the BES, this flag should be be TRUE. Also, the retirement date should be set to the date that the Element was Exempted from the BES.
K	Transfomer Longitude and Latitude*	Coordinate that provides the longitudinal and latitudinal physical location within one decimal.

Form 3.3: AC/DC BTB Converter Inventory Data

Table 3.3 records the detailed inventory details for AC/DC Back-to-Back Converter Elements. The inventory details should be updated with the fourth quarter reporting. If entering an outage on a circuit not in the inventory detail, the identifier should be entered to allow validation of the Element.

Table 3.3: AC/DC Back to Back Converter Detail Inventory Form (* Indicates Mandatory Fields)		
Column	**Form 3.3 Field Name**	**Form 3.3 Descriptor**
A	Unique Element Identifier*	A TO defined unique Element Identifier. Element Identifiers cannot be reused in any future reporting period for a different Element. If there are multiple owners of the Element, those TOs must agree on the Element Identifier.
B	Converter Name*	The substation name where the AC/DC BTB Converter is located.
C	Voltage Class*	The AC/DC BTB Converter's Voltage Class.
D	Change/Reconfiguration Date*	Is when the element was placed in-service. If this is unknown, use the January 1 of the current year you are reporting. If the element is altered/reconfigured in a way that would change its rating or voltage characteristics, then that date would be entered here.
E	Retirement Date*	If applicable to the Element, the date the Element became out-of-service.
F	Precursor Element Identifier*	The Unique Element Identifier that precedes the Element. This is used to maintain a parent/child relationship as Elements are modified.
G	BES Exempted Flag*	If the Element was reported in a prior reporting year and is now no longer considered within the BES, this flag should be be TRUE. Also, the retirement date should be set to the date that the Element was Exempted from the BES.
H	AC/DC Back to Back Converter Longitude and Latitude*	Coordinate that provides the longitudinal and latitudinal physical location within one decimal.

Chapter 4: Detailed Automatic Forms

Form 4.1-4.4: Detailed Automatic Outage

These forms contain data for each Automatic Outage of an Element, both Sustained and Momentary, and do not have row numbers. Since each line represents an outage and each outage has a unique Outage ID Code, this code is used to identify each outage entry.

Since there is so much similarity between the columns, all descriptors will be provided once, using the generic term of "Element" instead of AC Circuit, Transformer, etc.

Fields M-R are required if all the following criteria have been met for load loss resulting from transmission system outages:

1. Load previously served from a given Transmission Connection Point (TCP)[1] is no longer being served because of the TADS outage, **and**
2. Unserved load is not restored within 5 minutes, **and**
3. The de-energized TCP has a deliverable capacity of 20 MWs or greater

The initiating and sustained cause codes are only used for automatic outages. This includes the equipment sub-cause codes.

Table 4.1: Data for Elements That Had an Automatic Outage

Column	Forms 4.1-4.4 Field Name	Forms 4.1-4.4 Descriptor
A	Outage ID Code	The Outage ID Code assigned to the outage. This is assigned by the TO. See **Appendix A** for the definition of Outage ID Code. For any given TO, over multiple years, webTADS requires the TO entered Form 4.x Outage ID to be used only once on an Automatic Outage (on Form 4.x).
B	Event ID Code	The Event ID Code associated with the outage. This is assigned by the TO on Form 5.0. See **Appendix A** for the definition of Event ID Code. The Event ID Code used on Form 4.x must be pre-defined on Form 5.0.
C	Unique Element Identifier	A TO defined unique Element Identifier. See column A in Table 3.1 for details.
The descriptions that follow use defined terms that the TO should become familiar with. Definitions of defined terms are located in **Appendix A** and they will not be repeated here. Most data fields have drop-down menus. They each describe various facets of the outage.		
D	Fault Type	The Fault Type (if any) for each circuit Outage, input from a drop-down menu.
E	Outage Initiation Code	The Outage Initiation Code, input from a drop-down menu.
F	Outage Start Time	The Outage Start Time may be local time or UTC time. WebTADS will offer a choice of time zones, with UTC being the default. This applies whether the data is entered directly into webTADS or bulk-uploaded via XML files (created either from an Excel workbook or directly by the TO). WebTADS will convert all non-UTC times to UTC and store the time as UTC within webTADS.

[1] The demarcation where the BES transmission system interfaces with the non-BES transmission and/or distribution system.

Table 4.1: Data for Elements That Had an Automatic Outage		
Column	**Forms 4.1-4.4 Field Name**	**Forms 4.1-4.4 Descriptor**
		The use of UTC will allow related outages occurring on Elements reported by different Transmission Owners to be linked. For Outages occurring on Elements that cross quarters, TOs should, in the first quarter, extend the length of the Outage to the end of the first quarter. In subsequent quarters, the Outage length should be extended until the end of the reporting year. Refer to the instructions in Section 4.1, below, for outages that continue beyond the end of the reporting calendar year.
G	Outage Time Zone	The Outage Time Zone of the reported Outage.
H	Outage Duration	The Outage Duration expressed as hours and minutes. Momentary Outages will enter a "0" (zero). A zero entry in column M tells the reviewer that the outage was Momentary. See instructions in Section 4.1 below for outages that continue beyond the end of the reporting year. Note that the format is a text field and requires a colon (":") be entered between the hours and minutes. Enter 860 hours and 20 min. as 860:20. *If the colon is absent, the entry will be interpreted as "hours."* If the Outage Duration exceeds the number of hours remaining in the year (based upon the Outage Start Time), the data will be rejected and an error notice provided. If the previous entry of "860:20" were entered as 86020, it would be read as 86,020 hours and rejected.
I	Initiating Cause Code	The Initiating Cause Code, input from a drop-down menu. All Outages must supply an Initiating cause code.
I1	Initiating Equipment Sub-Cause Codes	If an equipment failure cause code is chosen, there is an option to choose a related equipment sub-cause code.
J	Sustained Cause Code	The Sustained Cause Code, input from a drop-down menu. This only applies to Sustained Outages. For Momentary Outages, enter "NA-Momentary."
J1	Sustained Equipment Sub-Cause Codes	If an equipment failure cause code is chosen, there is an option to choose a related equipment sub-cause code.
K	Outage Mode	The Outage Mode, input from a drop-down menu.
L	Outage Continuation Flag	The Outage Continuation Flag described whether the outages started and ended within the reporting year or not. The flag is explained in a footnote on the data form as well as in **Appendix A** where the term is fully defined. Outages that span across quarters in the same year should not use this flag. Instead, TOs should update the outage duration during each quarter until the outage ends.
M	Capacity at the TCP	Capacity at the TCP is the capacity at the transmission side where the BES transmission system interfaces with the non-BES transmission and/or distribution system.

Table 4.1: Data for Elements That Had an Automatic Outage		
Column	**Forms 4.1-4.4 Field Name**	**Forms 4.1-4.4 Descriptor**
N	Amount of Load Dropped	The (actual estimated) amount of Load Dropped (MWs) at time of outage minus redistributed load being served to alternate locations.
O	Method for Quantifying Load Loss	Method for Quantifying Load Loss. (Multiple Choice: SCADA System, Estimation, Peak Percentage, Customer Count, Other)
P	Load Loss Outage Duration	Load Loss Outage Duration (hhhh:mm) is the duration when load is dropped resulting from a transmission system outage until the load has been restored. This duration may be shorter than the outage duration if load is restored prior to the transmission equipment's restoration.
Q	Load Loss	Load Loss (MWhrs) is the (actual or estimated) amount of load (MWs) lost multiplied by the duration of the outage.
R	Method for ending load loss	Method for ending load loss. (Multiple Choice: Load restored at TCP, Load Restored at Alternate TCP(s), Load Restored within Delivery Network, Load No Longer Exists, Other)

Planned, operator-initiated load shedding to maintain the overall reliability of the BES, load controlled by under-frequency relays or load shed related to maintaining voltage support are not reported to TADS, as there are already reporting mechanisms in place to collect this information.

Chapter 6: Detailed Non-Automatic Outage Data

Forms 6.1-6.4

These forms contain data for *each* Non-Automatic Operational Outage of an Element and do not have row numbers. Since each line represents an outage and each outage has a unique Outage ID Code, this code is used to identify outage entry.

Chapter 4 describes the criteria for load loss resulting from transmission system outages (columns I through N).

Table 6.1: Data for Elements That Had a Non-Automatic Outage		
Column	**Forms 6.1-6.4 Field Names**	**Forms 6.1-6.4 Descriptor**
A	Outage ID Code	The Outage ID Code assigned to the outage. This is assigned by the TO. See **Appendix A** for the definition of Outage ID Code. For any given TO, over multiple years, webTADS requires the TO entered Form 6.x Outage ID to be used only once on a Non-Automatic Outage (on Form 6.x).
B	Unique Element Identifier	A TO defined unique Element Identifier. Element Identifiers cannot be reused in any future reporting period for a different Element. If there are multiple owners of the Element, those TOs must agree on the Element Identifier.
C	Non-Automatic Outage Type	Non-Automatic Outage Type. Please refer to **Appendix A** for the definition of Non-Automatic Outage Types.
The descriptions that follow use defined terms that the TO should become familiar with. They will not be repeated here. Most data fields have drop-down menus. They each describe various facets of the outage.		
D	Outage Start Time	The Outage Start Time. This may be local time or UTC time. WebTADS will offer a choice of time zones, with UTC being the default. This applies whether the data is entered directly into webTADS or bulk-uploaded via XML files (created either from an Excel workbook or directly by the TO). WebTADS will convert all non-UTC times to UTC and store the time as UTC within webTADS. The use of UTC will allow related outages occurring on Elements reported by different Transmission Owners to be linked. See instructions Section 4.1 below for outages that continue beyond the end of the reporting calendar year.
E	Outage Time Zone	The Outage Time Zone. The Time Zone of the reported Outage.
F	Outage Duration	The Outage Duration expressed as hours and minutes. Momentary Outages will enter a "0" (zero) in this field since we round to the nearest minute. A zero entry in column M tells the reviewer that the outage was Momentary. See instructions in Section 4.1 below for outages that continue beyond the end of the reporting year. Note that the format is a text field and requires a colon (":") be entered between the hours and minutes. Enter 860 hours and 20 min. as 860:20. *If the colon is absent, the entry will be interpreted as "hours."* If the Outage Duration exceeds the number of hours remaining in the year (based upon the Outage Start Time), the data will be rejected and an error notice provided. If the previous entry of "860:20" were entered as 86020, it would be read as 86, 020 hours and rejected.
G	Operational Cause Code	The Operational Cause Code, input from a drop-down menu. This only applies to Operational Outages.
H	Outage Continuation Flag	The Outage Continuation Flag described whether the outages stated and ended within the reporting year or not. The flag is explained in a footnote on the data form as well as in **Appendix A** where the term is fully defined.

Table 6.1: Data for Elements That Had a Non-Automatic Outage		
Column	**Forms 6.1-6.4 Field Names**	**Forms 6.1-6.4 Descriptor**
I	Capacity at the TCP	Capacity at the TCP is the capacity at the transmission side where the BES transmission system interfaces with the non-BES transmission and/or distribution system.
J	Amount of Load Dropped	Amount of Load Dropped (MWs) at time of outage minus redistributed load being served to alternate locations (actual or estimated).
K	Method for Quantifying Load Loss	Method for Quantifying Load Loss. (Multiple Choice: SCADA System, Estimation, Peak Percentage, Customer Count, Other)
L	Load Loss Outage Duration	Load Loss Outage Duration (hhhh:mm) is the duration when load is dropped resulting from a transmission system outage until the load has been restored. This duration may be shorter than the outage duration if load is restored prior to the transmission equipment's restoration.
M	Estimated Load Loss	Estimated Load Loss (MWhrs) is the estimated amount of load (MWs) lost multiplied by the duration of the outage.
N	Method for ending load loss	Method for ending load loss. (Multiple Choice: Load restored at TCP, Load Restored at Alternate TCP(s), Load Restored within Delivery Network, Load No Longer Exists, Other)

Appendix A: Definitions
TADS Population Outage Definitions

Sustained Outage[2]
An Automatic Outage with an Outage Duration of a minute or greater.

Capacity at the Transmission Connection Point (TCP)
The total capacity at the transmission side where the BES transmission system interfaces with the no-BES transmission and/or distribution. Reporting is required for 20 MWs or greater.

Amount of Load Dropped
The (actual or estimated) amount of Load Dropped (MWs) at time of outage minus redistributed load being served to alternate locations.

Method for Quantifying Load Loss
This is multiple choice: SCADA system, estimation, peak percentage, customer count, or other.

Load Loss Outage Duration
Load Loss Outage Duration (hhhh:mm) is the duration when load is dropped resulting from a transmission system outage until the load has been restored.

This duration may be shorter than the outage duration if load is restored prior to the transmission equipment's restoration.

Load Loss
Load Loss (MWhrs) is the (actual or estimated) amount of load lost multiplied by the duration of the outage.

Method for Ending Duration
This is multiple choice: load restored at the TCP, load restored at alternate TCP(s), load restored within delivery network, load no longer exists, or other.

End of Load Loss Resulting from a Transmission System Outage
The end of a load loss resulting from a transmission system outage is the time when load is available to be served, or load is being served to the TCP.

1. De-energized transmission system equipment is restored, and load is available at the TCP, or
2. Load has been energized through alternate means.

Automatic Outage Cause Codes
The Automatic Outage Cause Code describes the cause with respect to location on the power system it occurred. Cause codes and equipment sub-cause codes only apply for automatic outages.
(See Outage Initiation Code for location on the power system)

[2] The TADS definition of Sustained Outage is different from the NERC *Glossary of Term Used in Reliability Standards* definition of Sustained Outage that is presently only used in FAC-003-1. The glossary defines a Sustained Outage as: "The deenergized condition of a transmission line resulting from a fault or disturbance following an unsuccessful automatic reclosing sequence and/or unsuccessful manual reclosing procedure." The definition is inadequate for TADS reporting for two reasons. First, it has no time limit that would distinguish a Sustained Outage from a Momentary Outage. Second, for a circuit with no automatic reclosing, the outage would not be "counted" if the TO has a successful manual reclosing under the glossary definition.

Failed AC Substation Equipment

Automatic Outages caused by the failure of AC Substation, i.e., equipment "inside the substation fence" including Transformers and circuit breakers but not Protection System equipment as it is not part of the AC Substation. Refer to the definition of "AC Substation."

For TADS reporting when an instrument transformer failure results in a BES fault on the primary system it should be reported as failed AC substation equipment.

Failed AC/DC Terminal Equipment

Automatic Outages caused by the failure of AC/DC Terminal equipment, i.e., equipment "inside the terminal fence" including PLC (power-line carrier) filters, AC filters, reactors and capacitors, Transformers, DC valves, smoothing reactors, and DC filters but not Protection System equipment as it is not part of the DC Terminal. Refer to the definition of "AC/DC Terminal."

Failed Protection System Equipment

Automatic Outages caused by the failure of devices which are part of a Protection system as defined in the NERC Glossary of Terms. Includes any relay and/or control misoperations, *except* those that are caused by incorrect relay or control settings that do not coordinate with other protective devices. Categorize these as "Human Error".

Automatic Outages caused by the failure of a protective device which is not part of the NERC defined Protection system should be coded as Failed AC Substation Equipment and NOT Failed Protection System Equipment.

For TADS reporting when an instrument transformer has a failure on the secondary system it should be reported as failed protection system equipment.

Failed AC Circuit Equipment

Automatic Outages related to the failure of AC Circuit equipment, i.e., overhead or underground equipment "outside the substation fence." Refer to the definition of "AC Circuit."

Failed DC Circuit Equipment

Automatic Outages related to the failure DC Circuit equipment, i.e., overhead or underground equipment "outside the terminal fence." Refer to the definition of "DC Circuit." However, include the failure of a connecting DC bus within an AC/DC Back-to-Back Converter in this category.

Equipment Sub-Cause Codes

If an equipment type code is chosen, one equipment sub-level cause code from the following list will be required:*

Table A.4: Equipment Sub-Cause Codes	
AC/DC Converter	Station DC Supply
Communications System	Substation Conductor - Bar
Conductor	Substation Conductor - Line
Digital Relay	Switch
Gas Breaker (manufacturer if available)	Tower Structure
Series Compensation (capacitors / reactors)	Transformer
Other	

*Not all equipment sub-cause codes are applicable to all failed equipment types.

NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

Section 1600 Data Request

Discontinuation of TADS Non-Automatic Planned Outage Data Collection

RELIABILITY | ACCOUNTABILITY




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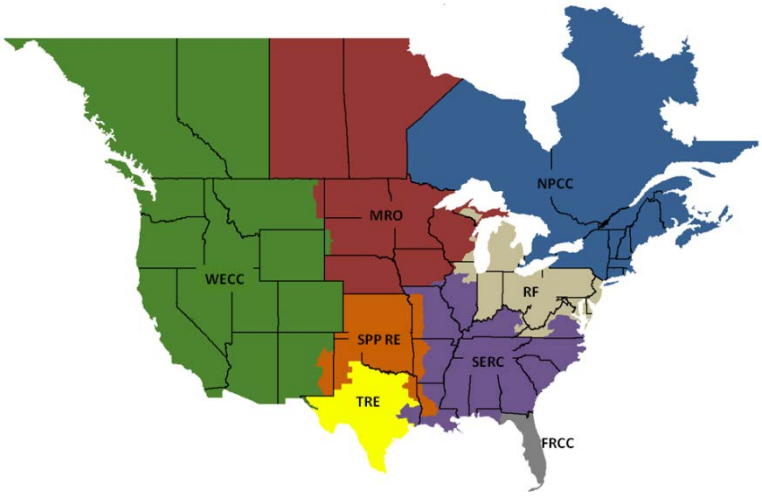
Table of Contents

Preface

The North American Electric Reliability Corporation (NERC) is a not-for-profit international regulatory authority whose mission is to assure the reliability of the bulk power system (BPS) in North America. NERC develops and enforces Reliability Standards; annually assesses seasonal and long-term reliability; monitors the BPS through system awareness; and educates, trains, and certifies industry personnel. NERC's area of responsibility spans the continental United States, Canada, and the northern portion of Baja California, Mexico. NERC is the electric reliability organization (ERO) for North America, subject to oversight by the Federal Energy Regulatory Commission (FERC) and governmental authorities in Canada. NERC's jurisdiction includes users, owners, and operators of the BPS, which serves more than 334 million people.

The North American BPS is divided into several assessment areas within the eight Regional Entity (RE) boundaries, as shown in the map and corresponding table below.



FRCC	Florida Reliability Coordinating Council
MRO	Midwest Reliability Organization
NPCC	Northeast Power Coordinating Council
RF	Reliability*First*
SERC	SERC Reliability Corporation
SPP-RE	Southwest Power Pool Regional Entity
TRE	Texas Reliability Entity
WECC	Western Electricity Coordinating Council

Executive Summary

The purpose of this data request is to initiate a change to the existing TADS reporting, specifically concerning the collection of Non-Automatic Outage data[1] consistent with the recommendations in the *TADSWG Non-Automatic Outage Sunset Provision Recommendation*[2] presented to the NERC Planning Committee in its December 2014 meeting.

The collection of Non-Automatic Outage data commenced in 2010 to complement the collection of Automatic Outage data that had been collected since 2008[3]. According to the *Transmission Availability Data System Phase II Final Report*[4], issued in September 2008, the collection of Non-Automatic Outage data would be put in place for a period of five years at which time, further collection of the Non-Automatic Outage data would be reassessed based on the intended uses described within this report. There are two components of Non-Automatic Outage data: Planned Outages (pre-planned, scheduled outages) and Operational Outages (non-pre-planned, operator-initiated outages under emergency conditions).

Following a review of the Non-Automatic Outage data collected and an assessment of the intended uses of this data, the TADSWG has concluded that there is merit to continue collecting the Operational Outage data, but the intended uses of collected Planned Outage data have not materialized.

It is recommended that the collection of Planned Outages be discontinued, concluding with the last Planned Outage data collected for the fourth quarter of 2014. NERC should continue to collect Operational Outages for all Voltage Classes above and including the 200-299 kV Voltage Classes.

To follow up these recommendations, this proposal was written to seek the NERC Board of Trustees' approval for the necessary modifications to the TADS Section 1600 data request.

[1] http://www.nerc.com/pa/RAPA/tads/TransmissionAvailabilityDataSyatemRF/TADS_Phase_II_Final_Report_091108.pdf

[2] http://www.nerc.com/comm/PC/Transmission%20Availability%20Data%20System%20Working%20G1/TADSWG_Non_Automatic_Sunset_Short_Report.pdf

[3] http://www.nerc.com/pa/RAPA/tads/TransmissionAvailabilityDataSyatemRF/TADS_PC_Revised_Final_Report_09_26_07.pdf

[4] http://www.nerc.com/pa/RAPA/tads/TransmissionAvailabilityDataSyatemRF/TADS_Phase_II_Final_Report_091108.pdf

Introduction

Background

Planned Outage Collection[5]

The original launch of the NERC Transmission Availability Data System (TADS) was described in the *Transmission Availability Data System Revised Final Report*[6], issued in 2007. This report focused on the collection of Automatic Outage data that began in 2008. In September of 2008, NERC issued the *Transmission Availability Data System Phase II Final Report*[7]. This report expanded on the original TADS approach to include the collection of Non-Automatic Outage data. The Non-Automatic Outage data are comprised of: Planned Outages (pre-planned, scheduled outages) and Operational Outages (non-pre-planned, operator-initiated outages under emergency conditions). The collection of Non-Automatic Outage data commenced in 2010. The TADS Phase II report stipulated collection of the Non-Automatic Outage data for a period of five years (referred to as the sunset provision) at which time, further collection of the Non-Automatic Outage data would be reassessed. The *TADS Phase II Final Report* indicated the expected uses and limitations for the data.

Assessment of the Intended Uses for the Data[8]

As part of the TADS Phase II approval, a sunset provision of five years was created in order to ascertain the value of the Non-Automatic Outage data collection and to determine whether it was justifiable to continue its collection. This section describes the outcome of each of the intended uses for the data as described in the *TADS Phase II Final Report*, as follows:

1. *Non-Automatic Outage data will complement Phase I Automatic Outage data, resulting in our ability to capture almost all transmission Element outages. Since almost all Element outages will be recorded, the calculation of certain Phase I metrics (discussed in Section 4) will now be more accurate.*

Outcome: The primary TADS Phase I metrics that improved from the collection were Transmission Availability (APC) and Mean Time Between Failures (MTBF). The Non-Automatic outage data complements the Automatic outage data to provide comprehensive availability metrics.

2. *Complete transmission outage information may influence NERC Reliability Standards development.*

Outcome: No reliability standards have been changed as a result of collecting the Non-Automatic TADS Outage data. This does not preclude the idea that, for future changes to or new reliability standards, TADS Non-Automatic Outages could become useful.

3. *Complete transmission outage information could allow for improved system analysis by bridging gaps between the operating environment and planning assumptions. For example, Transmission Planners could compare historical Planned Outages for a period with previously forecasted outages for the same period allowing them to assess whether their outage representation for planning is valid. 15 TOs, Transmission Planners, and Planning Coordinators could compare historic Planned Outages to historic load levels to determine the frequency of such outages during peak load periods.*

[5] http://www.nerc.com/comm/PC/Transmission%20Availability%20Data%20System%20Working%20G1/TADSWG_Non_Automatic_Sunset_Short_Report.pdf .

[6] http://www.nerc.com/pa/RAPA/tads/TransmissionAvailabilityDataSyatemRF/TADS_PC_Revised_Final_Report_09_26_07.pdf

[7] http://www.nerc.com/pa/RAPA/tads/TransmissionAvailabilityDataSyatemRF/TADS_Phase_II_Final_Report_091108.pdf

[8] Each italicized entry corresponds to an entry from section 2.4 in the TADS Phase 2 Final Report, pp.10-12.

From a planning perspective, if planned outages are not properly accounted for in the planning of the system, insufficient facilities may be built, making day-to-day reliability worse. Several TPL standards (TPL-002-0, TPL-003-0, and TPL-004-0) have a requirement that planned outages be explicitly considered. In TPL-002-0, this is found in R1.3.12:

> *"Include the planned (including maintenance) outage of any bulk electric equipment (including protection systems or their components) at those demand levels for which planned (including maintenance) outages are performed."*

Historical Planned Outage data could help Transmission Planners with this requirement.

Outcome: One of the considered uses for the Non-Automatic Outage data was to provide a NERC-wide snapshot of the actual operator-initiated Outages allowing transmission planners to reuse the data to create more realistic planning scenarios with the added benefit of having NERC-wide transmission owner data available. Unfortunately, there are three reasons why this has not occurred. First, the transmission planner may not easily obtain the relevant TADS data because it is CEII (Critical Energy Infrastructure Information). Secondly, the Outages are not currently linked directly to the planning or operational study identifiers. Thirdly, because of the first two limitations, transmission planners have not mapped TADS outages into their transmission studies.

4. *For U.S. Transmission Owners who are subject to EIA reporting requirements, the reporting of Non-Automatic Outages to NERC could avoid a duplicative reporting requirement to EIA.*

Outcome: In 2010, EIA changed their Form 411 Schedule 7 to include both Planned and Operational Outages, and TADS included these outages, providing EIA a consolidated source for Form 411 Schedule 7 data. In 2014, EIA performed a review of their Form 411 and determined that only Automatic and Operational, but not Planned, Outage data would be collected for Form 411 Schedule 7.

5. *No Reliability Standard or NERC rule (in NERC's Rules of Procedure) requires the systematic recording of historic system topology for the purpose of analyzing events. TADS will begin to fill this need by collecting both Automatic and Non-Automatic Outage data. Since we only require the submission of TADS data annually, we recognize that the submission of TADS data into webTADS may not occur until months after an event. The requirement to collect TADS outage data means that TOs could, by special request from NERC, provide outage data if required to help NERC analyze an event, and the fact that such data will be entered into a structured TADS database will be helpful.*

Outcome: Today, no Reliability Standard or NERC rule requires the systematic recording of historic system topology for the purpose of analyzing events. Currently, there have not been any events where this data was needed, but, in a larger event, having such a standardized format of data available will prove beneficial in developing a detailed sequence of events.

Conclusions

TADSWG has reviewed the intended benefits, and through its assessment, has concluded that there is benefit to continue the collection of Operational Outage data. However, the collection of Planned Outage data should be discontinued. This conclusion was formulated into a recommendation to the NERC PC as part of a short report[9] which stated that:

> *NERC should not continue to collect Planned Outages with the last Planned Outage data collected for the fourth quarter of 2014. NERC should continue to collect Operational Outages for all Voltage Classes above and including the 200-299 kV Voltage Classes.*

Authority

According to Section 1600 of NERC's Rules of Procedure[10]:

> *Within the United States, NERC and Regional Entities may request data or information that is necessary to meet their obligations under Section 215 of the Federal Power Act, as authorized by Section 39.2(d) of the Commission's regulations, 18 C.F.R. § 39.2(d). In other jurisdictions NERC and Regional Entities may request comparable data or information, using such authority as may exist pursuant to these Rules of Procedure and as may be granted by Applicable Governmental Authorities in those other jurisdictions.*

Section 1600 data requests are not applicable to data requests from a standards' requirement or from a compliance or enforcement action. As TADS data is not related to either of these two items, it is within the scope of Section 1600.

[9] http://www.nerc.com/comm/PC/Transmission%20Availability%20Data%20System%20Working%20G1/TADSWG_Non_Automatic_Sunset_Short_Report.pdf

[10] http://www.nerc.com/FilingsOrders/us/RuleOfProcedureDL/NERC_ROP_Effective_20140701_updated_20140602%20(updated).pdf, pp. 96-99.

Data Request Details

This section gives a brief overview of the two proposed changes: Discontinuation of Planned Outage Data Collection and Continuation of Operational Outage Data Collection. Following these details, the required questions for all Section 1600 data requests are organized into their own section for easy reference.

Discontinuation of Planned Outage Data Collection

Based on the approval by the NERC Planning Committee of the TADSWG's Non-Automatic Outage Sunset Provision Short Report recommendations, these recommendations should be applied as a modification to the Section 1600 data regarding TADS.

These recommendations (applying to all TADS data collected from January 1, 2015 forward)[11] are:

> *NERC should not continue to collect Planned Outages with the last Planned Outage data collected for the fourth quarter of 2014. NERC should continue to collect Operational Outages for all Voltage Classes above and including the 200-299 kV Voltage Classes.*

Many reasons were determined why the Planned Outage data collection was no longer necessary:

- Third party organizations have not found sufficient value.
- It is no longer required by EIA Form 411 Schedule 7 reporting.
- Additional costs and efforts are required to report the data.
- Coordination between Transmission Owners during Planned Outage TADS reporting is problematic.
- In the operational horizon, there is questionable reliability value.
- NERC is not yet able to draw actionable conclusions from the collected data.
- There are no proven benefits from the current metrics.
- In Phase II report, NERC anticipated that this data would be useful in Event Analysis which has not been demonstrated.
- Analysis of the present data collection has been inconclusive considering its current level of detail.

Continuation of Operational Outage Data Collection

Operational Outage collection would continue under the original TADS Phase II Section 1600 data request. Based on the TADSWG's Non-Automatic Outage Sunset Report, Operational Outage collection is needed for the following reasons[12]:

- EIA is still collecting this data. If this data is not collected, each TO would have to submit the same data to EIA separately instead of NERC collecting all of the required outage data and submitting it on behalf of the industry, as is presently the case.
- Operational Outages are functionally similar to Automatic Outages because they are typically in response to unplanned situations on the BES. For example, Operational Outages due to an emergency and human error switching, are similar in effect to an Automatic Outage response.

[11] http://www.nerc.com/comm/PC/Transmission%20Availability%20Data%20System%20Working%20G1/TADSWG_Non_Automatic_Sunset_Short_Report.pdf, p. 4.

[12] http://www.nerc.com/comm/PC/Transmission%20Availability%20Data%20System%20Working%20G1/TADSWG_Non_Automatic_Sunset_Short_Report.pdf, p. 5, ¶1.

Section 1600 Data Request Questions and Answers

Q. What data or information is being requested?
Response: Modification of Non-Automatic Outage collection to remove Planned Outages - Changes as per Section 1600 2.2

> *A proposed modification to a previously authorized request for data or information shall explain the nature of the modifications; Modify the existing Section 1600 data request (reference 2008 Section 1600 data request) to discontinue Planned Outage collection*

Based on the approval by the NERC Planning Committee of the TADSWG's Non-Automatic Outage Sunset Provision Short Report recommendations, these recommendations should be applied as a modification to the Section 1600 data regarding TADS.

These recommendations (applying to all TADS data collected from January 1, 2015 forward)[13] are:

> *NERC should not continue to collect Planned Outages with the last Planned Outage data collected for the fourth quarter of 2014. NERC should continue to collect operational outages for all Voltage Classes above and including the 200-299 kV Voltage Classes.*

Many reasons were determined why the Planned Outage data collection was no longer necessary:

- Third party organizations have not found sufficient value.
- It is no longer required by EIA Form 411 Schedule 7 reporting.
- Additional costs and efforts are required to report the data.
- Coordination between Transmission Owners during Planned Outage TADS reporting is problematic.
- In the operational horizon, there is questionable reliability value.
- NERC is not yet able to draw actionable conclusions from the collected data.
- There are no proven benefits from the current metrics.
- In Phase II report, NERC anticipated that this data would be useful in Event Analysis which has not been demonstrated.
- Analysis of the present data collection has been inconclusive considering its current level of detail.

Q. How will the data or information be used?
Response: Operational Outage collection would continue under the original TADS Phase II Section 1600 data request. Based on the TADSWG's Non-Automatic Outage Sunset Report, Operational Outage collection is needed for the following reasons[14]:

- EIA is still collecting this data. If this data is not collected, each TO would have to submit the same data to EIA instead of NERC submitting it on behalf of the industry.
- They are functionally similar to Automatic Outages because they are often not routine. For emergency and human error switching Operational Outages, they are similar in effect to the Automatic Outage response.

Q. How is the availability of the data or information necessary for NERC to meet its obligations under applicable laws and agreements?
Response: NERC does not need the data to meet its obligations under applicable laws and agreements.

[13] http://www.nerc.com/comm/PC/Transmission%20Availability%20Data%20System%20Working%20G1/TADSWG_Non_Automatic_Sunset_Short_Report.pdf, p. 4.
[14] http://www.nerc.com/comm/PC/Transmission%20Availability%20Data%20System%20Working%20G1/TADSWG_Non_Automatic_Sunset_Short_Report.pdf, p. 5, ¶1.

Q. What Reporting Entities will be required to report the data?
Response: Transmission Owners with TADS Elements for all Voltage Classes equal to and above 200 kV. Specifically, these include:

1. Overhead and underground ac circuits ≥ 200 kV;
2. Transformers with ≥ 200 kV low-side;
3. Back-to-back ac/dc converters with ≥ 200 kV ac on both sides; and
4. Dc circuits with ≥ ±200 kV dc voltage.

Q. What is the estimated the relative burden imposed on the Reporting Entities to accommodate the data or information request?
Response: It is anticipated that the discontinuation of reporting Planned Outage to TADS would reduce reporting burden on Reporting Entities. Operational Outages are less frequent and their continued collection and reporting is not expected to impose a large incremental burden on Reporting Entities.

Q. What is the schedule or due date for the data or information?
Response: Planned Outage Discontinuation: TADSWG recommends discontinuation of Planned Outage data collection commencing the quarter following NERC Board of Trustee approval.

Operational Outage Continuation: No change to existing TADS reporting.

Survey Questions and Request for Comments

A proposed request for data or information shall contain, at a minimum, the following information: (i) a description of the data or information to be requested, how the data or information will be used, and how the availability of the data or information is necessary for NERC to meet its obligations under applicable laws and agreements; (ii) a description of how the data or information will be collected and validated; (iii) a description of the entities (by functional class and jurisdiction) that will be required to provide the data or information ("Reporting Entities"); (iv) the schedule or due date for the data or information; (v) a description of any restrictions on disseminating the data or information (e.g., "Confidential Information," "Critical Energy Infrastructure Information," "aggregating" or "identity masking"); and (vi) an estimate of the relative burden imposed on the Reporting Entities to accommodate the data or information request.

A proposed modification to a previously authorized request for data or information shall explain (i) the nature of the modifications; (ii) an estimate of the burden imposed on the Reporting Entities to accommodate the modified data or information request, and (iii) any other items from Section 1602.2.1 that require updating as a result of the modifications.

Survey Questions - Discontinuation of TADS Planned Outage Data Collection

1. Would discontinuation of Planned Outage data reporting to TADS create a burden on your utility?
2. Would the continuation of Operational Outage data reporting to TADS pose a large increase in incremental effort for your utility?
3. Is the data being requested reasonable and obtainable? If "no," please explain.
4. Is the implementation schedule for the request reasonable? If "no," please explain.
5. Additional comments?

Comments are due by Midnight, PDT on <INSERT DATE>, and must be submitted in a Word document to tads@nerc.net. If you have any questions, please contact Trinh Ly at (404) 446-9737 or by e-mail at Trinh.Ly@nerc.net.

TADS Definitions[15]:

Planned Outage
A Non-Automatic Outage with advance notice for the purpose of maintenance, construction, inspection, testing, or planned activities by third parties that may be deferred. Outages of TADS Elements of 30 minutes or less duration resulting from switching steps or sequences that are performed in preparation or restoration of an outage of another TADS Element are not reportable.

Operational Outage
A Non-Automatic Outage for the purpose of avoiding an emergency (i.e., risk to human life, damage to equipment, damage to property) or to maintain the system within operational limits and that cannot be deferred.

[15] Transmission Availability Data System (TADS) Definitions – Appendix 7 of the Data Reporting Manual