# Compliance Aggregation/Meter Disaggregation

Revenue Metering Sub-Committee Meeting
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Robert Stancu

# Compliance Aggregation/Meter Disaggregation - Overview

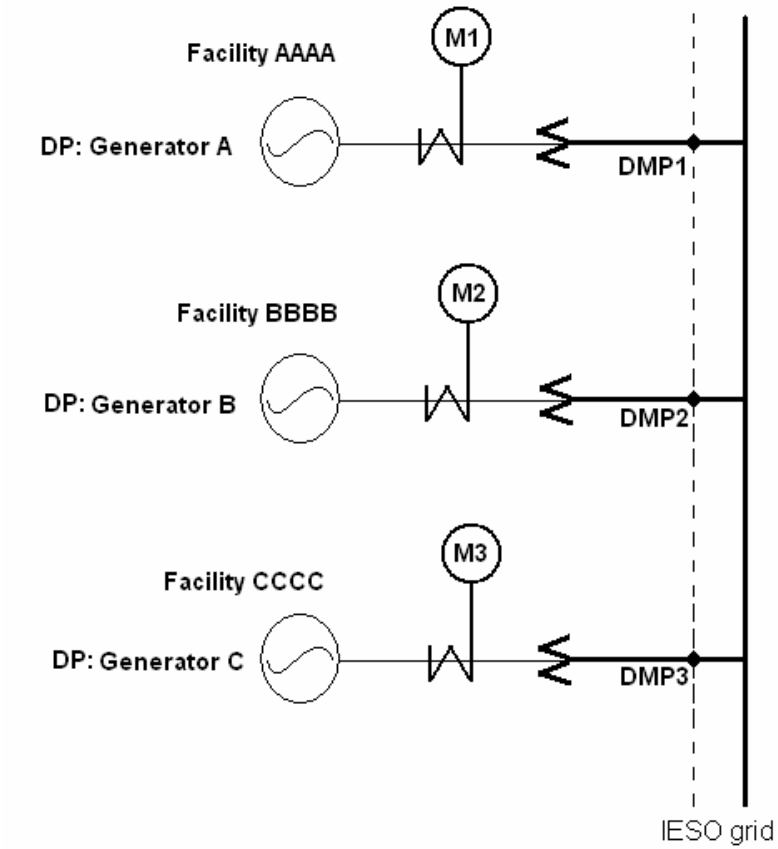
Compliance aggregation is the functionality which permits measured generation from multiple facilities to be aggregated and then apportioned to the delivery points associated with the Compliance Aggregation Model. The apportionment is performed by applying a proportionality factor based on dispatch instructions to the aggregation summary meter.

- Presently multi-unit hydroelectric stations are modeled as separate resources
- When one unit that was expected to run economically is forced out, the water can often physically be run through another unit that wasn't dispatched.
- Compliance Aggregation allows MW to be transferred to another related Delivery Point when a unit fails to perform in response to a dispatch.

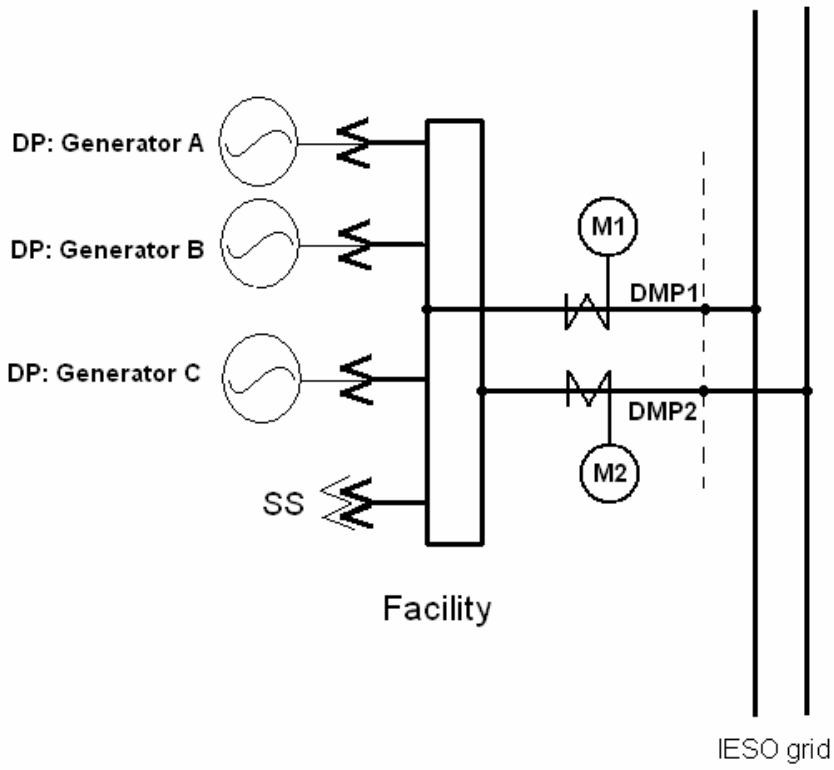
Meter Disaggregation is the functionality which permits measured net generation from one facility to be apportioned to the delivery points associated with the Meter Disaggregation Model. The apportionment is performed by applying a proportionality factor based on dispatch instructions to the disaggregation summary meter.

- Presently the generation facilities have allocated a physical meter installation for each generation resource for dispatchable reasons (even the facility has only one Defined Meter Point).
- Meter Disaggregation distributes the Net Energy measured at the Define Meter Point to each Generation Delivery Point based on dispatch instructions (Real Time Constrain Schedule).

Overview of 3 generators independently modeled/settled




**Compliance Aggregation**




**Meter Disaggregation**

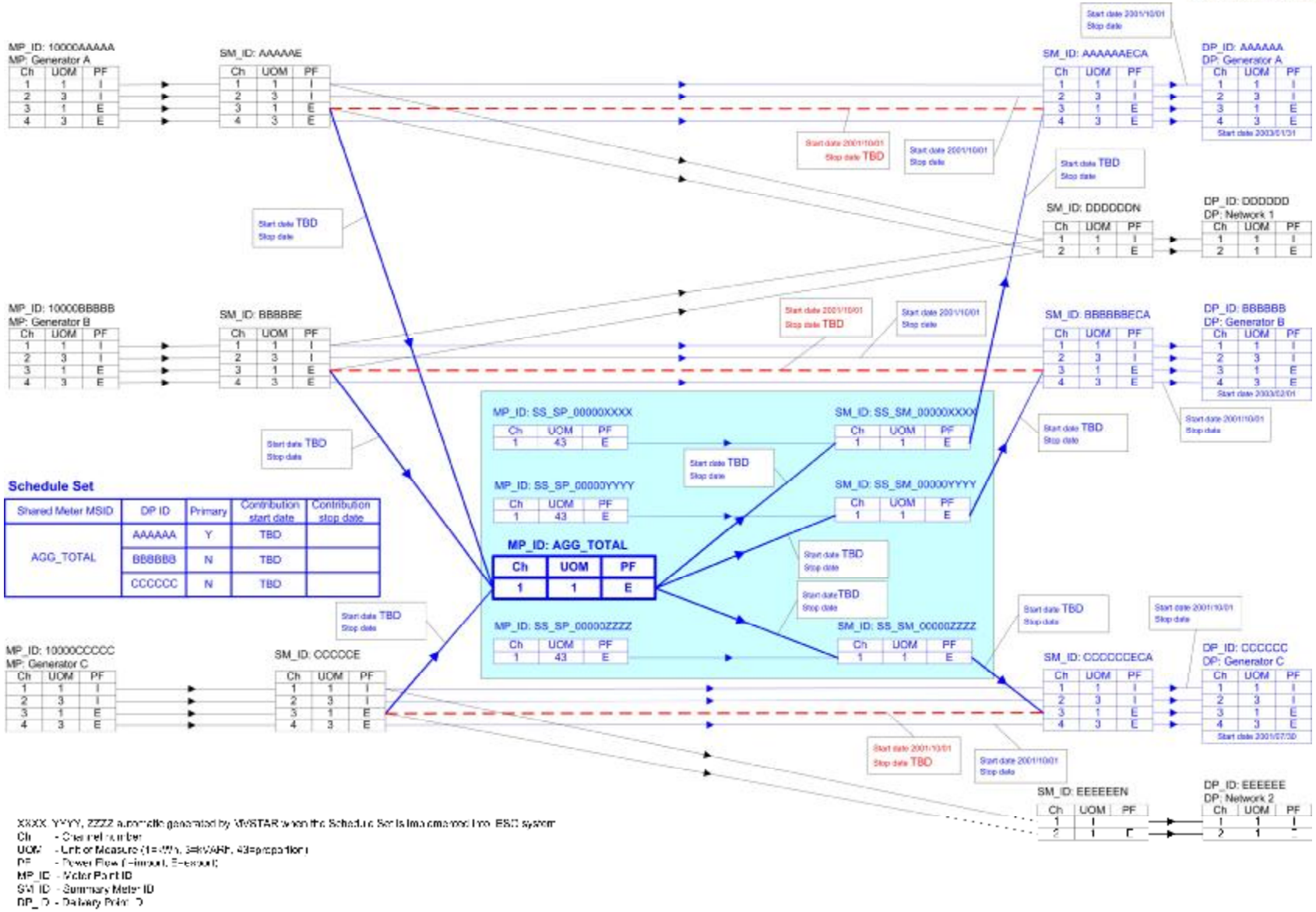
# MVSTAR

- Compliance Aggregation / Meter Disaggregation is done on MVSTAR using a Schedule Set. The Schedule Set redistributes percentage of the Total Generation / Net Generation to the Delivery Points defined by the Schedule Set based on the Dispatch Instructions

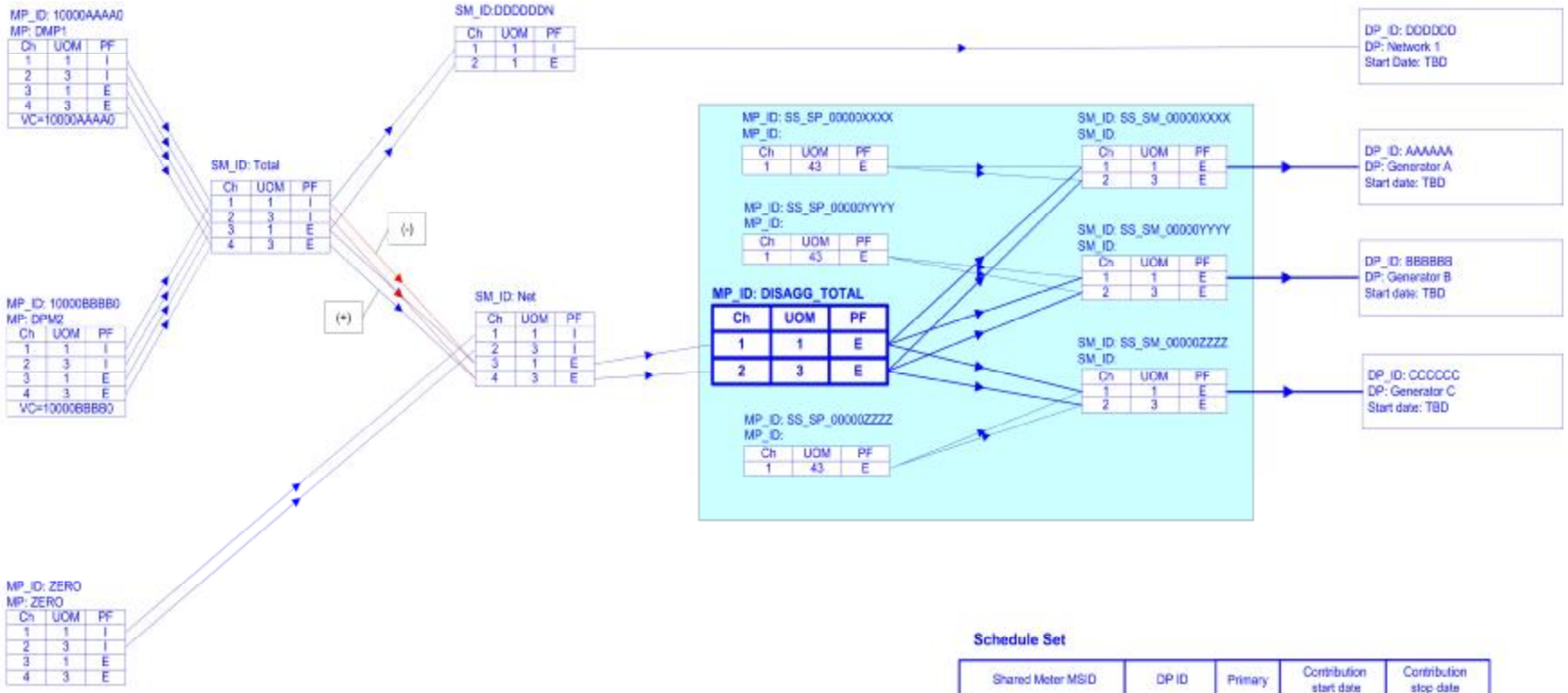
- A Schedule Set is comprised of :

  - AGG_TOTAL / - DISAGG_TOTAL the shared meter (the total generation / net generation)
  - SS_SP - virtual meters – the dispatch instruction on percentages (the sum of all SS_SP meters is one for each interval)
  - SS_SM - summary meter – the reallocation of the AGG_TOTAL / DISAGG_TOTAL to each Delivery Point ( SS_SM = SS_SP * AGG_TOTAL / SS_SM = SS_SP * DISAGG_TOTAL)
  - Associated Delivery Point ID's

# Overview of 3 facilities modeled/settled under Compliance Aggregation



# Overview of a facility with multiple Generation DPs modeled/settled under Meter Disaggregation

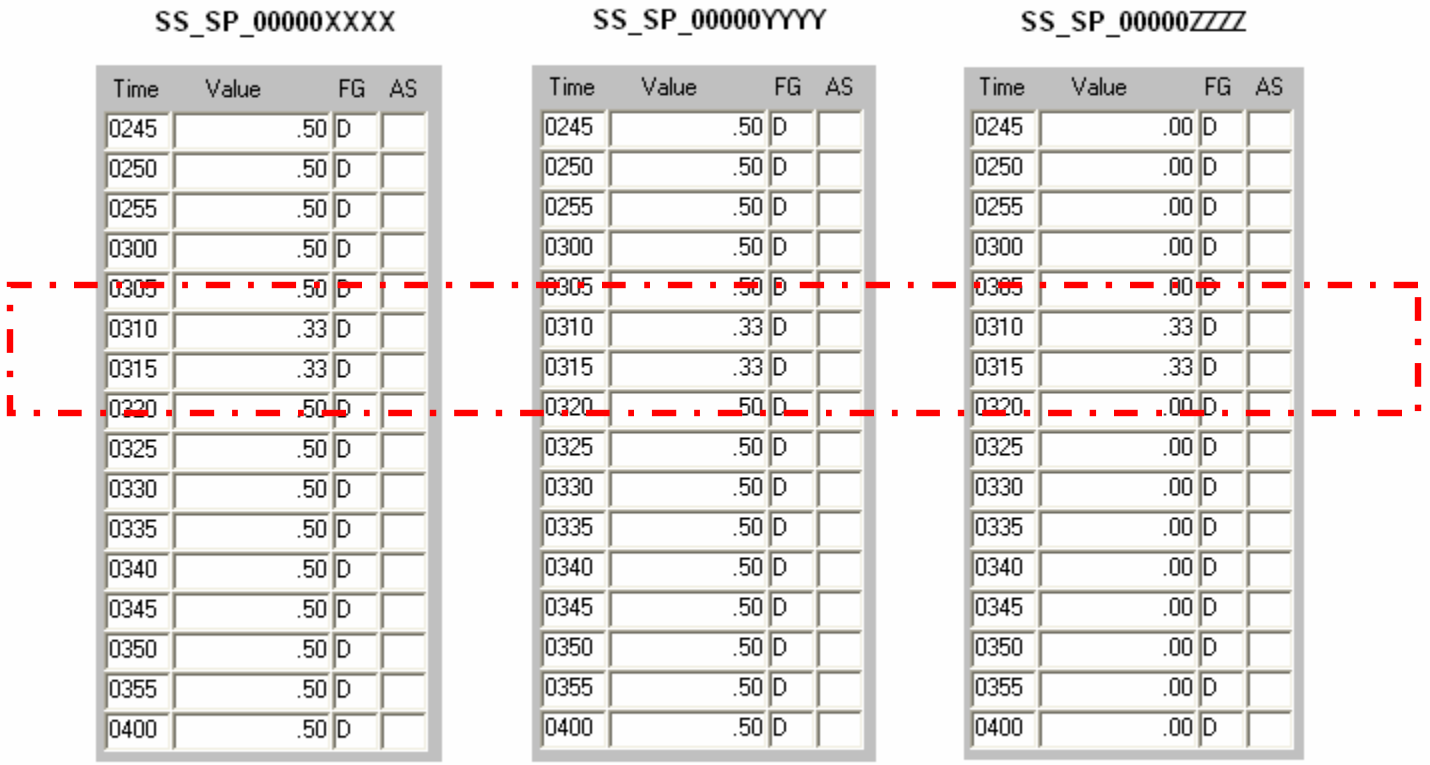



XXXX, YYYY, ZZZZ automatic generated by MVSTAR when the Schedule Set is implemented into IESO system
Ch - Channel number
UOM - Unit of Measure (1=kWh, 3=kVARh, 43=proportion)
PF - Power Flow (I=import, E=export)
MP_ID - Meter Point ID
SM_ID - Summary Meter ID
DP_ID - Delivery Point ID
VC - Voltage Code

**Schedule Set**

| Shared Meter MSID | DP ID | Primary | Contribution start date | Contribution stop date |
|---|---|---|---|---|
| DISAGG_TOTAL | AAAAAA | Y | TBD | |
| | BBBBBB | N | TBD | |
| | CCCCCC | N | TBD | |

# Compliance Aggregation / Meter Disaggregation Dispatch Instructions – Values calculated as percentage based on Dispatch Instruction for Generator A, B, and C



**SS_SP_00000XXXX**

| Time | Value | FG | AS |
|---|---|---|---|
| 0245 | .50 | D | |
| 0250 | .50 | D | |
| 0255 | .50 | D | |
| 0300 | .50 | D | |
| 0305 | .50 | D | |
| 0310 | .33 | D | |
| 0315 | .33 | D | |
| 0320 | .50 | D | |
| 0325 | .50 | D | |
| 0330 | .50 | D | |
| 0335 | .50 | D | |
| 0340 | .50 | D | |
| 0345 | .50 | D | |
| 0350 | .50 | D | |
| 0355 | .50 | D | |
| 0400 | .50 | D | |

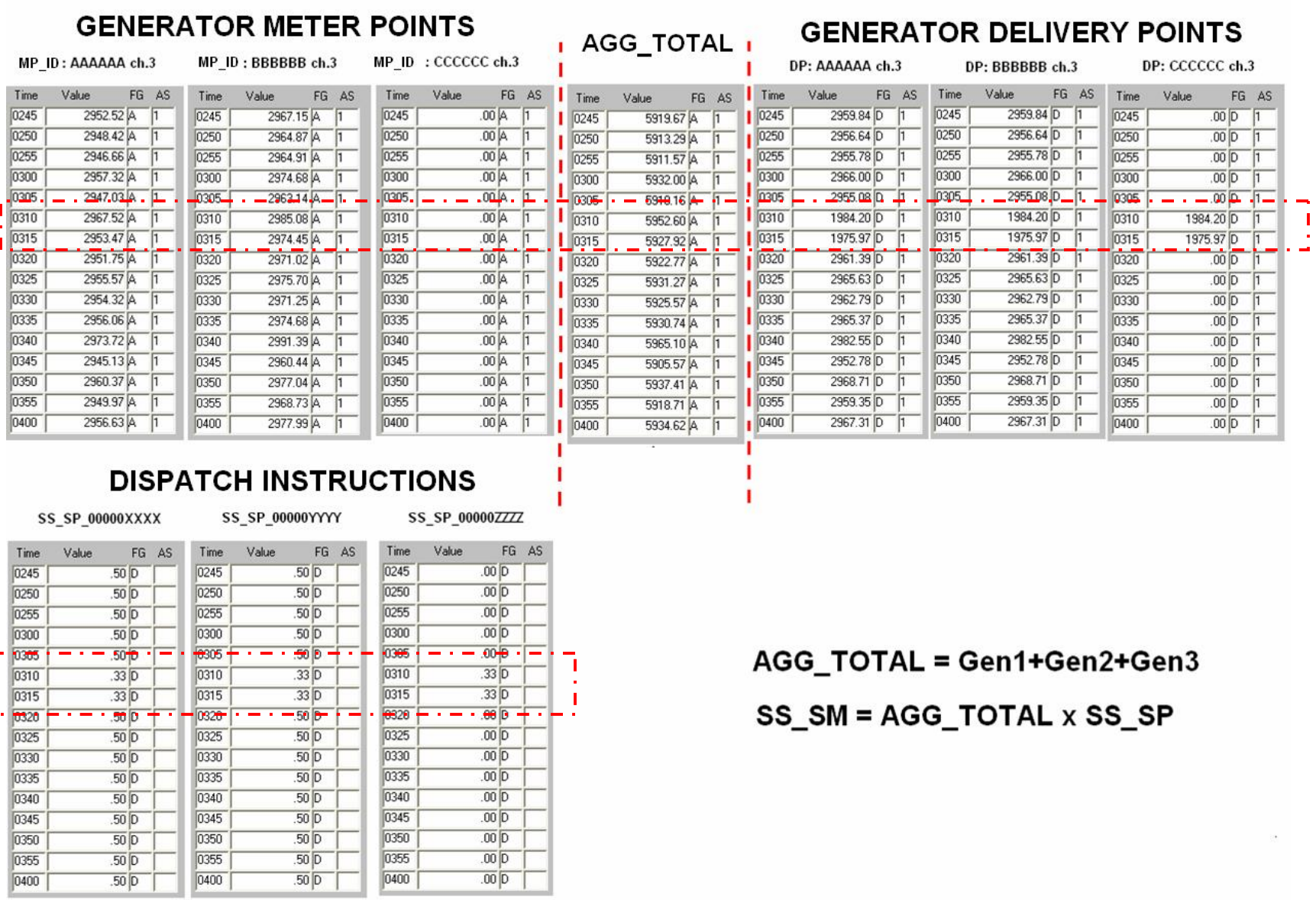
**SS_SP_00000YYYY**

| Time | Value | FG | AS |
|---|---|---|---|
| 0245 | .50 | D | |
| 0250 | .50 | D | |
| 0255 | .50 | D | |
| 0300 | .50 | D | |
| 0305 | .50 | D | |
| 0310 | .33 | D | |
| 0315 | .33 | D | |
| 0320 | .50 | D | |
| 0325 | .50 | D | |
| 0330 | .50 | D | |
| 0335 | .50 | D | |
| 0340 | .50 | D | |
| 0345 | .50 | D | |
| 0350 | .50 | D | |
| 0355 | .50 | D | |
| 0400 | .50 | D | |

**SS_SP_00000ZZZZ**

| Time | Value | FG | AS |
|---|---|---|---|
| 0245 | .00 | D | |
| 0250 | .00 | D | |
| 0255 | .00 | D | |
| 0300 | .00 | D | |
| 0305 | .00 | D | |
| 0310 | .33 | D | |
| 0315 | .33 | D | |
| 0320 | .00 | D | |
| 0325 | .00 | D | |
| 0330 | .00 | D | |
| 0335 | .00 | D | |
| 0340 | .00 | D | |
| 0345 | .00 | D | |
| 0350 | .00 | D | |
| 0355 | .00 | D | |
| 0400 | .00 | D | |

# Compliance Aggregation



# Meter Disaggregation

## DISAGG_TOTAL

NET ch.3 = AAAA(ch.3 - ch.1) + BBBB(ch.3 - ch.1)

| Time | Value | FG | AS |
|---|---|---|---|
| 0245 | 5919.67 | A | 1 |
| 0250 | 5913.29 | A | 1 |
| 0255 | 5911.57 | A | 1 |
| 0300 | 5932.00 | A | 1 |
| 0305 | 5910.16 | A | 1 |
| 0310 | 5952.60 | A | 1 |
| 0315 | 5927.92 | A | 1 |
| 0320 | 5922.77 | A | 1 |
| 0325 | 5931.27 | A | 1 |
| 0330 | 5925.57 | A | 1 |
| 0335 | 5930.74 | A | 1 |
| 0340 | 5965.10 | A | 1 |
| 0345 | 5905.57 | A | 1 |
| 0350 | 5937.41 | A | 1 |
| 0355 | 5918.71 | A | 1 |
| 0400 | 5934.62 | A | 1 |

## GENERATOR DELIVERY POINTS

DP: AAAAAA ch.3

| Time | Value | FG | AS |
|---|---|---|---|
| 0245 | 2959.84 | D | 1 |
| 0250 | 2956.64 | D | 1 |
| 0255 | 2955.78 | D | 1 |
| 0300 | 2966.00 | D | 1 |
| 0305 | 2955.08 | D | 1 |
| 0310 | 1984.20 | D | 1 |
| 0315 | 1975.97 | D | 1 |
| 0320 | 2961.39 | D | 1 |
| 0325 | 2965.63 | D | 1 |
| 0330 | 2962.79 | D | 1 |
| 0335 | 2965.37 | D | 1 |
| 0340 | 2982.55 | D | 1 |
| 0345 | 2952.78 | D | 1 |
| 0350 | 2968.71 | D | 1 |
| 0355 | 2959.35 | D | 1 |
| 0400 | 2967.31 | D | 1 |

DP: BBBBBB ch.3

| Time | Value | FG | AS |
|---|---|---|---|
| 0245 | 2959.84 | D | 1 |
| 0250 | 2956.64 | D | 1 |
| 0255 | 2955.78 | D | 1 |
| 0300 | 2966.00 | D | 1 |
| 0305 | 2955.08 | D | 1 |
| 0310 | 1984.20 | D | 1 |
| 0315 | 1975.97 | D | 1 |
| 0320 | 2961.39 | D | 1 |
| 0325 | 2965.63 | D | 1 |
| 0330 | 2962.79 | D | 1 |
| 0335 | 2965.37 | D | 1 |
| 0340 | 2982.55 | D | 1 |
| 0345 | 2952.78 | D | 1 |
| 0350 | 2968.71 | D | 1 |
| 0355 | 2959.35 | D | 1 |
| 0400 | 2967.31 | D | 1 |

DP: CCCCCC ch.3

| Time | Value | FG | AS |
|---|---|---|---|
| 0245 | .00 | D | 1 |
| 0250 | .00 | D | 1 |
| 0255 | .00 | D | 1 |
| 0300 | .00 | D | 1 |
| 0305 | .00 | D | 1 |
| 0310 | 1984.20 | D | 1 |
| 0315 | 1975.97 | D | 1 |
| 0320 | .00 | D | 1 |
| 0325 | .00 | D | 1 |
| 0330 | .00 | D | 1 |
| 0335 | .00 | D | 1 |
| 0340 | .00 | D | 1 |
| 0345 | .00 | D | 1 |
| 0350 | .00 | D | 1 |
| 0355 | .00 | D | 1 |
| 0400 | .00 | D | 1 |

## DISPATCH INSTRUCTIONS

SS_SP_00000XXXX

| Time | Value | FG | AS |
|---|---|---|---|
| 0245 | .50 | D | |
| 0250 | .50 | D | |
| 0255 | .50 | D | |
| 0300 | .50 | D | |
| 0305 | .50 | D | |
| 0310 | .33 | D | |
| 0315 | .33 | D | |
| 0320 | .50 | D | |
| 0325 | .50 | D | |
| 0330 | .50 | D | |
| 0335 | .50 | D | |
| 0340 | .50 | D | |
| 0345 | .50 | D | |
| 0350 | .50 | D | |
| 0355 | .50 | D | |
| 0400 | .50 | D | |

SS_SP_00000YYYY

| Time | Value | FG | AS |
|---|---|---|---|
| 0245 | .50 | D | |
| 0250 | .50 | D | |
| 0255 | .50 | D | |
| 0300 | .50 | D | |
| 0305 | .50 | D | |
| 0310 | .33 | D | |
| 0315 | .33 | D | |
| 0320 | .50 | D | |
| 0325 | .50 | D | |
| 0330 | .50 | D | |
| 0335 | .50 | D | |
| 0340 | .50 | D | |
| 0345 | .50 | D | |
| 0350 | .50 | D | |
| 0355 | .50 | D | |
| 0400 | .50 | D | |

SS_SP_00000ZZZZ

| Time | Value | FG | AS |
|---|---|---|---|
| 0245 | .00 | D | |
| 0250 | .00 | D | |
| 0255 | .00 | D | |
| 0300 | .00 | D | |
| 0305 | .00 | D | |
| 0310 | .33 | D | |
| 0315 | .33 | D | |
| 0320 | .00 | D | |
| 0325 | .00 | D | |
| 0330 | .00 | D | |
| 0335 | .00 | D | |
| 0340 | .00 | D | |
| 0345 | .00 | D | |
| 0350 | .00 | D | |
| 0355 | .00 | D | |
| 0400 | .00 | D | |

**DISAGG_TOTAL = ∑(EXPORT - IMPORT)**

**SS_SM = DISAGG_TOTAL x SS_SP**

# Compliance Aggregation Registration Process

Market Manual 3.7 section 2.3.5 (baseline 16.0 available Sep 13, 2006)

- Approval from IESO – Market Entry
- Development of the Compliance Aggregation Model
  - IESO/MMP
  - MMP signs IESO Form 1660
  - MSP to submit IESO form 1310 Totalization Table form
- MSP signs Site Registration Report

NOTE:

- For Compliance Aggregation existing DP's could be used
- Compliance Aggregation Model cannot be modified once implemented (will require new DP's and new Network Model build)
- A Delivery Point can only be associated with one Model.
- All Delivery Points associated with a Model must have the same MSP/MMP.

# Meter Disaggregation Registration Process

- Registration process to be detailed in MM 3.7 baseline 16.1 (Dec 2006)
- Similar to Compliance Aggregation Registration
  - Market Entry approval
  - Meter Disaggregation Model development
  - MSP sign SSR
- Conditions to be detailed
  - Netting of meter channels 1 and 3

- Summary:
  - 1 Meter Disaggregation Model in system
  - 2 Compliance Aggregation Models implemented June 06
  - 1 Meter Disaggregation application approved (implementation Jan 07)
  - 13 Compliance Aggregation requests submitted to Market Entry for approval