New York ISO
Independent System Operator

Distributed Energy Resources (DER) – Billing Code and DSS Updates for Settlements

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Agenda

- Distributed Energy Resources (DER)
- New Settlement Billing Codes for DER
- New Data Elements for Settlement Calculations
- DSS Universe Updates for Settlements
- DSS Corporate Report Updates for Settlements
- Next Steps

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Distributed Energy Resources (DER)

- **The DER participation model enhances opportunities for participation in the NYISO-administered wholesale markets**
- **Distributed Energy Resource ("DER") MST Definition:**
  - (i) a facility comprising two or more Resource types behind a single point of interconnection with an Injection Limit of 20 MW or less; or (ii) a Demand Side Resource; or (iii) a Generator with an Injection Limit of 20 MW or less, that is electrically located in the NYCA.

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DER Market Participation

- **The DER participation model will only be available to Aggregations**
  - An Aggregation consists of two or more individual resources
  - However, Demand Side Resources and individual facilities that can reduce load and inject energy (*i.e.*, transition from being Load to Supply without an infeasible operating range) will be permitted to individually use the DER participation model as a single-resource Aggregation
- **Individual facilities in an Aggregation will participate under the market rules for either:**
  - A DER Aggregation (when there are multiple Resource types in the Aggregation), or
  - The specific Resource type (when there is a single Resource type in the Aggregation)
    - Single Resource types may be: Generator, ESR, LESR, Wind, Solar, Landfill Gas

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New Settlement Billing Codes for DER

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Impacts to Settlements

- Payment to the Generator for DER Demand Reduction Energy
- Charge to the LSE for Generator DER Demand Reduction Energy
- MWh of DER Demand Reduction Energy

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New Billing Codes

- **New Billing Codes will result in updates to the following files/reports:**
  - **CSI** - Daily Reconciliation Dollar Report
  - **CSI** - Daily Reconciliation MW Report
  - **CSI** - Invoice Detail Report
  - **ADD** - Daily Customer Statement
  - **ADD** - Hourly Customer Statement
  - **DSS** - Corporate Reports

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Updates to Daily Reconciliation Reports

- **Daily Reconciliation Dollar Report**
  - 205100 DER Demand Reduction Expenditure
    - Located below SCR rows in Section 14: Balancing LBMP Expenditure
  - 85101 DER Demand Reduction Revenue
    - Located above Section 5: OATT Schedule 1: Total NYCA Customer Revenue - Physicals
- **Daily Reconciliation MW Report**
  - 20500 DER Demand Reduction Energy MWH
    - Located above Section 42: Balancing LBMP Energy Market MWh

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Updates to Invoice Detail Report

- **Power Supplier – Energy (MWh) section**
  - 2050 DER Demand Reduction Energy
- **Power Supplier – Energy Settlement ($) section**
  - 2051 DER Demand Reduction Payment
- **Transmission Customer – OATT Rate Schedule 1 Charges section**
  - 851 DER Demand Reduction Revenue

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Updates to Daily Customer Statement File

- **Power Suppliers section**
  - 2050 DER Demand Reduction MWh
  - 2051 DER Demand Reduction Payment $
- **Ancillary Services section**
  - 851 DER Demand Reduction Charge $

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Updates to Hourly Customer Statement File

- **Power Suppliers section**
  - 273 DER Demand Reduction MWh
  - 274 DER Demand Reduction Payment $
- **Ancillary Services section**
  - 651 DER Demand Reduction Charge $

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New Data Elements for Settlement Calculations

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DER Data Elements for Settlements

- **To provide visibility within DSS for the settlement of an Aggregation, 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 Aggregation by Aggregation Type
  - Aggregation Pricing Point and Transmission Node information
  - Telemetry
  - Hourly Revenue Meter Data
  - Settlement Calculations

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Impacted Settlement Calculations

- Generator Adjusted MW
- Balancing Market Energy
- RT BPCG
- DAMAP
- VSS LOC
- Supplemental Event Credit
- Regulation Penalty
- Regulation Revenue Adjustment
- LSE Demand Reduction Charge

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Identification of an Aggregation

- **Aggregation Type**: Aggregation Type will identify what type of aggregation. The values shall be one of the following: DER, Generator, ESR, LESR, Wind, Solar, or Landfill Gas. If a generator is not part of an aggregation the field will be Null.

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Aggregation Pricing Point and Transmission Node Information

- **Pricing Point Type**: Pricing Point Type will identify the type of pricing point. Standalone Generator or Transmission Node.
- **Pricing PTID**: Pricing PTID displays the point identifier of the Standalone Generator or the Transmission Node. The Pricing PTID will equal the Generator's existing PTID. For an Aggregation, the Pricing PTID will equal the Transmission Node's PTID.
- **Transmission Node Name**: Transmission Node Name represents the full name of the transmission node. For Standalone Generators this value will be Null.
- **Transmission Node PTID**: Transmission Node PTID is a number representing the unique point identifier for a transmission node. For Standalone Generators this value will be Null.

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Telemetry and Revenue Meter Data

- **RTD Gen Avg Actual Demand Reduction Energy (MW):** RTD Generator Average Actual Demand Reduction Energy (MW) is the number representing the amount of actual demand reduction for a given generator, for a given RTD interval.
- **Hr Gen MA Reported Demand Reduction Energy (MWh):** Hourly Generator MA Reported Demand Reduction Energy (MWh) is the demand reduction reported by a meter authority for a given generator, for a given hour.
- **Hr Gen ISO PTS Avg Actual Demand Reduction Energy (MWh):** Hourly Generator ISO PTS Average Actual Demand Reduction Energy (MWh) is a number representing the total amount of actual demand reduction integrated over the RTD interval and summed up to the hourly level, for the given demand response bus for a given hour.

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Generator Adjusted MW

- The NYISO calculated output level of a generator used for settlement calculation at the RTD level. With the addition of DER Aggregations, Demand Reduction is being added to this calculation.
- For DER Aggregations, injections, withdrawals, and demand reductions are scaled independently of each other*. Then injections and withdrawals are netted to determine the Gen Adjusted MW value for each RTD interval. This is then combined with demand reductions to calculate the total response.

** Similar to treatment of existing generators; i.e.: ESRs and CSRs*

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Generator Adjusted MW continued

- **RTD Gen Adjusted Demand Reduction Energy (MW):** RTD Gen Adjusted Demand Reduction Energy (MW) is a number representing the demand reduction of the generator at the RTD level based on telemetry and Hr Gen MA Reported Demand Reduction Energy on an RTD level. Calculated by multiplying the RTD Gen Avg Actual Demand Reduction Energy (MW) by the ratio of the Hr Gen MA Reported Demand Reduction Energy (MWh) to Hr Gen ISO PTS Avg Actual Demand Reduction Energy (MWh).
- **RTD Gen Adjusted Total Response (MW):** RTD Gen Adjusted Total Response (MW) is the adjusted net MWs of injection, withdrawal, and demand reduction following the shaping of the hourly revenue-quality data using the RTD telemetry for a given RTD interval.
- **RTD Gen Avg Actual Total Response (MW):** RTD Gen Avg Actual Total Response (MW) is the combined response of injection and demand reduction, netted with any withdrawals, as provided by telemetry data and averaged over a given RTD interval.

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Balancing Market Energy

- **Day BalMkt Demand Reduction Stlmnt: Gen ($):** Day Balancing Market Demand Reduction Settlement: Gen ($) is a number representing the demand reduction settlement for a generator, for a given day.
- **Day Gen BalMkt Demand Reduction Energy (MWh):** Day Generator Balancing Market Demand Reduction Energy (MWh) is a number representing the total amount of demand reduction in the balancing market, for a given day.
- **Hr BalMkt Demand Reduction Stlmnt: Gen ($):** Hourly Balancing Market Demand Reduction Settlement: Gen ($) is a number representing the demand reduction settlement for a generator, for a given hour.
- **Hr Gen ISO PTS Avg Actual Demand Reduction Energy (MWh):** from Telemetry slide 17
- **Hr Gen BalMkt Demand Reduction Energy (MWh):** Hourly Generator Balancing Market Demand Reduction Energy (MWh) is a number representing the total amount of demand reduction in the balancing market, for a given hour.

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Balancing Market Energy

- **RTD BalMkt Demand Reduction Stlmnt: Gen ($):** RTD Balancing Market Demand Reduction Settlement: Gen ($) is a number representing the demand reduction settlement for a generator, for a given RTD interval.
- **RTD Gen BalMkt Demand Reduction Energy (MWh):** RTD Generator Balancing Market Demand Reduction Energy (MW) is a number representing the total amount of demand reduction that is settled in the balancing market for a given generator for a given RTD interval.
- **RTD Gen Demand Reduction Basis (MW):** RTD Generator Demand Reduction Basis (MW) is a number representing the value used as the basis for the determination of the amount of demand reduction energy (MW), for the given RTD-interval.
- **Monthly Net Benefit Test Threshold ($/MWh):** Monthly Net Benefit Test Threshold ($/MWh) is a numerical value identifying the threshold price per MWh for compensation of demand side resources.

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Balancing Market Energy

- **RTD Gen Adjusted Demand Reduction Energy (MW):** from Gen Adj MW slide 19
- **RTD Gen Adjusted Total Response (MW):** from Gen Adj MW slide 19
- **Hr Gen MA Reported Demand Reduction Energy (MWh):** from Telemetry and Revenue Meter Data slide 17
- **RTD Gen Avg Actual Demand Reduction Energy (MW):** from Telemetry and Revenue Meter Data slide 17
- **RTD Gen Avg Actual Total Response (MW):** from Gen Adj slide 19

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RT BPCG

- **RTD Gen BalMkt Default Total Response Basis (MW):** RTD Gen BalMkt Default Total Response Basis (MW) represents the minimum of the RTD Generator Adjusted Total Response (MW) or the RTD RT Generator Balancing Market Default Cap (MW) over a given RTD interval.
- **RTD Gen Adjusted Total Response (MW):** from Gen Adj MW slide 19

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Other Generator Settlement Calculations impacted by updates to Gen Adjusted MW

- **RTD Gen Adjusted Total Response (MW):** from Gen Adj MW slide 19
  - DAMAP
  - Supplemental Event Credit
  - VSS LOC
  - Regulation Revenue Adjustment
  - Regulation Penalty
- **RTD Gen Avg Actual Total Response (MW):** from Gen Adj MW slide 19
  - Regulation Penalty

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LSE Demand Reduction Charge

- **Day DER Demand Reduction Stlmnt: LSE ($)**: Day DER Demand Reduction Settlement: LSE ($) is a number representing the DER demand reduction settlement allocation for a given load serving entity, for a given day.
- **Hr DER Demand Reduction Stlmnt: LSE ($)**: Hourly DER Demand Reduction Settlement: LSE ($) is a number representing the DER demand reduction settlement allocation for a given load serving entity, for a given hour.

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DSS Universe Updates for Settlements

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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
  - BalMkt Energy Settlement
  - Real Time BPCG Settlement
  - DAMAP
  - Supplemental Event Credit

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Updates to DSS Customer Settlement Universes - continued

- **PowerSupplrs AncServ Universe**
  - Generators
  - Voltage Support Services
    - VSS LOC
  - Regulation Service
    - Regulation Penalty
    - Regulation Revenue Adj

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Updates to DSS Customer Settlement Universes - continued

- **Loads AncServ Universe**
  - Settlement Allocation
    - DER Demand Reduction
      - *This is a new class folder below the SCR class folder*

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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 15 - 25
- When necessary, location of the object is identified in the parenthesis following the object name

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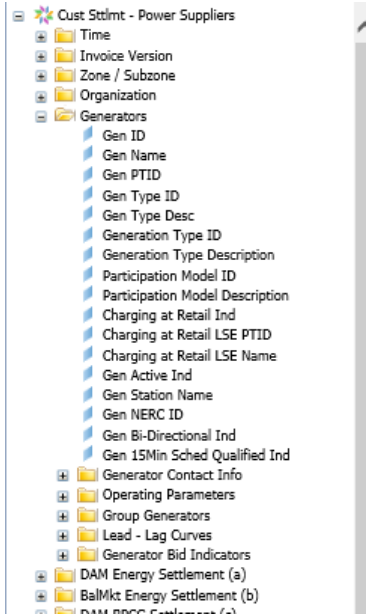
Power Suppliers - Generators

- Generators Class Structure



-- Generators

-- **Pricing Point Type** (below Generation Type Description)
-- **Pricing PTID** (below **Pricing Point Type**)
-- **Transmission Node PTID** (below **Pricing PTID**)
-- **Transmission Node Name** (below **Transmission Node PTID**)
-- **Aggregation Type** (below **Transmission Node Name**)

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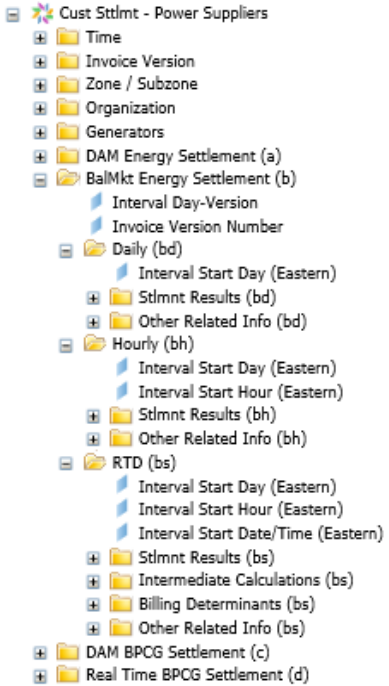
Power Suppliers – BalMkt Energy Settlement

- BalMkt Energy Settlement Class Structure – Daily and Hourly Classes



-- BalMkt Energy Settlement
- -- Daily
  - --Stlmnt Results
    - -- **Day BalMkt Demand Reduction Stlmnt: Gen ($)** (below Day Total BalMkt Stlmnt: Gen ($))
  - --Other Related Info
    - -- **Day Gen BalMkt Demand Reduction Energy (MWh)** (below Day Gen BalMkt Energy (MW))
- --Hourly
  - --Stlmnt Results
    - -- **Hr BalMkt Demand Reduction Stlmnt: Gen ($)** (below Hr Total BalMkt Stlmnt: Gen ($))
  - --Other Related Info
    - --**Hr Gen ISO PTS Avg Actual Demand Reduction Energy (MWh)** (below Hr Gen ISO PTS Avg Actual Withdrawal Energy (MWh))
    - -- **Hr Gen BalMkt Demand Reduction Energy (MWh)** (below Hr Gen BalMkt Energy (MW))

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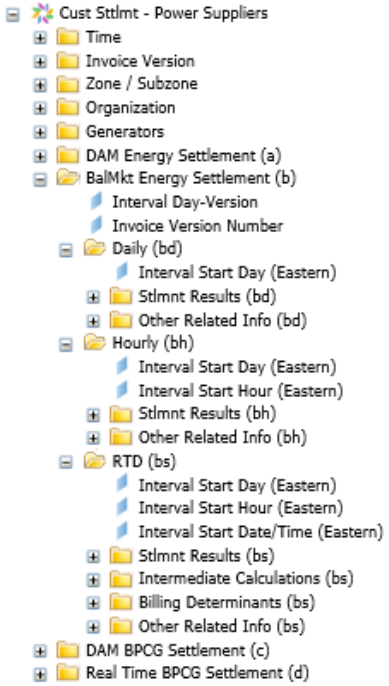
Power Suppliers – BalMkt Energy Settlement - continued

- BalMkt Energy Settlement Class Structure – RTD Class



--RTD

--Stlmnt Results

-- **RTD BalMkt Demand Reduction Stlmnt: Gen ($)** (below RTD Total BalMkt Stlmnt: Gen ($))

--Intermediate Calculations

-- **RTD BalMkt Demand Reduction Energy (MWh)** (below RTD Gen BalMkt Energy (MWh))

--**RTD Gen Demand Reduction Basis (MW)** (below RTD Gen BalMKt Basis (MW)

--Billing Determinants

--**Monthly Net Benefit Test Threshold ($/MWh)** (below RTD RT Total Price: Gen ($/MW))

-- **RTD Gen Adjusted Demand Reduction Energy (MW)** (below RTD Gen Adjusted Withdrawal Energy (MW))

-- **RTD Gen Adjusted Total Response (MW)** (below **RTD Gen Adjusted Demand Reduction Energy (MW)**)

-- **Hr Gen MA Reported Demand Reduction Energy (MWh)** (below Hr Gen MA Reported Withdrawal Energy (MWh))

-- **RTD Gen Avg Actual Demand Reduction Energy (MW)** (below RTD Gen Avg Actual Withdrawal Energy (MW))

-- **RTD Gen Avg Actual Total Response (MW)** (below **RTD Gen Avg Actual Demand Reduction Energy (MW)**)

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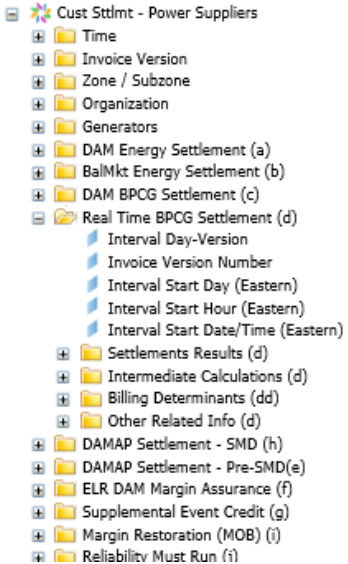
Power Suppliers – Real Time BPCG Settlement

- Real Time BPCG Settlement Class Structure



-- Real Time BPCG Settlement

--Intermediate Calculations

-- **RTD Gen BalMkt Default Total Response Basis (MW))** (below RTD Gen RT BPCG Basis (MW))

--Billing Determinants

-- **RTD Gen Adjusted Total Response (MW)** (below RTD Gen Adjusted Energy (MW))

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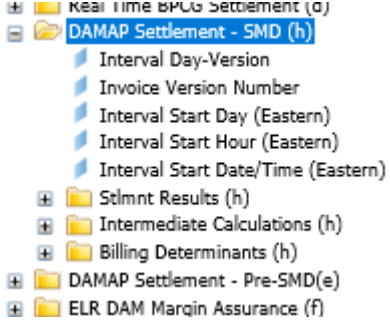
Power Suppliers – DAMAP Settlement

- DAMAP Settlement Class Structure



-- DAMAP Settlement - SMD
--Billing Determinants
-- **RTD Gen Adjusted Total Response (MW)** (below RTD Gen Adjusted Energy (MW))

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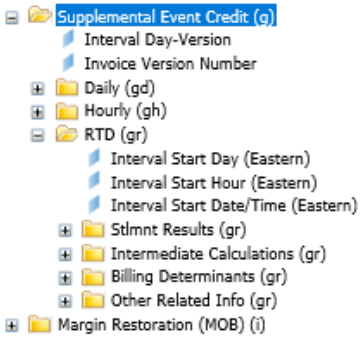
Power Suppliers – Supplemental Event Credit

- Supplemental Event Credit Class Structure



-- Supplemental Event Credit
-- RTD
--Billing Determinants
-- **RTD Gen Adjusted Total Response (MW)** (below RTD Gen Adjusted Energy (MW))

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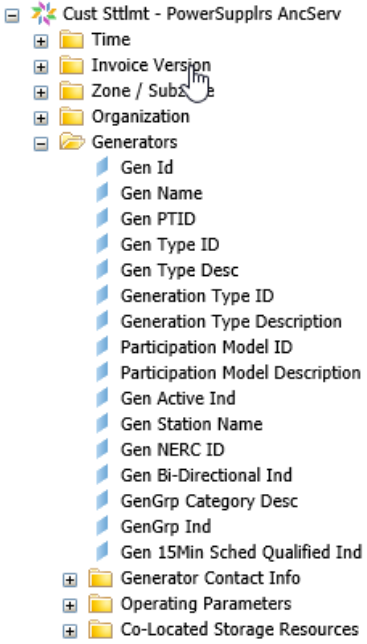
PowerSupplrs AncServ - Generators

- Generators Class Structure



-- Generators

-- **Pricing Point Type** (below Generation Type Description)
-- **Pricing PTID** (below **Pricing Point Type**)
-- **Transmission Node PTID** (below **Pricing PTID**)
-- **Transmission Node Name** (below **Transmission Node PTID**)
-- **Aggregation Type** (below **Transmission Node Name)**

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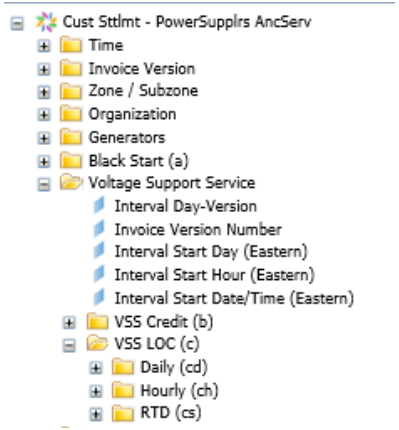
PowerSupplrs AncServ – Voltage Support Service Class

- Voltage Support Service Class Structure – VSS LOC Class



-- Voltage Support Service
-- VSS LOC
--RTD
--Billing Determinants
-- **RTD Gen Adjusted Total Response (MW)** (below RTD Gen Adjusted Energy (MW))

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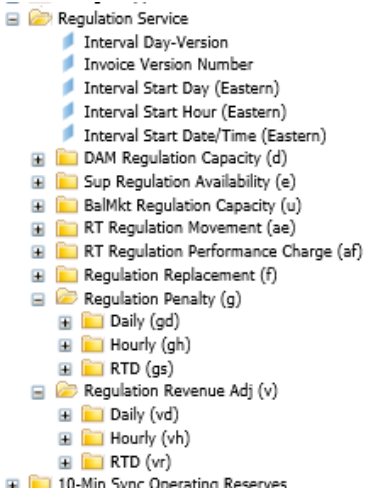
PowerSupplrs AncServ – Regulation Service Class

- Regulation Service Class Structure – Regulation Penalty and Regulation Revenue Adj Classes



-- Regulation Service
  -- Regulation Penalty
    --RTD
      --Billing Determinants
        -- **RTD Gen Adjusted Total Response (MW)** (below RTD Gen Adjusted Energy (MW))
        --**RTD Gen Avg Actual Total Response (MW)** (below RTD Gen Avg Actual Energy (MW)

  -- Regulation Revenue Adj
    --RTD
      --Billing Determinants
        -- **RTD Gen Adjusted Total Response (MW)** (below RTD Gen Adjusted Energy (MW))

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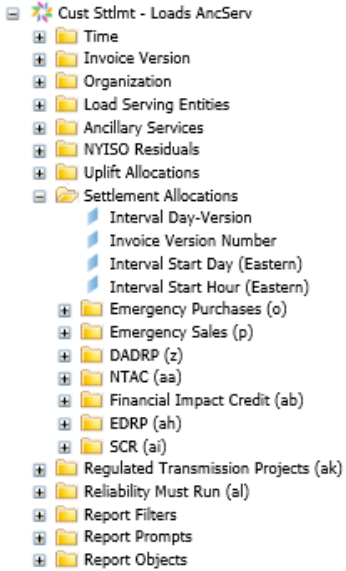
Loads AncServ – Settlement Allocations

- Settlement Allocation Class Structure



-- Settlement Allocations
-- SCR

-- **DER Demand Reduction** (add new class folder below SCR class folder)
--**Daily**
-- **Day DER Demand Reduction Stlmnt: LSE ($)**
--**Hourly**
-- **Hr DER Demand Reduction Stlmnt: LSE ($)**

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DSS Corporate Report Updates for Settlements

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Updates to DSS Corporate Reports

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

- **Settlement Summary Documents**
  - FIP to Initial Invoice Report
  - Monthly Invoice Version History Report
- **Settlement Summary Documents/Settlement Results**
  - Settlement Results Report (LSE Summary)
  - Settlement Results Report (PS Summary)
  - Settlement Results Report (Summary)
- **Settlement Summary Documents/Settlement Version Comparison**
  - Monthly Settlement Version Comparison Report (LSE Summary)
  - Monthly Settlement Version Comparison Report (PS Summary)
  - Monthly Settlement Version Comparison Report (Summary)

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Updates to DSS Corporate Reports - continued

- **Power Supplier Settlement Documents/Power Supplier - Energy**
  - Settlement Details – Power Supplier – Balancing Energy – *new tab "Demand Reduction" to report Demand Reduction settlement calculation*
- **Power Supplier Settlement Documents/Power Supplier – Energy/Power Supplier - DAM Margin Assurance**
  - Settlement Details – Power Supplier – DAM Margin Assurance – (Results)
- **Power Supplier Settlement Documents/Power Supplier – Energy/Power Supplier – RT BPCG**
  - Settlement Details – Power Supplier – RT BPCG– (Net Energy Cost)
- **Power Supplier Settlement Documents/Power Supplier – Energy/Power Supplier – Supplemental Event**
  - Settlement Details – Power Supplier – Supplemental Event – (Net Energy Cost)

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Updates to DSS Corporate Reports - continued

- **Power Supplier Settlement Documents/Power Supplier – Ancillary**
  - Settlement Details – Power Supplier – Voltage Support Service LOC
  - Settlement Details – Power Supplier – Regulation Penalty
  - Settlement Details – Power Supplier – Regulation Revenue Adjustment
- **Invoice Support Documents**
  - Settlement Details – Invoice Detail Support

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Next Steps

- **Q4 2022 Deployment of settlement system functionality**
  - This will result in the new bill codes being visible on settlement related reports and new objects being visible in DSS universes and on reports
  - However, the settlement system functionality will not be used until future deployment of DER functionality in 2023

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Our Mission & Vision

Mission

Ensure power system reliability and competitive markets for New York in a clean energy future

Vision

Working together with stakeholders to build the cleanest, most reliable electric system in the nation

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