INPUT FILES SPECIFICATIONS DOCUMENT

WRAP OPERATIONS PROGRAM

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Version 1.0

WRAP
POWERED BY WPP

REVISION HISTORY

DATE OR VERSION NUMBER	AUTHOR	CHANGE DESCRIPTION	DATE
0.1	SPP	Initial draft	2023
1.0	SPP/WPP	Significant document update including but not limited to: • Restrured Operational Requirement section to match with how BPM 202 is structured • Removal of any Forward Showing application, process and materials reference • Clarification details in Operational Requirements > General Requirements subsection, such as file size limitation • New section for After The Fact Energy Deployment file specifications.	02.01.2025

CONTENTS

PURPOSE

This document provides an overview of the file specifications and system interfaces for the Ops Client used as the Program Interface Tool (PIT) for the WPP Western Resource Adequacy Program (WRAP). It does not include information on program governance, program design, etc., as that information is available in other documents.

The audience for this document is the technical staff of participants in the WRAP.

Updates to this document are expected and will continue to be updated.

More information on the design and rules of the program can be found in the following documents:

- Participant Technology Solution Overview
- WRAP Tariff
- WRAP Business Practice Manuals

GLOSSARY OF TERMS AND ACRONYMS

- **AC**: Actual file
- **BPM:** Business Proactice Manual
- **CR**: Hourly Contingency Reserve forecast data
- **CSV**: Comma separated value, a file type used for program data.
- **FORC_OUT**: Forced outage
- **MD**: Multi Day
- **OD**: Operating Day
- **PL**: Point Limits
- **PTPL**: Point to Point Limits
- **VH**: Voluntary Holdback
- **PSN**: Participant Short Name (limited to 3-4 characters) established during registrations with the PO.
- **PO**: Program Operator
- **ROR**: Run of River
- **UI**: User Interface
- **UTC**: Coordinated Universal Time, also known by Greenwich Mean Time (GMT)
- **UTF-8**: Required file format for program data, Universal Coded Character Set Transformation Format – 8-bit
- **WPP**: Western Power Pool
- **YYYYMM**: timestamp format, where YYYY is the 4 digit year, MM is the 2 digit month
- **YYYYMMDD**: timestamp format, where YYYY is the 4 digit year, MM is the 2 digit month and DD is the 2 digit day of month in UTC
- **YYYYMMDDHH**: timestamp format, where YYYY is the 4 digit year, MM is the 2 digit month, DD is the 2 digit day of month, and HH is the 24 Hour time format in UTC

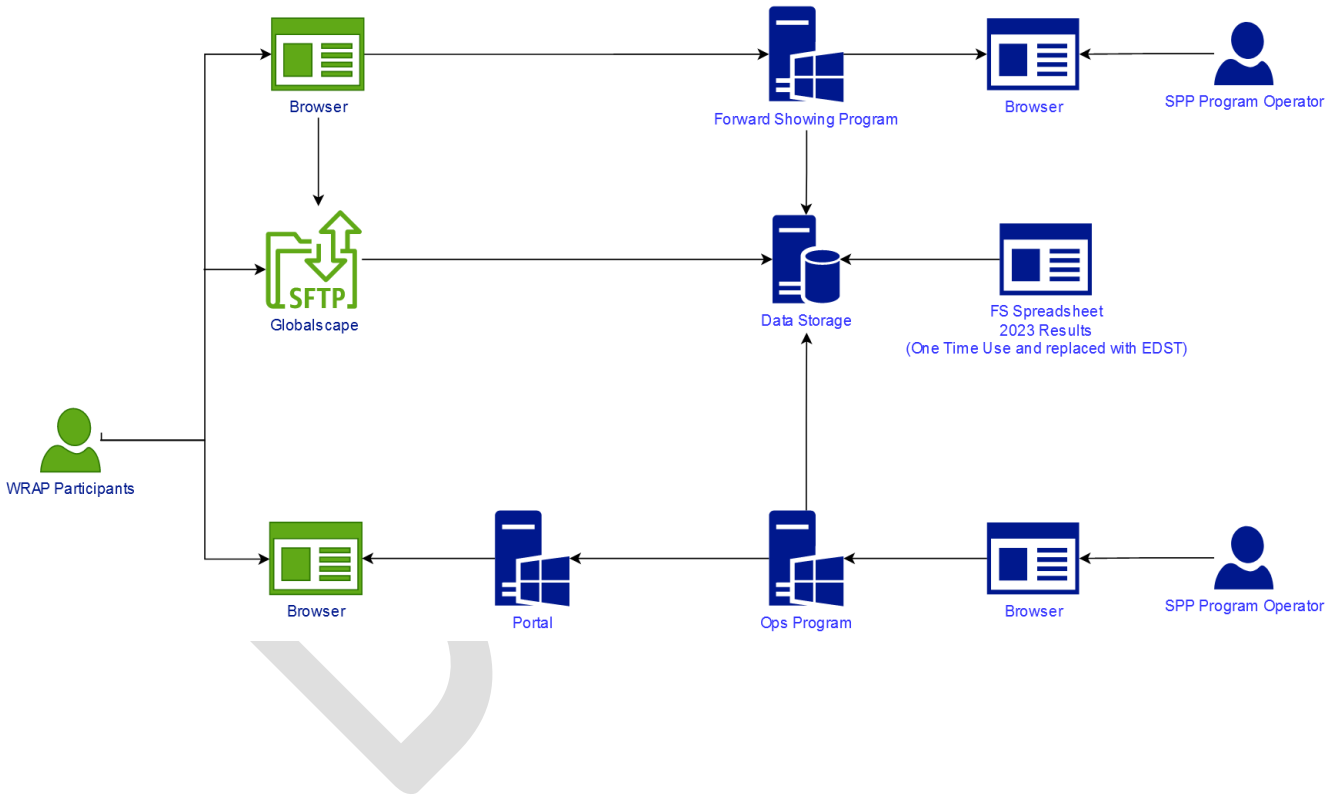
PARTICIPANT TECHNICAL REQUIREMENTS

The primary point of interaction between WRAP Participants and the Program Operator (SPP) for submitting data input files is through Secure File Transfer Protocol (SFTP). WRAP Participants can view and validate data uploads from the SFTP in the Ops Client.

Ops Client UIs will be web-based applications accessed through a compatible web browser. Supported browsers will be:

- Google Chrome (Latest Version)

The following diagram provides a high-level view of the WRAP systems. Participants systems and interactions are highlighted green.SPP systems and interactions highlighted blue. Participants will interact with Ops Client UIs through a web browser and provide input data files via SFTP.



SYSTEM OVERVIEW

Ops Client

The Ops Client will consist of transferring input data files that will be processed according to a predefined schedule to inform Participants of Sharing Events. A user interface will provide Participants the means to view input file upload status and error details, notifications and alerts, and Sharing Calculation results.
There are two environments used for the Ops Client:

- Member Testing Environment (MTE)
- Production Environment (PRD)

WRAP participants can use MTE to test their data uploads. MTE is also used for training, procedure validation and other specific requests. SPP will apply Ops Client updates to MTE first to allow particpants to test and validate the updates prior to realease to PRD.

PRD is the live production environment used during WRAP Seasons.

SYSTEM ACCESS

The Program Administrator (WPP) will coordinate with SPP and Participants to ensure Participant registration is completed within a timely manner to keep testing phases on track. This registration process will be facilitated through SPP's Request Management System (RMS). A RMS ticket will be used to obtain the Local Security Administrator (LSA) form and to register Participants for access to WRAP interfaces. Registration tickets are required to be submitted 45 days prior to the 1st day of the month a Participant needs to access the portal.For example to be in the portal for March 1st all required documents must be submitted by Jan 15th.

The following information is required to register Participants and will be aligned between the different systems:

- Participant company long name
- Participant company short name
- Participant company address
- Participant company point of contact

Request Management System (RMS)

As per program onboarding requirements, Participants will create RMS account(s) by following the guidance of the Program Operator.

Access to RMS is available via: https://spprms.issuetrak.com/login.asp

SPP portal Local Security Administator (LSA) Registration

As per program onboarding requirements, Participants will designate one or more individuals within their company to serve as the SPP Portal LSA. The LSA is the primary person at the Participant's organization who can perform the following functions in the SPP portal: Add, edit, and delete users, and assign and remove roles from

users for portal applications. They will also be contacted via email to vet and approve users requesting RMS access on behalf of their Participant company.

SPP portal Access for WRAP Ops Program UI

Access for the Ops Client UI is managed through the SPP Portal. Standard HTTPS port 443 is used. The Participant LSA will be responsible for granting user access to Ops Client UI. The OPS Client UI will support the following roles: read-only, read-write, and company-admin. The SPP Portal account passwords must be changed every 90 days. There are two environments for the SPP Portal:

- Member Testing Environment (MTE): https://portal-mte.itespp.org/
- Production Environment (PRD): https://portal.spp.org/

Secure File Transfer Protocol (STFP)

The Ops Program will utilize Globalscape to provide Participants Secure File Transfer Protocol (SFTP) (port 22) for sharing of input data files. Participants will request Globalscape access as part of the initial Participant registration ticket in RMS. Participants will need to submit the following information:

- Company name
- Email address
- Name of folder
- Access type (read only or read-write)

The SFTP account passwords must be changed every 90 days. Automated password reset reminder emails will originate from eftadmin@spp.org and will be sent to the email address associated with the SFTP account.

SFTP REQUIREMENTS

Background

Participants will be responsible for supplying input files using SFTP. Each participant will be provided a default application account (PSN_WRAP). Additional accounts can be requested through the SPP Request Management System (RMS).

- SFTP URL
  - Browser
    - https://xfer.spp.org
  - SFTP App
    - xfer.spp.org

NOTE: If using a SFTP application , the url to use is without the “https”, i.e. xfer.spp.org. GlobalScape will automatically redirect to the appropriate /WRAP/PSN folder based on the account permissions. The following information is provided to describe the folder structure and the intended purpose for each folder.

- Each participant will have their own folder using the Participant Short Name (PSN) registered with SPP.
  - xfer.spp.org/WRAP/PSN

- Environment Folders
    - xfer.spp.org/WRAP/PSN/PRD
        - URL used for the SPP production environment
    - xfer.spp.org/WRAP/PSN/MTE
        - URL used for the SPP testing environment
- Additional sub-folders have been created within each environment folder
    - Ops Program Production (PRD)
        - xfer.spp.org/WRAP/PSN/PRD/OPS
            - OD, MD, AC, VH, PL, PTPL, and trigger files will be submitted here.
    - Ops Program Testing (MTE)
        - xfer.spp.org/WRAP/PSN/MTE/OPS
            - OD, MD, AC, VH, PL, PTPL, and trigger files will be submitted here.

General Best Practice for Automating Uploads

The following steps are provided to help participants automate file uploads for use by the WRAP Ops Client. These are only general steps and a participant's internal process may be different.

1. Connect to SFTP Site
2. Upload a single data file (MD, OD, AC, VH, PL, or PTPL)
3. Verify data file uploaded
    - This can be automated to check the SFTP site to validate the file information (name, size, timestamp, etc.) matches what was uploaded.
4. Upload trigger file
    - Only upload the trigger file after you have confirmed the data file has been uploaded.
5. Verification
    - Wait ~5 minutes and check the SFTP site again to verify the uploaded files (both data file and trigger file) have been processed and are no longer available on the SFTP site.
    - Navigate to the Uploads section of the WRAP Ops Client to check sumbmission status.
        - If the upload contained errors, the participant will need to correct the data and/or trigger file and repeat this process.

OPERATIONAL REQUIREMENTS

Background

Participants are required to provide data input files in the form of Comma Separated Value (CSV) files via SFTP to SPP. These files must adhere to a submission schedule to allow the sharing calculations to run with as up-to-date and complete data as possible. The submission schedule for data input files is documented in WRAP's Business Practice Manuals.

General Requirements

Below is a guide for submitting data in the Operations Program.

1. Participants submit CSV files.
2. All data files are in UTF-8 encoding standard.
3. File names must include the UTC date/time for which the data is being submitted, and the file name will match with the first date/time record listed in the file.
4. All timestamp data will be hour ending and submitted in UTC formatted as ISO 8601 YYYY-MM-DDTHH:mmZ. For example:
    a) 2022-01-29T01:00Z
    b) 2022-01-29T02:00Z
    c) ...
    d) 2022-01-29T23:00Z
    e) 2022-01-30T00:00Z
5. All data fields must have a value:
    a) Use only whole numerical values
    b) If a field does not apply, input 0 , no null values (i.e no blank fields).
    c) If a value was previously provided and needs to be updated, a new file with new non-null values should be uploaded.
6. Field data is to be submitted as MW (Megawatt) values.
7. The order of the file columns is defined in the File Type sections below.
   NOTE: Do not change order.
8. All text data within columns must be contained within double quotation marks. For example:
    a) "PointNameVoltage"
9. All files are required to be uploaded at the frequency prescribed in the Business Practice Manuals.
10. All data files and trigger files must end with a NEWLINE character.
11. Only one file per type will be submitted at a time.
12. The file types include:
    a) Multi-Day (MD) File
    b) Operating Day (OD) File
    c) Point Limits (PL) File.
    d) Pont to Point Limits (PTPL) File
    e) Voluntary Holdback (VH) File
    f) Actual (AC) File
    g) After-the-Fact Energy Deployment (ATFED) File
    h) Trigger File

13. The trigger file will be submitted once a data file has been uploaded completely.
14. Participants are encouraged to follow the suggested record and day counts specified per file type. However, the system limit is 10 days of records, starting from the date of the first record, for the following file types: MD, OD, PL, PTPL, and VH.
15. If data errors are detected, the file will not be loaded. The Participant will view the errors within the Ops Client in order to resolve the errors. If correction is not possible for the forecast data, the PO will use the last good data set in the Ops Program calculations.

Operations Program Input File Types

(i) Multi-Day (MD) File

Per *BPM 202 Participant Sharing Calculation Inputs*, the data requested in the Multi-Day (MD) file is necessary to run the Operations Program Sharing Calculation, which is the mechanism to determine whether a Participant is surplus or deficit on any given hour of the Operating Day.

1. The data included in the Multi-Day (MD) File will include the data described below.
2. The forecast data will be saved in the location shown below and using the file name structure also shown below.
    a. File location: https://xfer.spp.org/WPP/PSN/Ops
    b. File name structure: "PSN_YYYYMMDD_MD.csv"
    NOTE: The date used in the MD file name should match the first date contained within the file.
3. MD files shall include seven (7) Operating Days' worth of forecast data.
4. Per *BPM 201 Operations Program Timeline*, Participants are required to submit a MD file no later than 05:20 AM Pacific Prevailing Time (PPT) on the Preschedule Day and according the WECC scheduling calendar.
5. MD data file format:

Column	Column Value Type	Description of value
HOURENDING	Datetime offset	The hour ending time interval for the record
FORC_OUT	Integer	Forecasted Thermal andStorage Hydro Forced Outages for the given hour ending
ROR	Integer	Forecasted Run of River Hydro Generation for the given hour ending
WIND	Integer	Forecasted Wind Generation for the given hour ending
SOLAR	Integer	Forecasted Solar Generation for the given hour ending
LOAD	Integer	Forecasted Load for the given hour ending
CR	Integer	Forecasted Contingency Reserve for the given hour ending

Note: All integers need to be in whole numbers

6. Example file name and layout:
    a. PSN_20220129_MD.csv

```
HOURENDING,FORC_OUT,ROR,WIND,SOLAR,LOAD,CR
2022-01-29T22:00Z,10,20,30,40,500,30
2022-01-29T23:00Z,11,22,33,44,505,33

```

Note: The last row of the above example ends with a NEWLINE character (i.e. blank row).

(ii) Operating Day (OD) File

Per *BPM 202 Participant Sharing Calculation Inputs*, the data requested in the Operating Day files (OD) is mainly used for informational purposes in the Operations Program. As the binding obligations are set on the Preschedule Day under the Tariff, input data submitted in the OD files is used to post updated Sharing Calculation results, hour by hour, for the Operating Day. These updated Sharing Calculation results help inform a Participant about its position relative to the Sharing Calculation result posted on the Preschedule Day.

1. The data included in the Operating Day (OD) File will include the data described below.
2. The forecast data will be saved in the location shown below and using the file name structure also shown below
    a. File Location: https://xfer.spp.org/WPP/PSN/Ops
    b. File name structure: "PSN_YYYYMMDDHH_OD.csv"
    NOTE: The date used in the OD file name should match the first date contained within the file.
3. OD files include at least twenty-four (24) (or twenty-three (23) on a daylight savings time day) operating hours' worth of forecast data and are to be submitted every hour for the given operating day. Moreover, OD files can include additional data that covers future days being prescheduled.
    a. For example: On Operating Day Friday, Participants can submit an OD File that includes data for all hours on Saturday, Sunday, and Monday.
4. Per *BPM 201 Operations Program Timeline*, Participants are required to submit an Operating Day file no later than one hundred and twenty (120) minutes prior to the start of any given operating hour.
5. OD data file format:

Column	Column Value Type	Description of value
HOURENDING	Datetime offset	The hourending time interval for the record
FORC_OUT	Integer	Forecasted Thermal and Storage Hydro Forced Outages for the given hour ending
ROR	Integer	Forecasted Run of River Hydro Generation for the given hour ending

WIND	Integer	Forecasted Wind Generation for the given hour ending
SOLAR	Integer	Forecasted Solar Generation for the given hour ending
LOAD	Integer	Forecasted Load for the given hour ending
CR	Integer	Forecasted Contingency Reserve for the given hour ending

Note: All integers need to be in whole numbers

6. Example file name and layout:
    a. PSN_2022012922_OD.csv

```
HOURENDING,FORC_OUT,ROR,WIND,SOLAR,LOAD,CR
2022-01-29T22:00Z,11,22,33,44,555,33
2022-01-29T23:00Z,12,23,34,45,506,34
```

Note: The last row of the above example ends with a NEWLINE character (i.e. blank row).

(iii) Point Limits (PL) File

As part of the design of the WRAP, there are two subregions, one of which without a central hub: SWEDE. An optimization methodology for deliverability and receipt of generation at specific Point(s) Of Delivery (POD) and Point(s) Of Receipt (POR) has been defined and made available on the Western Power Pool website. The PL files are constructed as follows:

a. **TYPE –** This value indicates whether the components of the connectivity from resources to a point (or set of points) or from a point (or set of points) to load in either one of the two below configurations:
    A. (2A2C) In support of the requirements for SWEDE
        - Set the type column equal to 2A2C per Tariff required submission.
    B. (1A) In support of voluntarily supplied holdback (1A).
        - Set the type column equal to 1A for voluntarily supplied holdback above what is required as a result of the sharing calculation.

b. **POINTNAME** – This is the name of the point (or points) at which a Participant could be required to deliver for a given hour; or the name of the point (or points) at which a Participant could take receipt for a given hour. This will typically be a POR/POD or Tie Point. The PointName must match the master point name list. This list is available from within the Ops Client as a report.

c. **GENTOPOINTMW –** This is the value that represents the deliverability MWs. For a given hour, if a Participant is calculated to be surplus, this is the amount of MWs that a Participant can deliver to the point identified in POINTNAME. If the Participant is calculated to be deficient for a given hour, then the system will set this value to zero.
NOTE: Per Tariff, if a Participant is calculated to be surplus, the sum for all points submitted must be greater than or equal to the positive result of the sharing calculation.

d. **POINTTOLOADMW –** If a Participant is calculated to be deficient for a given hour, this is the amount of MWs that the Participant can take receipt of at the point identified in POINTNAME. If the Participant is calculated to be surplus for a given hour, then the system will set this value to zero.
Per Tariff, if a Participant is calculated to be deficient the sum for all points submitted must be greater than or equal to the absolute value of the negative result of the sharing calculation.
NOTE: When submitting this data file, the Participant may submit a MW value for both GENTOPOINTMW and POINTTOLOADMW for a given hour. However, the system will set POINTTOLOADMW to zero when the Participant is calculated to be surplus, and the GENTOPOINTMW will be set to zero when the Participant is calculated to be deficient.

e. **RANK** – Rank is a value that indicates the relative priority of the transfer capability to or from a point for the specified TYPE. For example, a surplus Particpant may be able to deliver to several points: Point A and Point B. Point A has a RANK of 1 and Point B has a RANK of 2. This indicates a preference for the use of Point A over Point B.
There are total of three levels of RANK available for a given point: 1, 2 or 3. Providing the same RANK for each point indicates indifference about the priority of their use. The utilization will be driven by the optimization.

1. The data included in the Point Limit (PL) File will include the data described below.
2. The data will be saved in the location shown below and using the file name structure also shown below
    a. https://xfer.spp.org/WPP/PSN/Ops/PSN_YYYYMMDD_PL.csv
3. The CSV file will contain the data for the Point Limits submitted to the Ops Program.
NOTE: An empty file (only including headers) can be submitted if there is no data to be provided.
4. The PL file is an input file needed for the optimization. This will need to be submitted after 5:20 AM (PPT) and before 6:35 AM (PPT) on the presechedule day for all days being scheduled.
5. Data Layout

Column	Column Value Type	Description of value
HOURENDING	Datetime offset	The hourly time interval for the record
TYPE	string (max 5)	(1A or 2A2C)
POINTNAME	string	The modeled point name
GENTOPOINTMW	Integer	The amount of MW going in for the given hour ending
POINTTOLOADMW	Integer	The amount of MW going out for the given hour ending
RANK	Integer	Participant provided path priority. Rank paths based on how likely you would like the path to be utilized (1) to least likely (3). If all paths have the same priority, then set them all to the same value (1, 2, or 3).

Note: All Integers need to be in whole numbers

6. Example file name and layout:

PSN_YYYYMMDD_PL.csv

HOURENDING, TYPE,POINTNAME, GENTOPOINTMW, POINTTOLOADMW,RANK 2022-01-29T22:00Z, 1A,FORECORNE345,100,0,9 2022-01-29T22:00Z, 2A2C,FORECORNE345,100,0,9 2022-01-29T22:00Z, 2A2C,MEAD500,100,0,9

(iv) Point To Point Limits (PTPL) File

Given the transmission constraints that might exist in a subregion without a central hub (i.e. SWEDE) and/or subregion connectivity, the optimized allocation algorithm can make use of any wheeling capability that might exist to prioritize diversity sharing within the WRAP footprint. The PTPL files are constructed as follows:

a. **TYPE –** This value indicates whether the components of the connectivity from a point (or set of points) to another point (or set of points) is in either one of the two below configurations
   A. (2A2C) In support of the requirements for SWEDE
      - Set the type column equal to 2A2C per Tariff required submission.
      - NOTE: This could be utilized if a Participant is more than one segment of transmission away from a point at which another Participant is likely to be able to deliver or receive.
   B. (1B) In support of voluntarily supplied holdback (1B).
      - Set the type column equal to 1B for any voluntarily supplied transmission capability.

b. **FROMPOINTNAME** – This is the name of the point (or points) at which a Particpant would take receipt of an energy delivery (i.e. POR transmission segment). The FromPointName must match the master point name list. This list is available from within the Ops Client as a report.

c. **TOPOINTNAME** – This is the name of the point (or points) at which a Particpant would deliver the energy (i.e. POD transmission segment). The ToPointName must match the master point name list. This list is available from within the Ops Client as a report.

d. **TRANSFERCAPABILITYMW** – The amount of MWs a participant is willing to transfer from the point identified in FROMPOINTNAME to the point identified in TOPOINTNAME.

e. **RANK** – Rank is a value that indicates the relative priority of the transfer capability between the points provided. For example, a surplus entity may be able to wheel from Point A to Point B and Point C to Point D. If they would prefer to wheel from Point A to Point B they would provide a rank of 1 to the record indicating transfer capability between Point A and Point B and a rank of 2 (or 3) to the transfer capability between Point C and Point D. This indicates a preference for the use of the path between Point A and Point B. Valid values are 1, 2 or 3.

   NOTE: Providing the same RANK for each wheeling segment indicates indifference about the priority of their use and utilization will be driven by the optimization.

1. The data included in the Point To Point Limit (PTPL) File will include the data described below.
2. The data will be saved in the location shown below and using the file name structure, as follows:
    a. https://xfer.spp.org/WPP/PSN/Ops/PSN_YYYYMMDD_PTPL.csv
3. Participants within a subregion without a central hub (i.e. SWEDE), may use the PTPL file to inform the Operations Program of connectivity between Participants within the subregion.
   Participants with connectivity between the two WRAP subregions can submit a PTPL file to inform the Operations Program about transfer limits between the subregions and/or connectivity to Participants within the other subregion.
   NOTE: An empty file (only including headers) should be submitted if there is no subregion exchange.
4. The PTPL file is an input file needed for the solver. This will need to be submitted no later than 6:35 AM (PPT) on Preschedule day, and for all days being scheduled.
5. Data Layout

Column	Column Value Type	Description of value
HOURENDING	Datetime offset	The hourly time interval for the record
TYPE	string (max 5)	(1B or 2A2C)
FROMPOINTNAME	string	The modeled point name "from"
TOPOINTNAME	string	The modeled point name "to"
TRANSFERCAPABILITYMW	Integer	MW capability for the given hour ending
RANK	Integer	Participant provided path priority. Rank paths based on how likely you would like the path to be utilized (1) to least likely (3). If all paths have the same priority, then set them all to the same value (1, 2, or 3).

Note: All Integers need to be in whole numbers

6. Example file name and layout:
   PSN_YYYYMMDD_PTPL.csv

```
HOURENDING, TYPE,FROMPOINTNAME,TOPOINTNAME,TRANSFERCAPABILITYMW,RANK
2022-01-29T22:00Z, 2A2C,FORECORNE345,JOJOBA500,100,1
2022-01-29T22:00Z, 2A2C,FORECORNE345,MEAD500,50,1
```

(v) Voluntary Holdback (VH) File

Per *BPM 204 Holdback Requirement* and *BPM 205 Energy Deployment*, participants may use the Voluntary Holdback (VH) file, given the desire to offer Voluntary Holdback MWs to the program. The intent of this submission is to indicate the MW value that will be voluntarily made available. The points at which the additional Voluntary Holdback would be made available would be found in the Point Limits File (type=1A) and/or Point To Points Limits File (type=1B).

VOLUNTARYMW – The amount of Voluntary Holdback that a Participant would like to make available. Voluntary Holdback is prioritized in the optimized allocation.

1. The data included in the Voluntary Holdback (VH) File will include the data described below
2. The data will be saved in the location shown below and using the file name structure, as follows:
    a. https://xfer.spp.org/WPP/PSN/Ops/PSN_YYYYMMDD_VH.csv
3. An empty file (only including headers) should be submitted if there is no subregion exchange.
4. Voluntary Holdback file is an input file needed for the solver. This will need to be submitted no later than 6:35 AM (PPT) on Preschedule day, and for all days being scheduled.
5. Data Layout

Column	Column Value Type	Description of value
HOURENDING	Datetime offset	The hourly time interval for the record
VOLUNTARYMW	Integer	Voluntary MW capability for the given hour ending

Note: All Integers need to be in Whole Numbers

6. Example file name and layout:
PSN_YYYYMMDD_VH.csv

```
HOURENDING, VOLUNTARYMW
2022-01-29T22:00Z, 100
```

(vi) Actual (AC) File

Per *BPM 202 Participant Sharing Calculation Inputs*, the data requested in the Actuals (AC) files is after-the-fact in nature - equivalent to the data submitted in the MD and OD files - reflecting the actual values of the data that was forecasted. The data collected from AC files is not a Sharing Calculation input.

1. The data will be saved in the location shown below and using the file name structure as follows:
    a. https://xfer.spp.org/WPP/PSN/Ops/PSN_YYYYMMDDHH_AC.csv
2. Participants will submit data for each operating hour no later than 168 hours after the end of the operating hour.
3. Data Layout

Column	Column Value Type	Description of value
HOURENDING	Datetime offset	The hourly time interval for the record
FORC_OUT	Integer	Actual Thermal/Hydro outages for the given hour ending
ROR	Integer	Actual Run of River Hydro Generation for the given hour ending
WIND	Integer	Actual Wind Generation for the given hour ending
SOLAR	Integer	Actual Solar Generation for the given hour ending

LOAD	Integer	Actual Load for the given hour ending
CR	Integer	Actual Contingency Reserve for the given hour ending

4. Example file name and layout:
    a. PSN_YYYYMMDDHH_AC.csv

```
HOURENDING,FORC_OUT,ROR,WIND,SOLAR,LOAD,CR
2022-01-29T22:00Z,0,0,0,0,0,0
2022-01-29T23:00Z,0,0,0,0,0,0
```

(vii) After-the-Fact Energy Deployment Information (ATFED) File

Per *BPM 205 Energy Deployment*, each Participant will be required to submit after-the-fact data for any Energy Deployment for the data points speficified further in detail in the BPM.

1. The data will be saved in the location shown below and using the file name structure also shown below
    a. https://xfer.spp.org/WPP/PSN/Ops/PSN_YYYYMMDDHH_ATFED.csv
2. Participants will submit data for each operating hour no later than 168 hours after the end of the operating hour.
3. Data Layout

Column	Column Value Type	Description of value
HOURENDING	Datetime offset	The hourly time interval for the record
FROM_CP	String	Who is deploying the Energy Deployment
TO_CP	String	Who is receiving the Energy Deployment
ED_MW	Integer	Actual Energy Deployment MWs
FROM_SUB	String	Subregion where the FROM_CP is located
POD	String	Point to which energy was delivered
TO_SUB	String	Subregion where the TO_CP is located
POR	String	Point at which energy was received

(viii)Trigger File

1. All data files will be accompanied by a "trigger file" that will be sent after the data file has been transferred.
2. Trigger file be named PSN_[File Type].txt.
    a. File type is MD, OD, AC, VH, PL, or PTPL.
3. The trigger file will include the expected file name and line count of the data file to be used as a sanity check.

4. The trigger file name will match the data file name, excluding the file extension.
5. Example file name and layout:
    a. PSN_2022010101_OD.txt

PN_2022010101_OD.csv,300

NOTE: After completion of your data file being uploaded to the SFTP site, particpants will need to provide the Trigger file to the SFTP site. The Trigger file is used by SPP to know when to begin importing and processing the data you provide. Once SPP has fully processed the Trigger file, SPP will remove it from the SFTP location. Users will need to access the Ops Program UI to check the file(s) status for possible errors that may have occurred when SPP processed the file

Timezone and Daylight Savings for Data Submissions:

All data submitted to the Ops Client is expected to be in Universal Time Coordinated (UTC).

(i) PDT to UTC timezone conversion

The following table is provided as an example to show a typical conversion from Pacific Daylight Time (PDT) to UTC.

Timezone	Hour Ending	Date Hour Beginning PPT	Date Hour Ending PPT	Data File Formatted HOURENDING UTC
PDT	01	4/27/2023 12:00:01 AM	4/27/2023 1:00:00 AM	2023-04-27T08:00Z
PDT	02	4/27/2023 1:00:01 AM	4/27/2023 2:00:00 AM	2023-04-27T09:00Z
PDT	03	4/27/2023 2:00:01 AM	4/27/2023 3:00:00 AM	2023-04-27T10:00Z
PDT	04	4/27/2023 3:00:01 AM	4/27/2023 4:00:00 AM	2023-04-27T11:00Z
PDT	05	4/27/2023 4:00:01 AM	4/27/2023 5:00:00 AM	2023-04-27T12:00Z
PDT	06	4/27/2023 5:00:01 AM	4/27/2023 6:00:00 AM	2023-04-27T13:00Z
PDT	07	4/27/2023 6:00:01 AM	4/27/2023 7:00:00 AM	2023-04-27T14:00Z
PDT	08	4/27/2023 7:00:01 AM	4/27/2023 8:00:00 AM	2023-04-27T15:00Z
PDT	09	4/27/2023 8:00:01 AM	4/27/2023 9:00:00 AM	2023-04-27T16:00Z
PDT	10	4/27/2023 9:00:01 AM	4/27/2023 10:00:00 AM	2023-04-27T17:00Z
PDT	11	4/27/2023 10:00:01 AM	4/27/2023 11:00:00 AM	2023-04-27T18:00Z
PDT	12	4/27/2023 11:00:01 AM	4/27/2023 12:00:00 PM	2023-04-27T19:00Z
PDT	13	4/27/2023 12:00:01 PM	4/27/2023 1:00:00 PM	2023-04-27T20:00Z
PDT	14	4/27/2023 1:00:01 PM	4/27/2023 2:00:00 PM	2023-04-27T21:00Z
PDT	15	4/27/2023 2:00:01 PM	4/27/2023 3:00:00 PM	2023-04-27T22:00Z
PDT	16	4/27/2023 3:00:01 PM	4/27/2023 4:00:00 PM	2023-04-27T23:00Z
PDT	17	4/27/2023 4:00:01 PM	4/27/2023 5:00:00 PM	2023-04-28T00:00Z
PDT	18	4/27/2023 5:00:01 PM	4/27/2023 6:00:00 PM	2023-04-28T01:00Z
PDT	19	4/27/2023 6:00:01 PM	4/27/2023 7:00:00 PM	2023-04-28T02:00Z
PDT	20	4/27/2023 7:00:01 PM	4/27/2023 8:00:00 PM	2023-04-28T03:00Z
PDT	21	4/27/2023 8:00:01 PM	4/27/2023 9:00:00 PM	2023-04-28T04:00Z
PDT	22	4/27/2023 9:00:01 PM	4/27/2023 10:00:00 PM	2023-04-28T05:00Z
PDT	23	4/27/2023 10:00:01 PM	4/27/2023 11:00:00 PM	2023-04-28T06:00Z
PDT	24	4/27/2023 11:00:01 PM	4/28/2023 12:00:00 AM	2023-04-28T07:00Z

(ii) PDT to PST time change

The following table is provided as an example to show a typical conversion to UTC during the Fall transition from Pacific Daylight Time (PDT) to Pacific Standard Time (PST).

Timezone	Hour Ending	Date Hour Beginning PPT	Date Hour Ending PPT	Data File Formatted HOURENDING UTC
PDT	1	11/5/2023 12:00:01 AM	11/5/2023 1:00:00 AM	2023-11-05T08:00Z
PDT	2	11/5/2023 1:00:01 AM	11/5/2023 1:00:00 AM	2023-11-05T09:00Z
PST	2	11/5/2023 1:00:01 AM	11/5/2023 2:00:00 AM	2023-11-05T10:00Z
PST	3	11/5/2023 2:00:01 AM	11/5/2023 3:00:00 AM	2023-11-05T11:00Z
PST	4	11/5/2023 3:00:01 AM	11/5/2023 4:00:00 AM	2023-11-05T12:00Z
PST	5	11/5/2023 4:00:01 AM	11/5/2023 5:00:00 AM	2023-11-05T13:00Z
PST	6	11/5/2023 5:00:01 AM	11/5/2023 6:00:00 AM	2023-11-05T14:00Z
PST	7	11/5/2023 6:00:01 AM	11/5/2023 7:00:00 AM	2023-11-05T15:00Z
PST	8	11/5/2023 7:00:01 AM	11/5/2023 8:00:00 AM	2023-11-05T16:00Z
PST	9	11/5/2023 8:00:01 AM	11/5/2023 9:00:00 AM	2023-11-05T17:00Z
PST	10	11/5/2023 9:00:01 AM	11/5/2023 10:00:00 AM	2023-11-05T18:00Z
PST	11	11/5/2023 10:00:01 AM	11/5/2023 11:00:00 AM	2023-11-05T19:00Z
PST	12	11/5/2023 11:00:01 AM	11/5/2023 12:00:00 PM	2023-11-05T20:00Z
PST	13	11/5/2023 12:00:01 PM	11/5/2023 1:00:00 PM	2023-11-05T21:00Z
PST	14	11/5/2023 1:00:01 PM	11/5/2023 2:00:00 PM	2023-11-05T22:00Z
PST	15	11/5/2023 2:00:01 PM	11/5/2023 3:00:00 PM	2023-11-05T23:00Z
PST	16	11/5/2023 3:00:01 PM	11/5/2023 4:00:00 PM	2023-11-06T00:00Z
PST	17	11/5/2023 4:00:01 PM	11/5/2023 5:00:00 PM	2023-11-06T01:00Z
PST	18	11/5/2023 5:00:01 PM	11/5/2023 6:00:00 PM	2023-11-06T02:00Z
PST	19	11/5/2023 6:00:01 PM	11/5/2023 7:00:00 PM	2023-11-06T03:00Z
PST	20	11/5/2023 7:00:01 PM	11/5/2023 8:00:00 PM	2023-11-06T04:00Z
PST	21	11/5/2023 8:00:01 PM	11/5/2023 9:00:00 PM	2023-11-06T05:00Z
PST	22	11/5/2023 9:00:01 PM	11/5/2023 10:00:00 PM	2023-11-06T06:00Z
PST	23	11/5/2023 10:00:01 PM	11/5/2023 11:00:00 PM	2023-11-06T07:00Z
PST	24	11/5/2023 11:00:01 PM	11/6/2023 12:00:00 AM	2023-11-06T08:00Z

(iii) PST to PDT time change

The following table is provided as an example to show a typical conversion to UTC during the Spring transition from Pacific Standard Time (PST) to Pacific Daylight Time (PDT).

Timezone	Hour Ending	Date Hour Beginning PPT	Date Hour Ending PPT	Data File Formatted HOURENDING UTC
PST	01	3/10/2024 12:00:01 AM	3/10/2024 1:00:00 AM	2024-03-10T09:00Z
~~Skipped~~	~~02~~			
PDT	03	3/10/2024 1:00:01 AM	3/10/2024 3:00:00 AM	2023-03-10T10:00Z
PDT	04	3/10/2024 3:00:01 AM	3/10/2024 4:00:00 AM	2023-03-10T11:00Z
PDT	05	3/10/2024 4:00:01 AM	3/10/2024 5:00:00 AM	2023-03-10T12:00Z
PDT	06	3/10/2024 5:00:01 AM	3/10/2024 6:00:00 AM	2023-03-10T13:00Z
PDT	07	3/10/2024 6:00:01 AM	3/10/2024 7:00:00 AM	2023-03-10T14:00Z
PDT	08	3/10/2024 7:00:01 AM	3/10/2024 8:00:00 AM	2023-03-10T15:00Z
PDT	09	3/10/2024 8:00:01 AM	3/10/2024 9:00:00 AM	2023-03-10T16:00Z
PDT	10	3/10/2024 9:00:01 AM	3/10/2024 10:00:00 AM	2023-03-10T17:00Z
PDT	11	3/10/2024 10:00:01 AM	3/10/2024 11:00:00 AM	2023-03-10T18:00Z
PDT	12	3/10/2024 11:00:01 AM	3/10/2024 12:00:00 PM	2023-03-10T19:00Z
PDT	13	3/10/2024 12:00:01 PM	3/10/2024 1:00:00 PM	2023-03-10T20:00Z
PDT	14	3/10/2024 1:00:01 PM	3/10/2024 2:00:00 PM	2023-03-10T21:00Z
PDT	15	3/10/2024 2:00:01 PM	3/10/2024 3:00:00 PM	2023-03-10T22:00Z
PDT	16	3/10/2024 3:00:01 PM	3/10/2024 4:00:00 PM	2023-03-10T23:00Z
PDT	17	3/10/2024 4:00:01 PM	3/10/2024 5:00:00 PM	2023-03-11T00:00Z
PDT	18	3/10/2024 5:00:01 PM	3/10/2024 6:00:00 PM	2023-03-11T01:00Z
PDT	19	3/10/2024 6:00:01 PM	3/10/2024 7:00:00 PM	2023-03-11T02:00Z
PDT	20	3/10/2024 7:00:01 PM	3/10/2024 8:00:00 PM	2023-03-11T03:00Z
PDT	21	3/10/2024 8:00:01 PM	3/10/2024 9:00:00 PM	2023-03-11T04:00Z
PDT	22	3/10/2024 9:00:01 PM	3/10/2024 10:00:00 PM	2023-03-11T05:00Z
PDT	23	3/10/2024 10:00:01 PM	3/10/2024 11:00:00 PM	2023-03-11T06:00Z
PDT	24	3/10/2024 11:00:01 PM	3/11/2024 12:00:00 AM	2023-03-11T07:00Z