To: Group  
From: Shmuel Oren  
Sent: Friday, September 15, 2000 8:49 PM  
Subject: Re: Negative-priced and secondary FTR trading in PJM

The attached Emails were not circulated to the entire mailing list but I think they are of general interest. If anyone knows how to get the info for comparing the FTR auction prices to the actual FTR settlements please let me know. This would be a good market test.

See Email Exchange between Larry Ruff and Shmuel Oren

To: Shmuel Oren  
From: Andy Ott  
Date: September 15, 2000  
Re: Negative-priced and secondary FTR trading in PJM

I do not know of any such study, but participants have reported to me that when the Auction was first implemented (April 1999), they were able to buy FTRs in the Auction for a fraction of what they were worth in congestion revenues. But they say that the margins have decreased considerably since then … as I would expect. I have attached two powerpoint slides that show PJM FTR Auction activity since implementation. Judging by the increase in volume, I assume it is becoming more competitive.

To answer your question regarding sources of FTR information, FTR Auction results (Source, Sink, Clearing prices and cleared MW) by individual FTR are public information and are able to be downloaded from our website eftr.pjm.com (instructions: click on File Transfer, then right click on auction_results.csv and 'save target as' your desired file name. Be sure to select the market (auction month) that you want on the left side of the web page)

In order to determine FTR economic value, you would need to download hourly PJM LMP values from our website www.pjm.com (under Market and System Data), You would then need to match LMP values with the FTR source / sink. This could be a labor intensive process but the data is all available.

To: Larry Ruff  
From: Alex Papalexopoulos  
Date: September 14, 2000  
Re: Negative-priced and secondary FTR trading in PJM

Larry:

I assume the secondary trading should be registered with PJM. I.e.,
Traders need to notify PJM about these deals. This information is important for many reasons, including enforcement of position limits for market power mitigation. The fact that PJM sees no secondary trading in the secondary market is because there is none. Is this assumption correct?

Alex

To: Alex Papalexopoulos
From: Larry E. Ruff
Sent: Friday, September 15, 2000 11:57 AM
Subject: Negative-priced and secondary FTR trading in PJM

Alex --

I do not think that traders are required to register bilateral contracts with PJM, whether these are energy contracts or FTRs, but I will ask Andy Ott to answer. Such a requirement would be virtually impossible to police or enforce anyway.

As both Andy and I have said, there may indeed be little secondary trading of FTRs, at least for generators and loads hedging physical positions, given that PJM conducts a monthly reconfiguration auction.

Larry

To: Alex Papalexopoulos
From: Andy Ott
Sent: Friday, September 15, 2000
Subject: RE: Negative-priced and secondary FTR trading in PJM

Alex, PJM does not require that participants register bilateral trades of FTRs (or energy) with PJM. I agree with Larry that we could not enforce such a rule.

To: Andy Ott
From: Alex Papalexopoulos
Date: September 16, 2000
Subject: Re: Negative-priced and Secondary FTR trading in PJM

Andy:

That's interesting. FEFC requires the CAL ISO to monitor and register all bilateral trades in the secondary market. The ISO had developed a sophisticated tracking system to do just that. I agree, it is difficult to enforce such a rule. Market Participants are obligated to register these trades with the ISO but there are no penalties if they don't.

Alex

To: Shmuel Oren
From: Bill Hogan
Date: September 16, 2000
Re: My final (Maybe) Word on Flowgates

Shmuel,
Re your comment below about PJM: "After all the PJM implementation of LMP is also a far cry from what the theory promises in terms of dispatch efficiency. The PJM Power Point presentation distributed by Bill Hogan reveals that PJM's LMP implementation is basically a system of "no arbitrage" transmission pricing based on the pool dispatch. It effectively mutes bypass of the pool by pricing transmission so that no bilateral transaction can do better than trading with the pool. Such a system can sustain any arbitrary level of dispatch inefficiency by the pool and there is no market test built into the system that can measure how efficient is the dispatch. Decentralized forward trading is, in my opinion, the only hope for contestability and that is why I am so supportive of designs that can promote such trading. But this is a topic for another debate."

This reminds me of a similar claim in Wu, F., P. Varaiya, P. Spiller, and S. Orren, "Folk Theorems on Transmission Access," Journal of Regulatory Economics, Vol. 10, No. 1, 1996. If this is the intent, there is an important difference between the Wu et al. analysis and the PJM practice. The Wu et al. analysis uses a specialized definition of market equilibrium and the no-arbitrage condition which importantly excludes the shift factors (transmission network first order constraint representation) and complementarity conditions for the binding constraints. When these constraints are ignored, the no arbitrage condition with locational prices could support substantial dispatch inefficiency. However, this is not what PJM does and not what is described in the power point presentation from Andy Ott.

By contrast, the PJM implementation explicitly includes the transmission constraints that are binding and applies the no arbitrage condition to the full set of first-order conditions as consistent with a conventional definition of market equilibrium. This provides, among other things, a measure of any deviation from efficient dispatch based on the degree of required deviation from perfect prices. As Andy Ott has reported elsewhere, this deviation is quite small. Were it otherwise, the pricing deviations would be immediately apparent to the bidders who would find themselves sometimes undercompensated for their supply. The absence of widespread complaint is evidence that the PJM implementation is neither arbitrary nor inefficient.

Further, there is bilateral trading in PJM and if traders can do better than the PJM operator they are free to do so. The only requirement is that the bilateral traders pay the marginal cost imposed on the rest of the PJM system, which is the price as described above. Hence, there is no muting of competition.

Bill

To: Group
From: Mike Rothkopf
Date: September 17, 2000
Re: Negative Priced and Secondary FTR Trading in PJM

Hi all,

This exchange intrigues me. Aren't ISO's required to have market monitoring committees to watch out for, among other things, abuses of market power? If so, how will they carry out this function unless they know who controls how much capacity? (In my humble opinion, if they don't do this job, we will eventually see reregulation.)

As for the enforceability question, I'm no attorney, but I would think that reporting all bilateral trades would be a good defense against criminal constraint of trade charges and that failure to make required reports could be evidence of criminal intent. Of course, this wouldn't be a factor for obviously innocent trades, but then not having these reported shouldn't hamper the market monitoring function.

Mike Rothkopf

To: Bill Hogan
Bill

In the classic primal dual relationship between quantities and prices. Dual feasibility provides a market test for primal optimality. The PJM approach takes a suboptimal primal solution and legitimizes it by making the dual variables feasible via the addition of the plus/minus epsilon constraints on the dispatch quantities in the LP. It would be useful to know how many of those "plus/minus epsilon" constraints end up being binding in the LP solution that is used to set the LMPs. The total cost of these added constraints could provide a useful measure of the suboptimality of the dispatch. Please let me know if such information is available.

As to the option given to bilateral transactions to bypass the PJM pool; The PJM approach is reminiscent of the ECPR (efficient component pricing) theory developed by Willig and others at Bell Labs as part of their theory of contestable monopolies. That theory was developed to establish the price that should be charged to entrants wishing to compete with a monopolist (such as AT&T) by offering telecommunication services over the monopolist's network. The answer that they came up with is that the entrant should pay an access charge that equals to the difference between the regulated monopoly price for the service and its marginal cost, i.e., pay the regulated monopolist an access charge that fully compensates it for its forgone profits. The rational for that access price was that such a charge would only allow efficient entrants with marginal costs below that of the monopoly to contest the monopoly. However, under this scheme an entrant could never do better than simply selling it technology or service to the monopoly at the monopoly's marginal cost. The basic criticism of that theory is that it hangs on the presumption that the regulated monopoly prices are the optimal social prices. (much like the PJM transmission charges are based on the presumption that the PJM calculated LMPs are the "correct" locational prices). I hope you see the similarity here. As I recall the ECPR principle was never accepted in the US. Although I think it was accepted in New Zealand after a lengthy court battle.

Regarding the paper by Andrew Ott that you circulated. The results are indeed dramatic when the commercially significant flowgates are chosen based on 80% coverage of congestion costs. I was wondering, however, if the analysis presented in the paper was done when the commercially significant flowgates are chosen based on 90%, 95% and 99% coverage of congestion cost. How much of the congestion cost in subsequent years would have to be socialized in each of these cases? Such analysis could provide useful guidelines on how to select commercially significant flowgates. If the analysis has not been done I will ask one of my students to do it from the data provided in the paper.

Shmuel

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To: Shmuel Oren
From: Andy Ott
Subject: RE: My FINAL (Maybe) Word on Flowgates
Date: Mon, 18 Sep 2000

Shmuel

I had included the 80% level in the paper to keep the number of flowgates at a "reasonable" amount. But I had done analysis at the other levels. Here is a summary:
The total congestion charges from 1/1/99-4/30/00 were $113,467,208 If we Define flowgates based on 1998 congestion to cover 90%, 95% and 99% the results are summarized in the attached spreadsheet. As you can see, even if we define the 35 flowgates necessary to cover 99% of the 1998 congestion, these 35 flowgates will only cover 9.85% of the
1999-2000 congestion. Therefore even at the 99% level, over $100 million in 1999-2000 congestion charges would need to be socialized because it is not covered by flowgates

Andy Ott

To: Andy Ott
From: Shmuel Oren
Date: September 18, 2000
Re: My FINAL (Maybe) Word on Flowgates

Andrew.
Could you make available an expanded version of Table A1 in your paper that would show the congestion cost on all 138 flowgates by month (or quarter) for the entire period 4/1/98 to 4/30/2000. I assume it is not confidential.

Shmuel

To: Shmuel Oren et al.
From: Larry Ruff
Date: Tue, 19 Sep 2000
Subject: Re: My FINAL (Maybe) Word on Flowgates

Friends --

In this discussion of how many flowgates are needed to capture "most" of the congestion costs, do not forget that the stability of the PTDFs is also critical. Even if the same (say) 50 flowgates captures (say) 80 percent of the congestion costs, if the PTDFs change much from day to day or month to month trading will be difficult and the RTO will probably be stuck with the congestion costs not captured by the current "announced" PTDFs when the actual PTDFs are different.

Larry

To: John Chandley
From: Richard Doying
Date: 9/18/2000
Subject: RE: MISO Congestion Management Hybrid Proposal

John,

What a wonderful report! I knew the data must exist. This shows that only 24 flowgates would have been required to capture 80% of the value Associated with PJM transmission congestion between 4/1998 and 4/2000. Ninety percent could have been captured by increasing the number of flowgates to only 43.

Moreover, the flowgates appear fairly stable. Had PJM identified flowgates for 2000 based only on the first full year of market data (1999), they would have captured more than half of the 2000 congestion value. Adding only one additional constraint -- a well known, long standing constraint on the Limerick 4A transformer -- would have increased to 80% the amount of congestion value captured.

Clearly, had PJM and the market set out to identify flowgates based on several years worth of operational and market data, one would expect that a reasonably small set of flowgates could have been identified that would have captured more than 80 percent of 2000 congestion value. That proportion would be even higher given a means to add new flowgates as
they are identified -- the report does show the danger of using a very limited data set (6 months of operational data) to designate a static set of flowgates.

Well done.

Richard

To: Richard Doying  
From: John Chandley  
Sent: Tuesday, September 19, 2000 6:44 PM  
Subject: RE: MISO Congestion Management Hybrid Proposal

Richard, et al.,

I appreciate the sly humor of your response. More important, I agree that the Andy Ott paper is important and well done, and it is interesting for several reasons.

1. Whether the finding that so far “only” 24 to 43 flowgates in PJM could capture 80-90% of the congestion charges in PJM is good news or bad news depends on how well the market can handle trading in a system that requires multiple rights for each transaction. Until recently, the assertion about each region, including PJM, was that there are only a “few” flowgates worth worrying about, and discussions usually assumed that a “few” meant less than 10. Now we see that to capture 80-90% of the congestion charges, while still socializing the rest, we need to designate somewhere between 24 and 43 flowgates. Frankly, I had my doubts about whether the market could effectively acquire and trade as many as the original “few” FGRs for each transaction, and then retrade them for each transaction change (never mind changing PTDFs). However, your sanguine response to “only” 24-43 flowgates leads me to suspect I may have underestimated the market’s ability to deal with complexity. Given that ability, we should not worry about whether the same sophisticated market can cope with a system that allows a trader either to acquire only one point-to-point FTR for each point-to-point transaction or alternatively allows that trader to accomplish similar results by acquiring any portfolio of FTRs with a similar aggregate hedging value. Apparently, these far simpler and more flexible options are not too complex for the market.

2. I agree with your general conclusion that we need a lot more experience, over longer periods of time, to be confident about using historical data to predict future congestion. I read Andy’s paper as showing that designating flowgates based on even a year’s worth of market-based data leaves open the likelihood that the designated flowgates will miss substantial numbers of significant, but undesignated, constraints that may become binding in the future, with significant cost exposure to the RTO and those who must pay its uplift charges. We are fortunate, therefore, that Andy and PJM have been tracking LMPs, regional congestion and redispatch cost data for the past two or more years of market operations, and that this type of market data is publically available for analysis of PJM.

Of course, we have no comparable data for other regions, whose markets have not even started, and the data we do have is not market-based. We honestly don’t know what congestion is likely to be like in MISO or SPP or Texas when their respective markets actually start. Those regions have not even had a mandatory redispatch rule, let alone an ability to price redispatch and determine how much and how often market participants are willing to pay for it.

Hence, the logic of what you are saying suggests that we will need a
period of straight LMP congestion pricing, using FTRs as hedges, before we can have any confidence in our ability to predict commercially significant flowgates (CSFs) or accept the risks of an FGR system that either (1) only hedges for those flowgates and thus leaves traders mostly unhedged or (2) requires the RTO to redispatch for all constraints but socializes the costs of managing the non-designated constraints. What you seem to be implying is that starting an RTO market with an FGR system but with no useful (market-based) historical data and no experience in predicting future congestion or CSFs is not a good idea, because it exposes the RTO and the RTO members to substantial risks. I would agree with that.

3. The MISO hybrid proposal attempts to mitigate this problem by giving the RTO the ability -- but apparently not the obligation -- to add new CSFs and issue new FGRs for those CSFs each month. If PJM had started with an FGR system instead of FTRs, then it would have been essential for the PJM ISO to add new CSFs as often and as rapidly as possible, at least until there were substantial, long-run periods in which the number and locations of CSFs were shown to be stable. It's not clear to me that even PJM has reached that point yet, but at least we can agree that an RTO should not start with the assumption that its CSFs are either predictable or stable. The PJM evidence, as well as the experience in California and New England, strongly show that pre-market data is a very poor indicator of post-market congestion.

If an RTO is even to consider a flowgate system in the face of these risks and uncertainties, it's important for the RTO to at least start off by designating all possible constraints as flowgates and then have ironclad procedures for adding new CSFs as quickly and rapidly as possible. Traders would not be required to purchase FGRs for every CSF, but at least they would have the ability to do so from the beginning. Adding new constraints to the list of CSFs as they arise should be mandatory and not subject to delays by a stakeholder governing body, some of whose members may have an interest in keeping the number of CSFs to only a "few." The RTO should not wait for a new constraint to prove itself "significant" over time (the MISO hybrid does not identify any mechanism or criteria for making this judgement, and doing so has so far proven illusive in California), as this will only lengthen the time in which the market is not allowed to manage or obtain hedges for that constraint.

4. Given the above, it would also seem prudent to remove any settlement rules that require the RTO to subsidize congestion charges and socialize their costs. Then the RTO and the market would have strong incentives to add as many CSFs as quickly as possible, to allow the market to manage congestion through the purchase of FGRs rather than require the RTO to manage it in real time and expose the market to unhedged congestion charges. My concern is that the MISO hybrid proposal put together by the working group creates the wrong incentives. The RTO will be required to manage all constraints through redispatch, but it will have no way to recover the costs of managing non-designated constraints from those who cause the congestion. Those who do cause the congestion will have strong incentives to skew the tariff rules and RTO procedures in ways that restrict the RTO's ability to add new constraints often and quickly, even as new constraints are identified with each passing month of market operations. Instead of narrowing the gap between what the forward market can do and what the RTO real-time redispatch must do, the perverse incentives will perpetuate and even worsen that gap, leaving the RTO with more to do and few market tools to do it with. MISO will then suffer from all of the perverse pricing incentives that have dogged the California market and brought it close to meltdown. Why would you wish that on the MISO (or anywhere else)?

5. If there were a no-subsidy, no socialization rule, it might not be nearly as important whether transmission hedges are defined as point-to-point FTRs or constraint-by-constraint FGRs. Ideally, we could offer both and let the market choose the mix of each that best met their needs. From an economic perspective, we might not care what the market chooses, as long as they have something that works and that does not rely on subsidies/cost socialization or creates perverse price incentives. My preference is for FTRs, and my belief is that FGRs, if done without
subsidiaries, will prove to be unworkable. I also believe that if MISO supports FGRs through subsidies, it is asking for a repeat of California's woes. These are my opinions and you may disagree. However, if the market wants to be fully hedged with FTRs or with many FGRs, that's fine, and if it is willing to be only partially hedged with only a few FGRs, or FGRs whose PTDFs might change, while paying the full marginal cost for unhedged constraints in real time, that's fine too. The problems will arise if we only provide FGRs and they turn out to be less than the full hedges you wanted, require the RTO to partially or substantially subsidize them, and still prove far more difficult to trade than you hoped. If that were our only choice, we'd all have to accept it, but we have better options.

Regards,

John Chandley

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To: Andy Ott
From: Shmuel Oren
Sent: Tuesday, September 19, 2000
Re: My FINAL (Maybe) Word on Flowgates

Andy

In your paper you seem to get much better results for the January 1, 2000 to April 30, 2000 period when the flowgates are based on 1999 data (17 flowgates cover 56.5%). How does that number change if you use more flowgates again based on 1999 data (again using the number of flowgates that in 1999 covered 90%, 95% and 99% of the congestion cost). It is possible that the poor results that you get represent a startup problem. If that is the case we may look for some explanation and how the problem can be mitigated. If we can get to a state were even 50 flowgates that are predicted based on one years’ data can account for 80%-85% of the congestion in the subsequent year I would consider that very promising.

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To: Andy Ott
From: Shmuel Oren
Date: Wed, 20 Sep 2000
Subject: RE: My FINAL (Maybe) Word on Flowgates

Shmuel,

I believe that the reason that you see 'better' results for the 1999-based flowgates is caused more by the fact that the data for 2000 only covers 4 months rather than indicating 1998 as an aberration. I will have data compiled for the period May, 2000 - August, 2000 to demonstrate this effect.

My impression was that the general theory behind the flowgate approach was to keep it simple by defining a small number of flowgates. If you need to define 50 flowgates in an small geographic area like PJM, that would translate into something like 800-1000 flowgates in the eastern interconnection (with these definitions changing at least once per year). And then you still have the risk that conditions change dramatically and most congestion is uplifted. I do not agree that most stakeholders would consider this scenario as a viable alternative that looks promising.

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To: Andy Ott
From: Shmuel Oren
Sent: Wednesday, September 20, 2000 6:26 AM
Re: My FINAL (Maybe) Word on Flowgates

Andy

If I am not mistaken some elements that you regard as flowgate are counted more than once when the congestion is due to different contingencies. In other words you are breaking up the congestion cost on the same monitored element and counting it as if it was on separate flowgates if it became congested for two different contingencies. In table A1 I am counting Line 230KV CEDARGRO-ROSELAN F-2206 five times. If you add all the five contingencies this line accounts for 5.66% of the congestion cost. Similarly LIMERICK 500KV LIMERICK LIM 4A XFORMER appears three times and accounts for a total of 8.77% of the congestion cost. I did not check the rest but if I am right your count of significant flowgates should go down. It probably will not alter your conclusion but it may make a difference when you use 1999 data with flowgates capturing 95% of that year’s congestion cost to predict Yr 2000 commercially significant flowgates. Am I right or did I miss something?

Shmuel

To: Shmuel Oren
From: Andy Ott
Subject: RE: My FINAL (Maybe) Word on Flowgates
Date: Wed, 20 Sep 2000 09:16:02 -0400

Shmuel, You are missing a key point. Both the monitored element and contingency element must be included in the analysis because of the dramatic effect that the contingency has on the power transfer distribution factors. For one of the lines you mention(Line 230KV CEDARGRO-ROSELAN F-2206) the PTDF’s change by over 50% depending on which contingency element is causing the binding constraint. This has a dramatic effect on price distributions and on which mitigating actions are chosen to alleviate the problem. These effects cannot be ignored, effectively you need to define flowgates that include both the contingency element and to monitored element.

To: Andy Ott
From: Shmuel Oren
Date: September 20, 2000
Re: My FINAL (Maybe) Word on Flowgates

Andy

First of all the whole point of the flowgate approach is to separate PTDF changes from flowgate shadow prices. Changes in PTDF will require reconfiguration of flowgates to hedge a point to point transaction but that is a separate issue. Second, I fail to see how a contingency constraint changes the PTDF unless the contingency element actually failed. Does the contingency element column in your table indicate element that were out of service or simply elements that “if failed” they would have overloaded the monitored element. If the later case is correct the actual PTDFs do not change. In any case defining flowgates as pairs of a monitored element and a contingency element would not allow definition of unique flowgate rights and is not consistent with the theory of flowgate based congestion management.

Shmuel

To: Shmuel Oren
From: Andy Ott
Subject: RE: My FINAL (Maybe) Word on Flowgates
Date: Wed, 20 Sep 2000
When operating a power system to adhere to single contingency criteria, it is necessary to control flow on both the monitored and contingency element. If you ignore flow on the contingency element and focus only on the monitored element, it is likely that the mitigating actions that are taken will be at best non-optimal and at worst totally wrong. For instance, if loss of line A on line B is the problem then it is incorrect (and could result in unreliable operations) to perform mitigating actions to reduce flow on line B while allowing line A flow to increase. So any realistic flowgate approach would need to account for these interactions. I realize that defining different flowgates that share common transmission lines will cause complex interactions, but that is the reality of the situation. Again, the reliable operation of the grid requires that the system be maintained in a reliable operating state, the PTDF must recognize the fact that as flow increases on the contingency element, there is potential to create an unstable operating condition by severely overloading the monitored element. This criteria is an industry standard and cannot be ignored. I would be happy to meet with you in person to discuss these points if you so desire. FYI, I will be out of the office until the end of next week and I will not have access to email.

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To: Andy Ott, Larry Ruff  
From: Shmuel Oren  
Sent: Thursday, September 21, 2000  
Subject: Re: My FINAL (Maybe) Word on Flowgates

As Far as I know NERC defines flowgates uniquely (and not as pairs of monitored and contingency elements) in their TLR protocols and that is consistent with control area procedures. But again I am willing to be corrected if I am wrong.

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To: Group  
From: Ross Baldick  
Date: September 20, 2000  
Re: My final (Maybe) Word on Flowgates

Colleagues,

I’d like to enter this discussion and I hope that is okay with you all.

I don’t think Andy’s test is at all a fair one of the flowgate approach. I interpret the flowgate hypothesis to say that there exists some “proxy” constraints that can represent most of the congestion. Picking some actual constraints and expecting them to be the right proxies is unlikely to work. Andy has used the data at hand but has not tested the hypothesis that is relevant. However, even more seriously, the flowgate approach is really also implying that many of the constraints in the system can be approximately conflated into proxies. To test this correctly, Andy should have:

1) picked his proxies using some procedure such as clustering buses with similar distribution factors then
2) run OPFs based on the true bids but respecting the proxy constraints and then
3) seen how close this came to actually satisfying all the true constraints (and how much uplift would be required to make the resulting dispatch feasible with respect to all the constraints).

What Andy did instead was to simply look for how many of the constraint labels were the same from year to year. To see why Andy’s procedure is wrong, suppose that we have two roughly parallel 100 MW lines, line 1 and line 2, that go from region A to region B. They do not
terminate at the same buses so the distribution factors for them will be slightly different. Consequently, sometimes one of the line limits will be binding and sometimes the other one will be binding. In 1999 it might have been the case that the pattern of generation was such that the line 1 limit was the one that was binding, but line 2 may have regularly had over 90 MW of flow. In 2000, the pattern of generation slightly changed and now the line 2 limit was binding a lot of the time, but the flow on line 1 was over 90 MW most of the time. Using Andy's procedure, he would find that the binding flowgate from 1999 was never binding in 2000. However, in fact, a good proxy for the constraint of both these lines would be (say) a 190 MW limit from region A to region B. This would capture most of the constraint in both years. Andy's procedure comes to the false conclusion that flowgate does not work in this case.

Regards,
Ross

To: Ross Baldick
From: Larry Ruff
Date: September 20, 2000
Subject: My FINAL (Maybe) Word on Flowgates

Ross --

Yes, if constraints are bundled into "proxies" there will be fewer of them. But then the capacity of the proxy constraint and the PTDFs will change all the time, depending on which of the actual constraints in a proxy is binding and the pattern of generation and loads -- which is precisely the "problem" that flowgates are supposed to solve.

Larry

To: Larry Ruff
From: Ross Baldick
Date: September 20,2000
Subject: My FINAL (Maybe) Word on Flowgates

So, the hypothesis we are exploring is: "do such proxies exist and how stable are they over time." My point is that Andy has performed an experiment that does not address the hypothesis. I am not claiming that the hypothesis is or is not true.

Ross

To: Hill Huntington
From: Larry Ruff
Subject: Decisions regarding ... website posting
Date: September 21, 2000

Hill --

I am just as glad that you have decided not to post the Ruff-Oren exchange ... because I think that exchange will get more extensive and probably more fair exposure elsewhere. But I am astonished at one of the rationales you give for your decision, i.e., that "[w]e also didn't see a clear way to focus on general policy considerations rather than the pros and cons of individual proposals." This reflects a serious misunderstanding of the current state of the policy debate and of the issues discussed in the Ruff-Oren exchange.
The CPOW authors have made ... some strong and supposedly "analytical" -- but analytically quite incorrect -- assertions about the relative values of a flow-based market and an LMP/FTR market. Some of these assertions, and in particular those concerning the issues of rights-versus-obligations, negative-value rights and counterflows that were at the center of the Ruff-Oren exchange, are also at the center of current policy debates. I, and even some more neutral observers, thought the Ruff-Oren exchange demonstrated the fallacies in some of these assertions. Apparently the authors of CPOW disagree, because the changes made in the latest version of CPOW are primarily defensive in nature.

Whatever ones views on the outcome of the Ruff-Oren exchange, it is certainly incorrect to say that it does not deal with "general policy considerations." There is probably no more important "general policy consideration" in this area than the relative merits of FTRs and FGRs for dealing with commoncounterflow situations. Nor is it fair to say that the Ruff-Oren exchange is all about "the pros and cons of individual proposals." Neither Shmuel nor I were advocating any "individual proposals" in that exchange. We were dealing with some high-level, important and policy-relevant analytical issues – must FTRs be obligations rather than options, can FGRs deal with counterflows without somehow creating FGR obligations that are equivalent to FTR obligations, is an FTR or FGR obligation unusual or extraordinarily risky compared to other, quite common commercial contracts, etc. Our discussion of these issues was far more general and analytical than some of the sales pitches made . . .

As I have said, I am just as glad that you have decided not to post ... the Ruff-Oren exchange ... But you ... might want to reflect on the broader implications of your decisions.

Regards,

Larry

To: Group
From: John Chandley
Sent: Thursday, September 21, 2000 9:16 AM
Subject: Who Should See the Ruff/Oren Exchanges?

Over the last several weeks, a select few of us (thank you to whoever added my e-mail address) have been treated to an extraordinary and timely dialogue between Larry Ruff and Shmuel Oren et al. on some of the most important issues in electricity market design. Others should now get equal access to the insights in these remarkable exchanges.

There are clearly a number of important "general policy considerations" involved in the Ruff/Oren exchanges. In response to FERC's Order 2000, and its general policy encouragement that RTOs be created to facilitate efficient electricity markets, stakeholder groups across the country are trying to figure out how best to organize/design these markets. A central policy consideration is how best to define property rights related to transmission that will support efficient power trading. If the country does a good job in defining, allocating and supporting these rights, they will help promote efficient markets and the benefits will accrue to all. If the country does a poor job, the rights will become a drag on the efficiency of the market and diminish the economic benefits. The stakes are high; there could be billions of dollars at risk between an efficient market and an inefficient market.

The country obviously needs an open, widely disseminated dialogue on all of the related issues. It needs to see every proposal examined closely, and every assertion challenged, tested, proven. Should the rights be
essentially financial in nature, functioning as hedges against congestion charges defined by marginal costs, or should they be "physical" and be required and used to allocate physical access to the grid? Should they address congestion on a point-to-point basis or on a constraint-by-constraint basis? Is one type easier to trade than another? Can either or both types support efficient decentralized trading, and how should they be defined to accomplish that? To what degree do both depend on a centralized market to achieve full efficiency? If they are financial, should at least some of them be obligations, to facilitate full, efficient use of the grid?

These and many other important policy issues have been the subjects of the Ruff/Oren exchange and related papers. I frankly don't care whether the exchanges were also in support of, or in opposition to, "individual proposals." Indeed, I cannot think of a single "individual proposal" in this area of electricity market design that does not have important general policy implications. If there were such a thing, no one would care about it. We care about everything in the Ruff/Oren exchanges.

Get on with the dialogue. Continue the exchange. Distribute it as widely as possible. Post it on numerous websites, and let people know where to find it and how to ask questions, raise related issues, and contribute to the dialogue.

Regards,
John Chandley

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To: Ross Baldick

I concur totally with John Chandley's remarks -- the Ruff/Oren exchange is timely and important. The California market meltdown is substantially related to poor market structure and design. In my judgment, two California design concepts -- market separation and zonal(average)locational pricing -- are at the heart of the problem. FERC has directed the ISO to overhaul or replace its system. In response to this directive, the California ISO is proposing a comprehensive package of reforms based on "flowgate" concepts.

I seriously doubt whether the ISO's Board of Governors is even aware that the reforms just voted in are predicated on flowgate concepts, and that these concepts are being discussed by serious thinkers. The efficacy of the ISO's proposed reforms will be vigorously challenged when they are filed at FERC in November. Surely, the Oren/Ruff exchange is of paramount importance in shedding light on this subject, which will soon be formally presented to the FERC for resolution.

California is a prosperous state, but its consumers can hardly afford to continue subsidizing market structure, design, and coordination concepts that don't produce efficient and effective competition.
From: Larry Ruff  
Date: Fri, 22 Sep 2000 15:36:13 -0700  
Subject: Re: My FINAL (Maybe) Word on Flowgates

Ross --

I thought we were testing the basic flowgate hypothesis that there are (1) a "few" flowgates that have (2) well-defined capacities and (3) stable PTDFs. The only conceivable basis for an assumption that a flowgate has a well-defined capacity and stable PTDFs is that it is a single network element, not a compound element or proxy for such an element. Andy has shown that (1) is not true if (2) and (3) must be met. You are suggesting that it may be possible to satisfy (1) if we relax (2) and (3) by allowing compound/proxy flowgates. This may be so, but unless (1), (2) and (3) are all true the basic flowgate hypothesis is wrong. Andy is not the one pushing the flowgate model, so it is not up to him to formulate and test a new hypotheses. Flowgate proponents may want to develop a new market model based on the hypothesis that there a few proxy flowgates with highly variable capacities and PTDFs. I would be willing to bet a lot of money that this new hypothesis could be proven -- and that the resulting trading model would be worthless.

Larry

To: John Chandley  
From: Richard Doying  
Date: Fri, 22 Sep 2000  
Subject: RE: MISO Congestion Management Hybrid Proposal

John,

I understand your confusion about the number of commercially significant flowgates. Flowgate proposals based on zonal models often define flowgates as aggregates (bundles of constrained elements with similar shift factors) between zones. I believe we have made great progress by linking an LMP energy market to a flowgate transmission market, but this has necessitated the unbundling of constraints into individual elements. Some people argue that aggregation is still possible. We will see. On the other hand, the 24 to 43 flowgates identified for PJM in Andy's paper is an overstatement. Andy double counted flowgates by assuming that unique limited-element/limiting-contingency pairs were flowgates. As a result, many flowgates are listed multiple times, once for each limiting contingency. Clearly the value of a constrained element is based on the magnitude, not the cause, of the constraint.

We did seem to take different lessons from Andy's analysis. You took away that "designating flowgates based on even a year's worth of market-based data leaves open the likelihood that the designated flowgates will miss substantial numbers of significant, but undesignated, constraints ...". It seems to me, you missed the logical next step of asking what additional information might improve the answer. I took away that: 1) mindlessly assuming that last years flowgates are good predictors of next years flowgates gets you pretty far (nearly 60 percent in the case Andy presented), and 2) it is possible to do much better than "mindless," e.g., by using historical data, input from market participants, and modeling. Perhaps we would be better served ceasing these arguments about numbers of flowgates (let's agree that the number of flowgates will be more than the 10 you had in mind and less than millions of point-to-point pairs). The MISO is moving beyond the question of "what" and now needs to address the question of "how." I would suggest we either turn to task of helping to find implementation solutions, or risk becoming irrelevant to the process.
To: Richard Doying  
From: John Chandley  
Subject: RE: MISO Congestion Management Hybrid Proposal  
Date: Fri, 22 Sep 2000

Richard Doying's latest e-mail claims that Andy Ott's paper on PJM congestion overstates the relevant number of possible PJM flowgates by double counting, arguing that some entries show the same constrained elements as others, but with different contingencies responsible for making those constraints binding. I think this misses the point, and there is an important policy issue that should not be overlooked.

The PJM data shows that a constraint can be violated under different contingencies. The different contingencies can mean that the PTDFs change depending on the contingency, resulting in a different set of flows across that constraint (and others). This means that to remain fully hedged, a trader may have to acquire a different mix of FGRs to match the changed flows resulting from each contingency. If the contingency changes, the mix of required FGRs may change again.

Listing these different contingency/constraint pairs shows that it is not enough to predict which constraints will be binding, as some advocates have claimed; you also need to know why the constraint is binding and what that does to the relevant PTDFs, because that will define the mix of FGRs you need. Each contingency could have a different set of PTDFs for the same transaction, so you need a different mix of FGRs to maintain the same hedge. However, you will not know which mix you need until you know which of many possible contingencies actually occurred (or did not occur). This can lead to the ISO having to publish a "library" of PTDF tables, one for each possible contingency, with traders having to consult the appropriate table and readjust their FGR portfolio each time a different contingency arises that affects any of the identified constraints. I do not know whether the market will find it easy, difficult or impossible to do this, but the requirement to do it has to be considered when addressing the merits of any flowgate rights approach.

This problem had an effect on the hybrid proposal developed by the MISO working group, which chose to "freeze" the grid assumptions on a month-ahead basis for purposes of defining the values of FGRs. If the RTO tries to "simplify" this problem by freezing the grid configuration assumptions and corresponding PTDFs for any period, you are then confronted with tough dilemmas. During the freeze period, the RTO must socialize the difference between the actual congestion costs based on actual grid conditions (and the actual contingency that made the constraints binding) and the FGR congestion credits based on the frozen grid conditions/PTDFs/contingencies. If you try to limit the socialization risks by shortening the freeze period -- e.g., from a year down to a month or week or less -- then you have precluded the market from acquiring any longer-term price certainty. So while the market gets subsidized rights during the freeze period, they lose longer-term hedging/price certainty. Conversely, a long-term freeze to improve price certainty can increase the degree of cost socialization. These are not easy tradeoffs either way. The data in Andy's paper helps us to see this problem.

Andy's paper is a warning that the problems are multi-faceted, and that we can't assume the numbers of constraints or contingencies will be either small or predictable. We have to design transmission rights to deal effectively and efficiently with these uncertainties, rather than assume they will not arise and expect someone else to bear the risks of our being wrong.
To: Larry Ruff  
From: Ross Baldick  
Date: Sun, 24 Sep 2000  
Subject: Variable Capacities and PTDFs

Dear Larry,

Thanks!

I thought we were testing the basic flowgate hypothesis that there are (1) a "few" flowgates that have (2) well-defined capacities and (3) stable PTDFs. The only conceivable basis for an assumption that a flowgate has a well-defined capacity and stable PTDFs is that it is a single network element, not a compound element or proxy for such an element. Andy has shown that (1) is not true if (2) and (3) must be met. You are suggesting that it may be possible to satisfy (1) if we relax (2) and (3) by allowing compound/proxy flowgates. This may be so, but unless (1), (2) and (3) are all true the basic flowgate hypothesis is wrong. Point well taken that there is a disjunction between what Chao and Peck, for example, literally say in their papers and what might work in practical reality.

Andy is not the one pushing the flowgate model, so it is not up to him to formulate and test a new hypotheses. Again, point well taken. Perhaps Ed Cazalet can specify the hypothesis inherent in what APX is doing?

Flowgate proponents may want to develop a new market model based on the hypothesis that there are a few proxy flowgates with highly variable capacities and PTDFs. I would be willing to bet a lot of money that this new hypothesis could be proven -- and that the resulting trading model would be worthless. Again, point well taken. But does not the variability of the capacities and PTDFs also preclude assuring that the issuer of FTRs will be financially whole?

In other words, I think your highly variable capacities and PTDFs have essentially as serious ramifications for the FTR world as for the flowgate world.

Regards,

Ross

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To: Ross Baldick  
From: Larry Ruff  
Date: Sun, 24 Sep 2000  
Subject: Variable Capacities and PTDFs

Ross --

I agree that the variability of flowgate capacities and PTDFs creates some risks for the issuer of FTRs, i.e., the RTO. Most of these risks are captured in the "simultaneous feasibility" test, so (depending exactly on how this is defined) most of the risk to the RTO is "upside," i.e., if the RTO issues no more FTRs than can be covered under the worst possible set of capacities and PTDFs, it can only overcollect revenue. But that answer is a bit of a fudge, both because upside risk is still risk, and because what is upside risk for the RTO is downside risk for market participants. In practice, the RTO could/should make some judgment about how much risk it is prepared to take in defining the number of FTRs, which would leave it with some upside and some downside risk. But an RTO issuing FGRs could do the same thing, so I do not think there is a fundamental difference between FGRs and FTRs in this regard (if an RTO issuing FGRs holds some back to reduce its risks).
The real issue raised by the variability of flowgate capacities and PTDFs is the problems this creates for individual traders trying to hedge with FGRs. Many combinations of capacities and PTDFs can have the same overall revenue implications for the RTO but very different implications for individual traders holding a specific set of FGRs to hedge point-to-point transactions. The advantage of FTRs is that a trader holding an A-to-B FTR is hedged for that transaction even if the capacity of individual flowgates and PTDFs change. The CPOW paper refers to this as “PTDF insurance” and implies that it is somehow inappropriate for the RTO to provide such insurance. But I think it is quite appropriate for the RTO (or grid owner) to absorb or pool risks that depend primarily on the physical state of the grid. The problem with FGRs is that they can force the RTO to pool/socialize risks that are due primarily to market outcomes, not the physical grid.

Larry

To: Group
From: James Dauphinais
Subject: RE: MISO Congestion Management Hybrid Proposal
Date: Mon, 25 Sep 2000

John said:
"The PJM data shows that a constraint can be violated under different contingencies. The different contingencies can mean that the PTDFs change depending on the contingency, resulting in a different set of flows across that constraint (and others). This means that to remain fully hedged, a trader may have to acquire a different mix of FGRs to match the changed flows resulting from each contingency. If the contingency changes, the mix of required FGRs may change again.

Listing these different contingency/constraint pairs shows that it is not enough to predict which constraints will be binding, as some advocates have claimed; you also need to know why the constraint is binding and what that does to the relevant PTDFs, because that will define the mix of FGRs you need. Each contingency could have a different set of PTDFs for the same transaction, so you need a different mix of FGRs to maintain the same hedge. However, you will not know which mix you need until you know which of many possible contingencies actually occurred (or did not occur). This can lead to the ISO having to publish a "library" of PTDF tables, one for each possible contingency, with traders having to consult the appropriate table and readjust their FGR portfolio each time a different contingency arises that affects any of the identified constraints. I do not know whether the market will find it easy, difficult or impossible to do this, but the requirement to do it has to be considered when addressing the merits of any flowgate rights approach."

I need to chime in on this discussion.

First, let's move this discussion from the advisory committee e-mail list to the MISO Hybrid WG e-mail list where it belongs. I don't believe everyone who is receiving these e-mails is really interested in this little debate and if they are they can ask to be added to the WG e-mail list.

Second, while I am not opposed to discussing this further (within the confines of the WG), I would generally disagree with the notion that a trader will need need a set of FGRs to match different contingency possibilities. The key is in how you define the flowgates. For voltage and stability limited flowgates we will generally be dealing with limits on transmission interfaces that have been set based on the worst case contingency (within criteria). In these two cases the concept of "outage" TDFs doesn't even exist. In the case of thermal limitations, while we could set up a system of
flowgates based on "outage" TDFs, I believe this would be needlessly complex. We could avoid
the use of "outage" TDFs by using thermal limitations on transmission interfaces rather than on
individual transmission elements when defining flowgates. As with voltage and stability
limitations, the thermal limitation on an interface would be set based on the worst case
contingency (within criteria).

Jim

To: Group
From: Roy Shanker
Date: September 29, 2000
Re: MISO Hybrid Report

Andy Ott of PJM recently distributed a paper containing his analyses of the
implications of attempting to use historic information to forecast
commercially significant flow gates. The implications of his paper were that
historic data would do a poor job of capturing future significant flow
gates, with historic market constraints being quite different from those in
succeeding periods. I have watched the related exchanges regarding LMP/Flow
Gate hybrids in general and some of the specifics related to the MISO hybrid
as well as the implications on practical implementation that have been
raised by Andy Ott's paper. Recently Richard Tabors put forth his own
response to the Ott paper suggesting that the conclusions that were made
were incorrect, as well as suggesting some general deficiencies in the PJM
LMP/FTR structure. This note is intended to respond to some of Richard
Tabors' comments. I don't intend to address all of the issues raised in
Richard's response, I am sure others will do that, however, I did want to
comment quickly on several of the items he raised, as I do think they are
somewhat misleading within this debate.

1) "The Flowgate Model can and should be defined based both on historical
data and a projection of future market and system conditions". (Tabors)

In a section of his response Richard Tabors stated that the Ott analysis was
flawed as it only relied on historic information. He stated that this was an
obvious deficiency, and appropriate efforts at identifying CSF would also
incorporate a projection of the future market conditions. While this seems
fine in spirit, the discussion is almost humorous, particularly given the
fact that Richard offers no specifics at all as to what future conditions he
is going to use or how he would use them. What aspects of future market
conditions are going to be used to forecast CSF's? Are we going to forecast
bids, fuel prices, locational loads, import levels and pricing, demand in
adjacent control areas, weather patterns, transmission outages, generation
outages, circulation, etc. etc. etc. I'm ok if someone thinks they can do
this, and I can potentially see the value of all this information in
forecasting CSF's. But then I don't know why anyone who could accomplish
this forecasting task this would be wasting their time in some undefined
administrative process in the MISO when they could be making millions in the
futures markets. The reality is that the approach Andy Ott took is
reasonably indicative of what we could expect in terms of using historic
data in forecasting CSF's, and the implications seem clear and very
disconcerting.

Another way of looking at this might be for Richard to present all of the
statements and reports that he has historically offered suggesting the
adequate number of "zones" needed to "fully describe" PJM. My recollection is that there has been at least two or three different proposals moving from about five zones to I think something in the range of nine to twelve. On each occasion that I read these, the proposals were intended to represent the "simple reality" of congestion in PJM and were supposed to provide an alternative that would allow you could model the "complex" PJM nodal system more simply. Each subsequently had to be revised based on unforeseen "new zones". Either this means Richard wasn't trying very hard when he made these recommendations, and/or withheld the secrets of forecasting future transmission system constraints, or that he is mortal like the rest of us, and this forecasting process is simply not feasible within the accuracy needed to avoid significant socialization of congestion costs in a system like the hybrid being proposed in MISO.

2) "Liquidity at the Western hub of PJM is a red herring, since the problem is the absence of any contracts for delivery to loads in eastern PJM" (Tabors).

Andy Ott commented that there was no merit to the position that the PJM markets were too complex, and discouraged/obstructed market liquidity. He offered the high volume of trading at the western hub as prime evidence of this. Richard's response was the statement above. I think the Tabors' red herring is a red herring. Andy's point was that in a so-called complex nodal system you could indeed have highly liquid trading of options and futures. The western hub fully demonstrates this potential.

What Richard is observing with respect to contracts for delivery in eastern PJM is something of a non-sequitor in terms of the ability of the structure of the market to allow or discourage liquidity. There are many open auction futures and options markets that most would agree are highly liquid. Most would also agree their design fosters liquidity. However in most of these markets there can and do exist certain circumstances which discourage transactions. The most frequent demonstration of this occurs when either there is a lack of interest to support liquidity, or significant scarcity of the underlying product exists. In these instances people don't suddenly conclude that the market design is a failure, they just look for and recognize the underlying causation.

With respect to the Eastern market in PJM there are several things going on, all related to the relative scarcity of hedging mechanisms, e.g. FTR's into the east. These all contribute to lack of significant liquidity in this market. (There is some trading here, but I haven't seen any good measures of this.) This problem has also been exacerbated by a very poor initial allocation process for the FTR's instituted by the PJM tariff as well as some poor designs for restructuring and retail access at the state level. Thus it isn't the basic LMP and FTR market structure that is causing a thin market to exist in PJM east, but rather the relative scarcity of transmission resources coupled with a poor allocation process and some inconsistent retail access processes instituted by state regulators. Richard should certainly be aware of all of this as he, like myself complained about the PJM FTR allocation process, and participated in some of the early market set up.

It is worth reviewing this allocation process and these other limitations to see how they, rather than the LMP process exacerbates the scarcity issue and obstructs liquidity. In PJM FTR's are allocated to network and point to
point customers effectively on a first come first served basis. Any of these customers could, at the onset of the market, nominate an FTR with an injection point at a Network Resource they control and a withdrawal point at their load, up to the amount of their coincident peak load. If the joint nominations from all network and point to point customers were not simultaneously feasible, the requested FTR's were pro-rated down until the total was feasible. Thus the starting point was to give away a relatively scarce resource on a first come first serve basis, with no reflection of market value. In this context the marginal cost of getting the "good" rights was zero.

(The design intent by PJM here was that in exchange for their network access payments to support embedded costs, FTR's would be allocated to network service and point to point service customers. In turn, the congestion rents from the FTR's would then be applied to the benefit of customers to reduce these access charges. However, as described more fully below, there is a disconnect between the allocation of the FTR's and the ultimate beneficiaries of the congestion rents due to both the PJM allocation process and the retail access programs. Thus the allocation doesn't accomplish the original intent, and it fosters illiquidity.) (See footnote 1 below)

Further, under existing rules (which will change next year) once a party held an FTR, they didn't have to yield it ever, e.g. they maintained this priority forever so long as they were eligible to designate the same load and Network Resource. Thus even though a re-nomination process would occur annually, parties could choose to withhold the highest value (read west to east) FTR's and never have to cede them. Again, this significantly discourages liquidity. Why give up (for free) a high value resource that you effectively had received for free when you might lose it and have no market mechanism to get it back. (Note there is a short term monthly FTR auction market, but that is limited for many of the reasons discussed here.)

Next, the retail access programs further served to reduce liquidity in these markets. State regulators put no obligations/conditions on the pre-existing integrated utilities to cede FTR's when they lost retail load. The utilities always could maintain any FTR's they held up to their remaining peak load. This meant that with small loses of retail load, a utility might not have to give up any FTR's (i.e. if it wished a utility didn't have to take all of the FTR's it was entitled to, and thus might have no requirement to cede FTR's with partial load losses to retail access), and even when forced to yield FTR's if large amounts of load migrated, the utilities could pick whichever FTR's they wanted to give up. Certainly to the extent that they lost load to retail access and did have to reduce their FTR's, the utilities didn't choose to give up the "good" ones (read west to east).

The next important step in the picture is that under retail access many of the utilities remained suppliers of last resort while also being subject to retail rate caps. Thus they might be exposed to unanticipated new load for which they couldn't hedge, and not have any mechanism to recover these costs.

Now let us think about all of these factors as a package: I have a valuable hedge directly allocated to me, and if I give it up long term I may lose it permanently. Also I may get unexpected load, and I can't recover any costs associated with this unexpected load above the rate cap. Should I give up the high value allocated hedges or hold on to them and protect my provider
of last resort exposure as well as capture potential congestion revenues? Similarly I may have to give up some FTR's I received by direct allocation, and I get to pick to give up the high value ones or the low value ones, what do I do? In both cases it seems clear what the rational business decision is: hold on to your high value east to west FTR's. This explains the lack of liquidity for FTR's to the east. This is not some failure of the underlying PJM LMP/FTR system but a design failure in the combined PJM allocation process and the state retail access programs.

In fact, a little thought suggests that the market is probably more liquid with the FTR structure than it would be with physical rights and FGR's, as the amount of transfer capability/rights released into the market in the first place should be significantly greater with FTR's. Simply consider the implications on scarcity and liquidity if say only half of the amount of FTR's were available in the form of FGR's into PJM east. There is no reason to believe that the exact same allocation process and priority/surrender process won't have been implemented with an FGR process, ultimately leading to the exact same liquidity issues, only worse due to the reduced supply of FGR's. If you followed the PJM allocation system and had the related retail access rules coupled with FGR's it could only make things worse.

There are no free lunches, if you create this package of incentives to hold on to transmission rights, the level of trading is going to very low.

3) Real Agenda.

Just as with the debates in NY and PJM that I participated in this debate appears to me as simply cover for the real agenda--- the imposition of mandatory balanced schedules and thus a prohibition against market participants independently bidding their own load or generation. This effectively mandates an inefficient bi lateral market without much price transparency. While this isn't a bad structure if you are a marketer, it has to impinge on all other participants. It should be clear that there is only one "best" dispatch of the system. If you mandate a system where generators and load are likely to have to pay intermediaries to help them "find" this best solution, it should be clear that the money for the intermediaries is only going to come from two places, higher costs to load or lower payments to generators.

(Footnote 1--- A way to circumvent this problem would have been to allocate the existing network and point to point customers an auction revenue right based on their designated FTR's. That is they get an entitlement to the monies associated with these rights based on the sale of the rights. Then an auction process could have been held to efficiently allocate FTR's based on all market participants valuations of the rights. This system would be similar to New York, and would have been more conducive to liquidity in these markets as well as developing a better match between the revenues from the reduction of access fees and the beneficiaries of congestion rights.)

Roy J. Shanker