

# Price Formation in Auctions for Financial Transmission Rights

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For nearly 20 years, participants in competitive electricity markets have been able to purchase a financial derivative called a Financial Transmission Right (FTR). FTRs are considered a fundamental component to efficient electricity market operation because they serve as a hedging device by both power producers and load-serving entities (LSEs). Yet, FTRs' existence has been underscored by multiple controversies. Among FTRs' controversies is this: they tend to sell at a price in the auction that is less than what the FTR ends up being worth. This is an important issue because the revenue raised in FTR auctions is passed through to electricity ratepayers, meaning lower auction prices translate to lower revenue pass-through to electricity ratepayers via their electricity bills.

Why do FTRs sell for a price less than their realized value? In our paper, we begin with the conceptual idea that financial speculators who trade FTRs demand, on the margin, a trading premium for purchasing a risky asset. The reason for the trading premium is a combination of a risk premium and the recovery of transaction costs associated with trading such a complex product. However, a trading premium demanded by FTR buyers alone is not enough to understand price formation in FTR auctions. For a comprehensive understanding of FTR auction price formation, we must also consider the supply side of the FTR auction market. In most U.S. competitive electricity markets, the supply side of FTR auctions is determined by something called the Auction Revenue Rights (ARR) process.

Our paper, entitled "Price Formation in Auctions for Financial Transmission Rights," provides a conceptual framework for understanding the role of ARRs in determining equilibrium FTR auction prices. The paper includes an empirical study which explores whether variation in ARR management strategies across ARR paths helps explain differences between an FTR's auction price and its realized value in the PJM Interconnection.

The main finding in our work is that as more FTRs are supplied to the auction through the ARR process, equilibrium auction prices decrease. This is an intuitive yet important finding given that decreasing auction prices directly harm electricity ratepayers. The policy implications of this paper include rethinking the ARR mechanism as a way to reimburse electricity ratepayers for the congestion rent they pay in the energy market.

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