

5 Inter-Zonal Congestion Management Markets

5.1 Inter-Zonal Congestion Management

Congestion occurs when the physical limits of a line, or inter-tie, prohibits load from being served with the least cost energy. The current zonal market distinguishes between inter- and intra-zonal congestion. Inter-zonal congestion refers to congestion that occurs between zones; intra-zonal congestion refers to congestion within a zone, which is discussed in the next chapter. Inter-zonal congestion is managed in forward markets on major inter-ties and two large internal paths (Path 15 and Path 26). Scheduling Coordinators (SCs) submit adjustment bids, which are dispatched to alleviate congestion while maintaining a balanced portfolio and minimizing congestion charges. The marginal adjustment bid dispatched to relieve congestion sets the congestion charge on the interface for the given period. Each SC pays a congestion charge depending on scheduled, accepted flows on the congested interface to the CAISO, which is then distributed back to holders of Firm Transmission Rights (FTRs) and Transmission Owners (TOs).

Congestion in 2007 increased in frequency and charges among almost all branch groups and inter-ties from 2006. The increase in congestion frequency and charges system-wide is mostly attributed to high north-to-south flows during the spring and early summer months coupled with transmission outages throughout the year and a few distinct events in the fall. Total congestion charges increased from \$56 million in 2006 to \$85 million in 2007, the first year since 2001 with charges over \$60 million. The Palo Verde branch group had the highest congestion charges, accounting for 25 percent of total charges; May was the most costly month in 2007 at \$12.1 million. The most frequently congested path in 2007 was the Pacific AC Inter-tie (PACI) at 32 percent of total annual hours. The spring and early summer months' congestion charges were concentrated on PACI and the Pacific DC Inter-tie (PDCI or NOB as referred to in the tables) as hydro electricity was imported from the Northwest across PACI and NOB to meet California load. The pattern of congestion transitioned to Palo Verde and Eldorado in the fall months as Northwest hydro went into the re-charge season and California shifted to rely more heavily on gas, nuclear, and coal generation from the Southwest.

Scheduling Coordinators can own FTRs to mitigate congestion charges they incur during the year. A FTR is both a financial instrument and a physical right to transmission. On the financial side, owners share in the distribution of Usage Charge revenues received by the CAISO due to inter-zonal congestion during the period for which the FTR was issued. The physical right is the priority given to FTR holders when scheduling energy across congested interfaces. FTRs are distributed to SCs through assignment, auction, secondary sales or trades, and transfers. Total revenues from the 2007-2008 FTR primary auction was \$121 million, a 16 percent increase from the 2006-2007 FTR primary auction. More FTR market transactions occurred through secondary auctions in 2007, compared to previous years, due to the delay of Market Redesign and Technology Upgrade (MRTU) and the need to extend FTRs beyond an MRTU implementation date that had become obsolete.

5.1.1 Overview

Under the current zonal model, the CAISO manages congestion in the forward market only on major inter-ties and two large internal paths (Path 15 and Path 26). It uses adjustment bids to mitigate congestion while minimizing the cost of schedule adjustments and keeping each SC's schedule in balance. The marginal SC establishes the usage charge for the inter-zonal interface. All SCs pay this charge based on their accepted, scheduled flow on the interface. The CAISO pays the net amount of congestion charges it collects to the Transmission Owners (TOs) and owners of FTRs. Figure 5.1 shows the active congestion zones and major inter-zonal pathways (branch groups) in the CAISO grid. The new footprint of the CAISO grid reflects several operational changes that were effective by May 3, 2007, including:

- A Pseudo Tie for Melones Plant¹
- Modification of the Palo Verde branch group²
- The new Tesla to Stanford branch group (TSLASTDFD_BG)³
- The new Oakdale to Los Banos branch group (OAKDLBNS_BG)⁴

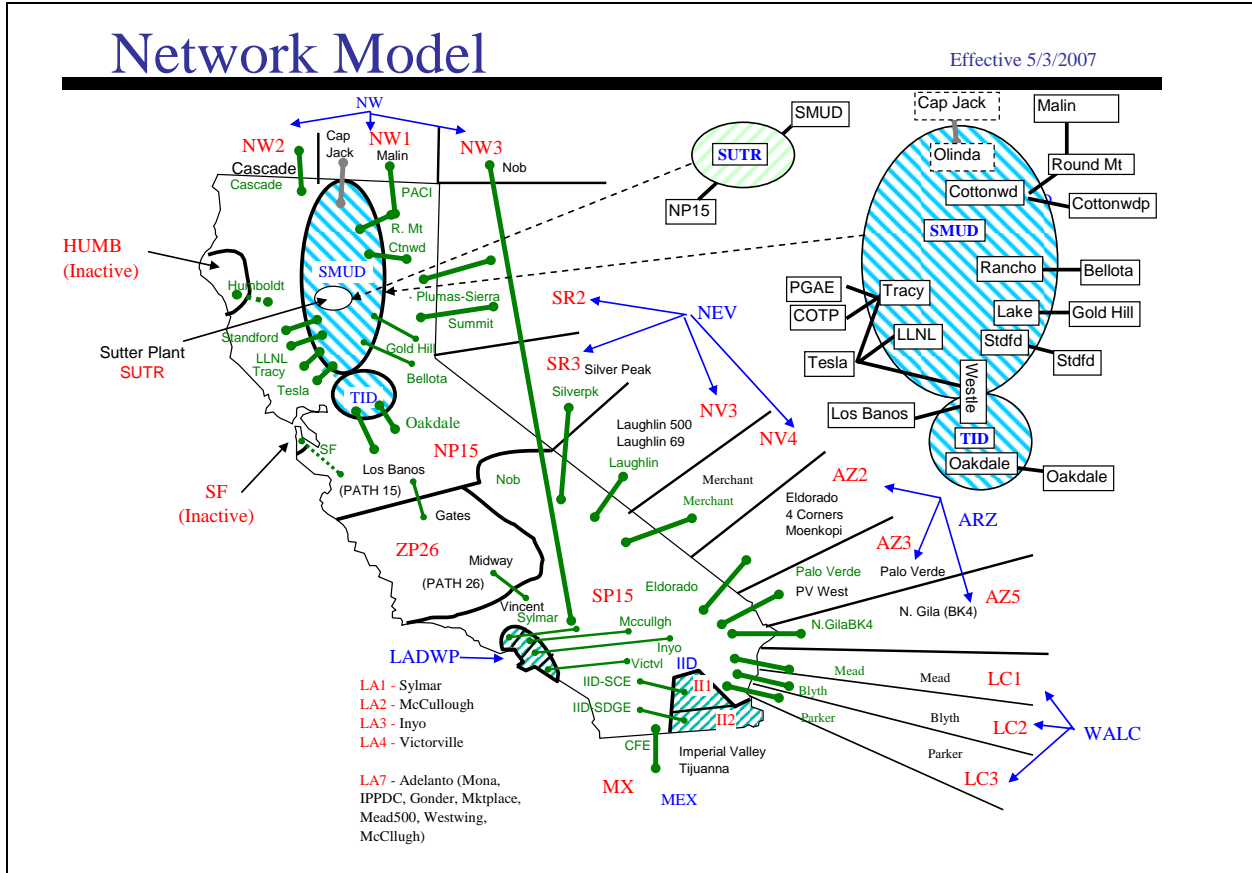
¹ The pseudo tie connects the Melones plant from SMUD to PG&E control area.

² The modification included combining Palo Verde and Palo Verde West into one inter-tie.

³ TSLASTDFD_BG includes the SMUD Inter-tie in Westly Los Banos and the SMUD-TID Inter-tie in Stanford Sub.

⁴ OAKDLBNS_BG includes the TID Inter-tie in Westly Los Banos and the TID Inter-tie in Oakdale CSF.

Figure 5.1 Active Congestion Zones and Branch Groups



Total inter-zonal congestion charges for the Day Ahead and Hour Ahead Markets in 2007 were \$85 million, which is a 51 percent increase from 2006. Table 5.1 shows the historical annual total inter-zonal congestion charges since the year 2001. The majority of 2007 inter-zonal congestion charges (89 percent) can be attributed to 7 branch groups (Palo Verde, PACI, Eldorado, IPP (DC)-Adelanto,⁵ NOB, Mead, Marketplace-Adelanto), with Palo Verde constituting the largest share. The next section provides a more detailed breakdown of congestion frequency and charges by individual branch group.

⁵ IPP-Adelanto is a 500kV DC transmission line owned by the Los Angeles Department of Water and Power (LADWP).

Table 5.1 Historical Inter-Zonal Congestion Charges

| Year | Total Inter-Zonal Congestion Charges (\$ M) |
|------|---|
| 2001 | \$107 |
| 2002 | \$42 |
| 2003 | \$26 |
| 2004 | \$56 |
| 2005 | \$55 |
| 2006 | \$56 |
| 2007 | \$85 |

5.1.2 Inter-Zonal Congestion Frequency and Magnitude

This section summarizes frequencies and average congestion charges for major inter-zonal interfaces (branch groups) in 2007. Table 5.2 shows annual congestion frequencies and average congestion charges by branch group, direction (import or export), and market type (day-ahead or hour-ahead). The frequency of congestion in 2007 was highest on several of the main branch groups between the CAISO and neighboring control areas outside California. In the Day Ahead Market, the Mead, Palo Verde, Blythe, and Eldorado branch groups, the Pacific DC (also known as the North-of-Oregon Border Inter-tie, or NOB, as listed in the table), the Pacific AC (PACI), and the IPP(DC)-Adelanto (IPPDCADLN) Inter-ties all were congested in at least 10 percent of hours. In the Hour Ahead Market, the Pacific AC and DC Inter-ties were also congested in at least 10 percent of hours. The most frequently congested branch group in 2007 was the Pacific AC Inter-tie, at 32 percent in the Day Ahead Market, up from 18 percent in 2006. The PACI was also congested 18 percent of hours in the Hour Ahead Market in 2007, with all of the congestion being in the import direction. The increased congestion on PACI and NOB may be attributed to the lower hydro conditions in the Pacific Northwest and California in 2007. Despite low overall hydro conditions, California's hydro conditions were lower than the Pacific Northwest, resulting in high north-to-south flows across PACI into the CAISO control area during the spring and early summer months. Congestion charges on PACI averaged \$3/MWh in the Day Ahead Market and \$17/MWh in the Hour Ahead Market, which was comparable to average charges on the Pacific DC (NOB) branch group. Average⁶ day-ahead congestion charges on two major Southwest branch groups (Palo Verde and Eldorado) were higher than the Northwest, averaging \$6/MWh and \$8/MWh, respectively. Congestion frequency on the IPPDCADLN Inter-tie in the Day Ahead Market increased significantly from 6 percent in 2006 to 29 percent in 2007, mostly due to several transmission de-rates and outages in September and October.

⁶ The Average Congestion Price is the average price only during congested hours. When the inter-tie is not congested, the congestion price is \$0.

Table 5.2 Inter-Zonal Congestion Frequencies (2007)⁷

| Branch Group | Day-Ahead Market | | | | Hour-ahead Market | | | |
|--------------|---|--------|-----------------------------------|--------|---|--------|-----------------------------------|--------|
| | Percentage of Hours Being Congested (%) | | Average Congestion Price (\$/MWh) | | Percentage of Hours Being Congested (%) | | Average Congestion Price (\$/MWh) | |
| | Import | Export | Import | Export | Import | Export | Import | Export |
| ADLANTOSP | 6 | 0 | \$4 | \$0 | 2 | 0 | \$42 | \$0 |
| BLYTHE | 10 | 0 | \$14 | \$0 | 0 | 0 | \$57 | \$0 |
| CASCADE | 7 | 0 | \$0 | \$0 | 4 | 0 | \$1 | \$0 |
| CFE | 0 | 0 | \$0 | \$0 | 0 | 0 | \$87 | \$0 |
| ELDORADO | 13 | 0 | \$8 | \$0 | 6 | 0 | \$21 | \$0 |
| GONDIPDC | 0 | 0 | \$0 | \$0 | 0 | 1 | \$0 | \$38 |
| IID-SCE | 0 | 0 | \$0 | \$0 | 0 | 0 | \$10 | \$0 |
| IID-SDGE | 0 | 0 | \$0 | \$0 | 0 | 0 | \$30 | \$0 |
| IPPDCADLN | 29 | 0 | \$6 | \$0 | 8 | 0 | \$58 | \$0 |
| MEAD | 18 | 0 | \$4 | \$0 | 9 | 0 | \$21 | \$0 |
| MERCHANT | 0 | 0 | \$0 | \$0 | 0 | 0 | \$0 | \$0 |
| MKTPCADLN | 5 | 0 | \$18 | \$0 | 1 | 0 | \$43 | \$0 |
| MONAIPDC | 0 | 2 | \$0 | \$7 | 0 | 1 | \$0 | \$67 |
| NOB | 17 | 0 | \$5 | \$17 | 10 | 0 | \$24 | \$5 |
| PACI | 32 | 0 | \$3 | \$0 | 18 | 0 | \$17 | \$0 |
| PALOVNDE | 19 | 0 | \$6 | \$0 | 9 | 0 | \$34 | \$0 |
| PARKER | 8 | 0 | \$9 | \$0 | 0 | 0 | \$46 | \$0 |
| PATH15 | 0 | 0 | \$16 | \$0 | 0 | 0 | \$52 | \$0 |
| PATH26 | 0 | 1 | \$0 | \$4 | 0 | 1 | \$1 | \$19 |
| SILVERPK | 0 | 0 | \$15 | \$0 | 1 | 0 | \$9 | \$0 |
| SUMMIT | 2 | 0 | \$0 | \$0 | 1 | 0 | \$9 | \$84 |
| TRACYCOTP | 0 | 0 | \$2 | \$0 | 0 | 0 | \$13 | \$0 |
| TSLASTDFD | 0 | 0 | \$0 | \$30 | 0 | 0 | \$0 | \$0 |
| WSTWGMEAD | 5 | 0 | \$13 | \$0 | 1 | 0 | \$9 | \$15 |

5.1.3 Inter-Zonal Congestion Usage Charges and Revenues

Table 5.3 shows the total annual congestion charges for the major CAISO branch groups in 2007. Total congestion charges system-wide of \$85.1 million represents a 51 percent increase above the 2006 total. Twenty five (25) percent of total congestion charges were incurred on the Palo Verde branch group in the import direction in 2007, compared to 30 percent in 2006. Another 18 percent was incurred on the Pacific AC Inter-tie (PACI), all in the import direction, compared to the 21 percent of total congestion charges incurred in 2006. Both Palo Verde and PACI had a decrease in their share of total congestion charges, while actual congestion charges increased \$4.5 million and \$3.4 million respectively. Other branch groups with significant increases in congestion charges over 2006 include: the Pacific DC Inter-tie (NOB), which increased 119 percent in congestion charges from 2006; the IPP(DC)-to-Adelanto (IPPDCADLN) branch group increased 93 percent in congestion charges; the Blythe branch group congestion charges increased more than sixteen times; and the Marketplace-to-Adelanto branch group congestion charges increased more than twenty times from 2006. The only branch group that experienced a decline in congestion charges from 2006 was Path 26, which

⁷ In all tables, north-to-south congestion on Path 26 is represented as “Exports”. South-to-north congestion on Path 15 is represented as “Imports”.

incurred \$3.36 million in 2006 and only \$1.3 million in 2007, representing a 60 percent decrease.

Table 5.3 Inter-Zonal Congestion Charges (2007)⁸

| Branch Group | Day-ahead | | Hour-ahead | | Total Congestion Charges | | Total Congestion Charges | | Total Congestion Charges | Total Charges Percent |
|--------------|---------------------|--------------------|------------------|------------------|--------------------------|--------------------|--------------------------|--------------------|--------------------------|-----------------------|
| | Import | Export | Import | Export | Import | Export | Day-ahead | Hour-ahead | | |
| ADLANTOSP | \$2,124,792 | \$0 | \$117,527 | \$0 | \$2,242,318 | \$0 | \$2,124,792 | \$117,527 | \$2,242,318 | 3% |
| BLYTHE | \$2,085,431 | \$0 | \$64,922 | \$0 | \$2,150,353 | \$0 | \$2,085,431 | \$64,922 | \$2,150,353 | 3% |
| CASCADE | \$1,949 | \$0 | \$3,668 | \$0 | \$5,617 | \$0 | \$1,949 | \$3,668 | \$5,617 | 0% |
| CFE | \$577 | \$0 | \$23,046 | \$0 | \$23,623 | \$0 | \$577 | \$23,046 | \$23,623 | 0% |
| ELDORADO | \$9,146,578 | \$0 | \$239,013 | \$0 | \$9,385,591 | \$0 | \$9,146,578 | \$239,013 | \$9,385,591 | 11% |
| GONDIPPDC | \$0 | \$0 | \$0 | \$41,230 | \$0 | \$41,230 | \$0 | \$41,230 | \$41,230 | 0% |
| IID-SCE | \$0 | \$0 | \$2,193 | \$0 | \$2,193 | \$0 | \$0 | \$2,193 | \$2,193 | 0% |
| IID-SDGE | \$0 | \$0 | \$3,631 | \$10 | \$3,631 | \$10 | \$0 | \$3,641 | \$3,641 | 0% |
| IPPCADLN | \$8,060,476 | \$0 | \$209,315 | \$0 | \$8,269,791 | \$0 | \$8,060,476 | \$209,315 | \$8,269,791 | 10% |
| MEAD | \$4,497,756 | \$0 | \$340,338 | \$0 | \$4,838,094 | \$0 | \$4,497,756 | \$340,338 | \$4,838,094 | 6% |
| MERCHANT | \$206 | \$0 | \$0 | \$0 | \$206 | \$0 | \$206 | \$0 | \$206 | 0% |
| MKTPCADLN | \$3,257,325 | \$0 | \$31,310 | \$52 | \$3,288,635 | \$52 | \$3,257,325 | \$31,362 | \$3,288,687 | 4% |
| MONAIPPDC | \$1,032 | \$253,267 | \$0 | \$84,836 | \$1,032 | \$338,103 | \$254,300 | \$84,836 | \$339,136 | 0% |
| NOB | \$12,046,166 | \$68,066 | \$62,778 | -\$4,643 | \$12,108,944 | \$63,422 | \$12,114,232 | \$58,135 | \$12,172,367 | 14% |
| OAKDALSU | \$0 | \$0 | \$0 | \$1 | \$0 | \$1 | \$0 | \$1 | \$1 | 0% |
| PACI | \$15,175,369 | \$0 | \$262,535 | \$0 | \$15,437,905 | \$0 | \$15,175,369 | \$262,535 | \$15,437,905 | 18% |
| PALOVNDE | \$22,549,528 | \$0 | -\$936,166 | \$0 | \$21,613,362 | \$0 | \$22,549,528 | -\$936,166 | \$21,613,362 | 25% |
| PARKER | \$938,557 | \$0 | \$9,708 | \$0 | \$948,265 | \$0 | \$938,557 | \$9,708 | \$948,265 | 1% |
| PATH15 | \$2,108,667 | \$0 | \$85,915 | \$0 | \$2,194,582 | \$0 | \$2,108,667 | \$85,915 | \$2,194,582 | 3% |
| PATH26 | \$0 | \$1,049,190 | \$656 | \$292,414 | \$656 | \$1,341,604 | \$1,049,190 | \$293,070 | \$1,342,260 | 2% |
| SILVERPK | \$4,087 | \$0 | \$10,380 | \$0 | \$14,467 | \$0 | \$4,087 | \$10,380 | \$14,467 | 0% |
| STNDFDSTN | \$0 | \$0 | \$0 | -\$17 | \$0 | -\$17 | \$0 | -\$17 | -\$17 | 0% |
| SUMMIT | \$0 | \$0 | \$13,622 | \$24,794 | \$13,622 | \$24,794 | \$0 | \$38,416 | \$38,416 | 0% |
| TRACYCOTP | \$4,981 | \$0 | \$38,661 | \$0 | \$43,642 | \$0 | \$4,981 | \$38,661 | \$43,642 | 0% |
| TSLASTDFD | \$0 | \$53,527 | \$0 | \$0 | \$0 | \$53,527 | \$53,527 | \$0 | \$53,527 | 0% |
| WSTWGMEAD | \$603,578 | \$0 | \$21,130 | \$2,361 | \$624,708 | \$2,361 | \$603,578 | \$23,491 | \$627,070 | 1% |
| Total | \$82,607,055 | \$1,424,050 | \$604,181 | \$441,037 | \$83,211,236 | \$1,865,087 | \$84,031,105 | \$1,045,218 | \$85,076,323 | 100% |

The combined congestion charges for the two internal paths managed in the inter-zonal congestion market, Path 15 and Path 26, account for less than 5 percent of total congestion charges in 2007, compared to 9 percent in 2006. Path 26 was the only branch group with a decrease in total congestion charges, from \$3.4 million in 2006 down to \$1.3 million in 2007, \$0.4 million of which occurred during the wildfires in October. The majority of congestion on Path 15 occurred in November mainly due to a dynamic de-rate based on Midway generation as a result of work on Moss Landing-Los Banos 500kV and Diablo Canyon Unit #2 being out of service.

Exports from the CAISO Control Area resulted in only \$523,483 in congestion charges – 65 percent on Mona-IPP (DC) branch group, which connects to the Intermountain Power Project and is physically located in Utah.

Hour-ahead congestion accounted for 1.2 percent of congestion charges, or approximately \$1.05 million. This small proportion is due to the fact that hour-ahead congestion typically occurs after SCs have adjusted their day-ahead schedules or as the result of changes in line ratings after the closure of the Day Ahead Market. Only those SCs whose schedules change to help relieve congestion in the Hour Ahead Markets are required to pay hour-ahead congestion charges. Thus, the volume of transactions in the Hour Ahead Market is much lower than that in the Day Ahead Market.

⁸ In all tables, north-to-south congestion on Path 26 is represented as “Exports”. South-to-north congestion on Path 15 is represented as “Imports”.

5.1.3.1 Significant Transmission Events

There were several significant transmission events, forced outages, and scheduled outages that contributed to congestion charges on one or more major inter-ties or internal paths. Following is a brief description of selected major events that may have had a significant impact on congestion charges.

Adelanto 500kV was forced out of service on May 9 for equipment repairs. The line tripped and was out of service on May 10-May 11, and May 18. Due to the outages, Southern California Inter-ties were de-rated.

Captain Jack – Olinda was forced out of service from October 1 to October 3 and on October 12 to repair equipment, de-rating and contributing to congestion on the Pacific AC Inter-tie (PACI).

Celilo was out of service from October 1 to October 9 for annual maintenance, curtailing 1,000 MW. The outage de-rated the Pacific DC Inter-tie (PDCI) 1,900 MW north-to-south and 900 MW south-to-north, and added to congestion on PDCI in the import direction during October.

Celilo – Sylmar was out of service for maintenance work from October 9 to October 20, de-rating PDCI. On October 9, PDCI was de-rated to 500 MW in both directions and de-rated to approximately 1,000 MW in both directions from October 10 to October 20. For a few hours on December 6, PDCI was de-rated to zero in both directions when Celilo to Sylmar was forced out of service.

Eldorado – Moenkopi was forced out of service from May 7 to May 11, de-rating West of River, Westwing to Mead, and Eldorado to Moenkopi. The outage may have contributed to congestion on the de-rated lines as well as on several other Southwest inter-ties as flows across parallel lines were increased to meet load.

Malin – Round Mountain #1 line cleared and was forced out of service from April 30 to May 5, de-rating PACI by almost 2,000 MW north-to-south and adding to congestion on PACI and possibly on the PDCI as flows across those lines had to be increased to meet load.

Marketplace 500kV was de-energized and forced out of service from March 28 to March 29. The outage de-rated Southern California Inter-ties and East of River Inter-ties, leading to congestion on those lines.

Marketplace – Adelanto was out of service for scheduled work from December 1 to December 15, de-rating several branch groups and nomograms which include: Marketplace-Adelanto, Westwing-Mead, and Eldorado-Moenkopi branch groups and Southern California Inter-ties, East of River, and West of River nomograms.

Mira Loma 500kV was out of service from November 2 to November 3, de-rating South of Lugo by 2,000 MW. De-rating South of Lugo caused imports on other Southern inter-ties to increase, adding to congestion on those lines.

North Gila – Hassayampa was out of service from January 22 to January 25 due to scheduled work. The outage de-rated several Southwest inter-ties and nomograms, notably Palo Verde. Palo Verde was de-rated to 1,100 MW and 1,300 MW in the Day Ahead and Hour Ahead Markets respectively, resulting in approximately \$2 million in congestion charges.

Palo Verde #2 unit tripped on February 7, curtailing 220 MW, and returned to service on February 9. During the outage, the Southern California Inter-ties were de-rated, which

increased flows on other parallel importing lines and led to congestion on the Palo Verde branch group.

Palo Verde – Devers 500kV relayed on November 30 and was forced out of service through December 1, curtailing 500 MW. The outage de-rated all Southwest inter-ties, which may be attributed to almost \$1 million in congestion charges on Palo Verde.

San Onofre Units #2 and #3 were both out of service for several days in October. Prior to the fires, San Onofre Unit #3 was out of service for maintenance. On October 20, which was at the beginning of the Southern California Wildfires, San Onofre Unit #2 was forced out of service. With no San Onofre generation online, imports from the Southwest had to be increased to account for the 2,200 MW of lost internal generation. Increasing the Southwest imports added to the congestion on Palo Verde, and exacerbated the impact from the wildfires.

South West Power Link (SWPL) is a major importing line from Arizona into Southern California. During the October Southern California Wildfires, SWPL was forced out of service from October 24 to October 28, de-rating the Palo Verde tie, East of River, and West of River transfer capabilities. The loss of SWPL naturally causes power flow to increase on Palo Verde, a parallel importing line, which in this situation led to congestion on Palo Verde.

5.1.3.2 Significant Changes in Congestion Cost

As a result of the major transmission events and other system conditions (e.g., hydroelectric availability, regional energy demands), congestion charges on almost all major inter-ties and paths increased from 2006. Figure 5.2 compares congestion charges in 2006 and 2007 on selected major paths. Congestion charges increased on the Pacific AC Inter-tie (PACI) and the Pacific DC Inter-tie (NOB), which could be due to high north-to-south hydroelectric flows in the Pacific Northwest during the spring and summer and numerous transmission de-rates. Congestion charges also increased on Eldorado, Mead, and IPPDCADLN branch groups, most of which can be attributed to the Southern California wildfires and various transmission de-rates. The increased congestion charges on the Marketplace-Adelanto (MKTPLADLN) branch group is mostly due to two unrelated events, which are discussed below.

Figure 5.3 shows the seasonal pattern of congestion charges on major paths. High monthly congestion charges on several of the branch groups correspond with the timing of several major transmission events previously discussed. The highest cost month was May, which may be due to high north-to-south power flows on PACI and NOB in combination with maintenance work. October through December also had notably high congestion charges on Palo Verde and Eldorado, primarily due to the Southern California wildfires, transmission de-rates, and increased reliability on Southwest imports. Following is a brief discussion of events that led to increased congestion charges by branch group.

Figure 5.2 Congestion Charges on Selected Paths (2006 vs. 2007)

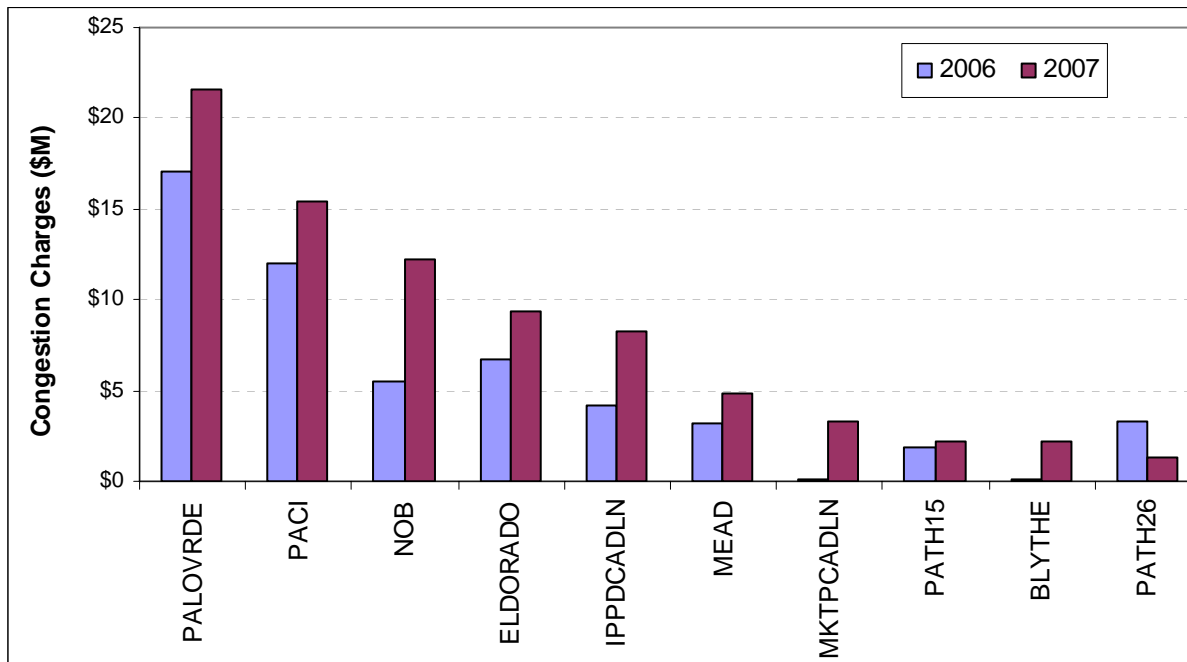
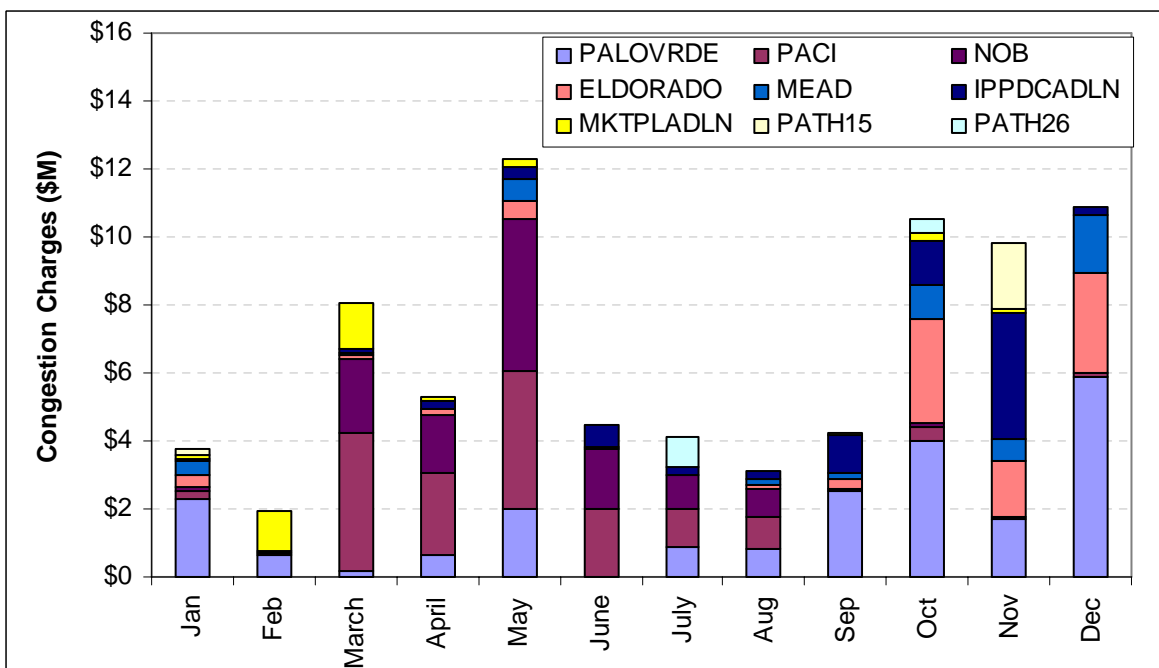


Figure 5.3 Monthly Congestion Charges on Selected Major Paths (2007)



Palo Verde had the highest total congestion charges in 2007 of \$21.6 million, a 26 percent increase from 2006. Four months (January, September, October, and December) account for 70 percent of the congestion charges on Palo Verde, which was all in the import direction.

January congestion charges totaled \$2.3 million, most of which was incurred from January 22 to January 25 when Palo Verde was de-rated due to work on North Gila to Hassayampa. The loss of SWPL and both San Onofre Units can also be attributed to congestion charges on Palo Verde in October, along with Mead being de-rated to zero from October 1-October 15. December's congestion charges on Palo Verde reached \$5.9 million, \$4.1 million of which occurred in the first week when Palo Verde to Devers 500kV was out of service, de-rating the Palo Verde branch group. The Marketplace-Adelanto and Celilo-Sylmar outages in December may have also added to the congestion as they both increased the reliance on the Palo Verde branch group. A significant portion of the day-ahead congestion charges on Palo Verde are hedged through Firm Transmission Rights, which are not accounted for in the figures represented here, making the actual congestion charges less than what is shown.

Pacific AC Inter-tie (PACI) congestion charges increased \$3.4 million from 2006, most of which can be attributed to high north-to-south flows in conjunction with several transmission outages throughout the year. High north-to-south flows were most likely a result of the increased imported hydroelectric generation from the Northwest into the CAISO Control Area on PACI due to Northern California's low hydro conditions during the spring months. The Captain Jack-Olinda outage in October as well as the Southern California Wildfires also contributed to the congestion charges on PACI.

Pacific DC Inter-tie (PDCI or NOB as in table) congestion charges increased \$6.6 million from 2006, most of which occurred during the spring months. Congestion charges in the spring are attributable to the high north-to-south flows as a result of Northern California's low hydro conditions. The wildfires and work on Celilo and Celilo-Sylmar also added to congestion charges on PDCI in October.

Eldorado congestion charges increased to \$9.4 million from \$6.7 million in 2006, most of which were incurred during the fall months, October to December; congestion charges incurred in May were a result of the Eldorado – Moenkopi outage. During the fall months, energy flows were from the Southwest to the Northwest to meet peak loads in the Northwest. In addition to the directional change of energy flows, the October wildfires, loss of SWPL, loss of two San Onofre Units, and work on Celilo-Sylmar added to congestion charges on Eldorado. Most of the December charges can be attributed to the Marketplace-Adelanto outage.

Intermountain Power Project DC to Adelanto (IPPDCADLN) congestion charges nearly doubled from 2006, reaching \$8.3 million. IPPDCADLN incurred congestion charges throughout the year, with the majority in November when South of Lugo was de-rated as a result of the Mira Loma 500kV outage. On November 5, the Intermountain Power Project (IPP) #1 was offline, accounting for approximately \$1 million in congestion charges.

Mead congestion occurred in several months, with the majority occurring during the fall. The congestion charges can mostly be attributed to the October wildfires, and work on Marketplace-Adelanto and Palo Verde-Devers. In December the Mead branch group was de-rated 600 MW on two days as a result of work on Navajo to West Wing, adding to the December congestion on Mead.

Marketplace to Adelanto congestion charges reached \$3.3 million, up from \$0.1 million in 2006. February and March were the high congestion months for MKTPLADLN. The increased congestion charges can mostly be attributed to two events. Palo Verde Unit #2 tripped on February 7, leading to high congestion prices on MKTPLADLN, and the Marketplace 500kV line was out of service in March, both of which can account for the majority of congestion charges on MKTPLADLN.

5.2 Firm Transmission Rights Market Performance

A Firm Transmission Right (FTR) is a right that has both financial and physical transmission right attributes. FTRs entitle their owners to share in the distribution of Usage Charge revenues received by the CAISO (in the Day Ahead and Hour Ahead Markets) in connection with inter-zonal congestion during the period for which the FTR is issued. FTRs also entitle registered FTR Holders to certain scheduling priorities (in the Day Ahead Market) for the transmission of energy across a congested inter-zonal interface.

The CAISO does not require that FTR owners be CAISO Scheduling Coordinators (SCs). FTRs may be purchased by any qualified bidder purely as an investment to enable the owner to receive a stream of income from the congestion usage revenues. In order to be used in scheduling, however, an FTR must be assigned to one of the SCs. In addition, an owner may resell the FTR, or the scheduling rights may be unbundled from the revenue rights and sold or transferred to another party. All these sales, transfers or assignments are considered “secondary market transactions” and must be recorded in the CAISO Secondary Registration System (SRS). Due to the delay of the Market Redesign and Technology Upgrade (MRTU) implementation date, current FTRs were extended until the start of MRTU through secondary auctions.

5.2.1 Primary Auction Results

The CAISO creates a primary market for FTRs by auctioning them each year for a 12-month period beginning in April and ending in March. Due to the planned release date of the Market Redesign and Technology Upgrade (MRTU) market design of February 1, 2008, the 2007-2008 FTR primary auction was for a 10-month period from April 1, 2007, to January 31, 2008.⁹ The FTR Auction is a simultaneous, multi-round clearing price auction conducted separately and independently across specified CAISO inter-zonal interfaces. The FTR Auction proceeds are distributed to Participating Transmission Owners (PTOs), based upon their respective ownership interest in each auctioned path. Owners of FTRs can use their FTRs as a hedge against congestion costs.

Table 5.4 provides a summary of the 2007-2008 FTR primary auction results. In the 2007-2008 primary auction, FTRs on 33 directional branch groups were auctioned. Total revenue earned in the 2007-2008 primary auction was approximately \$121 million for the 10 month period. The 2006-2007 primary auction, which spanned a 12 month period, generated \$104 million in revenue. Auction results for the 2006-2007 Primary Auction can be found in the 2006 Annual Report on Market Issues and Performance.

During the 10-month FTR period, various exchange agreements and existing transmission contracts (ETCs)¹⁰ expired on July 31, 2007, impacting the available megawatts to be auctioned

⁹ FTR revenues for the 2006-2007 and 2007-2008 primary auction results cannot be directly compared as a result of the temporal differences due to the planned release date of MRTU. The 2006-2007 FTRs were for a 12 month period while the 2007-2008 FTRs only spanned a 10 month period.

¹⁰ Existing Transmission Contract (ETC) owners are given scheduling priority on the associated branch group for a predetermined capacity. When an ETC expires, the corresponding megawatts that had scheduling priorities are released and become available in the FTR auction.

off on several branch groups. The Los Angeles Department of Water and Power (LADWP) exchange agreement expired on July 31, 2007, increasing available megawatts on PACI, Path 15, and Path 26, and decreasing megawatts on NOB; the Pacific Gas and Electric (PG&E)-Pacific Corp exchange agreement expired, also impacting available megawatts on PACI. Two Palo Verde ETCs expired, releasing an additional 25 MW in both directions. In addition to the LADWP exchange agreement releasing 320 MW on Path 26, the Vernon exchange agreement also expired, reducing available megawatts on Path 26 by 121 MW. FTRs on Tracy COTP were eliminated on July 31, 2007 when the PG&E-Vernon exchange agreement expired. To accommodate the change in available megawatts, FTRs on PACI, Palo Verde, NOB, Path 15, Path 26, and Tracy COTP were auctioned off in two separate time blocks, April 1, 2007 to July 31, 2007 and August 1, 2007 to January 31, 2008. FTRs auctioned off for August 1, 2007 to January 31, 2008 reflect the changes in available megawatts. The FTR auction results for both time blocks are listed independently for each branch group by direction in Table 5.4.

Table 5.4 Summary of 2007-2008 FTR Auction Results (FTRs – April 1, 2007 through January 31, 2008)¹¹

| Branch Group | Direction | Total FTRs Sold (MW) | Auction Clearing Price (\$/MW) | Auction Revenue (\$) |
|--------------|-----------|----------------------|--------------------------------|----------------------|
| BLYTHE | Export | 127 | \$154 | \$19,558 |
| BLYTHE | Import | 171 | \$5,751 | \$983,421 |
| CFE | Export | 408 | \$142 | \$57,936 |
| CFE | Import | 400 | \$137 | \$54,800 |
| CTNWDRDMT | Export | 305 | \$83 | \$25,315 |
| CTNWDRDMT | Import | 305 | \$83 | \$25,315 |
| CTNWDWAPA | Export | 703 | \$83 | \$58,349 |
| CTNWDWAPA | Import | 703 | \$83 | \$58,349 |
| ELDORADO | Export | 704 | \$108 | \$76,032 |
| ELDORADO | Import | 704 | \$23,755 | \$16,723,520 |
| IID-SCE | Import | 600 | \$300 | \$180,000 |
| IID-SDGE | Export | 57 | \$362 | \$20,634 |
| IID-SDGE | Import | 62 | \$237 | \$14,694 |
| MEAD | Export | 767 | \$83 | \$63,661 |
| MEAD | Import | 598 | \$10,975 | \$6,563,050 |
| NOB* | Import | 472 | \$13,138 | \$6,201,136 |
| NOB** | Import | 398 | \$2,855 | \$1,136,290 |
| PACI* | Export | 833 | \$33 | \$27,489 |
| PACI** | Export | 575 | \$50 | \$28,750 |
| PACI* | Import | 841 | \$15,951 | \$13,414,791 |
| PACI** | Import | 791 | \$10,796 | \$8,539,636 |
| PALOVRDE* | Export | 1,475 | \$25 | \$36,875 |
| PALOVRDE** | Export | 1,258 | \$58 | \$72,964 |
| PALOVRDE* | Import | 1,850 | \$3,187 | \$5,895,950 |
| PALOVRDE** | Import | 1,875 | \$27,443 | \$51,455,625 |
| PARKER | Import | 160 | \$2,967 | \$474,720 |
| PATH15* | Import | 2,700 | \$106 | \$286,200 |
| PATH15** | Import | 3,020 | \$1,267 | \$3,826,340 |
| PATH26* | Export | 1,827 | \$2,143 | \$3,915,261 |
| PATH26** | Export | 2,026 | \$123 | \$249,198 |
| RNCHLAKE | Export | 753 | \$83 | \$62,499 |
| RNCHLAKE | Import | 642 | \$83 | \$53,286 |
| SILVERPK | Export | 10 | \$1,708 | \$17,080 |
| SILVERPK | Import | 10 | \$688 | \$6,880 |
| TRACYCOTP* | Export | 79 | \$93 | \$7,347 |
| TRACYCOTP* | Import | 34 | \$103 | \$3,502 |
| TRACYPGAE | Export | 1,067 | \$83 | \$88,561 |
| TRACYPGAE | Import | 1,208 | \$83 | \$100,264 |
| VICTVL | Export | 450 | \$83 | \$37,350 |
| VICTVL | Import | 1,222 | \$83 | \$101,426 |
| Total | | | | \$120,964,054 |

¹¹ * Indicates FTR auction results for the April 1, 2007 to July 31, 2007 time block.

** Indicates FTR auction results for August 1, 2007 through January 31, 2008 time block.

5.2.2 2007-2008 FTR Market Performance

FTR Revenue

The 2007-2008 FTR market cycle begins on April 1, 2007 and ends on January 31, 2008. Table 5.5 summarizes the FTR revenues from the current market cycle. The primary auction price for those directional Branch Groups that were auctioned off in two time blocks, as noted in Table 5.4, is a quantity weighted average price. FTR market revenues for the 2006-2007 FTR Auction can be found in the 2006 Annual Report.

During the current FTR cycle, five paths (Blythe (import), Parker (import), Path 15 (south-to-north), Silver Peak (import), and Tracy COTP (import)) had total pro-rated FTR revenue greater than their auction prices. However, pro-rated FTR revenues on most paths were well below the auction price. This is not surprising. As mentioned earlier, the FTR holders of major paths are also transmission owners. The FTR auction revenues are used to reduce the Transmission Revenue Requirement (TRR). As a result, the FTR purchase cost for these entities is to a large extent offset by a corresponding reduction in the TRR. Also, the FTR provides additional benefits to the holders beyond FTR revenue. Schedules with FTR rights are entitled to scheduling priority in the Day Ahead Market and FTRs can serve as insurance to hedge against possible high congestion charges.

Table 5.5 FTR Revenue Statistics (\$/MW) (April 2007 – January 2008)

| Branch Group | Direction | Apr-06 | May-06 | Jun-06 | Jul-06 | Aug-06 | Sep-06 | Oct-06 | Nov-06 | Dec-06 | Cum. Net \$/MW FTR Rev. | Prorated Net \$/MW FTR Rev. | Primary Auction Price | Value Ratio |
|--------------|----------------|----------|----------|----------|--------|--------|----------|----------|----------|----------|-------------------------------|-----------------------------------|-----------------------------|----------------|
| ADLANTOSP | Import | \$ - | \$ 231 | \$ 15 | \$ 3 | \$ - | \$ 3 | \$ 1,234 | \$ 158 | \$ 34 | \$ 1,678 | \$ 2,237 | N/A | N/A |
| BLYTHE | Import | \$ - | \$ 563 | \$ 98 | \$ 0 | \$ - | \$ 194 | \$ 4,437 | \$ 2,632 | \$ 3,829 | \$ 11,753 | \$ 15,671 | \$ 5,751 | 272% |
| CFE | Import | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 53 | \$ 53 | \$ 71 | \$ 137 | 52% |
| ELDORADO | Import | \$ 227 | \$ 480 | \$ 12 | \$ 60 | \$ 159 | \$ 222 | \$ 2,781 | \$ 1,618 | \$ 3,244 | \$ 8,803 | \$ 11,737 | \$ 23,755 | 49% |
| GONDIPPDC | Export | \$ 30 | \$ 194 | \$ - | \$ 60 | \$ 6 | \$ 4 | \$ 730 | \$ 764 | \$ - | \$ 1,788 | \$ 2,384 | N/A | N/A |
| IID-SDGE | Import | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 30 | \$ 30 | \$ 40 | \$ 237 | 17% |
| IPPDCADLN | Import | \$ 356 | \$ 511 | \$ 959 | \$ 286 | \$ 437 | \$ 1,754 | \$ 1,975 | \$ 5,759 | \$ 347 | \$ 12,383 | \$ 16,511 | N/A | N/A |
| MEAD | Import | \$ 21 | \$ 985 | \$ 17 | \$ 0 | \$ 238 | \$ 270 | \$ 1,493 | \$ 955 | \$ 2,523 | \$ 6,503 | \$ 8,670 | \$ 10,975 | 79% |
| MKTPCADLN | Import | \$ 246 | \$ 588 | \$ - | \$ - | \$ - | \$ 65 | \$ 494 | \$ 168 | \$ 55 | \$ 1,615 | \$ 2,154 | N/A | N/A |
| MONAIPPDC | Export | \$ - | \$ - | \$ 217 | \$ 879 | \$ 177 | \$ - | \$ - | \$ - | \$ - | \$ 1,272 | \$ 1,697 | N/A | N/A |
| MONAIPPDC | Import | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 3 | \$ - | \$ 3 | \$ 4 | N/A | N/A |
| NOB | Import | \$ 865 | \$ 2,407 | \$ 1,018 | \$ 496 | \$ 566 | \$ 13 | \$ 98 | \$ - | \$ - | \$ 5,464 | \$ 7,285 | \$ 8,434 | 86% |
| NOB | Export | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 70 | \$ - | \$ 70 | \$ 93 | N/A | N/A |
| PACI | Import | \$ 1,325 | \$ 2,798 | \$ 971 | \$ 506 | \$ 422 | \$ 32 | \$ 219 | \$ - | \$ 44 | \$ 6,318 | \$ 8,425 | \$ 13,452 | 63% |
| PALOVRDE | Import | \$ 341 | \$ 798 | \$ 8 | \$ 357 | \$ 320 | \$ 1,011 | \$ 1,608 | \$ 683 | \$ 2,394 | \$ 7,520 | \$ 10,026 | \$ 15,396 | 65% |
| PARKER | Import | \$ - | \$ 179 | \$ 0 | \$ - | \$ 0 | \$ 33 | \$ 1,604 | \$ 837 | \$ 3,240 | \$ 5,894 | \$ 7,858 | \$ 2,967 | 265% |
| PATH15 | South-to-North | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 0 | \$ - | \$ 559 | \$ 0 | \$ 559 | \$ 746 | \$ 719 | 104% |
| PATH26 | North-to-South | \$ 1 | \$ - | \$ 20 | \$ 380 | \$ 0 | \$ - | \$ 166 | \$ - | \$ - | \$ 566 | \$ 754 | \$ 1,081 | 70% |
| SILVERPK | Import | \$ - | \$ - | \$ 11 | \$ 240 | \$ 9 | \$ - | \$ 579 | \$ - | \$ - | \$ 838 | \$ 1,118 | \$ 688 | 162% |
| TRACYCOTP | Import | \$ 51 | \$ 109 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 160 | \$ 213 | \$ 103 | 207% |
| WSTWGMEAD | Import | \$ 103 | \$ 689 | \$ - | \$ 0 | \$ 5 | \$ - | \$ - | \$ 1,153 | \$ - | \$ 1,951 | \$ 2,601 | N/A | N/A |
| WSTWGMEAD | Export | \$ - | \$ 5 | \$ 13 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 18 | \$ 24 | N/A | N/A |

FTR Trades in the Secondary Markets

In California, the successful bidders in the FTR primary auctions are allowed to conduct further FTR trades in the secondary markets. The FTR transactions in the secondary markets have been minimal, as shown in Table 5.6. One notable exception was a 121 MW trade of Path 15 imports from the City of Vernon back to CAISO on August 9, 2007. All but one of these exchanges (121 MW Path 15 exchange) occurred between Southern Participating Transmission Owners (SPTOs) (i.e., the City of Pasadena, the City of Anaheim, and the City of Riverside) and the CAISO, due to either the transfer of FTRs owned by SPTOs to CAISO, or the revision of SPTOs entitlements.

Table 5.6 FTR Trades in the Secondary Market (April 2007 – December 2007)

| Branch Group | Direction | Date of Trade | Buyer | Seller | Quantity Sold (MW) | First Effective Date | Last Effective Date |
|--------------|-----------|---------------|-------|--------|--------------------|----------------------|---------------------|
| GONDIPPDC | Import | 21-Sep-07 | PASA | CISO | 3 | 25-Sep-07 | 31-Mar-08 |
| GONDIPPDC | Export | 21-Sep-07 | PASA | CISO | 2 | 25-Sep-07 | 31-Mar-08 |
| GONDIPPDC | Import | 21-Sep-07 | ANHM | CISO | 9 | 25-Sep-07 | 31-Mar-08 |
| MONAIPPDC | Import | 21-Sep-07 | PASA | CISO | 12 | 25-Sep-07 | 31-Mar-08 |
| MONAIPPDC | Export | 21-Sep-07 | PASA | CISO | 11 | 25-Sep-07 | 31-Mar-08 |
| MONAIPPDC | Import | 21-Sep-07 | ANHM | CISO | 46 | 25-Sep-07 | 31-Mar-08 |
| MONAIPPDC | Export | 21-Sep-07 | ANHM | CISO | 39 | 25-Sep-07 | 31-Mar-08 |
| MONAIPPDC | Import | 24-Sep-07 | RVSD | CISO | 26 | 26-Sep-07 | 31-Mar-08 |
| MONAIPPDC | Export | 24-Sep-07 | RVSD | CISO | 22 | 26-Sep-07 | 31-Mar-08 |
| PATH15 | Import | 9-Aug-07 | CISO | VERN | 121 | 11-Aug-07 | 31-Jan-08 |

5.2.3 Supplemental Auction Results (February 1 – March 31, 2008)

As noted above, the FTR Primary Auction for 2007-2008 covered an FTR time period from April 1, 2007 to January 31, 2008, assuming a February 1, 2008 MRTU release date, at which time Congestion Revenue Rights (CRRs)¹² would be implemented. As the release date was delayed to April 1, 2008, the 2007-2008 FTR time period was extended to cover the lapse between the start date for CRRs (April 1, 2008) and the initial FTR expiration date (January 31, 2008). A supplemental auction was held to extend the 2007-2008 FTRs through March 31, 2008 and successfully auctioned off FTRs on 52 directional branch groups. The results of this auction are shown in Table 5.7.

¹² Congestion Revenue Rights (CRRs) will be implemented with MRTU and are similar to the current market's Firm Transmission Rights (FTRs) with a few design differences. For example, CRRs are only financial instruments that are associated with a source and sink rather than a line.

Table 5.7 Summary of FTR Supplemental Auction Results (2007 Auction Year)

| Branch Group | Direction | Quantity Sold (MW) | First Effective Date | Last Effective Date |
|--------------|-----------|--------------------|----------------------|---------------------|
| ADLANTOSP | Export | 502 | 1-Apr-07 | 31-Mar-08 |
| ADLANTOSP | Import | 1,036 | 1-Apr-07 | 31-Mar-08 |
| BLYTHE | Export | 127 | 1-Feb-08 | 31-Mar-08 |
| BLYTHE | Import | 123 | 1-Feb-08 | 31-Mar-08 |
| CFE | Export | 408 | 1-Feb-08 | 31-Mar-08 |
| CFE | Import | 400 | 1-Feb-08 | 31-Mar-08 |
| CTNWDRDMT | Export | 320 | 1-Feb-08 | 31-Mar-08 |
| CTNWDRDMT | Import | 320 | 1-Feb-08 | 31-Mar-08 |
| CTNWDWAPA | Export | 1,117 | 1-Feb-08 | 31-Mar-08 |
| CTNWDWAPA | Import | 1,117 | 1-Feb-08 | 31-Mar-08 |
| ELDORADO | Export | 704 | 1-Feb-08 | 31-Mar-08 |
| ELDORADO | Import | 704 | 1-Feb-08 | 31-Mar-08 |
| GONDIPPDC | Export | 4 | 1-Apr-07 | 31-Mar-08 |
| GONDIPPDC | Import | 13 | 1-Apr-07 | 31-Mar-08 |
| IID-SCE | Import | 600 | 1-Feb-08 | 31-Mar-08 |
| IID-SDGE | Export | 57 | 1-Feb-08 | 31-Mar-08 |
| IID-SDGE | Import | 62 | 1-Feb-08 | 31-Mar-08 |
| IPPDCADLN | Export | 471 | 1-Apr-07 | 31-Mar-08 |
| IPPDCADLN | Import | 647 | 1-Apr-07 | 31-Mar-08 |
| MCCLMKTPC | Export | 686 | 1-Apr-07 | 31-Mar-08 |
| MCCLMKTPC | Import | 686 | 1-Apr-07 | 31-Mar-08 |
| MEAD | Export | 34 | 1-Apr-07 | 31-Mar-08 |
| MEAD | Export | 767 | 1-Feb-08 | 31-Mar-08 |
| MEAD | Import | 70 | 1-Apr-07 | 31-Mar-08 |
| MEAD | Import | 598 | 1-Feb-08 | 31-Mar-08 |
| MEADMKTPC | Export | 369 | 1-Apr-07 | 31-Mar-08 |
| MEADMKTPC | Import | 369 | 1-Apr-07 | 31-Mar-08 |
| MEADTMEAD | Export | 182 | 1-Apr-07 | 31-Mar-08 |
| MEADTMEAD | Import | 182 | 1-Apr-07 | 31-Mar-08 |
| MKTPCADLN | Export | 423 | 1-Apr-07 | 31-Mar-08 |
| MKTPCADLN | Import | 423 | 1-Apr-07 | 31-Mar-08 |
| MONAIPPDC | Export | 268 | 1-Apr-07 | 31-Mar-08 |
| MONAIPPDC | Import | 279 | 1-Apr-07 | 31-Mar-08 |
| NOB | Export | 69 | 1-Apr-07 | 31-Jan-08 |
| NOB | Export | 27 | 1-Apr-07 | 31-Mar-08 |
| NOB | Export | 82 | 1-Apr-07 | 31-Jul-07 |
| NOB | Import | 73 | 1-Apr-07 | 31-Mar-08 |
| NOB | Import | 93 | 1-Apr-07 | 31-Jul-07 |
| NOB | Import | 421 | 1-Feb-08 | 31-Mar-08 |
| PACI | Export | 778 | 1-Feb-08 | 31-Mar-08 |
| PACI | Import | 791 | 1-Feb-08 | 31-Mar-08 |

| Branch Group | Direction | Quantity Sold (MW) | First Effective Date | Last Effective Date |
|--------------|-----------|--------------------|----------------------|---------------------|
| PALOVRDE | Export | 25 | 1-Apr-07 | 30-Jun-07 |
| PALOVRDE | Export | 1,300 | 1-Feb-08 | 31-Mar-08 |
| PALOVRDE | Import | 10 | 1-Apr-07 | 30-Jun-07 |
| PALOVRDE | Import | 1,875 | 1-Feb-08 | 31-Mar-08 |
| PARKER | Import | 160 | 1-Feb-08 | 31-Mar-08 |
| PATH15 | Import | 2,845 | 1-Feb-08 | 29-Feb-08 |
| PATH15 | Import | 175 | 1-Feb-08 | 31-Mar-08 |
| PATH15 | Import | 2,511 | 1-Mar-08 | 31-Mar-08 |
| PATH26 | Export | 121 | 1-Aug-07 | 31-Jan-08 |
| PATH26 | Export | 1,371 | 1-Feb-08 | 29-Feb-08 |
| PATH26 | Export | 703 | 1-Feb-08 | 31-Mar-08 |
| PATH26 | Export | 1,383 | 1-Mar-08 | 31-Mar-08 |
| RNCHLAKE | Export | 917 | 1-Feb-08 | 31-Mar-08 |
| RNCHLAKE | Import | 994 | 1-Feb-08 | 31-Mar-08 |
| SILVERPK | Export | 10 | 1-Feb-08 | 31-Mar-08 |
| SILVERPK | Import | 10 | 1-Feb-08 | 31-Mar-08 |
| SYLMAR-AC | Export | 25 | 1-Apr-07 | 30-Jun-07 |
| SYLMAR-AC | Import | 35 | 1-Apr-07 | 30-Jun-07 |
| SYLMAR-AC | Import | 10 | 1-Jul-07 | 31-Mar-08 |
| TRACYPGAE | Export | 121 | 1-Aug-07 | 31-Mar-08 |
| TRACYPGAE | Export | 1,894 | 1-Feb-08 | 29-Feb-08 |
| TRACYPGAE | Export | 1,200 | 1-Mar-08 | 31-Mar-08 |
| TRACYPGAE | Import | 121 | 1-Aug-07 | 31-Mar-08 |
| TRACYPGAE | Import | 1,200 | 1-Feb-08 | 31-Mar-08 |
| VICTVL | Export | 560 | 1-Feb-08 | 31-Mar-08 |
| VICTVL | Import | 1,355 | 1-Feb-08 | 31-Mar-08 |
| WSTWGMEAD | Export | 126 | 1-Apr-07 | 31-Mar-08 |
| WSTWGMEAD | Import | 126 | 1-Apr-07 | 31-Mar-08 |