



Vincent Duane  
Sr. Vice President, Gen. Co., Compliance & Ext. Relations

PJM Interconnection, L.L.C.  
2750 Monroe Blvd.  
Audubon, PA 19403  
T: (610) 666-4367  
Vincent.Duane@pjm.com

January 9, 2018

The Honorable Fred Upton, Chairman  
Committee on Energy and Commerce  
Subcommittee on Energy  
2125 Rayburn House Office Building  
Washington, DC 20515-6115

*Re: November 29, 2017 Hearing – Response to Additional Questions for the Record*

Dear Chairman Upton,

Thank you for the opportunity to testify before the Subcommittee on Energy of the Committee on Energy and Commerce of the U.S. House of Representatives on November 29, 2017 at the hearing entitled “Powering America: Examining the Role of Financial Trading in the Electricity Markets,” and for the opportunity to address additional questions of subcommittee members.

Attached are my responses to those additional questions per your letter dated December 19, 2017. Thank you and the Subcommittee for your continued time, effort and consideration of perspectives offered. Should you have any questions with regard to the attached, please do not hesitate to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'Vincent Duane', written over a horizontal line.

Vincent Duane

cc: The Honorable Bobby L. Rush, Ranking Member, Subcommittee on Energy  
Ms. Allie Bury, Legislative Clerk, Committee on Energy and Commerce

Attachment: Responses of Vince Duane, Additional Questions for the Record

**The Honorable Fred Upton**

1. You stated that financial trading in the electricity markets can be “too much of a good thing”, and that in some circumstances, needs to be prevented if the trading does not deliver any efficiencies to the electricity markets.
  - a. However, a broader question is whether RTO markets should host this type of trading activity at all? Isn't financial trading more appropriate on a financial exchange like NYMEX or the Intercontinental Exchange (ICE) rather than in a physical RTO/ISO market?

**Answer**

RTO markets should host financial trading only to the extent financial trading improves the performance of the predominantly physical RTO/ISO markets. RTO/ISOs should not, and PJM does not, create financial instruments to attract financial trading as an end unto itself or to compete with secondary market exchanges or platforms that can and do offer swaps, options and futures contracts used to hedge or speculate on PJM forward prices.

PJM offers two products that have clear financial characteristics – virtual bids/offers and financial transmission rights (FTRs). But even these products have unique design elements which support and tie them very closely to PJM's physical market operations; to wit PJM's commitment, dispatch and delivery of electricity to supply load.

A virtual trade is a forward contract, committing the counterparty to either buy or sell electricity the following day at a price to be determined in that day's spot market. The obligation associated with a virtual trade (to buy or sell the next day) can be settled financially, which is to say, the counterparty need not deliver, or take delivery of, physical electricity. An FTR has different tenures (monthly, multi-month and annual). PJM's FTR regime (which includes auction revenue rights (ARRs)) offers FTR and ARR holders superior efficiency and optionality to manage the risk of locational price differences in electricity as compared to physically firm transmission service, which can be curtailed or subject to redispatch.

As hopefully is evident from the foregoing product descriptions, both virtual trades and FTRs are integral to PJM's fundamentally physical operations. This fact was recognized by the Commodity Futures Trading Commission (CFTC) in 2013 when it granted exemptions to virtual and FTR transactions from potential Commodities Exchange Act jurisdiction. With reference to virtual trades, the final order granting these exemptions states:

Although there is an apparent financial settlement nature of virtual and convergence bids and offers ... they are inextricably linked to the physical delivery of electric energy due to their being subject to the same aggregate physical capabilities of the electric energy transmission grid as other physical Energy Transactions.<sup>1</sup>

The CFTC proceeding that culminated in the Final Order cited above, is replete with evidence showing the association between RTO/ISO financial products and RTO/ISO operations, the volumetric limit to these products constrained by the physical character of each RTO/ISO system and the efficiency and convergence role these products can provide to RTO/ISO market operations. The role that the RTO/ISO physical system plays to define and constrain the financially settled transactions that occur in these markets distinguishes those transactions from those occurring in distinct CFTC-regulated secondary market environments.<sup>2</sup>

Finally, I would note that ISO/RTOs, pursuant in part to FERC Order No. 741,<sup>3</sup> have adopted practices and protections developed in CFTC-regulated markets to manage credit, default and potential gaming concerns unique to financial trading. So, while I do not believe the types of virtual and FTR transactions offered by PJM could be replicated by CFTC-regulated exchanges or swap dealers and brokers, the sophisticated protections developed in these environments have been adopted and applied with good result in PJM.

---

<sup>1</sup> Final Order in Response to a Petition From Certain Independent System Operators and Regional Transmission Organizations to Exempt Specified Transactions Authorized by a Tariff or Protocol Approved by the Federal Energy Regulatory Commission or the Public Utility Commission of Texas From Certain Provisions of the Commodity Exchange Act Pursuant to the Authority Provided in Section 4(c)(6) of the Act, RIN 3038-AE02, p.32.

<sup>2</sup> While appropriate to examine fundamental premises as part of the hearing record, it should be noted that Congress itself acknowledged in Section 1233 of the Energy Policy Act of 2005 (the "native load" provisions of "EPACT 2005"), the link among financial transmission rights, service to native load customers and the RTO/ISO's planning obligations which work to ensure the value of those rights on a long term basis.

<sup>3</sup> Credit Reforms in Organized Wholesale Electric Markets, Order No. 741, 133 FERC ¶61,060 (2010).

**2. PJM's Independent Market Monitor has taken the position that the current FTR market design is flawed and does not ensure that load serving entities receive all the congestion revenues. Does PJM share the position of its independent market monitor?**

Answer

PJM does not agree that its current FTR market design is flawed. We do, however, agree that the FTR market is not designed to ensure that load serving entities receive all congestion revenues. The market is designed to afford load serving entities entitled to an allocation of FTRs (or to be more technical, an allocation of auction revenue rights) the opportunity to hedge congestion risk associated with deliveries from generation to load.

The allocation of financial rights (FTR/ARRs) serves as the paradigm in organized wholesale electricity markets by which the ISO/RTO, as transmission provider, meets its obligations to provide to customers open access firm transmission service. In non-market regions of this country, transmission customers take physically firm service. Importantly, physically firm transmission service does not mean a transaction cannot be curtailed, subject to TLRs, or redispatch costs. In theory, transmission service providers (both those providing financial rights and those providing physical rights) can reduce or eliminate altogether instances where either the financial rights allocation fails to hedge all congestion exposure or where physical rights have to be curtailed, respectively. This outcome can be achieved by applying very conservative estimates of the available capacity on the transmission system in deciding on the number of FTR/ARRs to offer or the number of physical transmission service requests to approve, respectively.

While such conservatism can assure that an FTR fully offsets congestion cost or that a physical transaction is never curtailed, this overly-cautious approach would effectively discount the real transfer capability of the respective system under normal and reasonably foreseeable system conditions. In effect, this overly cautious approach underutilizes the system and will result in a suboptimal level of transmission transactions relative to the capability of the system.

As is equally true for traditional physical transmission service providers, the only way to offer a customer an absolute guarantee of firm service would be to grant an unreasonably low level of transmission service requests. Consequently, when Congress addressed financial transmission rights in EPACT 2005, it made clear that transmission customers under an FTR/ARR regime are entitled to financial transmission rights to meet their "reasonable" load serving needs.

Finally, in PJM the highest priority of financial rights is allocated to load serving entities on paths aligned with physical energy deliveries. After first allocating financial rights requested by load serving entities, excess capability may be

purchased by non-load serving entities. Excess capability is historically available only on those paths not aligned with congestion patterns. Therefore, typically where a non-load serving entity acquires rights on a path associated with physical energy delivery, it will pay a premium for these rights. This premium benefits the market by increasing revenues to all ARR holders, including load serving entities

**The Honorable John Shimkus**

- 1. In answering my question regarding the degradation of firm transmission rights when the transfer from physical rights to FTRs occurred more than a decade ago, you stated that some entities ultimately were not hedged as they might have been otherwise. The Federal Power Act requires the FERC assure that RTOs reasonably plan and expand your transmission system to meet the foreseeable needs of Load Serving Entities. That planning includes the allocation of physical transmission rights (or at least equivalent financial rights) on a long term basis for LSEs that have long term power supply arrangements. Isn't it reasonable that entities that had long term firm transmission rights be held harmless by your tariffs? At a minimum, shouldn't your system provide them equivalent or comparable access to their resources without excessive congestion cost if they originally had a long term firm transmission path? If not, how is your market design just and reasonable if it causes costs or price escalation for resources owned by entities that held long term firm transmission rights?**

**Answer**

Long term firm transmission customers in PJM are allocated ARRs recognizing these customers paid originally for transmission for their load to access resources. When PJM's energy market prices separate, which is to say prices at the where power is injected differ from the where power is withdrawn, the transmission customer is exposed to congestion – a higher locational price at the delivery point as compared to the price realized by the generator at the point of injection. A transmission customer can hedge this price differential by holding an FTR on the pathway between these locations. The FTR is funded by congestion revenues collected by PJM.

A transmission customer is first allocated a level of ARRs in an amount commensurate to its transmission service, and subject to PJM's transfer capability modeling described in my response to the second question above. A customer can elect to convert its ARRs into FTRs and can (subject to caveat mentioned in the response above) thus deliver energy effectively congestion free from its historic

resources to its load. Additionally, however, PJM's financial rights regime works such that if the transmission customer elects not to convert its ARR into FTRs, it will instead receive the revenues realized by selling these FTRs in PJM administered auctions. Giving a transmission customer this optionality permits them to monetize FTRs they would otherwise hold if the customer believes other market participants in PJM place a greater value, and thus will pay more, than what the transmission customer believes the FTR is worth. Customers that take this route may realize revenues in excess of the congestion costs they end up being exposed to. But the other side of the bet also exists. By assuming the floating price risk of congestion in return for fixed revenues coming out of the FTR auction, the customer may not be fully hedged to actual congestion costs as they occur. Depending on system conditions and resulting levels of congestion, the customer thus may end up paying more in congestion than it received by way of auction revenue rights. This outcome, of course, is the result of the customer's financial decision, and is not a pre-ordained consequence of PJM's market design.

Your question references the obligations imposed by the Federal Power Act to plan and enhance the transmission system in order to meet a long-term, firm customer's reasonable needs. The scope and interpretation of this standard has been subject to debate before FERC. A particular question as to how the law defines a customer's "reasonable needs" was addressed by the FERC in Order No. 681.<sup>4</sup> In this Order, FERC provided a guideline which stated that "transmission organization may propose reasonable limits on the amount of existing capacity used to support long-term firm transmission rights such as minimum daily peak load or 50 percent of maximum daily peak load." In PJM compliance filings made pursuant to the final rule, certain parties protested that "reasonable needs" for purposes of FTRs should mean whatever a customer may need at any point in time to deliver energy to load. PJM instead proposed a standard it describes as the customer's "zonal base load," which conforms to the minimum daily peak load guidance offered by the FERC in Order No. 681. PJM's standard was ultimately accepted by FERC over objection by certain customers with the Commission reasoning that PJM's proposal met the requirements of both Order No. 681 and the Federal Power Act's "reasonable needs" standard.

Importantly, once this standard is triggered, PJM is required by law to expand its transmission system, as correctly noted in your question. Recently, in order to ensure that a legally sufficient allocation of ARRs could be maintained to transmission customers in Illinois, PJM ordered development and construction of a 345kV transmission project, known as the Grand Prairie Gateway Project, to enhance congestion free transfer capabilities in the Commonwealth Edison zone, for the benefit of long term transmission customers in that zone. This project offers an excellent illustration of how Congress' EPACT 2005 amendments to the Federal

---

<sup>4</sup> See *Long-Term Firm Transmission Rights in Organized Electricity Markets*, Order No. 681, 116 FERC ¶ 61,077 (2006).

Power Act work to provide long term transmission customers in PJM an appropriate degree of congestion hedge while not subjecting all customers to inefficient and expensive overbuilding of the transmission network. The “reasonable needs” standard adopted by EPACT 2005 appropriately balances the needs of an individual customer while ensuring just and reasonable rates for the broader set of transmission customers.