

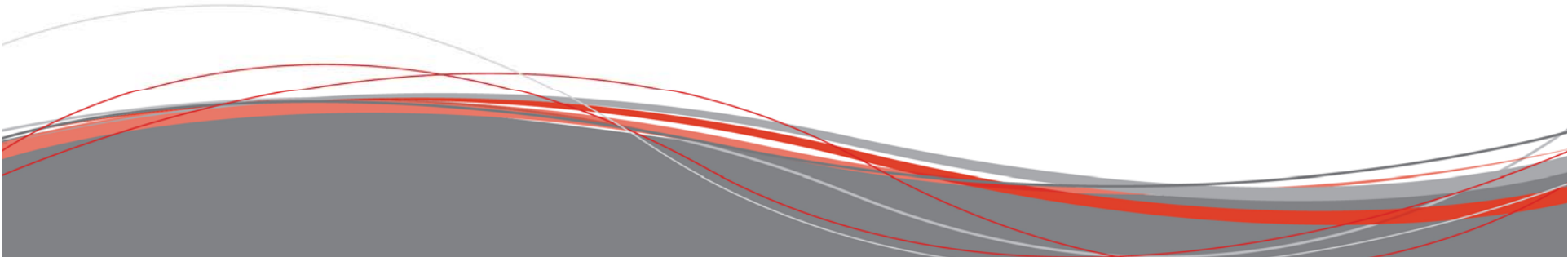


West Connect EIS Workgroup 10/28/10

EIS Market Scheduling & Settlements Examples



Topics

- **Resource Plans**
 - **Scheduling**
 - **Resource Offers**
 - **Settlement Examples**
- 



Assumptions

- **Market Participant 1 (MP 1)**
 - ◆ **Load Serving Entity (LOAD 1)**
 - ◆ **5 Resources**
 - **GEN A, GEN B, GEN C, GEN D, GEN E**
- **Market Participant 2 (MP 2)**
 - ◆ **Independent Power Producer (IPP)**
 - ◆ **1 Resource**
 - **GEN F**

What is a Resource Plan?

- Enables the market system to assess Resource and Ancillary Service adequacy for the region, each BA, and each MP
- Plan of how you would operate your system absent the market
- The first submission of Resource Plans for an Operating Day must be made by 1100 the day prior to the Operating Day.
 - ◆ Resource Plans must cover a period of 7 days beginning with the Operating Day (168 hours)

What is a Resource Plan?

■ Contents

- ◆ Resource ID
- ◆ Resource Type
- ◆ Operational Information
 - Planned MW
 - Min/Max
 - Ramp Rates
- ◆ Resource Status

Resource Status Descriptions

- **Available**
 - ◆ Resource is online and available for deployment
- **Unavailable**
 - ◆ Resource is offline and unavailable for deployment or other uses
- **Self Dispatch**
 - ◆ Resource is online and unavailable for deployment
- **Manual**
 - ◆ Not capable of following Dispatch Instructions; and
 - ◆ Not capable of adhering to a Schedule
 - Intermittent Resource; or
 - Testing, Startup, or Shutdown Mode

Balanced Resource Plan – MP 1

- HE 13:00
- LOAD 1 (forecast) = 1,000 MW
- Total GEN = 800 MW
 - ◆ GEN A = 300 MW (Available)
 - ◆ GEN B = 300 MW (Available)
 - ◆ GEN C = 100 MW (Self-Dispatched)
 - ◆ GEN D = 100 MW (Manual)
 - ◆ GEN E = 0 MW (Unavailable)

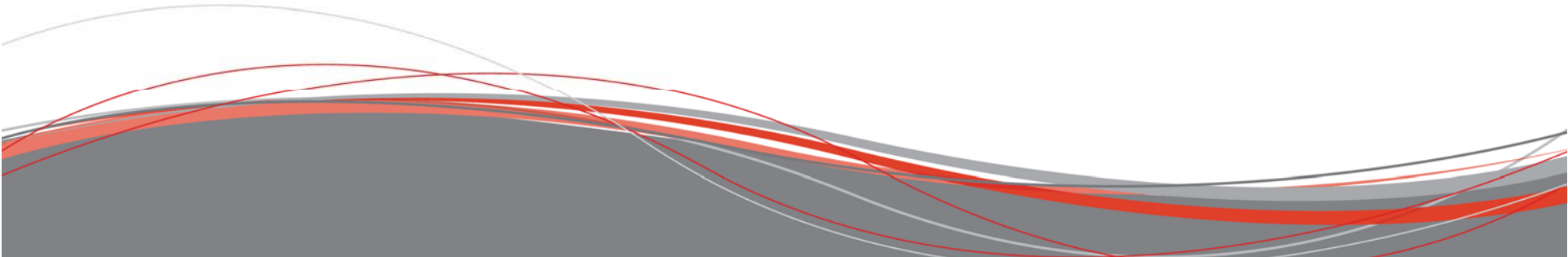
MP 1 needs 200 MW to meet load obligation

Balanced Resource Plan – MP 1

- How does MP1 satisfy the additional 200MW?
 - ◆ Enters into a bilateral with MP 2
 - GEN F: 200MW @ \$25/MWh →LOAD 1
- Other Options
 - ◆ Start another unit
 - ◆ Others?



Balanced Resource Plan – MP 2

- HE 13:00
 - No Load Serving Obligation
 - No requirement to schedule or offer output of GEN F
 - No Balanced Plan requirement
- 

Scheduling

■ MP 1

- ◆ **LOAD 1 = 1000MW**
- ◆ **GEN A = 300 MW**
- ◆ **GEN B = 300 MW**
- ◆ **GEN C = 100 MW**
- ◆ **GEN D = 100 MW**

■ MP 2

- ◆ **GEN F = 200 MW (to LOAD 1)**

Why Schedule?

- **Schedule provides hedge**
 - ◆ **Without schedule, full exposure to the LIP**
 - ◆ **(Actual – Schedule) * LIP**

Resource Offers – MP 1

- **GEN A: Available – 300 MW**
 - ◆ 100 MW @ \$20
 - ◆ 200 MW @ \$40
 - ◆ 300 MW @ \$50
- **GEN B: Available – 300 MW**
 - ◆ 200 MW @ \$15
 - ◆ 300 MW @ \$25
- **GEN C: Self Dispatched – 100 MW (no offer)**
- **GEN D: Manual – 100 MW (no offer)**

Resource Offers – MP 2

- **GEN F: Available – 300 MW**
 - ◆ **100 MW @ \$10**
 - ◆ **200 MW @ \$20**
 - ◆ **300 MW @ \$30**
- **GEN F has bilaterally scheduled 200MW but can still offer entire range for dispatch**

EIM Settlement

- **EI = (Actual – Schedule)**
- **LIP = \$40/MWH**
- **MP 1**
 - ◆ **LOAD 1 = (1000 MW – 1000 MW) * \$40 = \$0**
 - ◆ **GEN A = (200 MW – 300 MW) * \$40 = (\$4,000)**
 - ◆ **GEN B = (300 MW – 300 MW) * \$40 = \$0**
 - ◆ **GEN C = (100 MW – 100 MW) * \$40 = \$0**
 - ◆ **GEN D = (100 MW – 100 MW) * \$40 = \$0**

EIM Settlement

■ **EI = (Actual – Schedule)**

■ **LIP = \$40/MWH**

■ **MP 2**

◆ **GEN E = (300 MW – 200 MW) * \$40 = \$4,000**

Total Settlements

■ MP 1

- ◆ **EIM Settlement = \$4,000 to market for GEN A imbalance**
- ◆ **Bilateral = 200MW x \$25/MWh = \$5,000 to MP 2**

■ MP 2

- ◆ **EIM Settlement = \$4,000 from market for GEN F imbalance**
- ◆ **Bilateral = 200MW x \$25/MWh = \$5,000 from MP1**

Manual Status Example

- **What happens if a manual status resource (GEN D) deviates from schedule?**
 - ◆ **Short answer – nothing different!**
 - ◆ **Schedule = 100 MW**
 - ◆ **Actual = 0 MW**
 - ◆ **EIS = $(0-100) * \$40 = (\$4000)$ paid to market**
- **Market ignores the schedule and dispatches based on the output of the resource 10 minutes prior to dispatch interval**
 - ◆ **“Echo” SCADA**



Questions?



