

# 1. Introduction

## 1.1 Purpose

The purpose of this document is to add context to the settlement formulae from the FM protocols by providing transactional examples of the settlement charge types and intermediate calculations. Where practical the examples are presented with illustrations which show how different types of market instruments interact in achieving settlement results. In the interest of brevity and clarity the example calculations evaluate results in a single interval, be it 5-minute, hourly, daily or even monthly/yearly.

## 1.2 Definition of Terms

Acronym	Term	Definition
AO	Asset Owner	<i>The middle tier of financial entities in the CM, used for settlement statements.</i>
BA	Balancing Authority	<i>A boundary defined by internal generation control to an instantaneous NAI signal</i>
BDR	Block Demand Response	<i>Behind the meter load reduction which requires calculated response</i>
CBA	Consolidated Balancing Authority	<i>Approach assumes the footprint will retain existing SAs for determining residual load while supplying NSI &amp; NAI for the entire footprint to calculate the impact of NI</i>
CC	Combined Cycle (Resource)	<i>Resource comprised of many operational configurations such as 1 gas turbine &amp; 1 steam turbine or 2 gas turbines and 1 steam turbine etc.</i>
CM	Commercial Model	<i>The financial entities, network elements and relationships between them constructing the backbone of the market</i>
CP	Commitment Period	<i>The date/time range of a DA market or RTBM resource Market or Self commitment</i>
COS	Commercial Operations Systems	<i>A suite of market applications including settlements, customer service and the portal</i>
DA	Day Ahead (Market)	<i>The future forward market for energy and operating reserves</i>
DDR	Dispatchable Demand Response	<i>Load reduction which can be metered</i>
DRL	Demand Response Load	<i>A meter location discretely representing the load behind which a demand response resource is located. A DRL is not necessarily associated with a SL which will be settled, its primary function is for acceptance of metering which supports the calculated method for BDRs &amp; BDRs</i>
DRR	Demand Response Resource	<i>BDR or DDR</i>
EIS	Energy Imbalance Service	<i>The current SPP market</i>

Acronym	Term	Definition
<b>FM</b>	Future Market	<i>SPP's DA Market, RTBM and TCR Market for energy and Operating Reserves planned for implementation Q4 2012</i>
<b>EMS</b>	Energy Management System	<i>SPP repository and dashboard for MP SCADA data</i>
<b>JOU</b>	Joint Owned Unit	<i>Ownership of a physical resource shared among multiple financial entities</i>
<b>LRS</b>	Load Ratio Share	<i>The % of load at a single SL relative to the SPP total</i>
<b>MA</b>	Meter Agent	<i>Entity responsible for submittal of revenue quality interchange, resource and load meter data to settlements via the market portal</i>
<b>ML</b>	Meter Location	<i>A child of SL – the level at which meter data is submitted. It is usually 1:1 with SL, but in certain cases multiple MLs may relate to a single SL. MLs are confined to a single SA (necessary for the purpose of residual &amp; calibration calculation) while a SL may span multiple SAs.</i>
<b>MP</b>	Market Participant	<i>The highest tier of financial entities in the CM, used for invoicing and credit.</i>
<b>MS</b>	Market Settlements	<i>The system built to implement new market protocols</i>
<b>MTR</b>	Meter	<i>Revenue Quality</i>
<b>MWP</b>	Make Whole Payment	<i>Cost guarantees during periods of SPP economic resource commitment</i>
<b>MWEP</b>	Make-Whole Eligibility Period	<i>The settlement subset of a CP considered in MWP calculations</i>
<b>NAI</b>	Net Actual Interchange	<i>The actual net flow into or out of CBA or SA</i>
<b>NI</b>	Net Inadvertent	<i>The difference between the actual and scheduled net flow into or out of SPP</i>
<b>NSI</b>	Net Scheduled Interchange	<i>The scheduled net flow into or out of CBA or SA</i>
<b>OCL</b>	Over Collected Losses	<i>Settlement surplus related to marginal loss pricing, which is rebated based on payment of marginal losses.</i>
<b>OD</b>	Operating Day	<i>The day boundary for a single settlement period</i>
<b>OR</b>	Operating Reserves	<i>Capacity held for regulation, spinning and supplemental reserve</i>
<b>POP</b>	Post Operations Processor	<i>A rudimentary system which consists primarily of a market system database dump, and bridges the gap between RT Operations and MS</i>
<b>RUC</b>	Reliability Unit Commitment	<i>Operations process and algorithm for determining which units should be started</i>
<b>RTBM</b>	Real Time Balancing Market	<i>Future market for dispatch of energy and operating reserves to meet current demand</i>
<b>RTOSS</b>	Regional Transmission Organization Scheduling System	<i>Manages interchange schedule data and NSI / NAI for the footprint</i>
<b>RNU</b>	Revenue Neutrality Uplift	<i>Market charge type for balancing daily settlement</i>
<b>RUC</b>	Reliability Unit Commitment	<i>Market process for committing resources needed to meet the load forecast</i>

Acronym	Term	Definition
<b>SA</b>	Settlement Area	<i>A boundary within the market footprint which defines the load balance equation to determine the residual quantity</i>
<b>SCADA</b>	Supervisory Control And Data Acquisition	<i>4 second resource and load bus signals from MP equipment sent to SPP</i>
<b>SE</b>	State Estimator	<i>An operations system which smoothes, replaces and repairs SCADA data to create complete snapshots of the transmission system every 5 minutes</i>
<b>SL</b>	Settlement Location	<i>Pricing points in the footprint: Resource, Load, Interface &amp; Hub types</i>
<b>TCR</b>	Transmission Congestion Rights	<i>The market (or instrument) for transmission planning and forward hedging of congestion rents</i>
<b>UOM</b>	Unit of Measure	<i>MW or MWh data submitted in 5-minute intervals</i>
<b>URD</b>	Uninstructed Resource Deviation	<i>Performance outside of a tolerance band from the dispatch setpoint</i>

### 1.3 Outstanding Issues/Assumptions

Issue	Description
<b>Combined Cycle Resources</b>	<i>CCs are settled in aggregate; all data necessary to support these calculations are available as input.</i>
<b>Joint Owned Units</b>	<i>JOUs are settled as separate assets; the same calculation and data expectations as any other resource apply.</i>