

# FTR Auction Credit Examples

- FTR Auction participants must establish an Auction Credit Limit prior to bidding into auction
- Credit Requirement for a participant's bids may not exceed Credit Limit
- Credit Requirement for individual FTR bids is price of the FTR bid minus estimate of revenue from the FTR
- Participant's Credit Requirement is sum of Credit Requirement for each individual FTR bid offset by total value of Participant's ARR's

- Credit requirements apply to All FTR auctions
  - For prompt-month monthly products, credit requirement only applies to “new” auction participants
  - "New" participants defined as those with less than six months of completed activity prior to the auction
  - Use monthly weighted average of past three years (50%-30%-20%) when calculating historical value
  - Separate historic values for on-peak, off-peak and 24-hour FTRs
  - Discount historical value by 10% when calculating credit requirements for FTR paths with positive expected value and add 10% for FTR paths with negative expected value
- Specific timetable for credit release
- No credit requirement for participants that self-schedule their ARRAs into FTRs since ARR credits offset FTR costs in full

- Specific timetable for credit release
- The individual monthly credit requirements for FTRs is removed after the settlement date of each month.
  - If monthly subtotal is negative than there will be no change in total credit requirement
  - If monthly subtotal is positive than the total credit requirement will be reduced by positive monthly subtotal of completed month

- Credit Requirement Calculation
  1. Starts with a monthly credit calculation for each FTR
    - Monthly Price minus discounted historical value for each month for each FTR
  2. Within each month individual FTR credit numbers are added across all FTRs to result in 12 monthly subtotals for the account.
    - For cleared FTRs only, negative individual FTR credit numbers will offset positive numbers within the same month.
    - ARR credits in the account are subtracted from credit requirements each month.
      - Monthly ARR value
  3. Credit requirement is the sum of positive monthly subtotals



# FTR Credit Example

## Historical LMPs and Hours

NODE	HISTORICAL LMP											
	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY
A	\$23	\$25	\$27	\$23	\$18	\$56	\$52	\$49	\$47	\$35	\$29	\$25
B	\$36	\$38	\$40	\$54	\$49	\$34	\$30	\$27	\$25	\$45	\$42	\$38
C	\$34	\$36	\$38	\$34	\$29	\$23	\$27	\$25	\$45	\$44	\$40	\$36
D	\$14	\$20	\$24	\$65	\$60	\$42	\$31	\$33	\$29	\$44	\$26	\$22
E	\$37	\$40	\$43	\$37	\$52	\$24	\$33	\$31	\$60	\$56	\$47	\$42
F	\$67	\$69	\$71	\$13	\$8	\$65	\$61	\$58	\$56	\$23	\$73	\$69
G	\$34	\$36	\$38	\$26	\$21	\$45	\$41	\$38	\$36	\$32	\$40	\$36
H	\$3	\$5	\$7	\$67	\$62	\$13	\$9	\$6	\$4	\$16	\$9	\$5

*Assume On-Peak, Off-Peak, and 24-HR historical LMPs are the same for example.*

	# of On-Peak Hours	# of Off-Peak Hours	# of 24-HR Hours
JUN 2007	336	384	720
JUL 2007	336	408	744
AUG 2007	368	376	744
SEP 2007	304	416	720
OCT 2007	368	376	744
NOV 2007	336	385	721
DEC 2007	320	424	744
JAN 2008	352	392	744
FEB 2008	336	360	696
MAR 2008	336	407	743
APR 2008	352	368	720
MAY 2008	336	408	744
Total	4080	4704	8784



# FTR Credit Example

## Annual Bids

### Auction Open

FTR ID	Source	Sink	Period	Tradetype	Bid MW	Hedge Type	Class Type	Bid (\$MW-period)	Payment
1	A	C	All	Buy	1	Obligation	ON	\$900	\$900
2	B	D	All	Buy	1	Obligation	ON	-\$600	-\$600
3	C	E	All	Buy	1	Obligation	OFF	\$5,000	\$5,000
4	A	F	All	Buy	1	Option	ON	\$1,000	\$1,000

$$(\$900 * (336/4080) - ((1-0.1)(\$34-\$23)(1 \text{ MW})(336 \text{ Hrs}))$$

10% discount for volatility

$$(\$900*320/4080) - ((1+0.1)(\$27-\$52)(1 \text{ MW})(320 \text{ Hrs}))$$

10% adder for counterflow bid in which Sink LMP < Source LMP

FTR ID	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	Bid Credit Requirement
1	-\$3,252	-\$3,252	-\$3,562	-\$2,943	-\$3,562	\$12,271	\$8,871	\$9,370	\$813	-\$2,647	-\$3,407	-\$3,252	\$31,325
2	\$8,082	\$6,603	\$6,423	-\$3,054	-\$3,697	-\$2,469	-\$335	-\$1,953	-\$1,259	\$320	\$6,143	\$5,864	\$33,436
3	-\$629	-\$1,035	-\$1,292	-\$681	-\$7,384	\$63	-\$1,839	-\$1,700	-\$4,477	-\$3,963	-\$1,927	-\$1,770	\$63
4	-\$13,223	-\$13,223	-\$14,483	\$75	\$90	-\$2,639	-\$2,514	-\$2,765	-\$2,639	\$82	-\$13,853	-\$13,223	\$247

$$(\$1000*304/4080) - ((1+0.1)(\$13-\$23)(1 \text{ MW})(304 \text{ Hrs}))$$

\$0

\$Expected Value is set to zero if Sink LMP < Source LMP and Hedge Type=Option

Bid Credit Requirement equals sum of positive months' credit requirement.

### Cleared Credit Requirements

FTR ID	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY
1	-\$3,252	-\$3,252	-\$3,562	-\$2,943	-\$3,562	\$12,271	\$8,871	\$9,370	\$813	-\$2,647	-\$3,407	-\$3,252
2	\$8,082	\$6,603	\$6,423	-\$3,054	-\$3,697	-\$2,469	-\$335	-\$1,953	-\$1,259	\$320	\$6,143	\$5,864
3	-\$629	-\$1,035	-\$1,292	-\$681	-\$7,384	\$63	-\$1,839	-\$1,700	-\$4,477	-\$3,963	-\$1,927	-\$1,770
4	-\$13,223	-\$13,223	-\$14,483	\$75	\$90	-\$2,639	-\$2,514	-\$2,765	-\$2,639	\$82	-\$13,853	-\$13,223
MONTHLY SUBTOTAL	-\$9,022	-\$10,907	-\$12,914	-\$6,603	-\$14,553	\$7,226	\$4,183	\$2,953	-\$7,562	-\$6,208	-\$13,044	-\$12,381

**Total Credit Requirement** \$14,362

Total credit requirement equals the sum of positive monthly subtotals



## Additional Credit Requirements for Undiversified Portfolios

- FTR credit requirements for undiversified FTR auction bidding
  - Undiversified Portfolio Definitions
    - Flow Undiversified = the FTR Portfolio is net counterflow which means the total value of the portfolio is negative based on FTR auction clearing prices.
    - Geographically Undiversified = The FTR portfolio is Flow Undiversified and the FTR portfolio has lower projected target allocations because of a single transmission outage.
    - The FTR portfolio is the cumulative position for all current and future FTRs cleared in previous auctions and FTRs cleared in any current preliminary auction case.

## Additional Credit Requirements for Undiversified Portfolios (cont)

- Diversification check performed after preliminary auction clearing
- Screen for undiversified portfolios (geographically and by flow)
- Additional collateral:
  - 2 times absolute value of FTR auction-based value if flow undiversified
  - 3 times absolute value of FTR auction-based value if flow and geographically undiversified
- PJM issues demand for additional credit as required by diversification test
- Participants bids are removed from auction if demand not satisfied by 4:00 pm next day

- New rule only applies to bids placed into open auction and only applies to bids having exact same characteristics (source, sink, period, class type, hedge type and trade type)
- Current rule calculates bid credit requirement for each FTR bid based on bid price regardless of FTR path
- New rule calculates the highest possible credit requirement for bids placed on the same path
- For each set of same-path bids, the credit requirement for each possible outcome is determined and the outcome which produces the highest credit requirement is used to determine the bid credit requirement for the set of same-path bids
- The price which is determined to cause the highest potential credit requirement will be used for all bids at or above price for buy bids and at or below price for sell offers.



## New Bid Credit Rule for Same-Path FTRs Bids (cont)

### Example of Credit calculation for same characteristic bids

FTRID	SOURCE	SINK	PERIOD	CLASS	HEDGE	TRADE	MW	PRICE
1	A	B	ALL	24H	Obligation	Buy	5	4
2	A	B	ALL	24H	Obligation	Buy	5	2
3	A	B	ALL	24H	Obligation	Buy	150	500
4	A	B	ALL	24H	Obligation	Buy	500	300

### Credit Requirements – Old Rule

FTRID	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	Total
1	\$5,189	\$1,516	-\$969	\$5,189	\$6,672	\$4,516	\$24,554	\$10,150	\$7,763	\$2,048	\$4,437	\$7,367	\$79,400
2	\$5,188	\$1,515	-\$970	\$5,188	\$6,671	\$4,515	\$24,553	\$10,149	\$7,762	\$2,047	\$4,436	\$7,366	\$79,391
3	\$161,792	\$51,791	-\$22,758	\$161,792	\$206,469	\$141,596	\$742,930	\$310,815	\$238,601	\$67,750	\$139,220	\$227,338	\$2,450,095
4	\$531,089	\$164,144	-\$84,352	\$531,089	\$679,736	\$463,769	\$2,467,940	\$1,027,556	\$787,667	\$217,340	\$455,849	\$749,300	\$8,075,476

**Total= \$10,684,363**

### Credit Requirements – New Rule

FTRID	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	Total
3	\$159,327	\$49,243	-\$25,306	\$159,327	\$203,921	\$139,131	\$740,382	\$308,267	\$236,300	\$65,202	\$136,755	\$224,790	\$2,422,643
4	\$531,089	\$164,144	-\$84,352	\$531,089	\$679,736	\$463,769	\$2,467,940	\$1,027,556	\$787,667	\$217,340	\$455,849	\$749,300	\$8,075,476
1													
2													

**Total= \$10,498,119**

Highest possible credit requirement is at the \$300 price so this price is used to determine credit requirement for all bids above \$300