

Ontario's Auction Market for Financial Transmission Rights: An Analysis of its Efficiency

*Derek E. H. Olmstead*¹

Executive summary

Spatial variation of electricity prices arises as a result of it being economically desirable to transfer more electricity from one point to another than the transmission system connecting the points is physically capable of achieving. In such an event the transmission system is said to be congested; the price will be lower upstream of the constraint and higher downstream. The electricity system operator—known in different jurisdictions as an independent system operator, a regional transmission organization, or a transmission system operator—that financially settles electricity transactions will pay the lower price for electricity upstream of the constraint that is transferred and sold at the higher price downstream. The difference is known as congestion rent. In the event there is no congestion, there will be no spatial price variation and no congestion rent. The sum of all congestion rent is non-negative by definition and is known as the merchandizing surplus.

The ex ante uncertain nature of transmission network congestion poses a financial risk to electricity traders, which can include generators and retailers. Financial transmission rights (FTR) were developed as a mechanism to provide a payout based on the realized congestion rent associated with a specific potential constraint in the transmission network and can be used to hedge this risk. As a result, FTR may support a more efficient allocation of resources than would otherwise be possible: in the short-run by minimizing production costs and in the long-run by informing investment decisions. In many restructured electricity markets, FTR for various elements of the transmission network are sold by the system operator in auctions. It is by bidding in these auctions that traders can obtain the FTR necessary to hedge particular trades.

This paper examines the performance of FTR auctions in Ontario's restructured electricity market and examines four related questions. First, do auction market clearing prices (MCP) approximate the realized payout (congestion)? Second, is there any evidence that auctions are informationally efficient in the sense that the information available at the time of the auction is accounted for by the MCP? Third, is there any evidence that the competitiveness of auctions as measured by the number of bidders impacts the forward market unbiasedness or informational efficiency of the auctions? Fourth, what policy purpose does the auction process serve?

¹ Principal Economist, (Alberta) Market Surveillance Administrator; Adjunct Research Professor, Department of Economics, Carleton University; and Adjunct Assistant Professor, Department of Economics, University of Calgary. E-mail: derek.olmstead@ucalgary.ca.

The paper finds that over the period 2003 to 2011 FTR auction MCP were substantially lower than realized payouts. In the auctions examined herein, FTR that were sold for \$152.5 million received a total payout of \$328.6 million. As a result, there was a transfer of wealth away from consumers who would collectively be the residual claimants on these (in the form of reduced transmission charges) were FTR held on their behalf.

On average across all auctions observed there is mixed evidence that MCP is an unbiased forecast of payout (congestion). In auctions with at least three bidders the MCP is an unbiased forecast of the payout but when there are only one or two bidders the MCP is a biased forecast of the payout. Further, there is no evidence that information available at the time of the auction is not accounted for by the MCP.

Regarding policy purposes, there is little to support the proposition that the auction of FTR has made the Ontario market more efficient. A majority of electricity trades between Ontario and neighboring markets occur without a hedge that could be provided by an FTR and a substantial volume of FTR are procured and held by speculators not engaged in trade. Moreover, as Ontario's market has developed into one in which virtually all generation capacity therein is either under contract with or owned by government, forward-looking generation investors have no need to secure their investment with forward sales. Under these circumstances, it is unlikely that the auctioning of FTR contribute to the efficiency of the Ontario market.

Unless FTR auction prices begin to approximate realized congestion rent more closely, consumers would likely be better off if congestion rent is used to reduce transmission charges (or otherwise transferred to them) rather than be sold at auction. Implementation of internal locational pricing would not, by itself, change this result.

Keywords Electricity market; liberalization; financial transmission rights; forward market unbiasedness; informational efficiency; auction competitiveness; Ontario.