

6. Congestion Management Market

6.1 Summary of 2002 inter-zonal Congestion Management Market

6.1.1 Overview

There are two kinds of congestion in the ISO system based on the current zonal framework of congestion management in California: *inter-zonal* and *intra-zonal* congestion. The mitigation and settlement for each is different. In managing inter-zonal congestion, the ISO utilizes adjustment bids to mitigate the congestion while minimizing the bid cost of schedule adjustments and keeping each SC's schedule in balance. The marginal SC establishes the usage charge for the *inter-zonal* interface, which is paid by all SCs based on their accepted, scheduled flow on the interface. The net amount of congestion charge collected by the ISO is paid to the transmission owners (TOs) and the owners of Firm Transfer Rights (FTR). To mitigate intra-zonal congestion, ISO reschedules the resources within the zone using the adjustment bids from the same or different SCs, without any market separation constraints. In mitigating *intra-zonal* congestion, the ISO has two objectives: 1) to alleviate congestion at the lowest cost, and 2) to minimize the changes in the preferred schedule of each SC. The net cost of intra-zonal congestion is recovered from all SCs in proportion to their scheduled load (plus net export out of) within the zone.

In general, the *inter-zonal* congestion market worked well during 2002 experiencing a significant decrease in congestion costs. The total 2002 congestion costs were about \$42 million, much lower than the \$108 million costs in 2001 and nearly \$400 million in 2000. The moderate congestion costs are a product of the overall favorable supply and demand conditions in 2002. Congestion markets were more competitive having fewer incidents of insufficient adjustment bids in congestion management in 2002 than previous years.

One problem remaining in the inter-zonal congestion market is the prior allocation of substantial portions of inter-zonal transmission capacity to the holders of existing transmission contracts (ETC) rights. These ETC rights existed before electricity restructuring, and typically they guarantee their holders the ability to submit additional schedules up to twenty minutes before the operating hour. In practice, substantial portions of ETC capacity go unscheduled. However, because the full amount must be reserved in the ISO's day-ahead and hour-ahead markets, unscheduled ETC rights could generate the phenomenon of phantom congestion. Our analysis showed that most of congestion in the major interfaces could have been avoided if unscheduled ETC had been utilized in the day-ahead markets. The presence of phantom congestion not only compromises market efficiency, but also creates difficulties in the actual grid management.

6.1.2 Inter-zonal Congestion Frequency and Magnitude

This section summarizes and compares the frequency, magnitude, and cost of inter-zonal congestion in 2001 and 2002 for the major inter-zonal interfaces (branch groups). Congestion occurred primarily on six branch groups. Among these, NOB

(import direction), COI (import direction), Palo Verde (import direction), and Path26 (north to south direction), and McCullough (export direction) experienced the most congestion in 2002. Except for Path15, the other five paths were more congested in 2002 than 2001. In comparison, for NOB and COI, the congestion pattern was reversed with 2001 having the greater congestion. In the day-ahead market, NOB experienced congestion in the import direction for 17 and COI for 16 percent of the hours in 2002. COI and NOB were more frequently congested in the export direction for 5 and 18 percent of the time in 2001, respectively. The hour-ahead market had a similar congestion pattern as in the day-ahead market. Figures 6.2 and 6.4 demonstrate that export congestion was very infrequent.¹

Table 6.1 lists all the inter-zonal interfaces that the ISO manages in its congestion market. Figures 6.1 and 6.2 show annual day-ahead congestion frequencies by branch group in the import and export direction, respectively. Figures 6.3 and 6.4 show hour-ahead congestion in the import and export direction.

Table 6.1. Summary of Branch Groups in the CAISO Market, 2002

BRANCH_GRP	TIF_POINT	CAISO	Outside	Outside	Max Branch Group	Max Branch group
BLYTHE_BG	BLYTHE_1_WALC	SP15	LC2	SW	197	218
CASCADE_BG	CASCAD_1_CRAGVW	NP15	NW2	NW	100	30
CFE_BG	IVALLY_2_23050	SP15	MX	SW	800	408
CFE_BG	TJUANA_2_23040	SP15	MX	SW		
COI_BG	CAPJAK_5_OLINDA	NP15	NW1	NW	4750	3675
COI_BG	MALIN_5_RNDMTN	NP15	NW1	NW		
ELDORADO_BG	ELDORD_5_MOENKP	SP15	LA2	SW	1555	1555
ELDORADO_BG	MOENKO_5_PSUEDO	SP15	AZ2	SW		
ELDORADO_BG	FCORNR_5_PSUEDO	SP15	AZ2	SW		
ELDORADO_BG	ELDORD_5_PSUEDO	SP15	AZ2	SW		
IID-SCE_BG	DEVERS_2_COCHLA	SP15	II1	CA	600	100
IID-SCE_BG	MIRAGE_2_COCHLA	SP15	II1	CA		
IID-SDGE_BG	IVALLY_2_230S	SP15	II2	CA	225	225
INYO_BG	INYOS_2_LDWP	SP15	LA3	CA	56	56
LAUGHLIN_BG	MOHAVE_5_500KV	SP15	NV3	SW	0	222
LAUGHLIN_BG	MOHAVE_6_69KV	SP15	NV3	SW		
MCCULLGH_BG	ELDORD_5_MCLLGH	SP15	LA2	SW	2598	2598
MEAD_BG	MEAD_2_WALC	SP15	LC1	SW	1460	1460
MERCHANT_BG	MRCHNT_2_ELDORD	SP15	NV4	SW	645	645
N.GILABK4_BG	NGILA_5_NG4	SP15	AZ5	SW	240	240
NOB_BG	SYLMAR_2_NOB	SP15	NW3	NW	1995	1407
PALOVRDE_BG	PVERDE_5_DEVERS	SP15	AZ3	SW	2823	2823
PALOVRDE_BG	PVERDE_5_NG-PLV	SP15	AZ3	SW		
PARKER_BG	PARKR_2_GENE	SP15	LC3	SW	220	60
PASADENA_BG	GOODRH_2_PASA	SP15	SP15	CA	300	300
PASADENA_BG	GOODRH_2_PASA	SP15	SP15	CA		
SILVERPK_BG	SLVRPK_7_SPP	SP15	SR3	NW	17	17
SUMMIT_BG	SUMITM_1_SPP	NP15	SR2	NW	120	100
SYLMAR-AC_BG	SYLMAR_2_LDWP	SP15	LA1	SW	1200	1200
VICTVL_BG	LUGO_5_VICTVL	SP15	LA4	CA	2400	900

* Maximum import and export capacities for each branch group were computed based on the hourly Total Transmission Capacity (TTC) for each branch group in 2002.

¹ For all the congestion frequency statistics, congestion involving less than 1 MWh of curtailment or scheduled new firm use was excluded.

Figure 6.1. Day-ahead Congestion Frequency – Import Direction

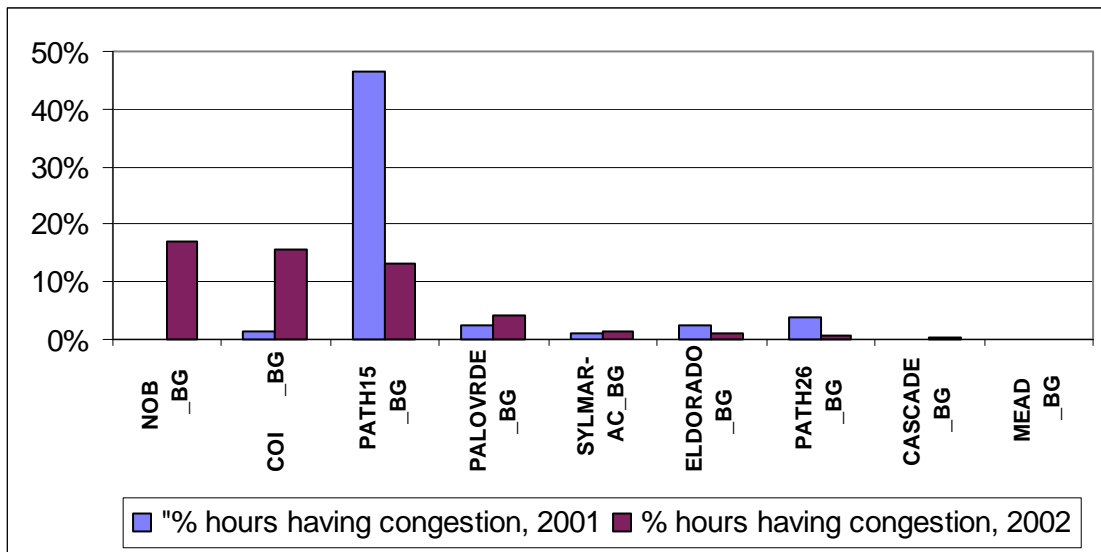


Figure 6.2. Day-ahead Congestion Frequency – Export Direction

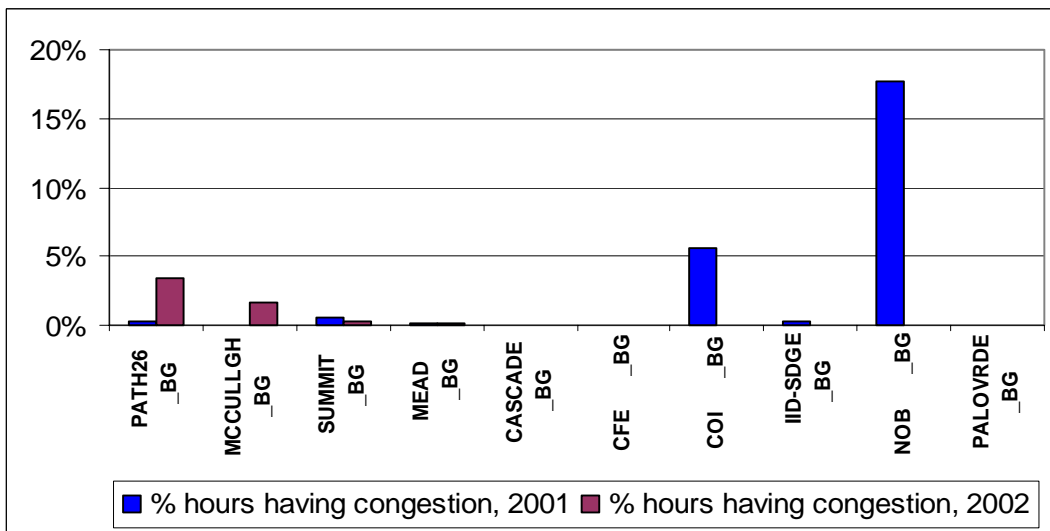


Figure 6.3. Hour-ahead Congestion Frequency – Import Direction

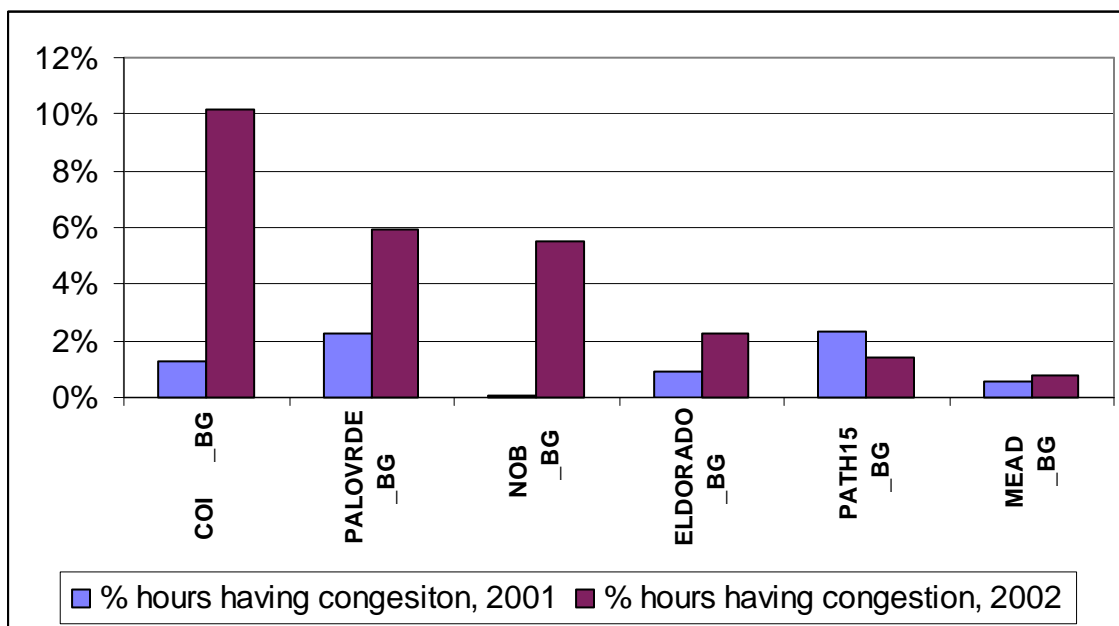
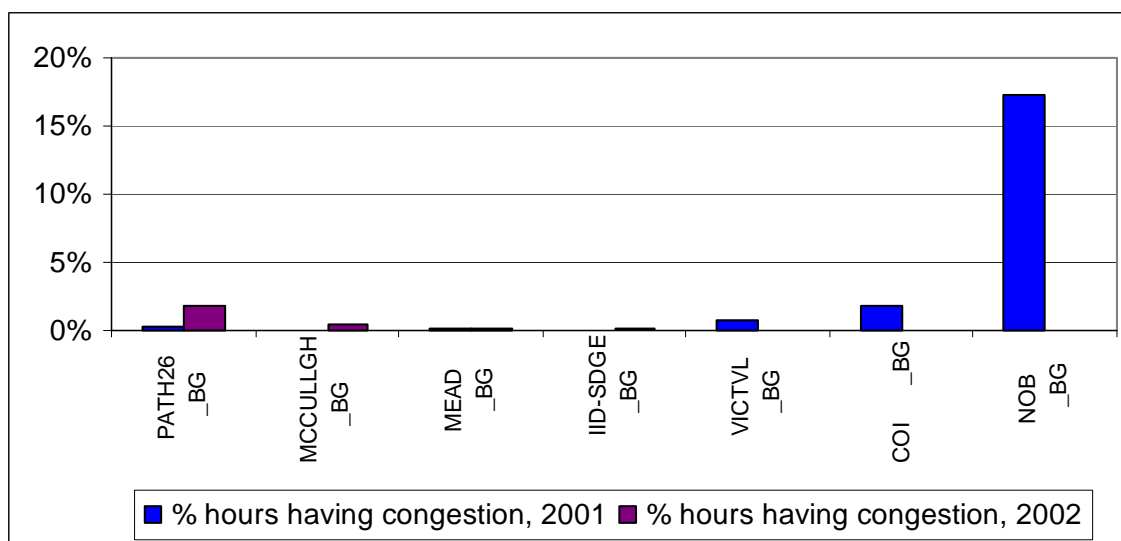


Figure 6.4. Hour-ahead Congestion Frequency – Export Direction



6.1.3 Inter-zonal Congestion Usage Charge and Revenues

In general, congestion revenue in 2002 decreased significantly from \$108 million in 2001 to \$42 million in 2002. Out of the total 2002 congestion revenue, about \$30 million occurred in the import direction. COI and Palo Verde (in the import direction) generated about \$14 and \$10 million congestion revenue, respectively, and the sum of the congestion revenue from these two paths accounts for more than half of the total

congestion revenue across all branch groups. Congestion revenues decreased significantly on Palo Verde (import direction), Path26 (south to north direction), Path15 (south to north direction), COI (export direction), and NOB (export direction), but increased significantly on COI (import direction), Path26 (north to south direction), and McCullough (export direction). Figures 6.5 and 6.6 plot the annual day-ahead congestion revenues and average usage charges on major branch groups in 2001 and 2002.²

Figures 6.7 and 6.8 show the average usage charge of congested hours for major branch groups in the day-ahead market. On an annual usage basis, usage charges for most branch groups were, on average, significantly lower in 2002 than 2001. For instance, the average usage charge on Palo Verde in the import direction in the day-ahead market decreased significantly from \$67/MWh in 2001 to \$30/MWh. Though the frequency of congestion in the day-ahead market increased slightly in 2002, the overall congestion revenue on Palo Verde decreased from \$23 million in 2001 to \$9 million in 2002.

In 2002, hour-ahead market generated about \$3 million congestion revenue. Congestion revenue remained minor in comparison to day-ahead revenues, mainly due to the fact that hour-ahead congestion often occurred when SCs adjusted their day-ahead schedule or if there was a change in line ratings. Often, only those SCs who changed their schedules in the hour-ahead markets were required to pay the congestion charges in the hour-ahead markets. Therefore, the volume of transactions in the hour-ahead market is typically much smaller.

Figure 6.9 provides further insights into the seasonal pattern of congestion on the two most congested paths in 2002, COI and Palo Verde (both in the import direction). The congestion pattern on these two paths follows closely California's electricity imports. During the late spring and early summer months, California relies heavily on the hydro energy from the Northwest and most of electricity flows south into CAISO system through COI branch group. However, after the summer, when hydro resources from the north decrease, California imports significantly from the Southwest regions to meet its load. Figure 6.7 shows that congestion revenues on COI reached about \$5 million in June and July in 2002, while congestion revenue on Palo Verde peaked in January with monthly congestion revenue of \$4.6 million.

² All the SCs who have accepted NFU schedule on the congested interfaces would pay the usage charge. The net account of congestion charge collected by the ISO is paid to transmission owner or the FTR holders.

Figure 6.5. Annual Congestion Revenues (Day-ahead Market)

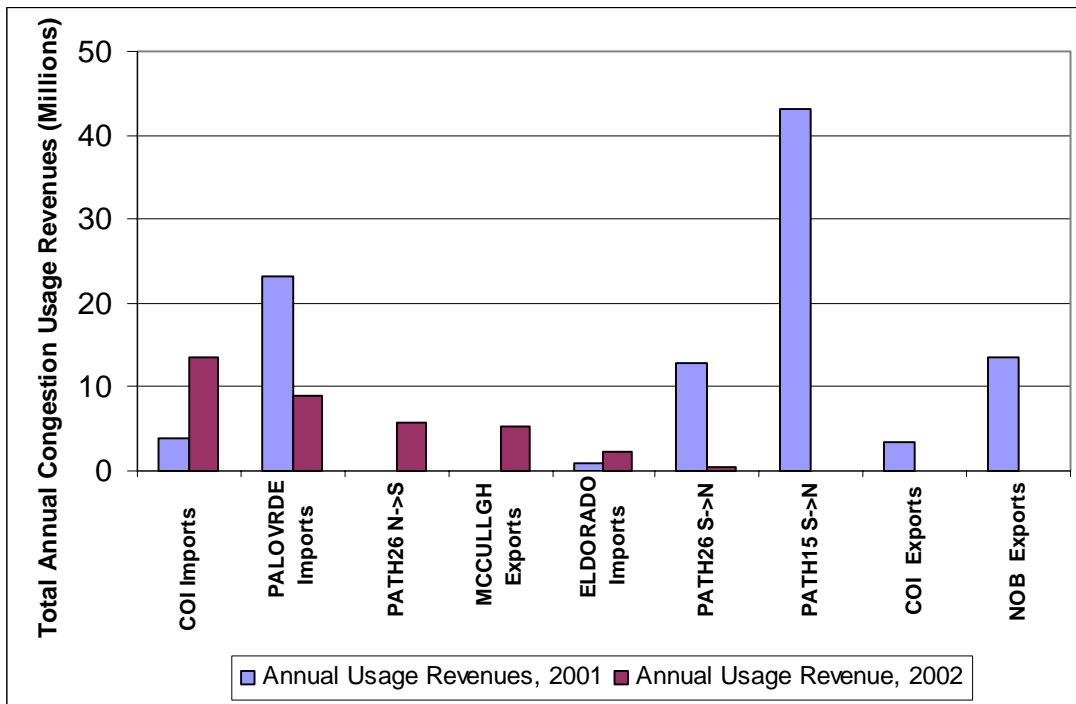


Figure 6.6. Annual Congestion Revenues (Hour-ahead Market)

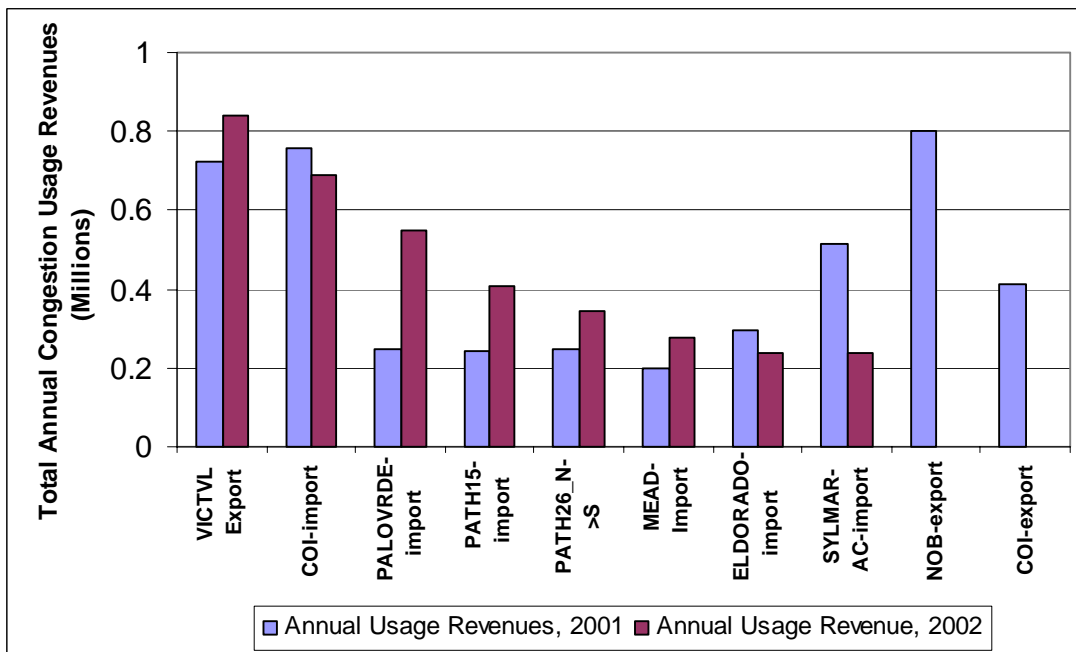


Figure 6.7. Average Usage Charge in the Import Direction (Day-ahead Market)

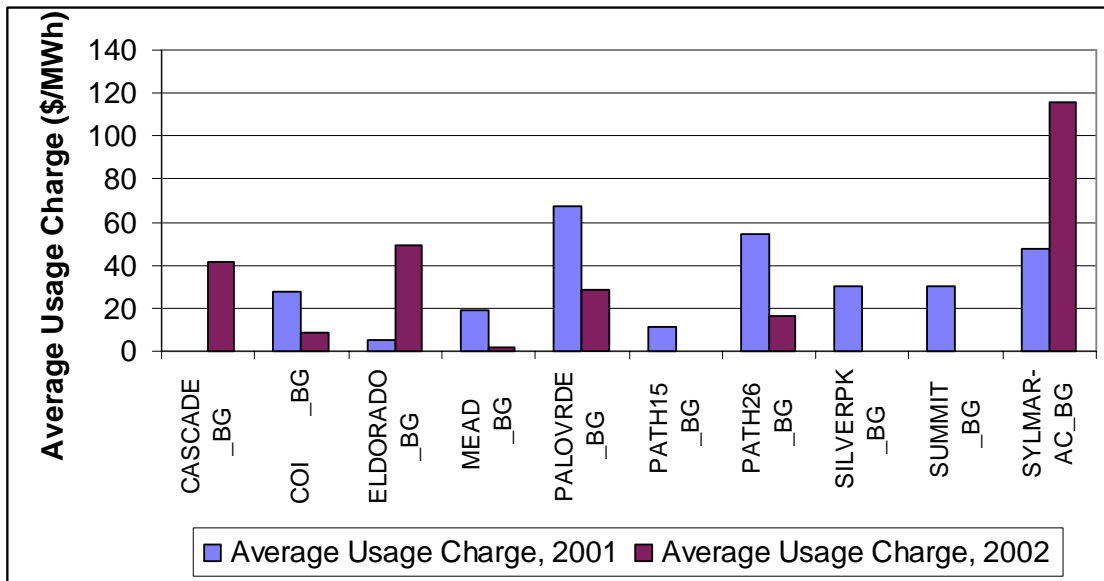


Figure 6.8. Average Usage Charge in the Export Direction (Day-ahead Market)

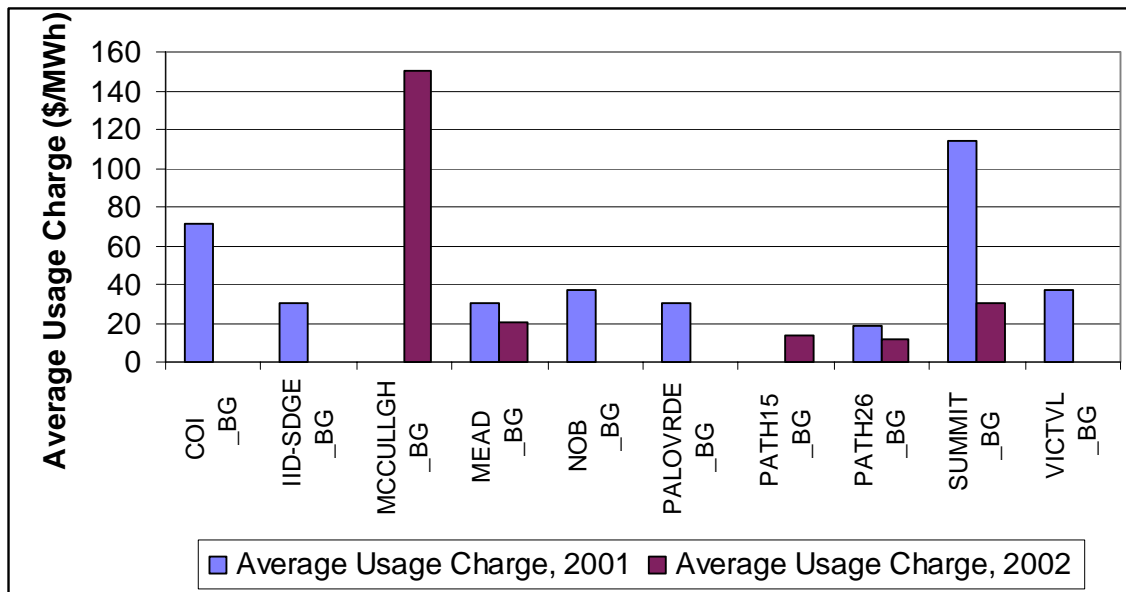
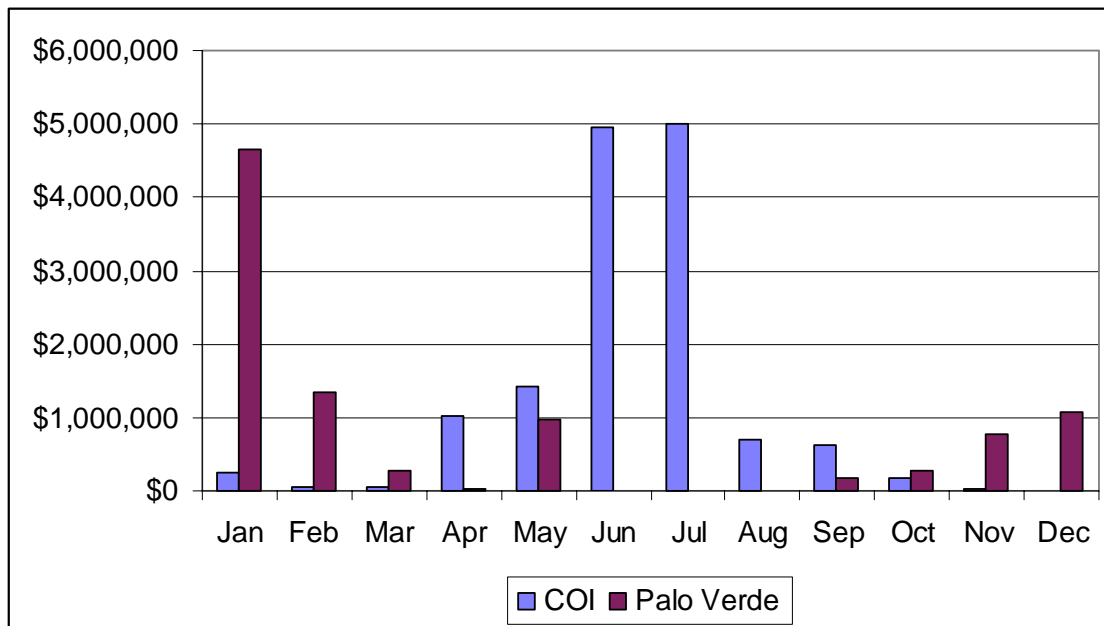


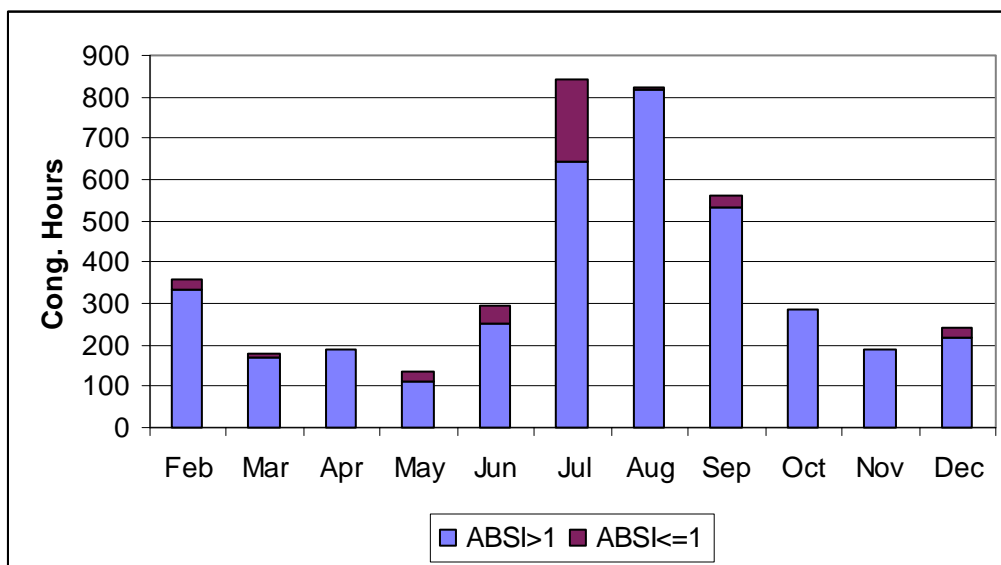
Figure 6.9. Total Congestion Revenue on COI and NOB, 2002

6.1.4 Special Topic

6.1.4.1 Adjustment Bid Sufficiency

One phenomenon the DMA has identified in the congestion market in 2001 has been the absence of adequate adjustment bids to manage congestion. To mitigate the congestion, the current market rules require the ISO to adjust each SC's schedule in a balanced manner (or follow the so-called market separation rule). This can only be done if SCs submit adjustment bids on both sides of a congested interface so that an INC bid on one side of the interface can be matched with an equal-size DEC bid on the other side within the same SC's portfolio. If enough matched bids are submitted to fully mitigate the congestion, we say there is bid sufficiency. Conversely, when the adjustment bid pairs are exhausted and ISO has to use *pro rata* schedule curtailments, there is bid insufficiency. To track and measure the extent of this problem, DMA has used an Adjustment Bid Sufficiency Index (ABSI). This is the ratio of quantity of the available adjustment bids to the adjustment quantity needed to resolve congestion.

Figure 6.10 shows that the adequacy of adjustment bids improve in 2002. The maximum number of congested hours in a month with the ABSI less than 1 was 197 in 2002. This was lower than the 300 hours in a month reported in early 2001. However, our concern about the adjustment adequacy remains, especially based on our observation that inadequate adjustment bids occurred much more frequently in summer months, when the transmission system is more stressed. Inadequate adjustment bids result in not only higher congestion prices but also difficulties in actual congestion management.

Figure 6.10. Day-ahead Congestion Frequency-Year 2002

Note: The data for January 2002, and for the period from 06/18/2002 to 6/28/2002 are not included due to data problems.

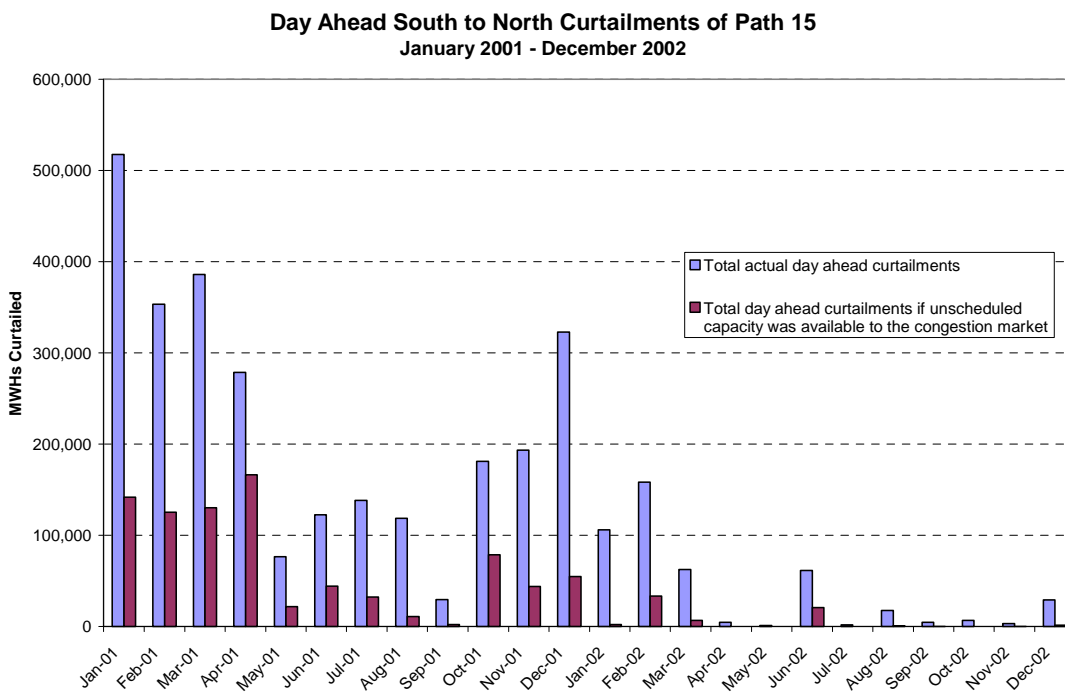
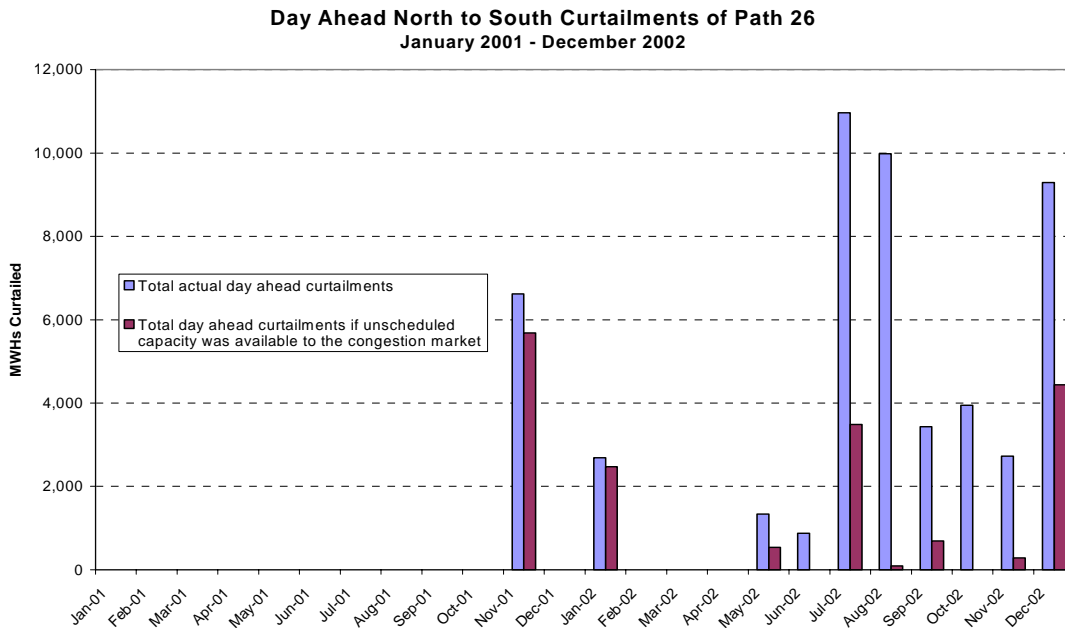
6.1.4.2 Existing Transmission Contracts and Phantom Congestion

The DMA has been concerned about the treatment of ETC rights from a market efficiency perspective. Under the current market rules, ETC holders have the full amount of their ETC capacity reserved for them in the day-ahead and hour-ahead markets, regardless of whether they actually plan to use it or not. The unused capacity is only released 20 minute before the real-time. Often this capacity cannot be efficiently used due to various factors, such as ramping limits of some generating facilities. The inability to use the potential available capacity can have several market consequences. For instance, due to the potential capacity available after the hour-ahead market closes, a SC might have an incentive to under-schedule in order to reduce exposure to congestion costs in the forward market. Thus, the presence of phantom congestion often undermines the price consistency between the forward and real time markets. Finally, the DMA has shown that phantom congestion can have a negative effect on market operation. The fact that different ETC contracts are afforded different timelines caused delays in ISO's pre-scheduling and the closing of the day-ahead markets.

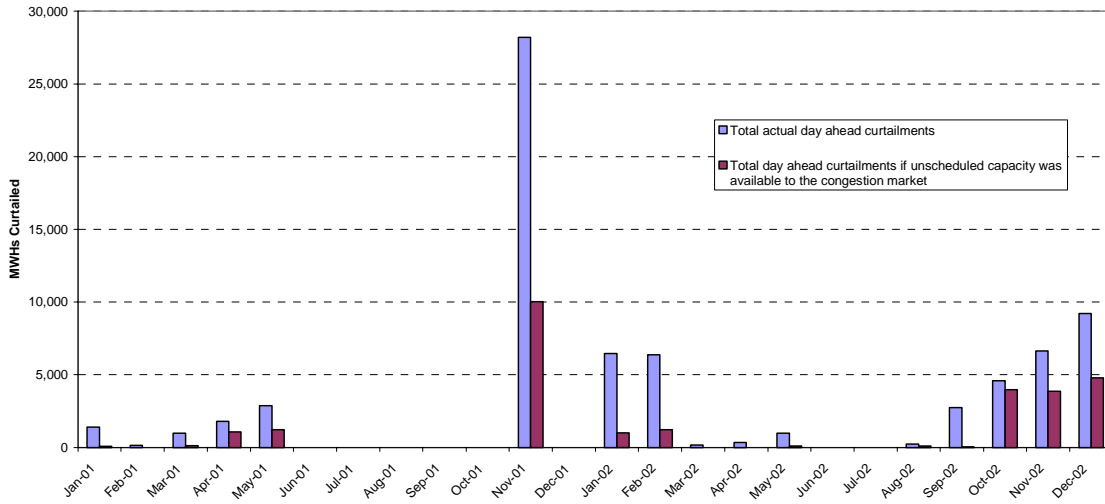
Figure 6.11 demonstrates for the most congested paths in the previous two years, the extent to which the observed day-ahead congestion was due to phantom congestion or the inability to make unscheduled ETC capacity available to the day-ahead market. This analysis clearly indicates that the releasing of unscheduled ETC could significantly reduce the congestion frequencies for all the major paths. For instance, the release of unscheduled ETC would almost completely eliminate the congestion in COI in the import direction. In actuality, the ISO had to curtail the total monthly import by about 20,000 MWh in summer months of 2002. Obviously, the phantom

congestion compromises the market efficiency, and can potentially increase the total costs to the final consumers.

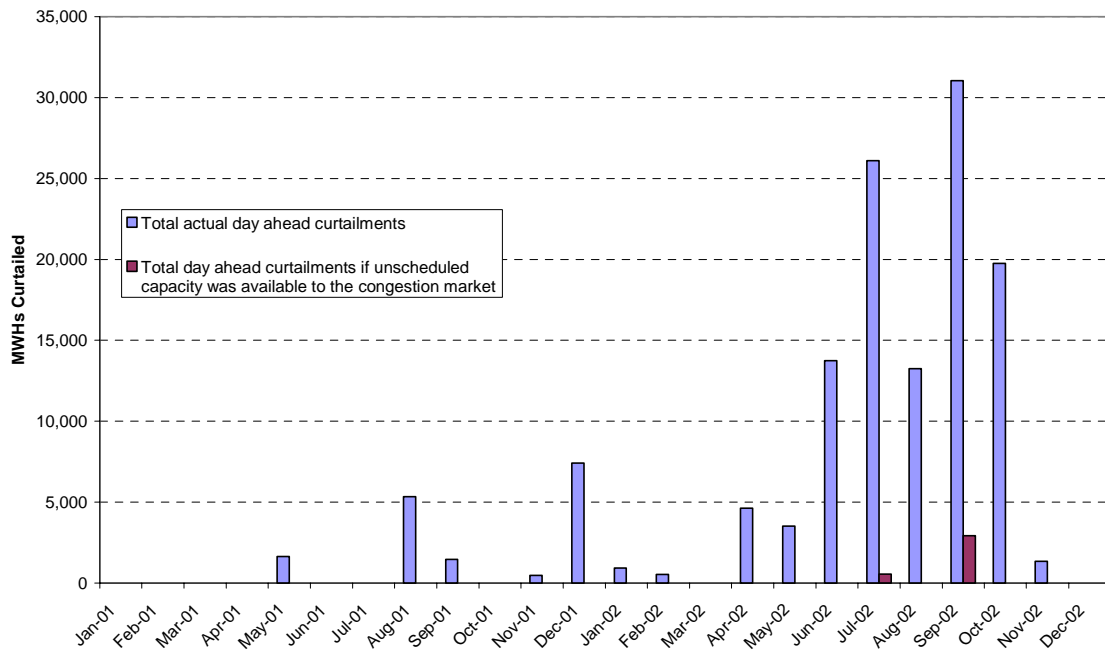
Figure 6.11. Phantom Congestion on Major Paths, 2001- 2002



Day Ahead Import Curtailments of Palo Verde
January 2001 - December 2002



Day Ahead Import Curtailments of COI
January 2001 - December 2002



6.2 Overview of FTR Market Performance

6.2.1 2002 and 2003 FTR Auction results

In the California market, a Firm Transmission Right is defined as a one-MW portion of the Available Transmission Capacity (ATC) on a specific inter-zonal transmission interface or inter-tie, going in one direction only, from an originating zone to a contiguous receiving zone. Thus, FTRs are path specific and have both a financial and physical attribute. The financial attribute entitles the owner to a share of the path's congestion revenues, and as such, they provide a financial hedge for scheduling on that path. The physical aspect pertains to the fact that the day-ahead energy schedules of FTR holders have higher priority against curtailment than the schedules of non-FTR holders. However, there is no FTR scheduling priority in the hour-ahead market.

The ISO does not require that FTR owners be ISO 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, the owner may resell the FTR or the scheduling rights may be unbundled from the revenue rights and sold or transferred to another party. All of these sales, transfers or assignments are considered "secondary market transactions" and must be recorded in the ISO's secondary registration system (SRS).

Currently, the ISO conducts an FTR auction in January each year. The FTRs auctioned are effective April 1 of the auction year to March 31 of the following year. The following two tables summarize the branch groups, quantity, auction clearing prices, and total revenues for the two most recent FTR auctions.

Table 6.2. Summary of FTR Auction in 2002, Effective Period: April 1, 2002 to March 31, 2003

Direction	Branch_Group	Auction Clearing Price (\$/MW)	Total FTR sold (MW)	Total Revenue
import	CFE_BG (MX-SP15)	165	408	67,320
import	COI_BG (NW1-NP15)	17,610	658	11,587,380
import	Eldorado_BG (AZ2-SP15)	8,432	793	6,686,576
import	-SCE_BG (I11-SP15)	275	600	165,000
import	Mead_BG (LC1-SP15)	4,488	452	2,028,576
import	NOB_BG (NW3-SP15)	5,990	605	3,623,950
import	Palo Verde_BG (AZ3-SP15)	14,868	1,167	17,350,956
import	Path 26_BG (SP15-ZP26)	3,222	445	1,433,790
import	Silver Peak_BG (SR3-SP15)	10,200	10	102,000
import	Victorville_BG (LA4-SP15)	485	851	412,735
export	CFE_BG (SP15-MX)	165	408	67,320
export	COI_BG (NP15-NW1)	10,002	51	510,102
export	Eldorado_BG (SP15-AZ2)	420	702	294,840
export	Mead_BG (SP15-LC1)	7,465	430	3,209,950
export	NOB_BG (SP15-NW3)	11,195	51	570,945
export	Palo Verde_BG (SP15-AZ3)	2,780	601	1,670,780
export	Path 26_BG (ZP26-SP15)	5,907	1,566	9,250,362
export	Silver Peak_BG (SP15-SR3)	450	10	4,500
export	Victorville_BG (SP15-LA4)	1,118	168	187,824
Total				59,224,906

Table 6.3. Summary of FTR Auction in 2003, Effective Period: April 1, 2003 to March 31, 2004

Direction	Branch Group	Auction Clearing	Total FTR sold (MW)	Total Revenue
import	BLYTHE_BG (LC2-SP15)	5,460	167	911,820
import	CFE_BG (MX-SP15)	745	100	74,500
import	COI_BG (NW1-NP15)	19,828	725	14,375,300
import	ELDORADO_BG (AZ2-SP15)	16,944	510	8,641,440
import	IID-SCE_BG (II1-SP15)	195	600	117,000
import	IID-SDGE_BG (II2-SP15)	2,290	62	141,980
import	MEAD_BG (LC1-SP15)	7,820	446	3,487,720
import	NOB_BG (NW3-SP15)	12,245	526	6,440,870
import	PALOVRDE_BG (AZ3-SP15)	88,167	602	53,076,534
import	PATH26_BG (SP15-ZP26)	245	285	69,825
import	SILVERPK_BG (SR3-SP15)	650	10	6,500
import	SUMMIT_BG (SR2-NP15)	650	98	63,700
import	VICTVL_BG (LA4-SP15)	115	991	113,965
export	BLYTHE_BG (SP15-LC2)	180	72	12,960
export	CFE_BG (SP15-MX)	135	100	13,500
export	COI_BG (NP15-NW1)	480	422	202,560
export	ELDORADO_BG (SP15-AZ2)	120	536	64,320
export	IID-SDGE_BG (SP15-II2)	182	62	11,284
export	MEAD_BG (SP15-LC1)	1,085	430	466,550
Export	NOB_BG (SP15-NW3)	565	509	287,585
Export	PALOVRDE_BG (SP15-AZ3)	165	845	139,425
Export	PATH26_BG (ZP26-SP15)	8,602	1,405	12,085,810
Export	SILVERPK_BG (SP15-SR3)	100	10	1,000
Total				100,806,148

Nineteen FTRs (directional) were auctioned in the 2002 auction and twenty-three were auctioned in 2003. In comparison with the 2002 FTR auction, fewer FTRs were auctioned in 2003 on Palo Verde and Eldorado, two inter-ties connecting the CAISO's control areas with the Southwest region. For instance, 1,167 MW of FTRs on Palo Verde in the import direction were sold in the 2002 auction, while only 602 MW were sold in the 2003 auction. In the export direction, more FTRs were sold in 2003 on COI, NOB, and Palo Verde.

Similar to the 2002 FTR auction, the highest 2003 auction prices were reported on the major inter-ties in the import direction. The FTR clearing prices for COI, ELDORADO, MEAD, NOB, and PALOVRDE in the import direction were \$19,828/MW, \$16,944/MW, \$7,820/MW, \$12,245/MW, and \$88,167/MW respectively. The auction clearing prices were significantly higher than the 2002 auction. For example, the FTR auction prices increased significantly from \$14,868/MW in 2002 to \$88,167/MW in the 2003 auction. At the same time, the auction prices for the FTRs in the export direction fell in the 2003 auction except for Path 26 in the north to south direction.

As a consequence of the significant increase in auction clearing prices, especially for the FTRs in the import direction, the total FTR auction revenue increased from \$59 million in 2002 to \$101 million in 2003. The FTR revenue on PALOVRDE in the import direction alone generated \$53 million, an increase of \$36 million from the 2002 auction.

6.2.2 Concentration of FTR Ownership and Control

Merely looking at FTR auction revenue itself might give a distorted picture of FTR markets in California. An important feature about the FTR market in California is that several UDCs, who at the same time are participating transmission owners (PTOs) of some paths, also participate in the auction process to acquire FTRs for the lines on which they have ownership. Because the auction proceeds eventually go to PTOs as a component of Transmission Revenue Requirement (TRR), the UDCs are financially risk-free in purchasing FTRs on those lines on which they have ownership. One direct consequence is that UDCs usually bid very aggressively in the FTR auctions to secure the desired level of FTRs. This results in very high auction clearing prices on some paths. UDCs spent \$70 million in 2003 FTR auction, while in 2002, they spent about \$25 million.

In fact, the 2003 auction results show that UDCs acquired ownership of a significant portion of FTRs on several important paths in the import direction. For instance, Southern California Edison owns 80 and 77 percent of FTRs on ELDORADO and IID-SC. In addition, it has complete ownership of the entire FTRs on IID-SDGE, Paloverde, and Silverpeak in the import direction. Similarly, Pacific Gas and Electric owns 69 percent of FTRs on COI in the import direction. Currently, UDCs are generally net energy buyers and their high concentrations in FTR ownership on these paths do not cause concerns of market manipulation at the moment. However, concentration ratios on a few other paths, including BLYTHE (import direction), CFE (import direction), and Silverpeak (export direction) are also high, DMA will monitor closely the FTR scheduling on these lines when the 2003 FTR cycle begins in April, 2003.

6.2.3 2002 FTR market Performance

6.2.3.1 FTR scheduling

In the 2002 FTR cycle, the FTR scheduling percentage was low. On average, only 18 percent of the total FTRs were scheduled in the day-ahead markets. However, on some paths, FTRs were used to establish the scheduling priority in the day-ahead markets. As shown Table 6.4, a high percentage of FTRs were scheduled on some paths (78 percent on Eldorado, 70 percent on IID-SCE, 61 percent on Paloverde, and 98 percent on Silverpeak in the import direction). FTRs on those paths are mainly owned by Southern California Edison Company (SCE1).

Table 6.4. FTR Scheduling Statistics for the 2002 FTR Cycle

	MW FTR Auctioned	Avg. MW FTR Sch.	Max MW FTR Sch.	Max Single SC FTR Schedule	% FTR Schedule
Import					
COI _BG	678	84	225	175	12%
ELDORADO_BG	793	616	710	710	78%
IID-SCE _BG	600	417	460	460	70%
MEAD _BG	522	51	270	178	10%
NOB _BG	734	33	206	200	4%
PALOVRDE_BG	1192	723	954	579	61%
SILVERPK_BG	10	10	10	10	98%
VICTVL _BG	926	21	262	234	2%
Export					
ELDORADO_BG	702	5	185	185	1%
MEAD _BG	464	36	363	173	8%
NOB _BG	181	3	23	23	2%
PALOVRDE_BG	626	25	500	250	4%
PATH26 _BG	1586	221	1013	525	14%

* only those paths on which 1% or more of FTRs were scheduled are listed

6.2.3.2 FTR Revenue Per MW

The 2003 FTR cycle in the current ISO market starts on April 1 and terminates on March 31, 2004. Tables 6.5 and 6.6 summarize the FTR revenues for two cycles; April 1, 2001 to March 31, 2002 (hereinafter referred as the 2001 cycle) and April 1, 2002 to March 31, 2003 (hereinafter referred as the 2002 cycle).

For the past two FTR cycles, the total FTR revenue exceeded their respective auction prices only on a few paths (Victorville (import direction), COI (import direction), Palo Verde (import direction), and PATH26 (import direction) in the 2001 cycle. For FTRs in the 2002 cycle, the total annual FTR revenue is lower than the FTR auction price for all paths except VICTVL in the export direction. One conclusion we can draw from this observation is that most FTR holders in the previous two FTR cycles did not financially benefit from investing in the FTR markets. Of course, an FTR provides additional benefits to the owners. The FTR can serve as insurance to hedge against possible very high congestion charges. In addition, FTR owners are also entitled to scheduling priority in the day-ahead market. Another obvious reason for the revenue/cost difference is that UDCs own the FTRs on major paths and they are financially neutral in the FTR markets.

Table 6.5. FTR Revenue Statistics, April 2001 to March 2002

Branch Group	Direction	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Cumm Net REV	FTR Auction Price
CFE	IMPORT	0	0	0	0	0	0	0	0	0	0	0	0	0	300
COI	IMPORT	0	492	11	0	1,494	1,520	237	28	86	172	28	42	4,112	3,234
ELDORADO	IMPORT	501	51	125	0	0	26	2	22	60	133	139	5	1,063	19,028
IID-SCE	IMPORT	0	0	0	0	0	0	2	0	0	0	0	0	2	625
MEAD	IMPORT	3	0	0	0	0	0	102	244	0	77	43	22	491	2,386
NOB	IMPORT	0	0	0	0	0	0	0	0	0	0	0	0	0	3,843
PALOV RDE	IMPORT	752	622	5	0	0	0	2	9,003	2	2,555	742	134	13,816	6,960
PATH26	S->N	6,159	5,828	407	0	0	0	70	997	332	89	0	100	13,982	2,564
SILVERPK	IMPORT	0	0	0	0	0	0	30	0	0	0	0	0	30	2,100
VICTVL	IMPORT	0	0	0	0	0	0	0	0	0	0	0	0	0	168
CFE	EXPORT	0	0	0	0	0	33	0	0	0	0	0	0	33	255
COI	EXPORT	9,501	365	0	60	0	0	0	0	0	0	0	0	9,926	47,537
ELDORADO	EXPORT	0	0	0	0	0	0	0	0	0	0	0	0	0	2,130
MEAD	EXPORT	0	0	0	135	428	0	0	0	0	0	0	0	563	7,327
NOB	EXPORT	10,412	1,649	312	249	461	0	0	0	0	0	0	0	13,083	64,069
PALOV RDE	EXPORT	0	0	0	30	0	0	0	0	0	0	0	0	30	14,100
PATH26	N->S	0	0	0	0	0	43	20	101	0	60	4	0	228	17,724
SILVERPK	EXPORT	0	0	0	0	0	0	0	0	0	0	0	0	0	28,374
VICTVL	EXPORT	0	0	46	1,371	653	0	0	0	0	0	0	0	2,070	760

Table 6.6. FTR Revenue (\$/MW), April 2002 to March 2003

Branch Group	Direction	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Cumm Net REV	FTR Auction Price
CFE	IMPORT	0	0	0	0	0	0	0	0	0	15	0	0	15	165
COI	IMPORT	1,088	888	4,129	4,278	581	562	153	15	0	10	0	173	11,879	17,610
ELDORADO	IMPORT	268	26	2	10	0	37	1,255	1,178	38	103	584	11	3,511	8,432
IID-SCE	IMPORT	0	0	0	0	0	0	0	2	0	0	0	0	2	275
LUGOTMONA*	IMPORT	0	0	0	0	0	0	0	0	0	17	19	2	38	N/A
MEAD	IMPORT	19	22	0	0	0	0	97	166	23	0	75	0	402	4,488
NOB	IMPORT	13	0	48	472	14	5	32	1	31	6	4	106	734	5,990
PALOV RDE	IMPORT	23	839	0	0	4	86	226	376	887	42	32	86	2,600	14,868
PATH26	S->N	0	133	370	0	0	25	28	44	31	0	0	0	631	3,222
SILVERPK	IMPORT	0	0	0	0	0	0	0	0	0	0	0	156	156	10,200
MEAD	EXPORT	0	0	0	262	31	0	0	0	0	0	0	0	293	7,465
PATH26	EXPORT	61	134	125	1,703	116	114	23	35	178	191	71	159	2,910	5,907
VICTVL	EXPORT	0	249	724	0	0	0	0	0	0	0	0	636	1,609	1,118

6.2.3.3 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. However, as shown in Tables 6.7 and 6.8, the FTR transactions in the secondary markets have been minimal during the past two FTR cycles. There were a total of 27 cases of changes in ownership of FTRs in the 2001 cycle and 25 in 2002 FTR cycle (determined by different SC_ID association over time). However, quite a few changes were due to the usage of different scheduling coordinator identifications by the same trader over time (rather than a real trade). For instance, due to some sort of company restructuring, Idaho Power Company changed its SC_ID from IPC1 to IDAC in 2001. For the most part, the secondary FTR market was rarely used during the two most recent FTR cycles. One possible explanation might be that FTR revenues only exceeded their prices in a few paths in 2001 and most of the investments in FTRs did not generate positive financial profits. Therefore, there was little incentive for market participants to purchase additional FTRs in the secondary market.

Table 6.7. FTR Trades in the Secondary Market, April 2001 to March 2002

Branch Grp Id	Trade Day Dt	Direction	Buyer	Seller	Qt Sold	Oper Day Dt MIN	Oper Day Dt MAX	Oper Hour No MIN	Oper Hour No MAX
COI _BG	26-Apr-01	EXPORT	MSCG	SCEM	25	27-Apr-01	28-Apr-01	1	24
COI _BG	20-Jul-01	IMPORT	TRAL	SCEM	35	24-Jul-01	30-Sep-01	1	24
CFE _BG	30-Jul-01	IMPORT	IDAC	IPC1	62	1-Aug-01	31-Aug-01	1	24
CFE _BG	30-Jul-01	EXPORT	IDAC	IPC1	106	1-Aug-01	31-Aug-01	1	24
COI _BG	30-Jul-01	EXPORT	IDAC	IPC1	23	1-Aug-01	31-Aug-01	1	24
COI _BG	30-Jul-01	IMPORT	IDAC	IPC1	219	1-Aug-01	31-Aug-01	1	24
ELDORADO_BG	30-Jul-01	IMPORT	IDAC	IPC1	125	1-Aug-01	31-Aug-01	1	24
ELDORADO_BG	30-Jul-01	EXPORT	IDAC	IPC1	401	1-Aug-01	31-Aug-01	1	24
IID-SCE _BG	30-Jul-01	IMPORT	IDAC	IPC1	50	1-Aug-01	31-Aug-01	1	24
MEAD _BG	30-Jul-01	IMPORT	IDAC	IPC1	50	1-Aug-01	31-Aug-01	1	24
MEAD _BG	30-Jul-01	EXPORT	IDAC	IPC1	213	1-Aug-01	31-Aug-01	1	24
NOB _BG	30-Jul-01	EXPORT	IDAC	IPC1	4	1-Aug-01	31-Aug-01	1	24
PALOVRDE_BG	30-Jul-01	IMPORT	IDAC	IPC1	300	1-Aug-01	31-Aug-01	1	24
PALOVRDE_BG	30-Jul-01	EXPORT	IDAC	IPC1	200	1-Aug-01	31-Aug-01	1	24
PATH26 _BG	30-Jul-01	EXPORT	IDAC	IPC1	75	1-Aug-01	31-Aug-01	1	24
SILVERPK_BG	30-Jul-01	EXPORT	IDAC	IPC1	10	1-Aug-01	31-Aug-01	1	24
VICTVL _BG	30-Jul-01	IMPORT	IDAC	IPC1	150	1-Aug-01	31-Aug-01	1	24
VICTVL _BG	30-Jul-01	EXPORT	IDAC	IPC1	166	1-Aug-01	31-Aug-01	1	24
PALOVRDE_BG	11-Dec-01	IMPORT	TRAL	AQPC	101	13-Dec-01	15-Dec-01	7	22
PALOVRDE_BG	11-Dec-01	IMPORT	TRAL	AQPC	101	17-Dec-01	22-Dec-01	7	22
PALOVRDE_BG	11-Dec-01	IMPORT	TRAL	AQPC	101	24-Dec-01	24-Dec-01	7	22
PALOVRDE_BG	11-Dec-01	IMPORT	TRAL	AQPC	101	26-Dec-01	29-Dec-01	7	22
PALOVRDE_BG	11-Dec-01	IMPORT	TRAL	AQPC	101	31-Dec-01	31-Dec-01	7	22
PALOVRDE_BG	11-Dec-01	IMPORT	TRAL	AQPC	101	1-Jan-02	31-Jan-02	1	24
PALOVRDE_BG	11-Dec-01	IMPORT	TRAL	AQPC	101	1-Feb-02	28-Feb-02	1	24
PALOVRDE_BG	11-Dec-01	IMPORT	TRAL	AQPC	101	1-Mar-02	31-Mar-02	1	24
PALOVRDE_BG	26-Feb-02	IMPORT	TEMU	TRAL	101	1-Mar-02	31-Mar-02	1	24

Table 6.8. FTR Trades in the Secondary Market, April 2002 to March 2003

Branch Grp Id	Trade Day Dt	Direction	Buyer	Seller	Qt Sold	Oper Day Dt MIN	Oper Day Dt MAX	Oper Hour No MIN	Oper Hour No MAX
COI _BG	29-Apr-02	IMPORT	MAEM	SCEM	175	1-May-02	31-Mar-03	1	25
ELDORADO _BG	29-Apr-02	EXPORT	MAEM	SCEM	100	1-May-02	31-Mar-03	1	25
MEAD _BG	29-Apr-02	EXPORT	MAEM	SCEM	173	1-May-02	31-Mar-03	1	25
MEAD _BG	29-Apr-02	IMPORT	MAEM	SCEM	100	1-May-02	31-Mar-03	1	25
PALOVRDE _BG	29-Apr-02	EXPORT	MAEM	SCEM	50	1-May-02	31-Mar-03	1	25
PALOVRDE _BG	29-Apr-02	IMPORT	MAEM	SCEM	25	1-May-02	31-Mar-03	1	25
PATH26 _BG	29-Apr-02	IMPORT	MAEM	SCEM	45	1-May-02	31-Mar-03	1	25
VICTVL _BG	29-Apr-02	EXPORT	MAEM	SCEM	6	1-May-02	31-Mar-03	1	25
COI _BG	30-Dec-02	IMPORT	BAN1	CISO	1	1-Jan-03	31-Mar-03	1	24
NOB _BG	30-Dec-02	EXPORT	RVSD	CISO	3	1-Jan-03	31-Mar-03	1	24
PATH15 _BG	30-Dec-02	EXPORT	BAN1	CISO	1	1-Jan-03	31-Mar-03	1	24
SYLMAR-AC _BG	30-Dec-02	EXPORT	CISO	BAN1	5	1-Jan-03	31-Mar-03	1	24
LUGOGONDR _BG	31-Dec-02	IMPORT	CISO	ANHM	21	2-Jan-03	31-Mar-03	1	24
LUGOGONDR _BG	31-Dec-02	IMPORT	CISO	RVSD	6	2-Jan-03	31-Mar-03	1	24
LUGOIPPDC _BG	31-Dec-02	IMPORT	CISO	ANHM	117	2-Jan-03	31-Mar-03	1	24
LUGOIPPDC _BG	31-Dec-02	IMPORT	CISO	RVSD	67	2-Jan-03	31-Mar-03	1	24
LUGOTMONA _BG	31-Dec-02	IMPORT	CISO	ANHM	189	2-Jan-03	31-Mar-03	1	24
LUGOTMONA _BG	31-Dec-02	EXPORT	CISO	ANHM	242	2-Jan-03	31-Mar-03	1	24
LUGOTMONA _BG	31-Dec-02	IMPORT	CISO	RVSD	103	2-Jan-03	31-Mar-03	1	24
LUGOTMONA _BG	31-Dec-02	EXPORT	CISO	RVSD	133	2-Jan-03	31-Mar-03	1	24
LUGOTMONA _BG	7-Jan-03	EXPORT	ANHM	CISO	242	9-Jan-03	31-Mar-03	1	24
LUGOGONDR _BG	27-Jan-03	IMPORT	CISO	ANHM	3	29-Jan-03	31-Mar-03	1	24
LUGOIPPDC _BG	27-Jan-03	IMPORT	ANHM	CISO	8	29-Jan-03	31-Mar-03	1	24
LUGOTMONA _BG	27-Jan-03	IMPORT	CISO	ANHM	8	29-Jan-03	31-Mar-03	1	24
LUGOGONDR _BG	28-Jan-03	IMPORT	CISO	RVSD	4	30-Jan-03	31-Mar-03	1	24