

# Co-located Storage Resources (CSR) - DSS Updates for Settlements

---

Stacia Wilcox

Business Intelligence Task Force

July 20, 2021

# Agenda

- **Co-located Storage Resources (CSR)**
- **CSR Data Elements for Settlements**
- **DSS Universe Updates**
- **DSS Corporate Report Updates**
- **Next Steps**

# Co-located Storage Resources (CSR)

- **CSR allows for market participation by a wind or solar Intermittent Power Resource (IPR) and an Energy Storage Resource (ESR) that share a common point of injection/withdrawal**
- **Co-located Storage Resources (“CSR”) MST Definition:**
  - Wind or solar Intermittent Power Resource and an Energy Storage Resource that: (a) are both located behind a single Point of Injection (as defined in Section 1.16 of the OATT); (b) participate in the ISO Administered Markets as two distinct Generators; and (c) share a set of CSR Scheduling Limits. Resources that serve a Host Load may not participate in the ISO-Administered Markets as components of a CSR.

# Data Elements for Settlements

# CSR Data Elements for Settlements

- To provide visibility within DSS for the settlement of the ESR and IPR members of a CSR, data elements have been added to better align with the purpose of the settlement
- Specific to settlement purposes, these data elements fall within the following categories:
  - Identification of the CSR POI and the ESR and IPR as members of the CSR
  - Registration
  - Bid Data
  - Out of Merit
  - Telemetry
  - Hourly Revenue Meter Data
  - Settlement Calculations

# Identification of the CSR POI

- **CSR POI Gen Name**: Bill Code - 200. CSR POI Generator Name represents the full name of the Co-located Storage Resource Point of Injection.
- **CSR POI Gen PTID**: Bill Code - 201. Co-located Storage Resource Point of Injection Generator PTID is a number representing the unique point identifier for a CSR POI.

# Identification of the ESR and IPR Members of a CSR

- **CSR ESR Gen Name**: Bill Code - 200. CSR ESR Generator Name represents the full name of the Co-located Storage Resource Energy Storage Resource Generator.
- **CSR ESR Gen PTID**: Bill Code - 201. CSR ESR Generator PTID is a number representing the unique point identifier for the Co-located Storage Resource Energy Storage Resource Generator.
- **CSR IPR Gen Name**: Bill Code - 200. CSR IPR Generator Name represents the full name of the Co-located Storage Resource Intermittent Power Resource Generator.
- **CSR IPR Gen PTID**: Bill Code - 201. CSR IPR Generator PTID is a number representing the unique point identifier for a Co-located Storage Resource Intermittent Power Resource Generator.

# Registration Data

- **CSR POI Injection Sched Limit (MW):** a Co-located Storage Resource Injection scheduling limit that sets the maximum, combined Regulation Capacity, Operating Reserve and Energy injection schedules for, and the maximum net injection by a CSR's Generators.
- **CSR POI Withdrawal Sched Limit (MW):** a Co-located Storage Resource Withdrawal scheduling limit that sets the maximum, combined Regulation Capacity, Operating Reserve and Energy withdrawal schedules for, and the maximum net withdrawal by a CSR's Generators.



# Bid Data

- **CSR POI Bid Injection Sched Limit (MW):** the maximum, combined Regulation Capacity, Operating Reserve and Energy injection schedules for, and the maximum net injection by a CSR's Generators. If a generator is not a CSR member, it will reflect a null value
  - Hr DAM CSR POI Bid Injection Sched Limit (MW)
  - Hr RT CSR POI Bid Injection Sched Limit (MW)
  - Eff Hr RT CSR POI Bid Injection Sched Limit (MW)
- **CSR POI Withdrawal Sched Limit (MW):** the maximum, combined Regulation Capacity, Operating Reserve and Energy withdrawal schedules for, and the maximum net withdrawal by a CSR's Generators. If a generator is not a CSR member, it will reflect a null value
  - Hr DAM CSR POI Bid Withdrawal Sched Limit (MW)
  - Hr RT CSR POI Bid Withdrawal Sched Limit (MW)
  - Eff Hr RT CSR POI Bid Withdrawal Sched Limit (MW)

# Out of Merit Data

- **There will be three new Out of Merit Types for CSRs**
  - An OOM for a CSR POI Scheduling Limit is made to the CSR POI, but, for settlement purposes, will apply to the ESR and IPR members of the CSR. The CSR POI Scheduling Limit OOM may occur in the same hour as an OOM of a different type (MW, MWh) for the ESR or IPR member of the CSR.
- **CSR POI Scheduling Limit OOM Types include:**
  - CSR POI Scheduling Limit – OOM for ISO Reliability; ID = 90
  - CSR POI Scheduling Limit – OOM for TO Reliability; ID = 91
  - CSR POI Scheduling Limit – OOM for Generator Request; ID = 92
- **CSR POI Sched Limit OOM Type Description:** describes the reason for the CSR POI Scheduling Limit OOM
  - Hr CSR POI Sched Limit OOM Type Description
  - RTD CSR POI Sched Limit OOM Type Desc (the RTD object abbreviates the word “Description”)
- **CSR POI Sched Limit OOM Type ID:** identifies the numeric value for the CSR POI Scheduling Limit OOM
  - Hr CSR POI Sched Limit OOM Type ID
  - RTD CSR POI Sched Limit OOM Type ID

# Out of Merit Data - continued

- **CSR POI OOM Injection Sched Limit (MW):** the injection limit that sets the maximum, combined Regulation Capacity, Operating Reserve and Energy injection schedules for, and the maximum net injection by a CSR's Generators.
- **CSR POI OOM Withdrawal Sched Limit (MW):** the withdrawal limit that sets the maximum, combined Regulation Capacity, Operating Reserve and Energy withdrawal schedules for, and the maximum net withdrawal by a CSR's Generators.

# Telemetry and Revenue Meter Data

- **Hr CSR POI PTS Avg Actual Withdrawal Energy (MWh):** the number representing the MWh output *used for the Rebate for Retail Withdrawal* from the ESR generator integrated over the RTD interval and summed up to the hourly level. Data used is from the NYISO SCADA systems (PTS).
- **Hr CSR POI MA Reported Withdrawal Energy (MWh):** the number representing the MWh withdrawal value *used for the Rebate for Retail Withdrawal* as submitted by the meter authority for the CSR ESR generator for the hour.

# TSC/NTAC Calculation for the CSR POI Adjusted Total Response (MW)

- **RTD CSR POI Adjusted Total Response (MW):** a number representing the de-normalized value from the CSR POI to the ESR member Generator for the interval. It is calculated by allocating Hourly Gen Meter Energy (MWh) for the CSR POI provided by the Transmission Owners to each RTD interval based upon Average Actual (MW) (captured for NYISO SCADA and integrated by PTS) for the CSR POI. *Used for TSC/NTAC settlement of ESR member Generator of the CSR.* The information is used to determine NTAC settlements and for TSC reporting.

# DSS Universe Updates

# Updates to DSS Customer Settlement Universes

The following DSS Customer Settlement Universes and classes (folders) within the universes will be updated to allow for custom reporting:

- **Power Suppliers Universe**

- Generators
- The following settlement classes for the new CSR POI Scheduling Limit OOM  
Type ID and Description
  - BalMkt Energy Settlement, Real Time BPCG Settlement, DAMAP Settlement, Supplemental Event Credit
- Rebate for Retail Withdrawals
- Generators Bid Data
- *Generator OOM Data (this is a new class)*
- Report Prompts

# Updates to DSS Customer Settlement Universes - continued

- **PowerSupplrs AncServ Universe**
  - Generators
  - Regulation Service
  - Storage Withdrawal NTAC Charge
  - Generator Bid Data
  - Report Prompts



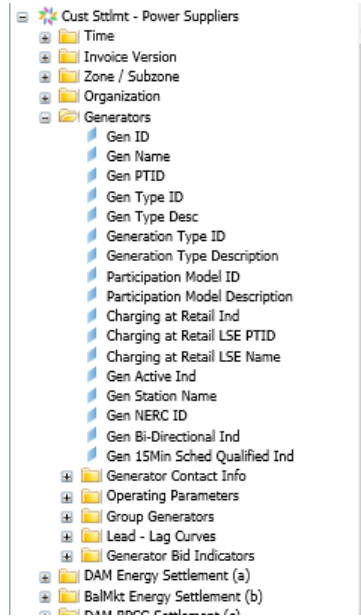
# Detailed Universe Updates

Conventions used in the detailed slides:

- Current universe structure shown on left side
- Additions or modifications to current structure shown on right side
- **Bolded object names represent new or modified object names**
  - Object name descriptions found on slides 6 - 13
- When necessary location of the object is identified in the parenthesis following the object name

# Power Suppliers - Generators

## ■ Generators Class Structure



```
--Generators
-- Group Generators

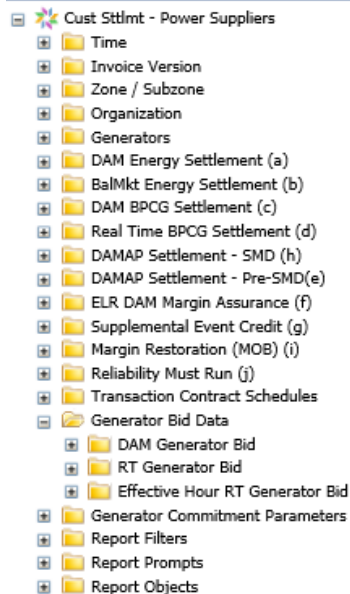
-- Co-Located Storage Resources
-- CSR POI Generator
-- CSR POI Gen PTID
-- CSR POI Gen Name
-- CSR POI Injection Sched Limit (MW)
-- CSR POI Withdrawal Sched Limit (MW)

-- CSR ESR Generator
-- CSR ESR Gen PTID
-- CSR ESR Gen Name

-- CSR IPR Generator
-- CSR IPR Gen PTID
-- CSR IPR Gen Name
```

# Power Suppliers – Generator Bid Data

## ■ Generator Bid Data Class Structure Bid Data



### -- Generator Bid Data

#### --DAM Generator Bid

##### --DAM Energy Bid

--Hr **DAM CSR POI Bid Injection Sched Limit (MW)** (below Hr DAM Beginning Energy Level (MWh))

-- Hr **DAM CSR POI Bid Withdrawal Sched Limit (MW)** (below Hr DAM CSR POI Bid Injection Sched Limit (MW))

#### --RT Generator Bid

##### --RT Energy Bid

--Hr **RT CSR POI Bid Injection Sched Limit (MW)** (below Hr RT Lower Storage Limit (MWh))

--Hr **RT CSR POI Bid Withdrawal Sched Limit (MW)** (below Hr RT CSR POI Bid Injection Sched Limit (MW))

#### --Effective Hour RT Generator Bid























##### --Effective Hour RT Energy Bid

--Eff Hr **RT CSR POI Bid Injection Sched Limit (MW)** (below Eff Hr RT Lower Storage Limit (MWh))

--Eff Hr **RT CSR POI Bid Withdrawal Sched Limit (MW)** (below Eff Hr RT CSR POI Bid Injection Sched Limit (MW))

# Power Suppliers – Generator OOM Data

## ■ Generator OOM Data Class Structure

- ☑  Cust SttInt - Power Suppliers
  - ☑  Time
  - ☑  Invoice Version
  - ☑  Zone / Subzone
  - ☑  Organization
  - ☑  Generators
  - ☑  DAM Energy Settlement (a)
  - ☑  BalMkt Energy Settlement (b)
  - ☑  DAM BPCG Settlement (c)
  - ☑  Real Time BPCG Settlement (d)
  - ☑  DAMAP Settlement - SMD (h)
  - ☑  DAMAP Settlement - Pre-SMD(e)
  - ☑  ELR DAM Margin Assurance (f)
  - ☑  Supplemental Event Credit (g)
  - ☑  Margin Restoration (MOB) (i)
  - ☑  Reliability Must Run (j)
  - ☑  Rebate for Retail Withdrawals (k)
  - ☑  Transaction Contract Schedules
  - ☑  Generator Bid Data
  - ☑  Generator Commitment Parameters
  - ☑  Report Filters
  - ☑  Report Prompts
  - ☑  Report Objects

-- Generator Bid Data

-- Generator OOM Data

--Operating Limit Out Of Merit

--Hr Out of Merit Type Desc

--Hr Out of Merit Type ID

--Storage Limit Out Of Merit

--Hr OOM Storage Limit Type Desc

--Hr OOM Storage Limit Type ID

--Scheduling Limit Out of Merit

--Hr CSR POI Sched Limit OOM Type Desc

--Hr CSR POI Sched Limit OOM Type ID

-- CSR POI OOM Injection Sched Limit (MW)

-- CSR POI OOM Withdrawal Sched Limit (MW)

# Power Suppliers – Specific Settlement Calculation Classes

## ■ Settlement Calculation Classes for CSR POI Sched Limit OOM Type

### Description and Type ID

- BalMkt Energy Settlement Class

```
--BalMkt Energy Settlement
--RTD
--Billing Determinants
  |--RTD CSR POI Sched Limit OOM Type Desc (below RTD OOM Storage Limit Type ID)
  |--RTD CSR POI Sched Limit OOM Type ID (below RTD CSR POI Sched Limit OOM
  Type Desc)
```

- Real Time BPCG Settlement Class

```
--Real Time BPCG Settlement
--Billing Determinants
  |--Hr CSR POI Sched Limit OOM Type ID (below Hr OOM Storage Limit Type Description)
  |--Hr CSR POI Sched Limit OOM Type Description (below Hr CSR POI Sched Limit OOM Type
  ID)
```

- DAMAP Settlement – SMD Class

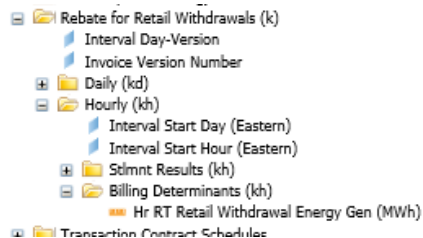
```
--DAMAP Settlement - SMD
--Billing Determinants
  |--RTD CSR POI Sched Limit OOM Type Desc (below RTD OOM Storage Limit Type ID)
  |--RTD CSR POI Sched Limit OOM Type ID (below RTD CSR POI Sched Limit OOM Type Desc)
```

- Supplemental Event Credit Class

```
--Supplemental Event Credit
--RTD
--Billing Determinants
  |--Hr CSR POI Sched Limit OOM Type ID (below Hr OOM Storage Limit Type
  Description)
  |--Hr CSR POI Sched Limit OOM Type Description (below Hr CSR POI Sched Limit
  OOM Type ID)
```

# Power Suppliers – Rebate for Retail Withdrawals

## ■ Rebate for Retail Withdrawals Class Structure



-- Rebate for Retail Withdrawals  
--Hourly

--Intermediate Calculations (this is a new class folder)

--HR RT Retail Withdrawal Energy Gen (MWh) (this object is being moved from the existing Billing Determinants class folder to this new Intermediate Calculations class folder)

--Billing Determinants

-- HR RT Retail Withdrawal Energy Gen (MWh) (remove this object from the Billing Determinants class folder and move it to the new Intermediate Calculations class folder above)

--Hr Gen MA Reported Withdrawal Energy (MWh) (this object is the Hr Gen MA Reported Withdrawal Energy MWh value for the ESR member Generator of the CSR)

--Hr Gen ISO PTS Avg Actual Withdrawal Energy (MWh) (this object is the Hr Gen ISO PTS Avg Actual Withdrawal Energy MWh value for the ESR member Generator of the CSR)

--Hr CSR POI MA Reported Withdrawal Energy (MWh) (this object is the Hr Gen MA Reported Withdrawal Energy MWh as a de-normalized value from the CSR POI to the ESR member Generator)

--Hr CSR POI PTS Avg Actual Withdrawal Energy (MWh) (this object is the Hr Gen ISO PTS Avg Actual Withdrawal Energy MWh as a de-normalized value from the CSR POI to the ESR member Generator)

# Power Suppliers – Report Prompts

## ■ Report Prompts Class Structure

- Generator Commitment Parameters
- Report Filters
- Report Prompts
  - Prompt for Org Name
  - Prompt for Gen Name
  - Prompt for Invoice Version Number
  - Prompt for Monthly Invoice Version Number
  - Prompt for Interval Start Day
  - Prompt for Interval Start Day Range
  - Prompt for List of Interval Day-Versions
  - Prompt for Flexible Invoice Period
- Report Objects

-- Report Prompts  
--Prompt for CSR POI Name (below Prompt for Gen Name)

# PowerSupplrs AncServ - Generators

## ■ Generators Class Structure

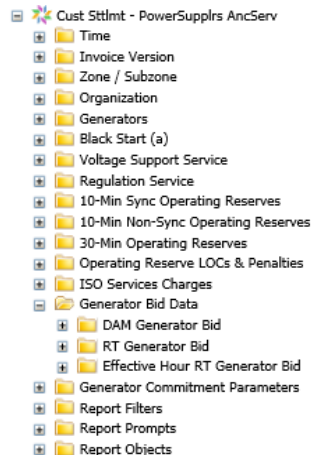
- [-] 🌸 Cust Sttlmt - PowerSupplrs AncServ
  - [+] 📁 Time
  - [+] 📁 Invoice Version
  - [+] 📁 Zone / Subzone
  - [+] 📁 Organization
  - [+] 📁 Generators
    - 📄 Gen Id
    - 📄 Gen Name
    - 📄 Gen PTID
    - 📄 Gen Type ID
    - 📄 Gen Type Desc
    - 📄 Generation Type ID
    - 📄 Generation Type Description
    - 📄 Participation Model ID
    - 📄 Participation Model Description
    - 📄 Gen Active Ind
    - 📄 Gen Station Name
    - 📄 Gen NERC ID
    - 📄 Gen Bi-Directional Ind
    - 📄 GenGrp Category Desc
    - 📄 GenGrp Ind
    - 📄 Gen 15Min Sched Qualified Ind
  - [+] 📁 Generator Contact Info
  - [+] 📁 Operating Parameters
  - [+] 📁 Lead - Lag Curves
  - [+] 📁 Generator Bid Indicators

```
--Generators
-- Operating Parameters
-- Co-Located Storage Resources
  -- CSR POI Generator
    -- CSR POI Gen PTID
    -- CSR POI Gen Name
    -- CSR POI Injection Sched Limit (MW)
    -- CSR POI Withdrawal Sched Limit (MW)
  -- CSR ESR Generator
    -- CSR ESR Gen PTID
    -- CSR ESR Gen Name
  -- CSR IPR Generator
    -- CSR IPR Gen PTID
    -- CSR IPR Gen Name
```



# PowerSupplrs AncServ – Generator Bid Data

## ■ Generator Bid Data Class Structure



```
-- Generator Bid Data
--DAM Generator Bid
--DAM Energy Bid
--Hr DAM CSR POI Bid Injection Sched Limit (MW) (below Hr DAM Beginning Energy
Level (MWh))
-- Hr DAM CSR POI Bid Withdrawal Sched Limit (MW) (below Hr DAM CSR POI Bid
Injection Sched Limit (MW))
--RT Generator Bid
--RT Energy Bid
--Hr RT CSR POI Bid Injection Sched Limit (MW) (below Hr RT Normal Upper Op Limit
(MW))
--Hr RT CSR POI Bid Withdrawal Sched Limit (MW) (below Hr RT CSR POI Bid
Injection Sched Limit (MW))
--Effective Hour RT Generator Bid
--Effective Hour RT Energy Bid
--Eff Hr RT CSR POI Bid Injection Sched Limit (MW) (below Eff Hr RT Lower Storage
Limit (MWh))
--Eff Hr CSR POI Bid Withdrawal Sched Limit (MW) (below Eff Hr RT CSR POI Bid
Injection Sched Limit (MW))
```

# PowerSupplrs AncServ – Regulation Service

## ■ Regulation Service Class Structure for Regulation Penalty

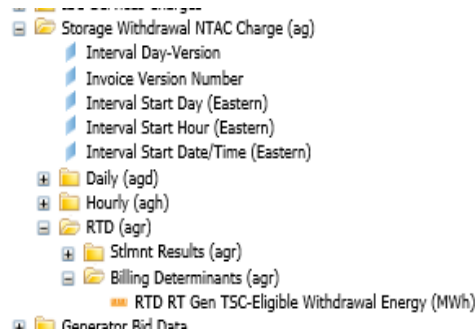
- regulation-replacement-v1
- Regulation Penalty (g)
  - Daily (gd)
  - Hourly (gh)
  - RTD (gs)
    - Stmnt Results (gs)
    - Intermediate Calculations (gs)
    - Billing Determinants (gs)
      - RTD RT Reg Capacity Price (\$/MW)
      - Hr HAM Reg Price (\$/MW)
      - Hr DAM Reg Capacity Price (\$/MW)
      - RTD Reg Negative Injection Error (MW)
      - RTD Reg Negative Withdrawal Error (MW)
      - RTD Reg Positive Error (MW)
      - RTD Max Gen Flag
      - Reserve Pickup Ind
      - RTD Interval Seconds
      - RTD On Control Ind
      - RTD In Service Ind
      - RTD RT Sched Reg Capacity (MW)
      - RTD Basepoint (MW)
      - RTD Gen Adjusted Energy (MW)
      - RTD Out of Merit Type Desc
      - RTD Out of Merit Type ID
      - RTD OOM Storage Limit Type Desc
      - RTD OOM Storage Limit Type ID
      - RTD PURPA Units Class Type
      - RTD VSS Flag
      - RTD Limit Wind Output Ind
      - RTD Gen Upper Op Limit (MW)
      - RTD PLU (MW)
      - RTD PLO (MW)
      - Eff Hr RT Gen Bid: Min Gen - LOL (MW)
      - RTD Gen Avg Actual Energy (MW)
      - RTD AGC Basepoint (MW)
    - Other Related Info (gs)

--Regulation Penalty  
--RTD

--Billing Determinants  
--RTD CSR POI Sched Limit OOM Type Desc (below RTD OOM Storage Limit Type ID)  
--RTD CSR POI Sched Limit OOM Type ID (below RTD CSR POI Sched Limit OOM Type Desc)

# PowerSupplrs AncServ– Storage Withdrawal NTAC Charge

## ■ Storage Withdrawal NTAC Charge Class Structure



-- Storage Withdrawal NTAC Charge  
--RTD

--Intermediate Calculations (this is a new class folder)

--RTD RT Gen TSC-Eligible Withdrawal Energy (MWh) (this object is being moved from the existing Billing Determinants class folder to this new Intermediate Calculations class folder)

--Billing Determinants













-- RTD-RT-Gen-TSC-Eligible-Withdrawal-Energy-(MWh) (remove this object from the Billing Determinants class folder and move it to the new Intermediate Calculations class folder above)

--RTD Gen Adjusted Energy (MW) (this object is the RTD Gen Adjusted MW value for the ESR member Generator of the CSR)

--RTD CSR POI Adjusted Total Response (MW) (this object is the RTD Gen Adjusted MW as a de-normalized value from the CSR POI to the ESR member Generator)

# Power Suppliers – Report Prompts

## ■ Report Prompts Class Structure

- ⊖  Generator Commitment Parameters
- ⊖  Report Filters
- ⊖  Report Prompts
  - ⌵  Prompt for Org Name
  - ⌵  Prompt for Gen Name
  - ⌵  Prompt for Invoice Version Number
  - ⌵  Prompt for Monthly Invoice Version Number
  - ⌵  Prompt for Interval Start Day
  - ⌵  Prompt for Interval Start Day Range
  - ⌵  Prompt for List of Interval Day-Versions
  - ⌵  Prompt for Flexible Invoice Period
- ⊖  Report Objects

-- Report Prompts  
--Prompt for CSR POI Name (below Prompt for Gen Name)

# DSS Corporate Report Updates

# Updates to DSS Corporate Reports

Within the Customer Settlements Documents folder and subfolders as represented below:

- **Power Supplier Settlement Documents/Power Supplier - Energy**
  - Settlement Details – Power Supplier – Balancing Energy
  - *Settlement Details – Power Supplier – CSR Meter Allocation* (this is a new report)
- **Power Supplier Settlement Documents/Power Supplier – DAM Margin Assurance**
  - Settlement Details – Power Supplier – DAM Margin Assurance – (Results)

# Updates to DSS Corporate Reports - continued

- **Power Supplier – Energy/Power Supplier – RT BPCG**
  - Settlement Details – Power Supplier – RT BPCG (Net Energy Cost)
- **Power Supplier – Energy/Power Supplier – Supplemental Event**
  - Settlement Details – Power Supplier – Supplemental Event Credit (Net Energy Cost)
- **Power Supplier – Energy/Power Supplier – Ancillary**
  - Settlement Details – Power Supplier – Regulation Penalty

# CSR Meter Allocation Report (new report)

## ■ Report Description

- Purpose is to support the reconciliation of the CSR meter allocation and adjustment process. The report will provide Hourly and RTD MW level data for the CSR POI and its two associated members (an ESR and an IPR)

## ■ Report Name

- Settlement Details – Power Supplier – CSR Meter Allocation

## ■ Report Location

- Customer Settlement Documents -> Power Supplier Settlement Documents -> Power Supplier – Energy -> Settlement Details – Power Supplier – CSR Meter Allocation



# CSR Meter Allocation Report – Hourly Tab

- **Section 1 – CSR POI and Member Generators**
  - Provides identifying information for the CSR POI, ESR and IPR
- **Section 2 – CSR POI Telemetry and Hourly Meter Data**
  - Provides Injection, Withdrawal and Net Telemetry Data for the CSR POI
  - Provides Injection and Withdrawal Hourly Meter Data for the CSR POI
- **Section 3 – ESR Telemetry and Allocated Hourly Meter Data**
  - Provides Injection and Withdrawal Telemetry Data and Allocated Hourly Meter Data for the ESR
- **Section 4 - IPR Telemetry and Allocated Hourly Meter Data**
  - Provides Injection Telemetry Data and Allocated Hourly Meter Data for the IPR

# CSR Meter Allocation Report – RTD Tab

- **Section 1 – CSR POI and Member Generators**
  - Provides identifying information for the CSR POI, ESR and IPR
- **Section 2 – CSR POI Telemetry Data**
  - Provides Injection, Withdrawal and Net Telemetry Data for the CSR POI
- **Section 3 – ESR Telemetry Data**
  - Provides Injection and Withdrawal Telemetry Data and Adjusted Injection and Withdrawal Telemetry Data for the ESR
- **Section 4 - IPR Telemetry Data**
  - Provides Injection Telemetry Data and Adjusted Injection Telemetry Data for the IPR

# Additional Corporate Report Updates

- **CSR POI Sched Limit OOM Type Description and Type ID were added to the impacted reports for the applicable Settlement Calculations**
- **Impacted Settlements and Reports**
  - Balancing Energy
  - DAMAP
  - Real Time BPCG
  - Supplemental Even Credit
  - Regulation Penalty
- **Report names detailed on slides 30 & 31**

# Next Steps

- Q4 2021 Deployment

# Our mission, in collaboration with our stakeholders, is to serve the public interest and provide benefit to consumers by:

- Maintaining and enhancing regional reliability
- Operating open, fair and competitive wholesale electricity markets
- Planning the power system for the future
- Providing factual information to policymakers, stakeholders and investors in the power system

