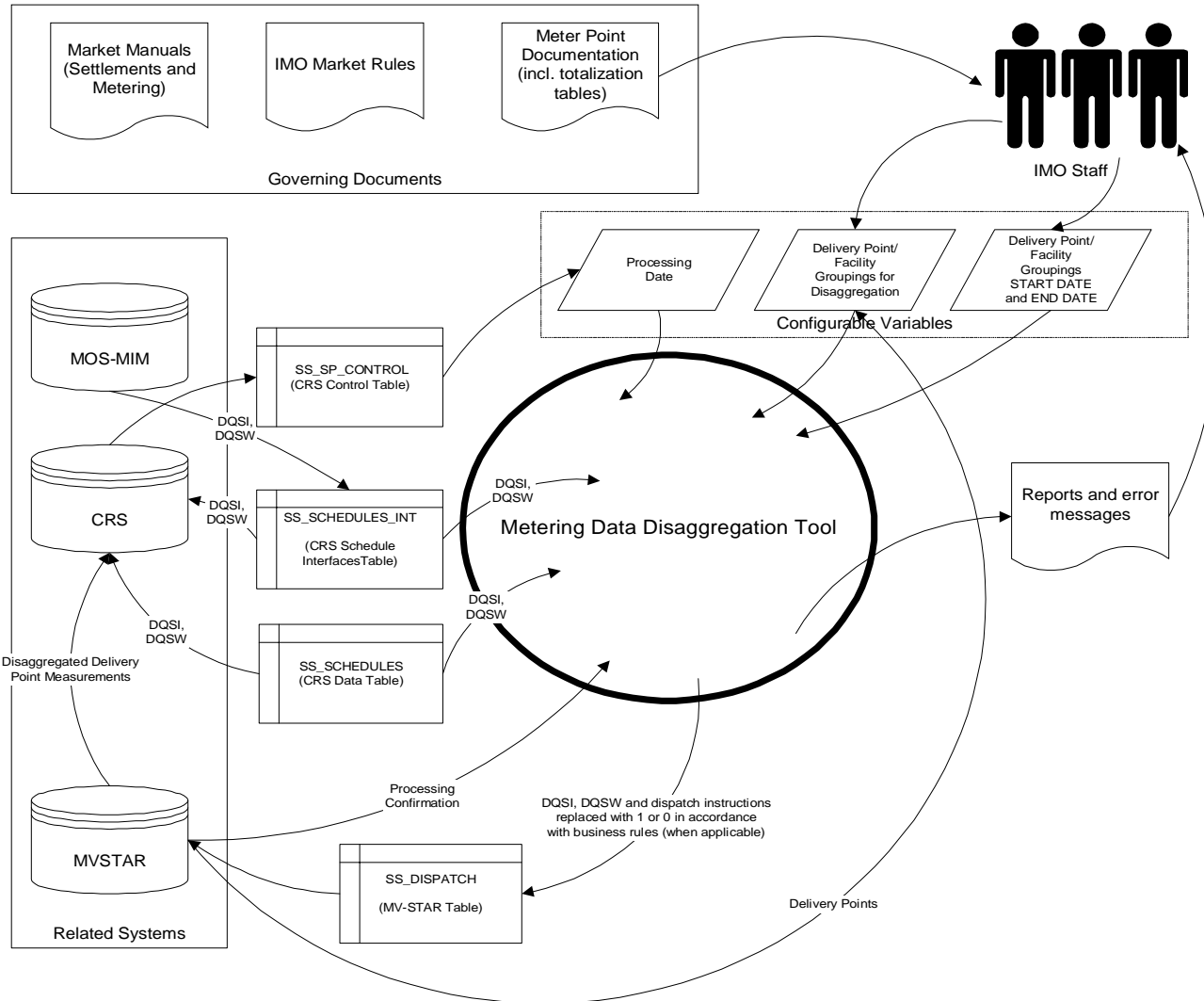


Disaggregation of Meter Readings

Metering Subcommittee – Nov 16, 2005



Context Diagram Market – Meter Disaggregation.



Situations where meter disaggregation functionality is supposed to apply to, generally have the following features:

- a dispatchable *facility* registered as more than one *registered facility*;
- more than one *registered facility* sharing a smaller number of *revenue meters*; and,
- the need to ensure parity between *dispatch instructions* and *revenue meter data* for settlement purposes (particularly, CMSC settlement amounts).

Background to Meter Disaggregation Goals

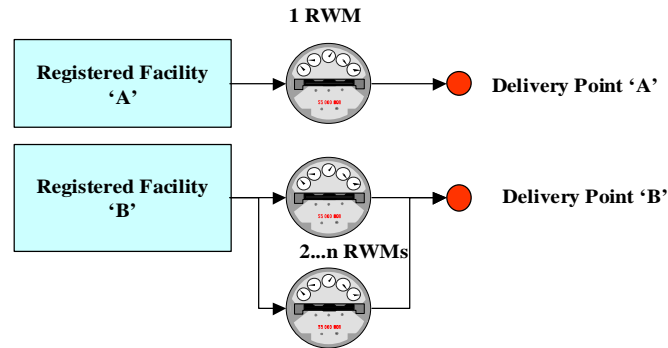


The end result of the disaggregation process is generally oriented towards the following goals:

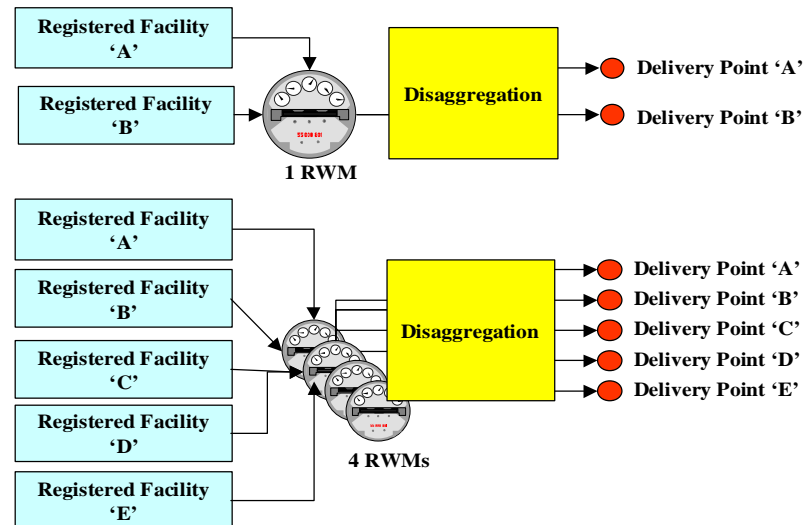
- All energy injected or withdrawn into the IMO-controlled grid as measured by RWM's is settled in accordance with the current market rules. The meter disaggregation process in of itself should not create or reduce the amount of energy to be settled.**
- Each registered facility that is part of a meter disaggregation grouping will be attributed (for settlement purposes) a portion of the energy injected on a pro-rata basis in accordance with the dispatch instruction received for each registered facility that is part of that grouping.**
- The absence of any dispatch instructions is an absence of any means to attribute energy injections or withdrawals, and therefore each registered facility in the grouping will receive an equal portion of the resulting AQEI quantity (station service channels would be totalized to one or more delivery points).**

Background to Meter Disaggregation Comparison of Arrangements

Typical Arrangements in the current market:



Examples of Possible Meter Disaggregation Arrangements



Disaggregation of Meter Readings

Basic formula for a net injector into the ICG

$$AQEI_{k,h}^{m,t} = \text{Meter Reading}(s) \times \frac{DQSI_{k,h}^{m,t}}{\sum_{m=\text{registered facility } 1}^{m=\text{registered facility } N} DQSI_{k,h}^{m,t}}$$

When the combined output of the registered facilities is a net injection into the IMO-controlled grid, the meter readings (loss adjusted, where applicable) are summed and prorated in accordance to the Dispatch Instructions (DQSI) sent to each *registered facility* 'm' that comprise the facility to be disaggregated for each metering interval 't'

AQEI – Allocated Quantity of Energy Injected

Disaggregation of Meter Readings

Examples:

Case 1: All registered facilities are operating.

	Original Dispatch Instruction for the interval	Combined RWM readings for the interval	Revised Dispatch Instruction after operation of the Metering Data Disaggregation Tool	Resulting Delivery point value (AQEW, AQEI) for the interval
Registered Facility 'A'	100 (injection)	540 (injection)	100 (injection)	AQEI = 90
Registered Facility 'B'	100 (injection)		100 (injection)	AQEI = 90
Registered Facility 'C'	100 (injection)		100 (injection)	AQEI = 90
Registered Facility 'D'	100 (injection)		100 (injection)	AQEI = 90
Registered Facility 'E'	100 (injection)		100 (injection)	AQEI = 90
Registered Facility 'F'	100 (injection)		100 (injection)	AQEI = 90
Totals	600 (injection)	540 (injection)	600 (injection)	540 (injection)

Disaggregation of Meter Readings

Examples:



Case 2: Some of the registered facilities are operating.

	Original Dispatch Instruction for the interval	Combined RWM readings for the interval	Revised Dispatch Instruction after operation of the Metering Data Disaggregation Tool	Resulting Delivery point value (AQEW, AQEI) for the interval
Registered Facility 'A'	100 (injection)	400 (injection)	100 (injection)	AQEI = 100
Registered Facility 'B'	no instruction received		0	AQEI = 0
Registered Facility 'C'	100 (injection)		100 (injection)	AQEI = 100
Registered Facility 'D'	100 (injection)		100 (injection)	AQEI = 100
Registered Facility 'E'	100 (injection)		100 (injection)	AQEI = 100
Registered Facility 'F'	no instruction received		0	AQEI = 0
Totals	400 (injection)	400 (injection)	400 (injection)	400 (injection)

Disaggregation of Meter Readings

Examples:

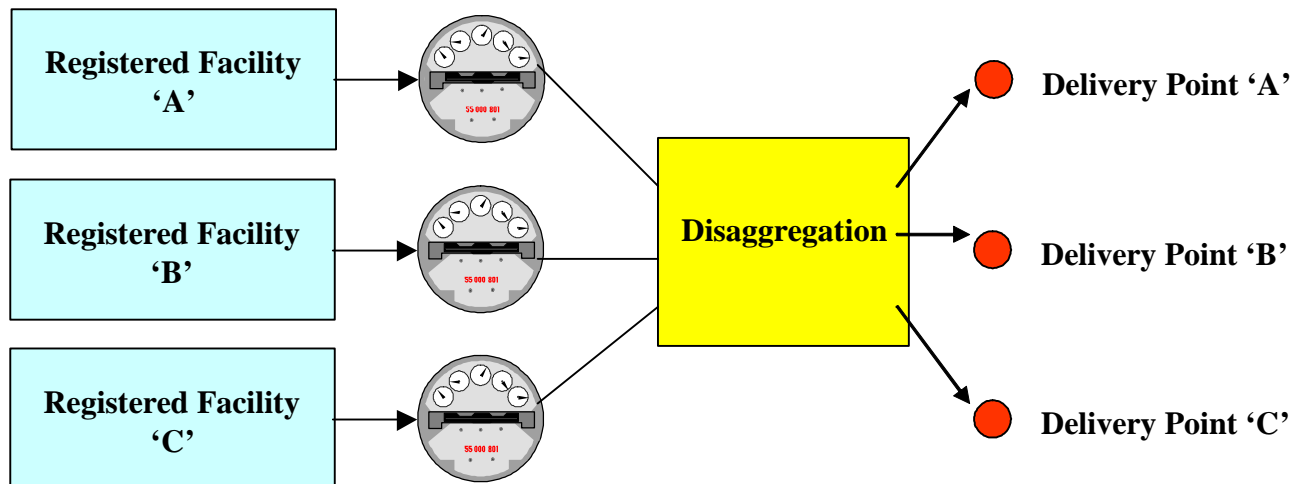


Case 3: No dispatch instructions but some of the registered facilities are operating.

Registered Facility in the Meter Disaggregation grouping	Original Dispatch Instruction for the interval	Combined RWM readings for the interval	Revised Dispatch Instruction after operation of the Metering Data Disaggregation Tool	Resulting Delivery point value (AQEW, AQEI) for the interval
Registered Facility 'A'	no instruction received	24 (injection) (i.e. 1 or more of the registered facilities is still injecting)	1	AQEI = 4
Registered Facility 'B'	no instruction received		1	AQEI = 4
Registered Facility 'C'	no instruction received		1	AQEI = 4
Registered Facility 'D'	no instruction received		1	AQEI = 4
Registered Facility 'E'	no instruction received		1	AQEI = 4
Registered Facility 'F'	no instruction received		1	AQEI = 4
Totals	0	24 (injection)	6	24 (injection)

Disaggregation of Meter Readings Compliance Aggregation

Allow a Generator to have two or more units accepted for compliance aggregation. The Generator would be able to take the unit specific dispatch instructions and aggregate them such that the Generator could shift the production from unit to unit, while at the same time maintaining tight compliance to the accumulated dispatch for the two (or more) units.



Disaggregation of Meter Readings Compliance Aggregation - Examples



I	Unit Production	Combined RWM readings for the interval	Dispatch Instruction after operation of the Metering Data Disaggregation Tool	Resulting Delivery point value (AQEW, AQEI) for the interval
Registered Facility 'A'	70 (injection)	90 (injection)	20 (injection)	AQEI = 20
Registered Facility 'B'	20 (injection)		30 (injection)	AQEI = 30
Registered Facility 'C'	0 (injection)		40 (injection)	AQEI = 40
Totals	90 (injection)	90 (injection)	90 (injection)	90 (injection)

III	Unit Production	Combined RWM readings for the interval	Dispatch Instruction after operation of the Metering Data Disaggregation Tool	Resulting Delivery point value (AQEW, AQEI) for the interval
Registered Facility 'A'	0 (injection)	90 (injection)	20 (injection)	AQEI = 20
Registered Facility 'B'	20 (injection)		30 (injection)	AQEI = 30
Registered Facility 'C'	70 (injection)		40 (injection)	AQEI = 40
Totals	90 (injection)	90 (injection)	90 (injection)	90 (injection)

II	Unit Production	Combined RWM readings for the interval	Dispatch Instruction after operation of the Metering Data Disaggregation Tool	Resulting Delivery point value (AQEW, AQEI) for the interval
Registered Facility 'A'	20 (injection)	90 (injection)	20 (injection)	AQEI = 20
Registered Facility 'B'	30 (injection)		30 (injection)	AQEI = 30
Registered Facility 'C'	40 (injection)		40 (injection)	AQEI = 40
Totals	90 (injection)	90 (injection)	90 (injection)	90 (injection)

IV	Unit Production	Combined RWM readings for the interval	Dispatch Instruction after operation of the Metering Data Disaggregation Tool	Resulting Delivery point value (AQEW, AQEI) for the interval
Registered Facility 'A'	0 (injection)	90 (injection)	20 (injection)	AQEI = 20
Registered Facility 'B'	0 (injection)		30 (injection)	AQEI = 30
Registered Facility 'C'	90 (injection)		40 (injection)	AQEI = 40
Totals	90 (injection)	90 (injection)	90 (injection)	90 (injection)