Real-Time Daily Market Watch Metric Catalog

Version 1.1

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VERSION HISTORY

Date	Version	Description	Author
9/09/2009	1.0	Creation of document	Yanni Chen
2/03/2011	1.1	Logo and address update	Market Performance Group

TABLE OF CONTENTS

Introduction

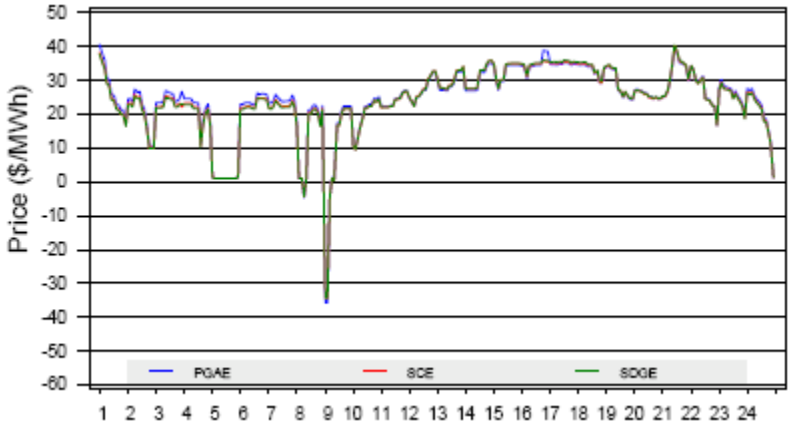
The Market Information group has published a Day-Ahead and a Real-Time Daily Market Watch (DMW) for each trading day. These reports contain various graphs and tables pertinent to the trading day. The Real-Time DMW Metric Catalog provides a description of all the graphs published in the Real-Time DMW.

For any questions regarding the Real-Time DMW reports or the Real-Time DMW Metric Catalog please send an email to **MarketServices@caiso.com**.

RTD Default LAP LMPs

Figure 1 shows the Real-Time Dispatch (RTD) Locational Marginal Prices (LMPs) for default Load Aggregation Points (LAPs) - PGAE, SCE and SDGE-for each of the 5-minute intervals.

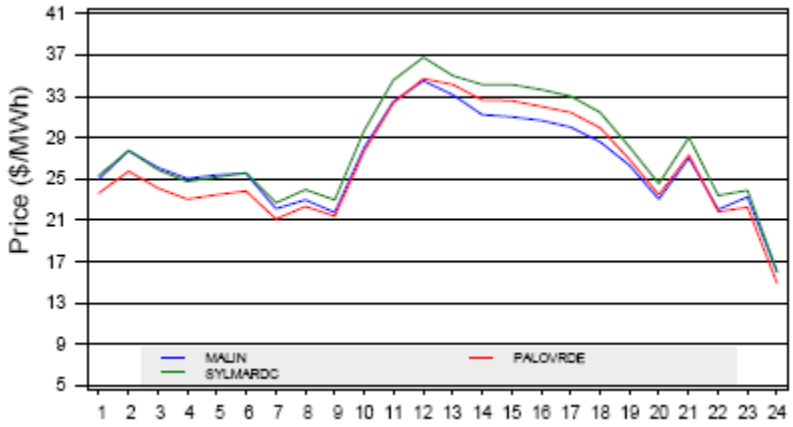
Figure 1: RTD Default LAP LMPs



Selected HASP Tie Point LMPs (Hourly Average)

Figure 2 shows the hourly average LMPs of three selected tie points, taken by averaging across the four 15-minute interval LMPs from the Hour-Ahead Scheduling Process (HASP) for the corresponding trading hour, because the tie point schedules are settled at the HASP hourly average LMPs. The three selected tie points are Malin, Palo-Verde and Sylmar DC, which highlight the LMPs at the PACI, Palo Verde and NOB interties, respectively. These tie points are chosen for this graph because on average more than 50% of imports into the CAISO area are scheduled on them. Please note that, Pnode names in the CAISO Full Network Model (FNM) for Malin and Sylmar DC scheduling points are MALIN_5_N101, and SYLMARDC_2_N501, respectively. And the APnode name in the FNM for Palo Verde is PALOVRDE_ASR-APND.

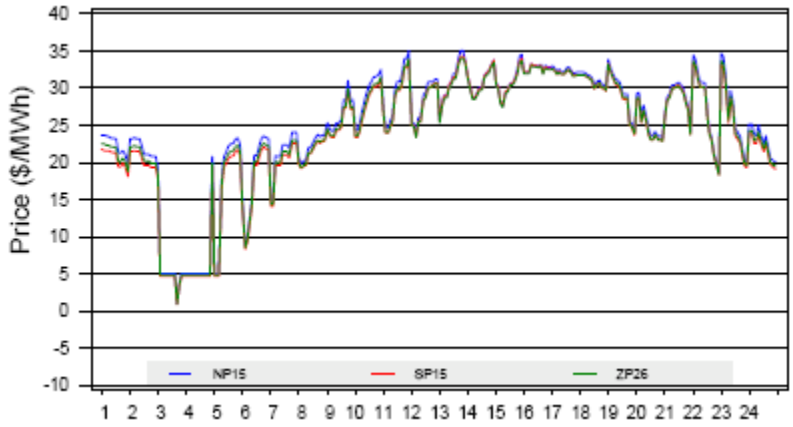
Figure 2: Selected HASP Tie Point LMPs (Hourly Average)



RTD Trading Hub LMPs

Figure 3 shows the RTD LMPs for three Trading Hubs – NP15, SP15 and ZP26- for each of the 5-minute intervals.

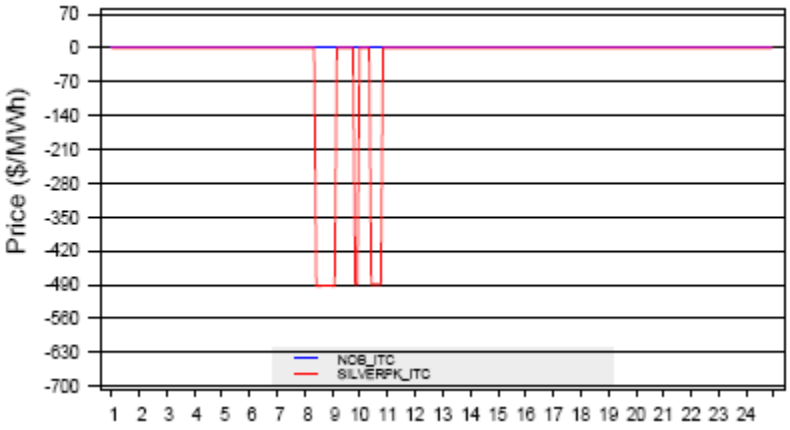
Figure 3: RTD Trading Hub LMPs



Selected RTD Intertie Shadow Prices

Figure 4 shows the RTD shadow prices by interties for each of the 5-minute intervals. At most four Interties are displayed in this graph based on the methodology explained in **Appendix I**.

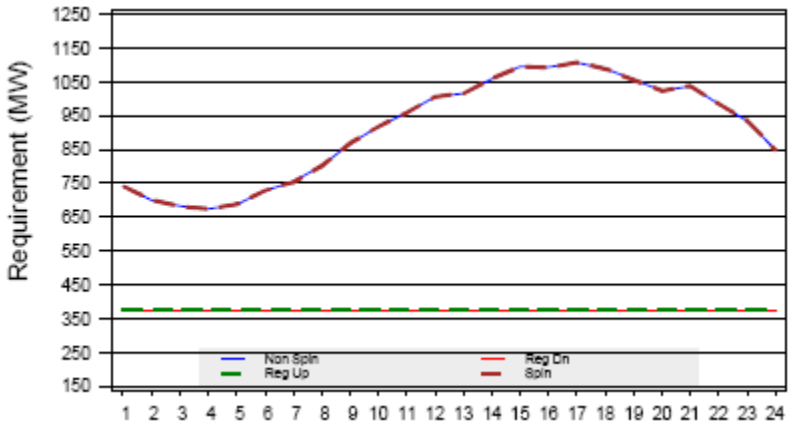
Figure 4: Selected RTD Intertie Shadow Prices



RTPD A/S System Requirement

Figure 5 shows the Real-Time Pre-Dispatch (RTPD) hourly Ancillary Service requirements for Regulation Up, Regulation Down, Spin and Non-Spin for the CAISO expanded region.

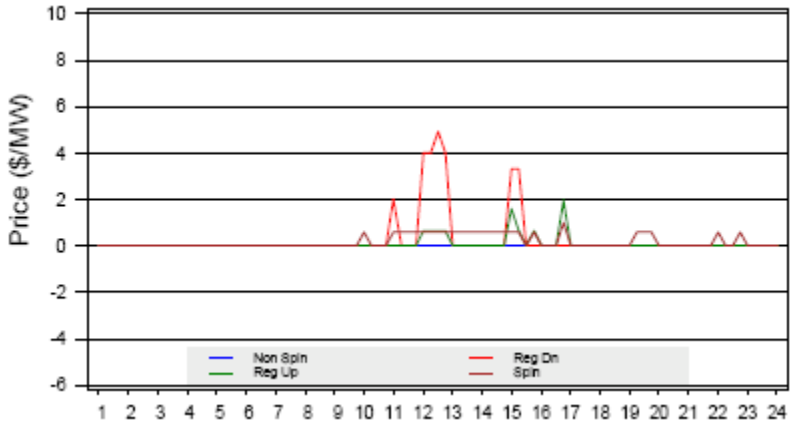
Figure 5: RTPD A/S System Requirement



RTPD A/S Average Price

Figure 6 shows the average price from the RTPD for all four types of Ancillary Services for each of the 15-minute intervals. The average price for a particular type of Ancillary Service is the ratio of total cost of procuring non-self scheduled Ancillary Service to the total non-self scheduled procured quantity. Note that all the day-ahead Ancillary Service awards are taken as the self-scheduled quantities in RTPD.

Figure 6: RTPD A/S Average Price



RTD LMP Statistics for On and Off-Peak Hours ($/MWh)

Table 1 shows the maximum, mean and minimum of the RTD LMPs for three default LAPs and three Trading Hubs by on-peak and off-peak hours. Peak hours are defined as Monday through Saturday, excluding North American Electric Reliability Council (NERC) holidays, from HE 7 to HE 22 (6:00 AM to 10:00 PM). All other hours are off-peak hours.

Table 1: RTD LMP Statistics for On and Off-Peak hours ($/MWh)

	NP15			SP15			ZP26			PGAE			SCE			SDGE		
	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min
OFF	36.51	27.10	19.48	36.05	26.17	18.49	35.62	26.32	18.72	37.64	27.87	19.95	36.89	26.81	18.93	37.07	26.67	18.79
ON	1595.17	108.15	-30.39	1637.40	112.52	-28.98	1593.55	106.47	-29.33	1664.36	113.65	-31.15	1679.12	111.45	-29.49	1686.96	161.86	-29.31

Appendix I

Figure 4 displays the shadow prices of binding constraints on interties. On any given day, there could be anywhere between no binding constraints to more than 10 binding constraints. This report highlights only important market events; as a result, this graph shows at most four binding constraints. The top four binding constraints are selected based on their congestion rents as explained below.

$$C_{ijk} = (Shadow\_Price_{ijk} * Flowlimit_{ijk})$$

C_{ijk} is the congestion rent for binding constraint i at interval j of hour k

i = 1 to M, where M is the total number of binding constraints for a particular trade date.

$$D_i = \sum_{k=1}^{H} \sum_{j=1}^{12} C_{ijk}$$

Where D_i = Daily total congestion rent for binding constraint i.

H = Total number of trading hours for a particular trade date

$$T = \sum_{i=1}^{M} D_i$$

Where T = Total congestion rent for all binding constraints on interties.

$$P_i = \frac{D_i}{T}$$

Where P_i is the percentage of congestion rent for binding constraint i.

Figure 4 shows the top four binding constraints on interties based on the rank of percentages.