

# Required Data Specification for the SPP Reliability Coordinator in the Western Interconnect (RDSWI)

## Revision History

Version	Date	Description of Modification
0.1	January 22, 2019	Draft endorsed by the West Modeling Task Force
1.0	February 13, 2019	Draft approved by Western Reliability Working Group

## Introduction

The data specifications identified in this document are a comprehensive listing of the information required by the SPP Reliability Coordinator to perform their Operational Planning Analyses, Real-time monitoring, and Real-time Assessments as stipulated by NERC Standard IRO-010.

## Responsible Entities

- All Balancing Authorities and Transmission Operators within the SPP Reliability Coordinator Area.
- Other entities as deemed applicable by SPP, including those not registered with NERC. Such entities will receive notification from SPP of the specific data required.

## Process for Resolving Data Conflicts

For purposes of uniformity, SPP data specifications include the periodicity, deadline, format and security protocols for each piece of information. If the Responsible Entity cannot meet one or more of the data specifications, then the Responsible Entity shall submit its exceptions and proposed solutions using the SPP Request Management System. Responsible Entities without access to the SPP Request Management System can contact SPP using other means. SPP Staff and the Responsible Entity shall coordinate to reach a mutually agreeable alternative or temporary solution. If SPP identifies a piece of information that is not being provided per the data specifications, SPP will contact the Responsible Entity to reach a mutually agreeable alternative or temporary solution.

## Descriptions of Security Protocols

### ICCP

All ICCP data exchanged between SPP and any other entity utilizes a direct telecommunication connection.

### Email

Required data communicated to SPP via email that the originator deems to be confidential shall be sent as a password protected attachment. Passwords should be provided in a separate communication. Required data that the originator does not deem to be confidential is not required to be exchanged as a password protected attachment.

## Phone

Entities providing information required in this data specification deemed to be confidential by phone are expected to verify they are speaking to the intended recipient before providing the information.

## CROW Outage Scheduler

Access is granted through secure digital certificate as submitted by an entity's Local Security Administrator and approved by SPP.

## Secure Electronic

All means of communication identified as secure electronic in this document use one or more of the following security measures: Username and Password, Digital Certificate, Direct Telecommunication Connection.

## **Periodicity of ICCP Data Exchange**

In the tables below, each data type that is exchanged via ICCP, excluding "Report by Exception", is assigned a periodicity requirement of "No greater than X seconds". This requirement is intended to represent the maximum interval at which this data can be exchanged. This requirement is not intended to represent the interval at which this data must be exchanged. In many cases, data is exchanged at a faster rate than the requirement in the Periodicity column of the tables below.

## **SPP RC Required Balancing Authority Real-Time Data**

Data Type: Balancing Authority Area Demand

Applicability: Balancing Authority within the SPP RC Area

Description/Requirements: Instantaneous calculation of the generation minus actual interchange for the Balancing Authority Area. The unit of measurement is MW.

Coordination surrounding inclusion of behind the meter load and generation must be made with the Reliability Coordinator.

Data Format: ICCP

Periodicity: No greater than 10 seconds

Security Protocol: ICCP

Deadline: 10/01/2019

Data Type: Scheduled Net Interchange

Applicability: Balancing Authority within the SPP RC Area

Description/Requirements: Instantaneous total net scheduled MW flow into or out of the Balancing Authority Area.

Data Format: ICCP

Periodicity: No greater than 10 seconds

Security Protocol: ICCP

Deadline: 10/01/2019

Data Type: Actual Interchange

Applicability: Balancing Authority within the SPP RC Area

Description/Requirements: Instantaneous total net MW flow into or out of the Balancing Authority Area.

Data Format: ICCP

Periodicity: No greater than 10 seconds

Security Protocol: ICCP

Deadline: 10/01/2019

Data Type: Area Control Error (ACE)

Applicability: Balancing Authority within the SPP RC Area

Description/Requirements: Instantaneous measurement of the area control error (ACE). Unit of measurement is MW. Value may be positive or negative.

Data Format: ICCP

Periodicity: No greater than 10 seconds

Security Protocol: ICCP

Deadline: 10/01/2019

Data Type: Real-Time System Frequency

Applicability: Balancing Authority within the SPP RC Area

Description/Requirements: Instantaneous readings of the actual frequency in Hz measured at three or more locations in the Balancing Authority Area. This is not the deviation from scheduled frequency but should be the actual measured frequency value.

Data Format: ICCP

Periodicity: No greater than 10 seconds  
Security Protocol: ICCP  
Deadline: 10/01/2019

Data Type: Scheduled Base Frequency  
Applicability: Balancing Authority within the SPP RC Area  
Description/Requirements: Instantaneous reading of the scheduled (base) frequency in Hz. This is not the deviation from a value (nominally 60 Hz). If this value is only valid during periods of time error correction, then a status indication value must also be supplied to indicate whether time correction is in effect or not.

Data Format:  
Scheduled Frequency: ICCP  
Time Error Correction Status: ICCP

Periodicity:  
Scheduled Frequency: No greater than 10 seconds  
Time Error Correction Status: Report by Exception

Security Protocol: ICCP  
Deadline: 10/01/2019

Data Type: BA Area Actual Generation Total  
Applicability: Balancing Authority Generator Operator within the SPP RC Area  
Description/Requirements: Total of all actual generation with the metered boundary of the Balancing Authority

Data Format: ICCP  
Periodicity: No greater than 10 seconds  
Security Protocol: ICCP  
Deadline: 10/01/2019

Data Type: BA Dynamic Frequency Bias  
Applicability: Balancing Authority Generator Operator within the SPP RC Area  
Description/Requirements: If a dynamic frequency bias is used

Data Format: ICCP  
Periodicity: No greater than 10 seconds  
Security Protocol: ICCP  
Deadline: 10/01/2019

Data Type: BA Meter Error Component of ACE  
Applicability: Balancing Authority Generator Operator within the SPP RC Area  
Description/Requirements: The meter error component used in the BA's ACE

Data Format: ICCP  
Periodicity: No greater than 10 seconds  
Security Protocol: ICCP  
Deadline: 10/01/2019

Data Type: BA Area Total Wind MW Output

Applicability: Balancing Authority Generator Operator within the SPP RC Area

Description/Requirements: This is a single value - summation of all wind generation currently online. This value should represent wind generation at the BES level.

Data Format: ICCP

Periodicity: No greater than 10 seconds

Security Protocol: ICCP

Deadline: 10/01/2019

Data Type: BA Area Total Solar MW Output

Applicability: Balancing Authority Generator Operator within the SPP RC Area

Description/Requirements: This is a single value - summation of all solar generation currently online. This value should represent solar generation at the BES level.

Data Format: ICCP

Periodicity: No greater than 10 seconds

Security Protocol: ICCP

Deadline: 10/01/2019

### **SPP RC Required Balancing Authority Forecast Data**

Data Type: Future Hourly BAA Net Scheduled Interchange Forecast

Applicability: Balancing Authority within the SPP RC Area

Description/Requirements: Required hourly values for each day for the current day through the next business day on a rolling basis

Data Format: File

Periodicity: Daily Submission by 3 PM Mountain Prevailing Time

Security Protocol: Secure Electronic

Deadline: 10/01/2019

Data Type: Future Hourly BAA Load Forecast

Applicability: Balancing Authority within the SPP RC Area

Description/Requirements: Required hourly values for each day for the current day through the next four business days on a rolling basis

Data Format: File

Periodicity: Daily Submission by 9 AM Mountain Prevailing Time

Security Protocol: Secure Electronic

Deadline: 10/01/2019

Data Type: Near-Term Hourly BAA Load Forecast

Applicability: Balancing Authority within the SPP RC Area

Description/Requirements: Required hourly values for the next four hours on a rolling basis

Data Format: File

Periodicity: 10 Minutes Prior to each Hour

Security Protocol: Secure Electronic

Deadline: 10/01/2019

Data Type: Future Hourly BAA Unit Commitment

Applicability: Balancing Authority within the SPP RC Area

Description/Requirements: Required hourly values for each day for the current day through the next four business days on a rolling basis for all BES generation in the BA area. SPP RC may require non-BES generation upon request to the BA.

Data Format: File

Periodicity: Daily Submission by 9 AM Mountain Prevailing Time

Security Protocol: Secure Electronic

Deadline: 10/01/2019

Data Type: Near-Term Hourly BAA Unit Commitment

Applicability: Balancing Authority within the SPP RC Area

Description/Requirements: Required hourly values for the next four hours on a rolling basis for all BES generation in the BA area. SPP RC may require non-BES generation upon request to the BA.

Data Format: File

Periodicity: 10 Minutes Prior to each Hour

Security Protocol: Secure Electronic

Deadline: 10/01/2019

Data Type: Future Hourly BAA\_Unit Dispatch

Applicability: Balancing Authority within the SPP RC Area

Description/Requirements: Required hourly values for each day for the current day through the next business day on a rolling basis for all BES generation in the BA area. SPP RC may require non-BES generation upon request to the BA.

Data Format: File

Periodicity: Daily Submission by 9 AM Mountain Prevailing Time

Security Protocol: Secure Electronic

Deadline: 10/01/2019

Data Type: Near-Term Hourly BAA\_Unit Dispatch

Applicability: Balancing Authority within the SPP RC Area

Description/Requirements: Required hourly values for the next four hours on a rolling basis for all BES generation in the BA area. SPP RC may require non-BES generation upon request to the BA.

Data Format: File

Periodicity: 10 Minutes Prior to each Hour

Security Protocol: Secure Electronic

Deadline: 10/01/2019

Data Type: Future Hourly BAA Unit Operational Maximum MW

Applicability: Balancing Authority within the SPP RC Area

Description/Requirements: Required hourly values for each day for the current day through the next four business days on a rolling basis for all BES generation in the BA area. SPP RC may require non-BES generation upon request to the BA.

Data Format: File

Periodicity: Daily Submission by 9 AM Mountain Prevailing Time

Security Protocol: Secure Electronic

Deadline: 10/01/2019

Data Type: Near-Term Hourly BAA Unit Operational Maximum MW

Applicability: Balancing Authority within the SPP RC Area

Description/Requirements: Required hourly values for the next four hours on a rolling basis for all BES generation in the BA area. SPP RC may require non-BES generation upon request to the BA.

Data Format: File

Periodicity: 10 Minutes Prior to each Hour

Security Protocol: Secure Electronic

Deadline: 10/01/2019

Data Type: Future Hourly BAA Unit Operational Minimum MW

Applicability: Balancing Authority within the SPP RC Area

Description/Requirements: Required hourly values for each day for the current day through the next four business days on a rolling basis for all BES generation in the BA area. SPP RC may require non-BES generation upon request to the BA.

Data Format: File

Periodicity: Daily Submission by 9 AM Mountain Prevailing Time

Security Protocol: Secure Electronic

Deadline: 10/01/2019

Data Type: Near-Term Hourly BAA Unit Operational Minimum MW

Applicability: Balancing Authority within the SPP RC Area

Description/Requirements: Required hourly values for the next four hours on a rolling basis for all BES generation in the BA area. SPP RC may require non-BES generation upon request to the BA.

Data Format: File

Periodicity: 10 Minutes Prior to each Hour

Security Protocol: Secure Electronic

Deadline: 10/01/2019

Data Type: Status

Applicability: Balancing Authority within the SPP RC Area

Description/Requirements: Instantaneous status of the generator as telemetered, or as derived from the status of the breaker associated with the generator unit. Possible values are In-service, Out-of-Service, and Between, or On, Off, and Between.

Data Format: ICCP

Periodicity: Report by Exception

Security Protocol: ICCP

Deadline: 10/01/2019

Data Type: Maximum MW Nameplate Capability

Applicability: Balancing Authority within the SPP RC Area or SPP BA Area

Description/Requirements: Highest limit on the gross or net Real Power (MW) output of a generator unit. This value may be either static or updated seasonally. Unit of measurement is in MW.

Data Format: For static limits use network model exchange or written notification to

[EMSModeling@spp.org](mailto:EMSModeling@spp.org)

Periodicity: Upon implementation of update

Security Protocol: Email

Deadline:

Initial: 04/01/2019

Updates:

At least 7 calendar days prior to the updated system model data becoming effective (i.e. energizing the revised system). Changes submitted within the 7 day requirement, will be evaluated and accepted at the discretion of the SPP RC.

or

Within 20 business days, upon request of SPP

Data Type: MW Output

Applicability: Balancing Authority within the SPP RC Area

Description/Requirements: Instantaneous measurement of the gross or net real output power from the generator. If gross measurements are supplied, the station auxiliary measurements must also be supplied so that net measurements can be derived. Unit of measurement is in MW.

Data Format: ICCP

Periodicity: No greater than 10 seconds

Security Protocol: ICCP

Deadline: 10/01/2019

Data Type: MVar Output

Applicability: Balancing Authority within the SPP RC Area

Description/Requirements: Instantaneous measurement of the gross or net reactive output power from the generator. If gross measurements are supplied, the station auxiliary measurements must also be supplied so that net measurements can be derived.

Unit of measurement is in MVar.

Data Format: ICCP

Periodicity: No greater than 10 seconds

Security Protocol: ICCP

Deadline: 10/01/2019

Data Type: Status of Generator Voltage Regulating Capability

Applicability: Balancing Authority within the SPP RC Area

Description/Requirements:

For the purposes of this requirement, a generator's voltage regulating capability shall be categorized as either automatic voltage regulation capability (AVRC) or manual voltage regulation capability (MVRC). AVRC is defined as the capability of a generator to modify its Net VAR Output automatically in response to changes in system conditions without operator action. MVRC is defined as the capability of a generator to modify its Net VAR Output through



manual operator action. For the purposes of this requirement, Net VAR Output is defined as the cumulative VAR injection to or consumption from the BES of all equipment at the generator station.

Generators with AVRC shall provide, via ICCP, a real-time status of the ability to regulate its net VAR output automatically. Generators with MVRC (and generators with AVRC operating in manual mode) shall inform the RC, via phone call, when MVRC is lost and the generator will remain online for 10 minutes or more. Generators exempted from the requirements of VAR-002-4 by their Transmission Operator are exempt from this requirement.

Data Format:

*AVRC Status:* ICCP

*MVRC Status Changes:* Phone Call to RC

Periodicity:

*AVRC Status:* No greater than 10 seconds

*MVRC Status Changes:* Per Event

Security Protocol:

*AVRC Status:* ICCP

*MVRC Status Changes:* Phone

Deadline:

*AVRC Status:* 10/01/2019

*MVRC Status Changes:* 10/01/2019

Data Type: Topology Updates

Applicability: Balancing Authority within the SPP RC Area

Description/Requirements: Notification of new or changes to existing equipment, including, Generators, Breakers, Buses, Switches, etc. and the expected in-service date of that equipment. Information can be provided in the form of System One-Line Diagrams or other descriptive information.

Data Format: Email to [EMSModeling@spp.org](mailto:EMSModeling@spp.org)

Periodicity: Upon availability of updated information

Security Protocol: Email or Secure Electronic

Deadline:

Initial: 04/01/2019

Updates:

At least 21 calendar days prior to the first day of the month in which the applicable topology change is scheduled to become energized in the revised SPP transmission system.

or

Within 30 calendar days, upon request of SPP.

Data Type: Model Characteristic Updates

Applicability: Balancing Authority within the SPP RC Area

Description/Requirements: Unit characteristics. For example, connecting substation name, turbine type, primary fuel type. Optional SCADA limits (used for display/operator alarming).

Data Format: Email to [EMSModeling@spp.org](mailto:EMSModeling@spp.org)

Periodicity: Upon availability of updated information

Security Protocol: Email or Secure Electronic

Deadline:

Initial: 04/01/2019

Updates:

At least 7 calendar days prior to the updated system model data becoming effective (i.e. energizing the revised system). Changes submitted within the 7 day requirement, will be evaluated and accepted at the discretion of the SPP RC.

or

Within 20 business days, upon request of SPP.

Data Type: Gross or Net Generation Modeling

Applicability: Balancing Authority within the SPP RC Area

Description/Requirements: Indication of the use of either gross or net generation measurements (MW and MVAR). If gross measurements are supplied, the station auxiliary measurements must also be supplied so that net measurements can be derived.

Data Format: Email to [EMSModeling@spp.org](mailto:EMSModeling@spp.org)

Periodicity: Upon availability of updated information

Security Protocol: Email or Secure Electronic

Deadline:

Initial: 04/01/2019

Updates:

At least 21 calendar days prior to the first day of the month in which the applicable topology change is scheduled to become energized in the revised SPP transmission system.

or

Within 30 calendar days, upon request of SPP.

Data Type: BAAL High and Low Limits

Applicability: Balancing Authority Generator Operator within the SPP RC Area

Description/Requirements: BAAL high and low limits instantaneous or if unable then one minute average values

Data Format: ICCP

Periodicity: No greater than 10 seconds, alternatively, one minute average

Security Protocol: ICCP

Deadline: 10/01/2019

### **SPP RC Required Transmission Operator Data**

Data Type: Facility Status

Applicability: Transmission Operator within the SPP RC Area

Description/Requirements: Current status of the switching devices (breakers, switches, disconnects) at each end of a transmission Facility. Facilities include transformers, lines, and reactive devices. Possible values are Open and Closed for two-state devices and Open, Closed, and Between for three-state devices.

Data Format: ICCP. For devices without telemetered status, voice notification to the RC is acceptable.

Periodicity: Report by Exception  
Security Protocol: ICCP  
Deadline: 10/01/2019

Data Type: Facility Loading MW  
Applicability: Transmission Operator within the SPP RC Area  
Description/Requirements: Instantaneous Real Power flow in MW on the transmission Facility where available. Unit of measurement is in MW.  
Data Format: ICCP  
Periodicity: No greater than 10 seconds  
Security Protocol: ICCP  
Deadline: 10/01/2019

Data Type: Facility Loading Mvar  
Applicability: Transmission Operator within the SPP RC Area  
Description/Requirements: Instantaneous Reactive Power flow in Mvar on the transmission Facility where available. Unit of measurement is in Mvar.  
Data Format: ICCP  
Periodicity: No greater than 10 seconds  
Security Protocol: ICCP  
Deadline: 10/01/2019

Data Type: MVA Capability Normal (Normal Rating)  
Applicability: Transmission Operator within the SPP RC Area  
Description/Requirements: Normal Rating for transmission Facilities including all seasons with the exception of Dynamic Limits. Unit of measurement is in MVA. A 'Normal Rating' is considered a SOL per the SPP Reliability Coordinator Area System Operating Limit Methodology Western Interconnection.

Data Format:  
*Dynamic limits:* ICCP  
*Static Limits on Currently Operational Facilities:* Submit using the Ratings Submission Tool  
*Static Limits on Future Operational Facilities:* Network model exchange, written notification to [EMSModeling@spp.org](mailto:EMSModeling@spp.org),

Periodicity:  
*Dynamic limits:* No greater than 10 seconds  
*Static Limits on Currently Operational Facilities:* Upon availability of updated information  
*Static Limits on Future Operational Facilities:* Upon availability of updated information

Security Protocol:  
*Dynamic limits:* ICCP  
*Static Limits on Currently Operational Facilities:* Secure Electronic  
*Static Limits on Future Operational Facilities:* Secure Electronic

Deadline:  
*Dynamic limits:* 04/01/2019  
*Static Limits on Currently Operational Facilities:*

At least 3 days prior to implementation of updated ratings on greater than 10 elements. No prior notification is required for 10 or less Facility Rating changes. At least 10 days prior to implementation of planned updated ratings on a monitored element of a permanent flowgate. Unplanned changes to the rating of the monitored element of a permanent flowgate can be implemented immediately by agreement between the RC and TOP.

*Static Limits on Future Operational Facilities:*

At least 7 calendar days prior to the updated system model data becoming effective (i.e. energizing the revised system). Changes submitted within the 7 day requirement, will be evaluated and accepted at the discretion of the SPP RC.

Or

Within 20 business days, upon request of SPP.

Data Type: MVA Capability Emergency (Emergency Rating)

Applicability: Transmission Operator within the SPP RC Area

Description/Requirements: The highest Emergency Rating for transmission Facilities including all seasons with the exception of Dynamic Limits. Unit of measurement is in MVA. Emergency Rating with an associated time limit of less than 15 minutes shall have an Operating Guide describing the use of the Emergency Limit. An 'Emergency Rating' is considered a SOL per the SPP Reliability Coordinator Area System Operating Limit Methodology Western Interconnection.

Data Format:

*Dynamic limits:* ICCP

*Static Limits on Currently Operational Facilities:* Submit using the Ratings Submission Tool

*Static Limits on Future Operational Facilities:* Network model exchange, written notification to [EMSModeling@spp.org](mailto:EMSModeling@spp.org),

Periodicity:

*Dynamic limits:* No greater than 10 seconds

*Static Limits on Currently Operational Facilities:* Upon availability of updated information

*Static Limits on Future Operational Facilities:* Upon availability of updated information

Security Protocol:

*Dynamic limits:* ICCP

*Static Limits on Currently Operational Facilities:* Secure Electronic

*Static Limits on Future Operational Facilities:* Secure Electronic

Deadline:

*Dynamic limits:* 04/01/2019

*Static Limits on Currently Operational Facilities:*

At least 3 days prior to implementation of updated ratings on greater than 10 elements. No prior notification is required for 10 or less Facility Rating changes. At least 10 days prior to implementation of planned updated ratings on a monitored element of a permanent flowgate. Unplanned changes to the rating of the monitored element of a permanent flowgate can be implemented immediately by agreement between the RC and TOP.

*Static Limits on Future Operational Facilities:*

At least 7 calendar days prior to the updated system model data becoming effective (i.e. energizing the revised system). Changes submitted within the 7 day requirement, will be evaluated and accepted at the discretion of the SPP RC.

Or

Within 20 business days, upon request of SPP.

Data Type: System Voltage Limits

Applicability: Transmission Operator within the SPP RC Area

Description/Requirements: The maximum and minimum steady-state voltage limits (both normal and emergency) that provide for acceptable System performance. ‘System Voltage Limits’ are considered a SOL per the SPP Reliability Coordinator Area System Operating Limit

Methodology Western Interconnection.

Data Format: File

Periodicity: As required by the SPP Reliability Coordinator Area System Operating Limit

Methodology Western Interconnection

Security Protocol: Secure Electronic

Deadline: 04/01/2019

Data Type: Stability Limits

Applicability: Transmission Operator within the SPP RC Area

Description/Requirements: Stability Limits consist of Transient Stability Limits and Voltage Stability Limits. ‘Stability Limits’ are considered a SOL per the SPP Reliability Coordinator Area System Operating Limit Methodology Western Interconnection.

Data Format: File

Periodicity: As required by the SPP Reliability Coordinator Area System Operating Limit

Methodology Western Interconnection

Security Protocol: Secure Electronic

Deadline: 04/01/2019

Data Type: Dynamic Stability Limits

Applicability: Transmission Operator within the SPP RC Area

Description/Requirements: Any TOP-provided stability limitation that the SPP RC, in collaboration with the TOP, determines to require submission in Real-time.

Data Format: ICCP

Periodicity: No greater than 10 seconds

Security Protocol: ICCP

Deadline: 10/01/2019

Data Type: Transformer Tap Setting

Applicability: Transmission Operator within the SPP RC Area

Description/Requirements: Predefined, fixed positions on one or both sides of a transformer.

Each Tap position represents a specific voltage value. (i.e. changing a Tap Position changes the voltage.) There is no standard numbering scheme for the tap position. Documentation defining the possible values and their meaning must be provided to SPP.

Data Format:

*Telemetered or Derived Tap Positions:* ICCP

*Non-Telemetered No-Load Tap Information:* Network Model Exchange or written notification to [EMSModeling@spp.org](mailto:EMSModeling@spp.org)

Periodicity:

*Telemetered or Derived Tap Positions:* No greater than 10 seconds

*Non-Telemetered No-Load Tap Information:* Upon availability of updated information

Security Protocol:

*Telemetered or Derived Tap Positions:* ICCP

*Non-Telemetered No-Load Tap Information:* Email

Deadline:

*Telemetered or Derived Tap Positions:* 04/01/2019

*Non-Telemetered No-Load Tap Information:*

At least 7 calendar days prior to the updated system model data becoming effective (i.e. energizing the revised system). Changes submitted within the 7 day requirement, will be evaluated and accepted at the discretion of the SPP RC.

or

Within 20 business days, upon request of SPP.

Data Type: Phase Shifting Transformer Phase Angle Setting

Applicability: Transmission Operator within the SPP RC Area

Description/Requirements: Represents the Phase Angle between the voltages on each side of the transformer (i.e. changing the Phase Angle changes the power.) The angle settings can typically vary between -90 and +90. The unit of measurement is Degrees.

Data Format: ICCP

Periodicity: No greater than 10 seconds

Security Protocol: ICCP

Deadline: 10/01/2019

Data Type: Voltage

Applicability: Transmission Operator within the SPP RC Area

Description/Requirements: Instantaneous voltage measurement for all telemetered locations on Transmission Facilities as defined above. Unit of measurement is kV. Per Unit, 100Base, 120Base, etc. voltages must be converted to simple kV readings by the originator, or if not possible, the appropriate scaling factors must be defined.

Data Format: ICCP

Periodicity: No greater than 10 seconds

Security Protocol: ICCP

Deadline: 10/01/2019

Data Type: Remedial Action Scheme In-Service Status

Applicability: Transmission Operator within the SPP RC Area

Description/Requirements: Instantaneous notification of changes to the status or degradation of Remedial Action Schemes. Documentation defining the possible values and their meaning must be provided to SPP.

Data Format:

*Changes to Status:* ICCP

*Degradation:* Phone Call to SPP RC

Periodicity:

*Changes to Status:* Report by Exception

*Degradation:* Per Event

Security Protocol:

*Changes to Status:* ICCP

*Degradation:* Phone

Deadline: Initial: 04/01/2019 Updates: Upon availability of updated information

Data Type: Remedial Action Scheme Arming Status

Applicability: Transmission Operator within the SPP RC Area

Description/Requirements: Instantaneous notification of changes to the arming status of Remedial Action Schemes. An indication that a RAS is 'Armed' shall indicate that the RAS will automatically (without operator intervention) perform specified actions in response to defined system conditions. Documentation defining the possible values and their meaning must be provided to SPP.

Data Format: ICCP

Periodicity: Report by Exception

Security Protocol: ICCP

Deadline: Initial: 10/01/2019 Updates: Upon availability of updated information

Data Type: Status of RAS-Like Schemes

Applicability: Transmission Operator within the SPP RC Area

Description/Requirements: Status of Non-RAS devices that perform automatic post-contingency actions based on certain parameters such as under voltage or overloaded facilities. This may include, but is not limited to, certain generator run-back schemes, under-voltage facility tripping schemes.

Data Format: ICCP

Periodicity: No greater than 10 seconds

Security Protocol: ICCP

Deadline: 10/01/2019

Data Type: Status of Transmission System Voltage Regulating Equipment

Applicability: Transmission Operator within the SPP RC Area

Description/Requirements: Instantaneous telemetered or derived status of static var compensators, shunt and series capacitors, reactors, etc. Possible values are In- service, Out-of-service, and Between, or On, Off, and Between

Data Format: ICCP

Periodicity: Report by Exception

Security Protocol: ICCP

Deadline: 10/01/2019

Data Type: Identified Phase Angle and Equipment Limitations

Applicability: Transmission Operator within the SPP RC Area

Description/Requirements: Known operational issues stemming from a specific circumstances, such as a given transmission system configuration, where phase angle cause adverse impacts to the reliability of BES.

Data Format:

*One Business Day or Prior Notifications:* Email to [OutageCoordination@SPP.org](mailto:OutageCoordination@SPP.org)

*Real-Time Notifications:* Phone Call to Reliability Coordinator

Periodicity: Upon identification of such conditions previously unreported to SPP RC

Security Protocol:

*One Business Day or Prior Notifications:* Email

*Real-Time Notifications:* Phone

Deadline: Initial: 04/01/2019 Updates: Upon availability of updated information

Data Type: Topology Updates

Applicability: Transmission Operator within the SPP RC Area

Description/Requirements: Notification of new Facilities or changes to existing equipment, including Transmission Lines, Transformers, Breakers, Buses, Switches, etc. or changes to existing equipment, including and the expected in-service date of that Facility or equipment. Information can be provided in the form of System One-Line Diagrams or other descriptive information.

Data Format: Email to [EMSModeling@spp.org](mailto:EMSModeling@spp.org)

Periodicity: Upon availability of updated information

Security Protocol: Email or Secure Electronic

Deadline:

Initial: 04/01/2019

Updates:

At least 21 calendar days prior to the first day of the month in which the applicable topology change is scheduled to become energized in the revised SPP transmission system and within 30 calendar days, upon request of SPP.

Data Type: Model Characteristic Updates – Currently Operational Equipment

Applicability: Transmission Operator within the SPP RC Area

Description/Requirements: Characteristics of currently operational lines and transformers.

Data Format: Submit using the Ratings Submission Tool

Periodicity: Upon availability of updated information

Security Protocol: Secure Electronic

Deadline:

Initial: 04/01/2019

Updates:

At least 3 days prior to implementation of updated characteristics on greater than 10 elements.

At least 10 days prior to implementation of updated characteristics on a monitored element of a permanent flowgate.

Data Type: Model Characteristic Updates – Future Equipment

Applicability: Transmission Operator within the SPP RC Area



Description/Requirements: Characteristics of future lines and transformers; and future and current switching devices, reactive devices, buses, and loads. Optional SCADA limits (used for display/operator alarming).

Data Format: Email to [EMSModeling@spp.org](mailto:EMSModeling@spp.org)

Periodicity: Upon availability of updated information

Security Protocol: Email or Secure Electronic

Deadline:

Initial: 04/01/2019

Updates:

At least 7 calendar days prior to the updated system model data becoming effective (i.e. energizing the revised system). Changes submitted within the 7 day requirement, will be evaluated and accepted at the discretion of the SPP RC.

or

Within 20 business days, upon request of SPP.

Data Type: Designated WECC Transfer Path Data

Applicability: Transmission Operator within the SPP RC Area

Description/Requirements:

1. Actual MW
2. Scheduled MW
3. Total Transfer Capacity (TTC)

Data Format: ICCP

Periodicity: No greater than 10 Seconds

Security Protocol: ICCP

Deadline: 10/01/2019

Data Type: Load Tap Changer (LTC) Position

Applicability: Transmission Operator within the SPP RC Area

Description/Requirements: LTC tap position measurements for all available LTCs with high side voltage greater than 100kV

Data Format: ICCP

Periodicity: No greater than 10 Seconds

Security Protocol: ICCP

Deadline: 10/01/2019

Data Type: Phase Shifting Transformer Tap Position

Applicability: Transmission Operator within the SPP RC Area

Description/Requirements: Real-time tap position for phase shifting transformers

Data Format: ICCP

Periodicity: No greater than 10 Seconds

Security Protocol: ICCP

Deadline: 10/01/2019

Data Type: Real-Time Dynamic Transfer Value  
Applicability: Transmission Operator within the SPP RC Area  
Description/Requirements: Real-time value for dynamic transfers  
Data Format: ICCP  
Periodicity: No greater than 10 Seconds  
Security Protocol: ICCP  
Deadline: 10/01/2019

Data Type: Overload Relay Trip Setting  
Applicability: Transmission Operator within the SPP RC Area  
Description/Requirements: Overload relay trip settings (including time-delay) on BES Facilities whose overload trip settings are below 125% of the highest Facility rating  
Data Format: Email at [EMSModeling@spp.org](mailto:EMSModeling@spp.org)  
Periodicity: Per Instance Identified  
Security Protocol: Email  
Deadline: 10/01/2019

### **SPP RC Required Outage Scheduling Information**

Data Type: Telemetry and Control Equipment, Monitoring and Assessment Capabilities, and Associated Communication Channels  
Applicability: Transmission Operator, Balancing Authority, and/or Generator Operator within the SPP RC Area  
Description/Requirements: Notification of outages of all Telemetry and Control Equipment, Monitoring and Assessment Capabilities, and Associated Communication Channel. Only outages expected to exceed 30 minutes are required to receive approval from the RC prior to implementation. All other outages required to be provided to the RC as notification but approval is not required unless stated by the RC. SPP accepts the use of ICCP quality codes as a means of reporting individual RTU outages. Individual RTU outages are not expected to be reported otherwise.  
Data Format: Email Notifications: [ICCPRequest@spp.org](mailto:ICCPRequest@spp.org)  
Periodicity: Per event meeting reporting requirements  
Security Protocol: Email  
Deadline: 10/01/2019

Data Type: Transmission Lines and Transformer  
Applicability: Transmission Operator within the SPP RC Area  
Description/Requirements: Notification of expected or known risks to or removal of service time and associated expected return to service time of all Transmission Facilities. This includes hot-line work or removal of re-closing capabilities that are not intended to remove the line from service, but may expose the Facility to increased risk of contingency. Also required is an explanation of the work being done or other reason for the outage. As information is updated, the outage shall be updated as appropriate (ex. expected return to service time, reason for the outage, etc.)

Data Format: CROW Outage Scheduler

Periodicity: Per event meeting reporting requirements in SPP RC Outage Coordination Methodology

Security Protocol: CROW Outage Scheduler

Deadline:

Initial: 05/01/2019

Per SPP RC Outage Coordination Methodology

Data Type: Reactive Devices

Applicability: Transmission Operator within the SPP RC Area

Description/Requirements: Planned outages with an expected duration of greater than 30 minutes of all Static and Dynamic Reactive Devices such as Capacitors, Inductors, Reactors, D-Var's, SVC's, ect. Also required is an explanation of the work being done or other reason for the outage. As information is updated, the outage shall be updated as appropriate (ex. expected return to service time, reason for the outage, ect.)

Data Format: CROW Outage Scheduler

Periodicity: Per event meeting reporting requirements in SPP RC Outage Coordination Methodology

Security Protocol: CROW Outage Scheduler

Deadline:

Initial: 05/01/2019

Per SPP RC Outage Coordination Methodology

Data Type: Generator Automatic Voltage Regulator and Power System Stabilizers

Applicability: Generator Operator within the SPP RC Area

Description/Requirements: Planned outages of Generator Automatic Voltage Regulation capability and Power System Stabilizers with an expected duration of greater than 30 minutes. Also required is an explanation of the work being done or other reason for the outage. As information is updated, the outage shall be updated in CROW as appropriate (ex. Expected return to service time, reason for outage, etc.). For the purposes of Generator start-up, shutdown, and testing mode pursuant to a Real-time communication or procedure previously provided to a Transmission Operator this does not apply.

Data Format: CROW Outage Scheduler

Periodicity: Per event meeting reporting requirements in SPP RC Outage Coordination Methodology

Security Protocol: CROW Outage Scheduler

Deadline:

Initial: 05/01/2019

Per SPP RC Outage Coordination Methodology

Data Type: Generation

Applicability: Generator Operator within the SPP RC Area

Description/Requirements: Notification of expected or known risks to or removal of service time and associated expected return to service time of all Generation units. As information is updated,

the outage shall be updated as appropriate (ex. expected return to service time, reason for the outage, etc.) (Risks may include fuel supply issues)

Data Format: CROW Outage Scheduler

Periodicity: Per event meeting reporting requirements in SPP RC Outage Coordination

Methodology

Security Protocol: CROW Outage Scheduler

Deadline:

Initial: 05/01/2019

Per SPP RC Outage Coordination Methodology

Data Type: Generator Derates

Applicability: Generator Operator within the SPP RC Area

Description/Requirements: Notification of expected time of reduced real power production capability and associated return to service time of full real power production capability. Also, the amount of capability lost shall be provided along with an explanation (fuel supply issues, mechanical problems, outlet constraints, etc.) of the reason for the derate. As information is updated, the outage shall be updated as appropriate (ex. expected return to service time, reason for the outage, etc.)

Data Format: CROW Outage Scheduler

Periodicity: Per event meeting reporting requirements in SPP RC Outage Coordination

Methodology

Security Protocol: CROW Outage Scheduler

Deadline:

Initial: 05/01/2019

Per SPP RC Outage Coordination Methodology

Data Type: Remedial Action Schemes

Applicability: Transmission Operator and/or Generator Operator within the SPP RC Area

Description/Requirements: Planned outages with an expected duration of greater than 30 minutes of all Remedial Action Schemes. Also, planned outages that result in degradation to the Remedial Action Scheme shall be provided. As information is updated, the outage shall be updated in CROW as appropriate (ex. expected return to service time, reason for the outage, etc.)

Data Format: CROW Outage Scheduler

Periodicity: Per event meeting reporting requirements in SPP RC Outage Coordination

Methodology

Security Protocol: CROW Outage Scheduler

Deadline:

Initial: 05/01/2019

Per SPP RC Outage Coordination Methodology

Data Type: Switching Equipment

Applicability: Transmission Operator and/or Generator Operator within the SPP RC Area

Description/Requirements: Planned outages with an expected duration of greater than 30 minutes of Switching Equipment (Breakers and Switches) other than those that are in series with another reported transmission outage (ex. Breaker and switches on a single bus/single breaker

configuration that are out of service in conjunction with a reported transmission line outage). Also required is an explanation of the work being done or other reason for the outage. As information is updated, the outage shall be updated in CROW as appropriate (ex. Expected return to service time, reason for outage, etc.) Outages will only be required to be reported on Switching Equipment modeled in the CROW Outage Scheduler. Switching Equipment is included in the CROW Outage Scheduler by agreement between the SPP RC and the TOP and/or the GOP.

Data Format: CROW Outage Scheduler

Periodicity: Per event meeting reporting requirements in SPP RC Outage Coordination Methodology

Security Protocol: CROW Outage Scheduler

Deadline:

Initial: 05/01/2019

Per SPP RC Outage Coordination Methodology