

Market Highlights¹ (July 11–July 24)

- The average DLAP price in the integrated forward market was \$79.08. The maximum and minimum DLAP prices were \$1,007.51 and \$23.98, respectively. The maximum and minimum PNode prices in the integrated forward market were \$1,205.96 and -\$993.34 respectively.
- The top two interties congested in the integrated forward market were NOB_ITC and MALIN500. Congestion rents in these two weeks totaled \$58,594,264.71.
- The average day-ahead ancillary service prices were between \$0.00 and \$790.61.
- Approximately 97.44 percent of the RUC requirements were met from RA units.
- The average real-time FMM DLAP price was \$56.59, with a maximum price of \$1,070.90 and a minimum price of -\$5.91. The maximum and minimum PNode prices in the FMM were \$1,650.20 and -\$962.07, respectively.
- Out of the total 1,344 FMM intervals, 29 intervals saw DLAP prices above \$250, and 0 intervals saw DLAP prices below -\$150.
- Out of the total 1,344 FMM intervals, 91 intervals saw ELAP prices above \$250 and 19 intervals saw ELAP prices below -\$150.
- The average real-time FMM ELAP price was \$35.54, with a maximum price of \$1,077.62 and a minimum price of -\$164.31.
- The average real-time RTD DLAP price was \$61.04, with a maximum price of \$1,720.96 and a minimum price of -\$174.07. The maximum and minimum PNode prices in the RTD were \$1,568.02 and -\$1,269.62, respectively.
- Out of the total 4,032 RTD intervals, 117 intervals saw DLAP prices above \$250 and 1 interval saw DLAP prices below -\$150.
- Out of the total 4,032 RTD intervals, 257 intervals saw ELAP prices above \$250 and 93 intervals saw ELAP prices below -\$150. The average real-time RTD ELAP price was \$37.48, with a maximum price of \$1,066.05 and a minimum price of -\$211.74.
- Root cause for daily high price events are noted in Tables 1 and Table 2.

Table 1 FMM Intervals	
Trade Date	Root Cause
FMM Jul 11 HE 18	Load changes, changes in renewable forecast, congestion on 30060_MIDWAY _500_24156_VINCENT _500_BR_2_3 and

¹ A description of the metrics presented in this report is available at <http://www.caiso.com/Documents/WeeklyPerformanceReportMetricsKey.pdf>

Table 1 FMM Intervals	
Trade Date	Root Cause
	RM_TM12_NG
FMM Jul 11 HE 20	Loach changes, changes in renewable forecast, congestion on RM_TM12_NG.
FMM Jul 18 HE 22; July 23 HE 14,15,16,17; Jul 24 HE 1,11,14	Congestion on 6510_CP1_NG
FMM Jul 23 HE 14	Congestion on 6510_CP1_NG
FMM Jul 23 HE 18; Jul 24 HE 16, HE 17	Congestion on 24092_MIRALOMA_500_24093_MIRALOM_230_XF_1_P and 24092_MIRALOMA_500_24093_MIRALOM_230_XF_4_P
FMM Jul 24 HE 15	Congestion on 22500_MISSION_138_22496_MISSION_69.0_XF_1 and 6410_CP1_NG
FMM Jul 24 HE 18 int 1	Congestion on 24092_MIRALOMA_500_24093_MIRALOM_230_XF_4_P and 6410_CP1_NG.
FMM Jul 24 HE 18 int 4; HE 19, 20	Reduction of net imports.

Table 1 RTD Intervals	
Trade Date	Root Cause
RTD Jul 11 HE 16,17,18	Congestion on 30060_MIDWAY_500_24156_VINCENT_500_BR_2_3, congestion on RM_TM12_NG, load changes, and renewable deviation.
RTD Jul 12 HE 1; Jul 13 HE 16	Congestion on 30060_MIDWAY_500_24156_VINCENT_500_BR_2_3 and load changes.
RTD Jul 12 HE 17	Congestion on 30060_MIDWAY_500_24156_VINCENT_500_BR_2_3.
RTD Jul 15 HE 19	Renewable deviation, load changes, and congestion on 6410_CP5_NG.
RTD Jul 15 HE 23; Jul 16 HE 1, 21; Jul 17 HE 23	Congestion on 6410_CP5_NG and 30055_GATES1_500_30900_GATES_230_XF_11_S
RTD Jul 17 HE 1	Congestion on 6510_CP1_NG, 6410_CP5_NG, and 30055_GATES1_500_30900_GATES_230_XF_11_S
RTD Jul 18 HE 2, HE 7	Congestion on 6510_CP1_NG.
RTD Jul 18 HE 19, HE 21, HE 23	Load changes, reduction of net imports, and congestion on 6510_CP1_NG.
RTD Jul 18 HE 11, HE 14; Jul HE 7, HE 8, HE 14; Jul 20 HE 20, HE 21, HE 23; Jul 21 HE 15	Congestion on 6510_CP1_NG.
RTD Jul 20 HE 13	Congestion on 22356_IMPRLVLY_230_21025_ELCENTRO_230_BR_1_1
RTD Jul 20 HE 18	Congestion on 6510_CP1_NG, load changes, and renewable deviation.
RTD Jul 20 HE 19	Congestion on 6510_CP1_NG and renewable deviation.
RTD Jul 24 HE 13, HE 14	Load changes.
RTD Jul 24 HE 2	Congestion on RBS-HA_525kV
RTD Jul 24 HE 17 int 3	Congestion on 22500_MISSION_138_22496_MISSION_69.0_XF_1, 24092_MIRALOMA_500_24093_MIRALOM_230_XF_1_P, and 6410_CP1_NG.
RTD Jul 24 HE 17 int 9; HE 18, HE 19, HE 20,	Load changes and reduction of net imports.



Figure 1: Day-Ahead (IFM) LAP LMP and Cleared Bid-In Demand

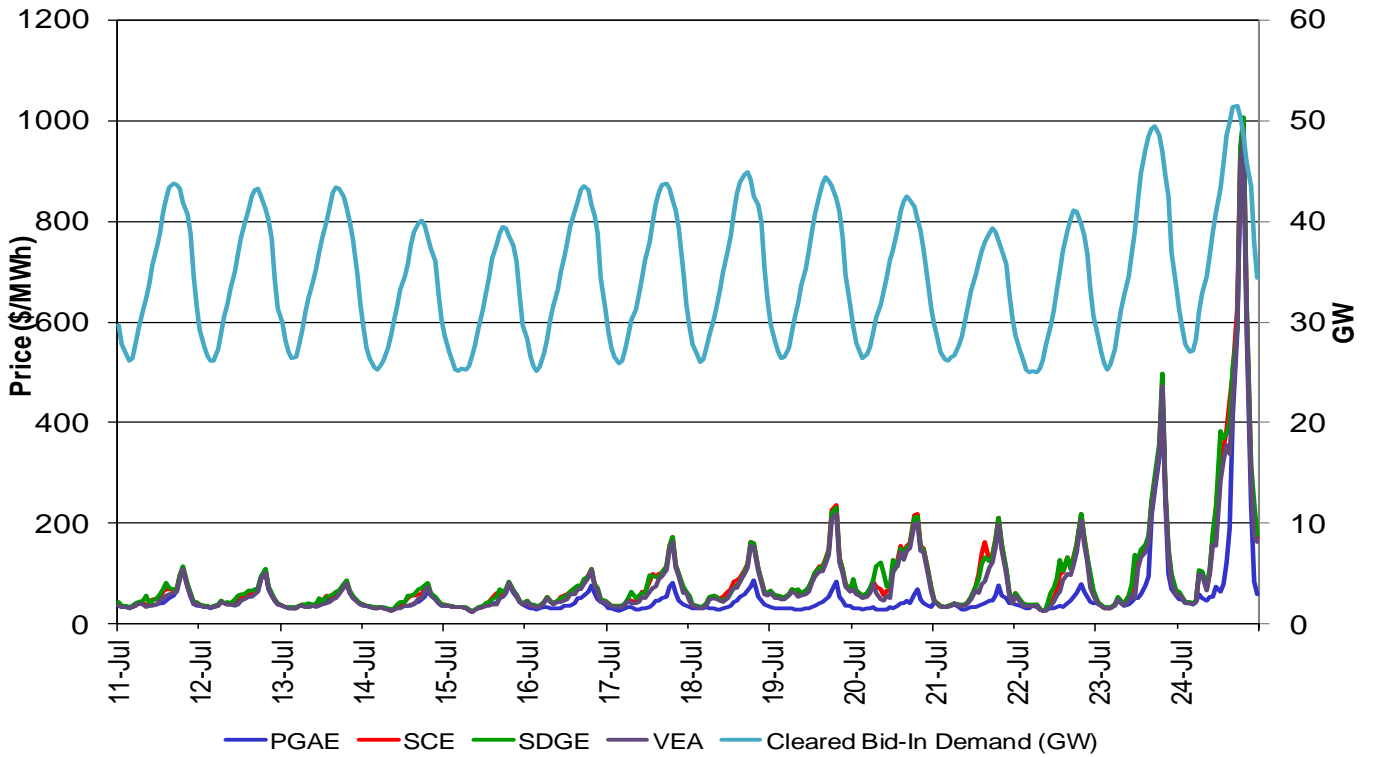


Figure 2: Day-Ahead Congestion Rents

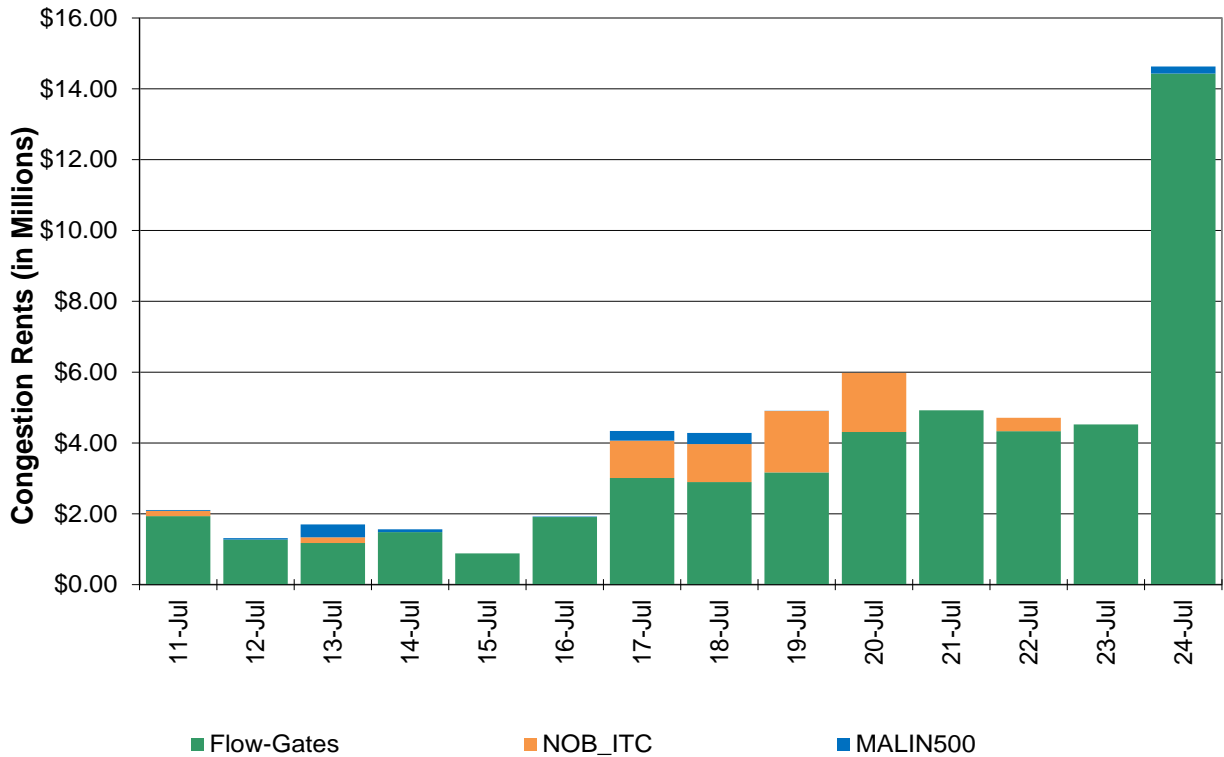


Figure 3: Day-Ahead Congestion Rents for Flow-Based Constraints

Transmission Constraint	Congestion Rent
6410_CP5_NG	\$ 8,920,599.48
6410_CP1_NG	\$ 7,683,410.46
24036_EAGLROCK_230_24059_GOULD_230_BR_1_1	\$ 7,004,710.18
24016_BARRE_230_25201_LEWIS_230_BR_1_1	\$ 6,278,106.50
24092_MIRALOMA_500_24093_MIRALOM_230_XF_1_P	\$ 2,392,274.00
RM_TM12_NG	\$ 2,212,467.48
7820_TL23040_IV_SPS_NG	\$ 2,133,136.53
IID-SCE_BG	\$ 2,041,217.82
37016_RNCHSECO_230_30510_CAMANCH_230_BR_2_1	\$ 1,652,129.76
30055_GATES1_500_30900_GATES_230_XF_11_S	\$ 907,315.52
22192_DOUBLTTP_138_22300_FRIARS_138_BR_1_1	\$ 852,213.81
33310_SANMATEO_115_30700_SANMATEO_230_XF_7_S	\$ 764,969.72
30060_MIDWAY_500_24156_VINCENT_500_BR_1_1	\$ 703,403.79
OMS_6149794_TL23021_41_NG	\$ 559,773.61
OMS_6107673_SUNCREST BK81_NG	\$ 398,546.06
24016_BARRE_230_24154_VILLA PK_230_BR_1_1	\$ 384,253.74
32056_CORTINA_60.0_30451_CRTNA M_1.0_XF_1	\$ 360,113.78
7820_TL_230S_OVERLOAD_NG	\$ 353,369.24
36851_NORTHERN_115_36852_SCOTT_115_BR_2_1	\$ 305,919.26
34112_EXCHEQUR_115_34116_LE GRAND_115_BR_1_1	\$ 295,674.73
7750_D-VISTA1_OOS_CP5_NG	\$ 288,434.66
22208_EL CAJON_69.0_22408_LOSCOCHS_69.0_BR_1_1	\$ 255,910.35
35122_NWARK EF_115_35350_AMES BS_115_BR_2_1	\$ 236,958.78
34548_KETTLEMN_70.0_34552_GATES_70.0_BR_1_1	\$ 201,515.84
22480_MIRAMAR_69.0_22756_SCRIPPS_69.0_BR_1_1	\$ 185,050.94
33315_RAVENSWD_115_33316_CLYLDG_115_BR_1_1	\$ 173,241.17
30515_WARNERVL_230_30800_WILSON_230_BR_1_1	\$ 154,236.09
33378_WTRSHTPA_60.0_33380_JEFFERSN_60.0_BR_1_1	\$ 152,925.39
33008_GRIZLYJ2_115_33010_SOBRANTE_115_BR_2_1	\$ 151,050.38
33310_SANMATEO_115_30700_SANMATEO_230_XF_7_P	\$ 148,040.81
OMS_5878344_MOSSLD_METCLF_500	\$ 139,439.01
25001_GOODRICH_230_24076_LAGUBELL_230_BR_1_1	\$ 135,112.09
32326_ENCL TAP_60.0_32332_PEASE_60.0_BR_1_1	\$ 127,323.98
32218_DRUM_115_32244_BRNSWKT2_115_BR_2_1	\$ 107,044.64
32765_ELCTOTP2_115_33010_SOBRANTE_115_BR_1_1	\$ 100,932.30
32768_RICHMOND_115_33010_SOBRANTE_115_BR_2_1	\$ 97,446.40
33020_MORAGA_115_32780_CLARMNT_115_BR_1_1	\$ 96,342.65
22372_KEARNY_69.0_22140_CLARMTTP_69.0_BR_1_1	\$ 93,883.04
22420_SILVERGT_69.0_22868_URBAN_69.0_BR_1_1	\$ 89,451.23
33203_MISSON_115_33204_POTRERO_115_BR_1_1	\$ 86,082.97
34116_LE GRAND_115_34134_WILSONAB_115_BR_1_1	\$ 77,677.72
22356_IMPRLVLY_230_21025_ELCENTRO_230_BR_1_1	\$ 68,160.14
30830_KEARNEY_230_30835_HERNDON_230_BR_1_1	\$ 65,616.96

Figure 3: Day-Ahead Congestion Rents for Flow-Based Constraints (contin.)

Transmission Constraint	Congestion Rent
30575_WND MSTR_230_38610_DELTAPMP_230_BR_1_1	\$ 53,242.86
32212_E.NICOLS_115_32214_RIO OSO_115_BR_1_1	\$ 52,871.98
34469_GFFNJCT_70.0_34470_GIFFEN_70.0_BR_1_1	\$ 51,270.90
22136_CLAIRMNT_69.0_22140_CLARMTTP_69.0_BR_1_1	\$ 49,486.20
33936_MELNS JB_115_33951_VLYHMTP1_115_BR_1_1	\$ 44,890.24
31080_HUMBOLDT_60.0_31088_HMBLT JT_60.0_BR_1_1	\$ 42,496.33
34860_TAFT_70.0_34943_Q356TAP_70.0_BR_1_1	\$ 41,569.32
24086_LUGO_500_26105_VICTORVL_500_BR_1_1	\$ 32,918.07
32225_BRNSWKT1_115_32222_DTCH2TAP_115_BR_1_1	\$ 31,824.75
31218_ER_FTNJT_115_31220_EGLE RCK_115_BR_1_1	\$ 30,062.26
31464_COTWDPGE_115_30105_COTTNWD_230_XF_1	\$ 25,276.21
33310_SANMATEO_115_33312_BELMONT_115_BR_1_1	\$ 23,594.21
7750_D-VISTA1_OOS_CP6_NG	\$ 20,409.01
31104_CARLOTTA_60.0_31105_RIODLLTP_60.0_BR_1_1	\$ 19,145.24
32756_CHRISTIE_115_33010_SOBRANTE_115_BR_1_1	\$ 16,295.13
33506_STANISLS_115_33503_FRGTNTP2_115_BR_1_1	\$ 14,826.94
31114_FRT SWRD_60.0_31116_GRBRVLE_60.0_BR_1_1	\$ 13,702.86
24087_MAGUNDEN_230_24153_VESTAL_230_BR_1_1	\$ 12,506.24
31306_WILLITS_60.0_31308_LYTNVLE_60.0_BR_1_1	\$ 11,109.90
22040_BARRETT_69.0_22416_LOVELAND_69.0_BR_1_1	\$ 10,928.37
31110_BRDGVLE_60.0_31112_FRUITLND_60.0_BR_1_1	\$ 9,443.97
32208_GLEAF TP_115_32214_RIO OSO_115_BR_1_1	\$ 7,082.37
30900_GATES_230_34378_GATES_115_XF_1	\$ 5,902.39
31090_HMBLT BY_60.0_31100_EEL RIVR_60.0_BR_1_1	\$ 5,886.01
31204_UKIAH_115_38020_CITY UKH_115_BR_1_1	\$ 5,705.03
35648_LLAGAS_115_35650_GILROY F_115_BR_1_1	\$ 5,400.60
22824_SWTWTRTP_69.0_22820_SWEETWTR_69.0_BR_1_1	\$ 4,062.14
22873_VINE SUB_69.0_22380_KETTNER_69.0_BR_1_1	\$ 3,655.00
34552_GATES_70.0_39003_Q633SS_70.0_BR_1_1	\$ 3,410.12
31214_GEYERS56_115_31220_EGLE RCK_115_BR_1_1	\$ 3,002.91
22820_SWEETWTR_69.0_22476_MIGUELTP_69.0_BR_1_1	\$ 2,764.48
34859_PRMTFMTP_70.0_34873_Q484TP_70.0_BR_1_1	\$ 2,687.53
33360_HILLSdle_60.0_33358_BERESFRD_60.0_BR_1_1	\$ 2,464.61
31581_OREGNTRL_60.0_31578_LOMS JCT_60.0_BR_1_1	\$ 2,329.85
33380_JEFFERSN_60.0_33387_WOODSIDE_60.0_BR_1_1	\$ 2,276.78
HUMBOLDT_IMP_NG	\$ 2,104.25
31000_HUMBOLDT_115_31452_TRINITY_115_BR_1_1	\$ 1,802.34
31084_HARRISST_60.0_31086_EUREKA_60.0_BR_1_1	\$ 1,529.61
33360_HILLSdle_60.0_33361_HLLSDLJT_60.0_BR_1_1	\$ 1,525.64
33357_SAN MATO_60.0_33364_ORACLE60_60.0_BR_1_1	\$ 1,340.25
33916_CURTISS_115_33917_FBERBORD_115_BR_1_1	\$ 1,129.62
34116_LE GRAND_115_34115_ADRA TAP_115_BR_1_1	\$ 586.06
33375_CLY LNDG_60.0_33382_S.R.I._60.0_BR_1_1	\$ 567.98

Figure 3: Day-Ahead Congestion Rents for Flow-Based Constraints (contin.)

Transmission Constraint	Congestion Rent
34471_SNJQJCT_70.0_34469_GFFNJCT_70.0_BR_1_1	\$ 555.31
31576_WNTU PMS_60.0_31578_LOMS JCT_60.0_BR_1_1	\$ 553.00
31108_SWNS FLT_60.0_31110_BRDGVLL_60.0_BR_1_1	\$ 368.02
31566_KESWICK_60.0_31582_STLLWATR_60.0_BR_1_1	\$ 278.38
31593_COWCREEK_60.0_31597_DESCHTP1_60.0_BR_1_1	\$ 108.65
34321_MCSWAINJ_70.0_34232_EXCHEQUR_70.0_BR_1_1	\$ 85.14
Totals	\$ 50,206,287.50

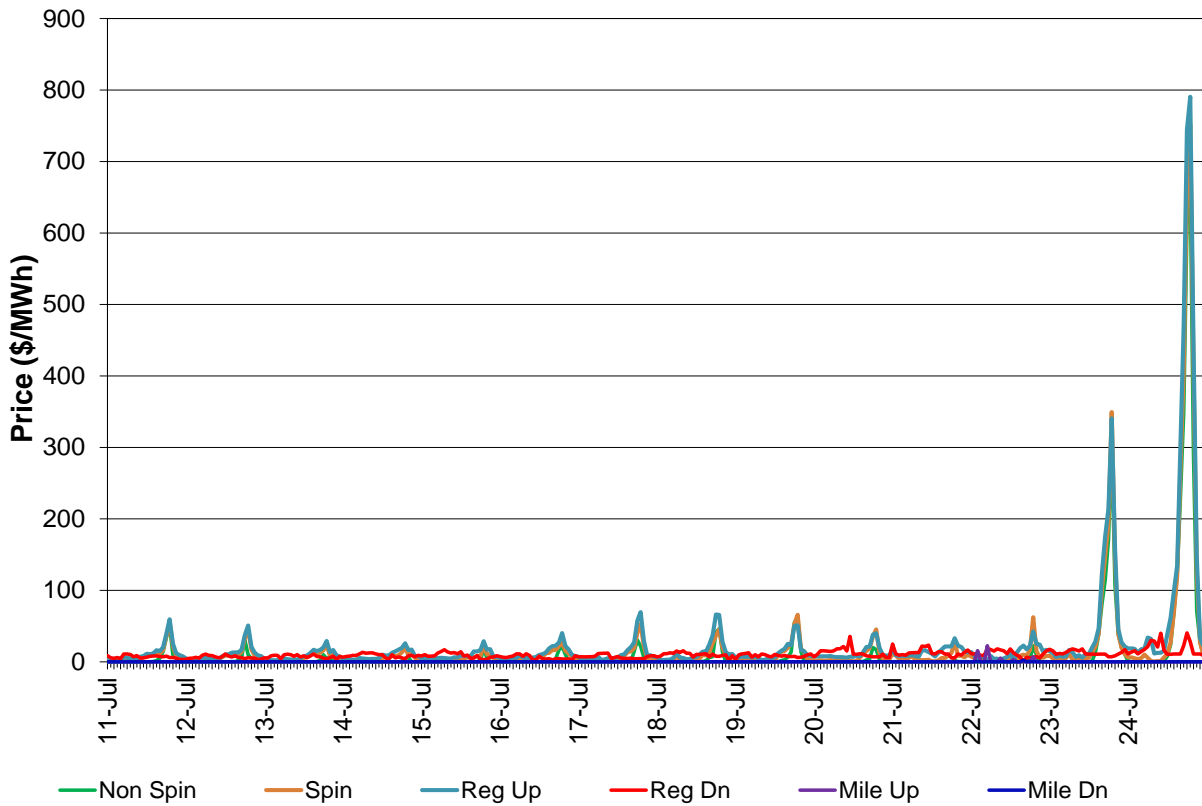
Figure 4: Day-Ahead (IFM) Average A/S Price




Figure 5: Day-Ahead Average RUC Price

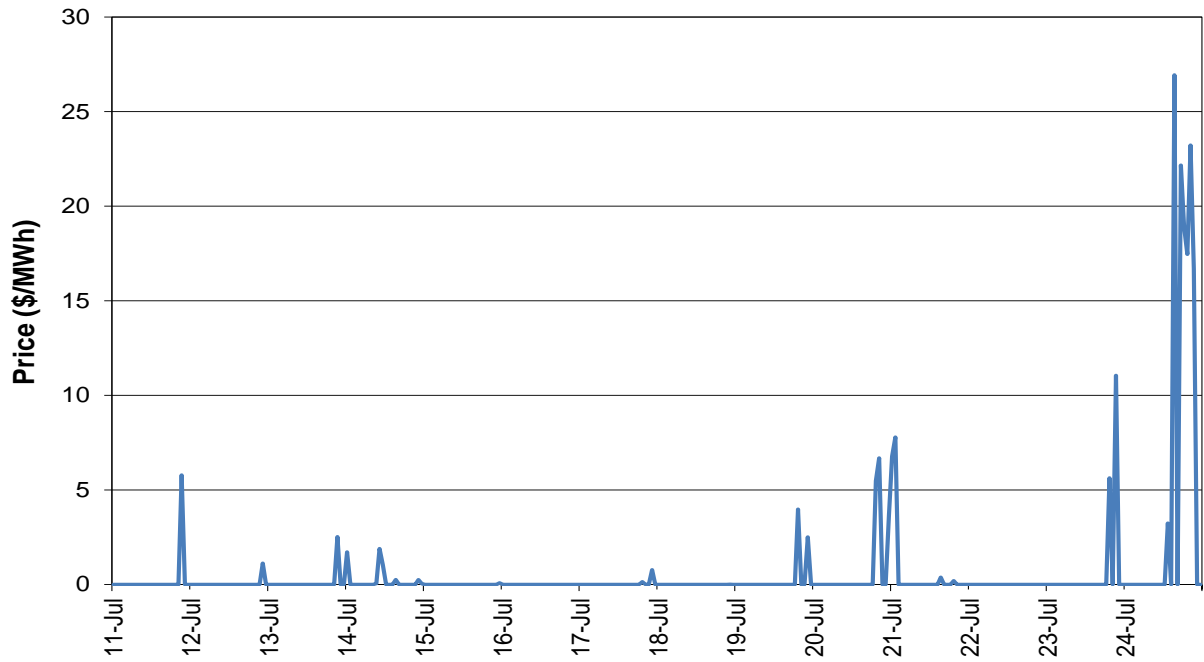


Figure 6: Real-Time FMM Average A/S Price

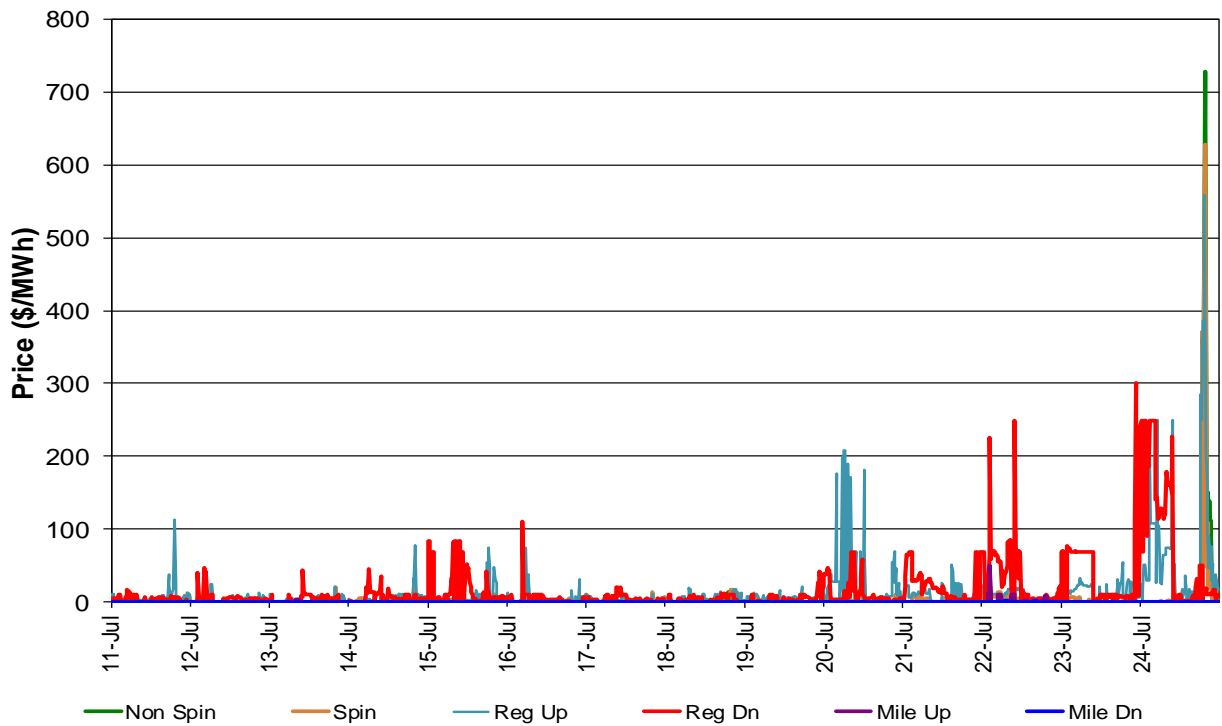




Figure 7: Real-Time FMM DLAP LMP

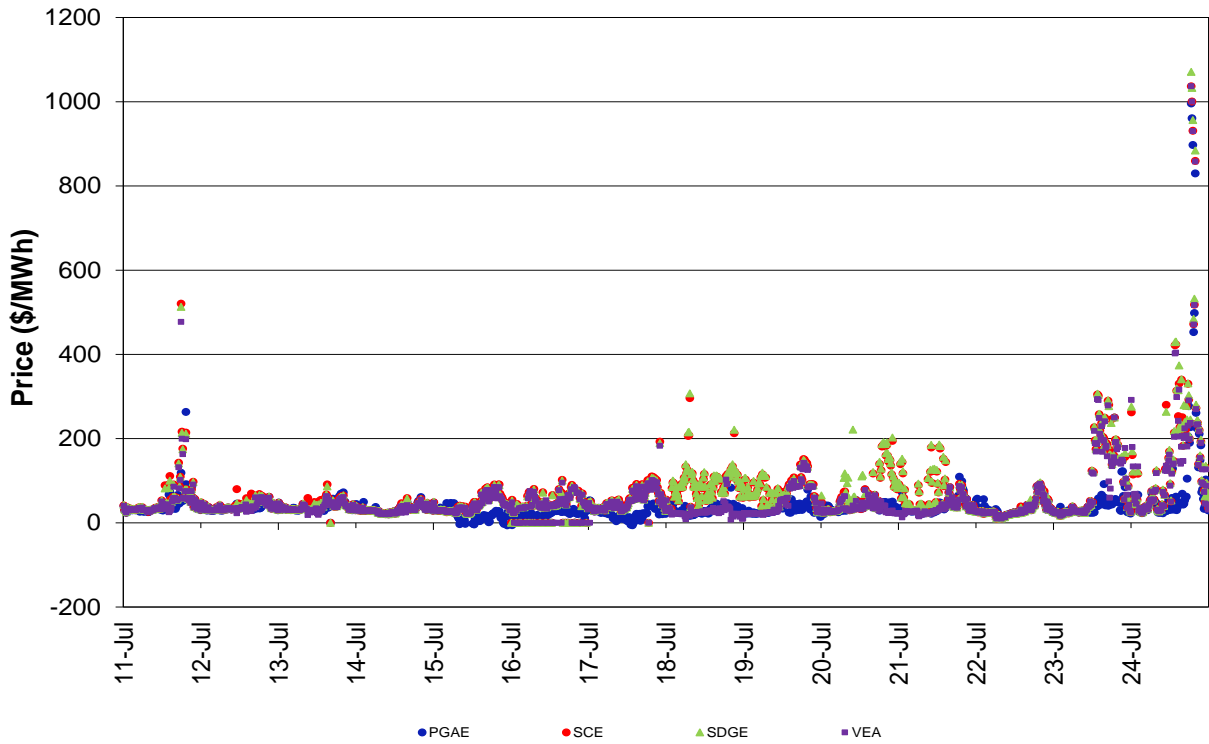


Figure 8: Real-Time RTD DLAP LMP

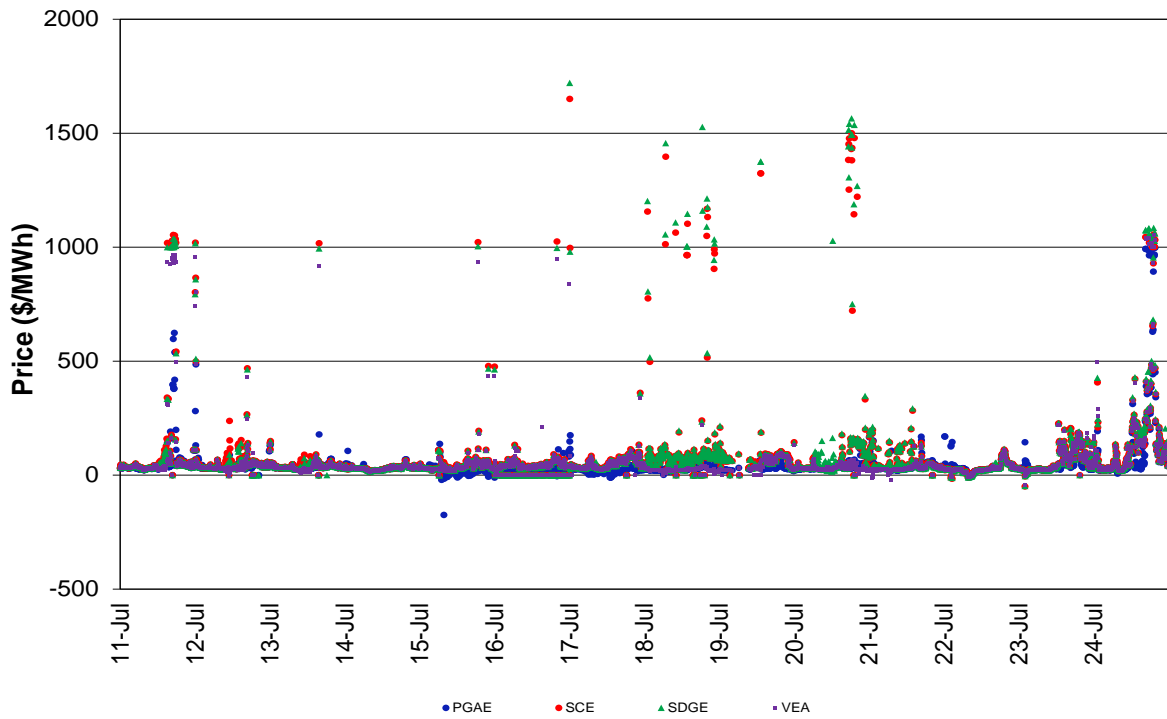


Figure 9: Real-Time FMM ELAP LMP

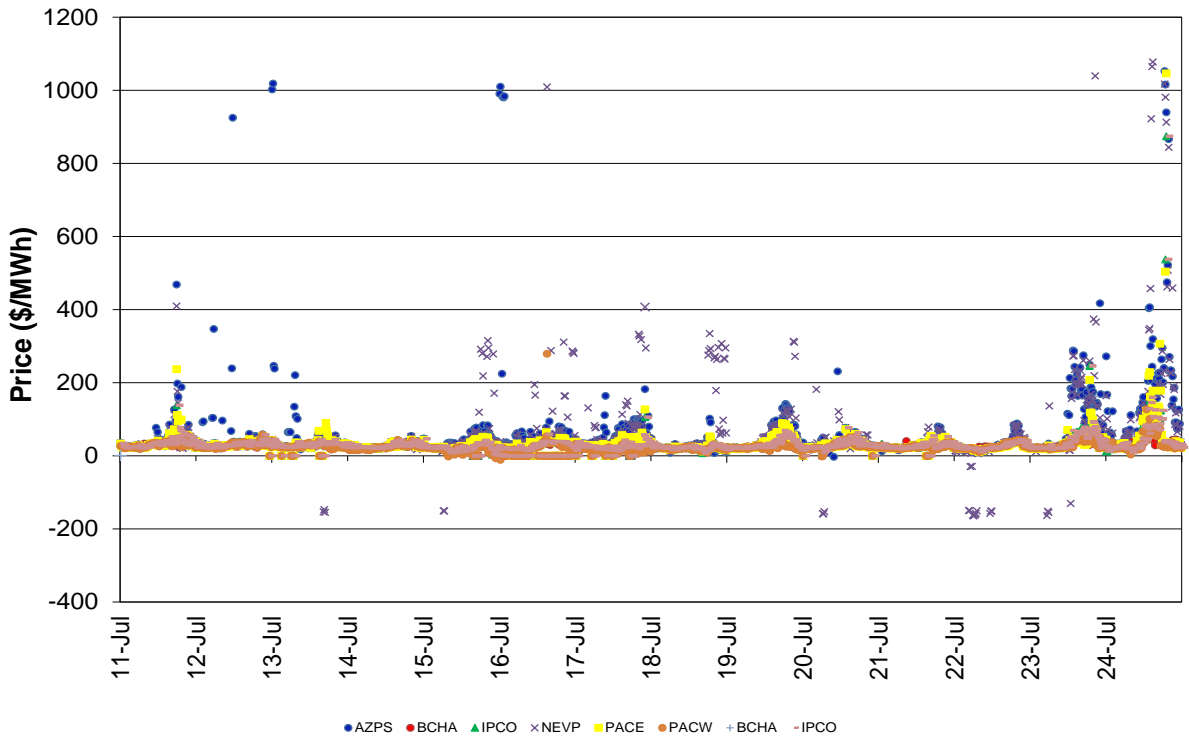


Figure 10: Real-Time RTD ELAP LMP

