BEFORE THE

FEDERAL ENERGY REGULATORY COMMISSION

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In the matter of : EL16-6-001

PJM'S FTR/ARR ALLOCATION : ER16-121-000

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Commission Meeting Room

Federal Energy Regulatory Commission

888 First Street, Northeast

Washington, D.C. 20426

Thursday, February 4th, 2016

The technical conference in the above-entitled matter was convened at 9:30 a.m., pursuant to Commission notice.

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PRESENTERS:

PANEL 1:

TIMOTHY HORGER, PJM INTERCONNECTION, LLC

ROY SHANKER, INDEPENDENT CONSULTANT SPEAKING ON BEHALF OF DC ENERGY, LLC, INERTIA POWER, LP, SARACEN ENERGY EAST, LP, and VITOL INC.

ADAM ROUSSELLE, TRANSOURCE, LLC

PRESENTERS:

PANEL 2:
STU BRESLER, PJM INTERCONNECTION, LLC
NOHA SIDHOM, INERTIA POWER, LLC
DAVID MABRY, PJM INDUSTRIAL CUSTOMER COALITION
ABRAM KLEIN, APPIAN WAY ENERGY PARTNERS
JOSEPH BOWRING, MONITORING ANALYTICS, LLC
DAVID PATTON, POTOMAC ECONOMICS

PANEL 3:
SUSAN POPE, FTI CONSULTING, SPEAKING ON BEHALF OF ELLIOTT BAY TRADING, LLC
STEVE LIEBERMAN, OLD DOMINION ELECTRIC COOPERATIVE
ROY SHANKER, INDEPENDENT CONSULTANT, SPEAKING ON BEHALF OF DC ENERGY, LLC, INERTIA POWER, LP, SARACEN ENERGY EAST, LP, and VITOL INC.
JOSEPH BOWRING, MONITORING ANALYTICS, LLC
TIMOTHY HORGER, PJM INTERCONNECTION, LLC

PRESENTERS:

PANEL 4:

JOSEPH BOWRING, MONITORING ANALYTICS, LLC

HARRY SINGH, J. ARON & COMPANY

JOSEPH WADSWORTH, VITOL INC.

STU BRESLER, PJM INTERCONNECTION, LLC

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Court Reporter: Alexandria Kaan, Ace-Federal Reporters

P R O C E E D I N G S (9:34 a.m.)

MS. QUINLAN: All right everyone. Welcome to the PJM/ARR technical conference. For those who don't know me, I'm Pamela Quinlan with the Office of Energy Regulation. Thanks for attending. As directed in the December 28th, 2015, order and notices to explore whether PJM's existing ARR RTF tariff provisions are unjust and unreasonable and whether PJM's tariff in this matter are just and reasonable.

This is a Staff-led technical conference and any statements or comments made at this technical conference represent the views of Commission staff and not the Commission. I want to also announce that there are two changes posted panelists. The January 28th, 2015, supplemental notice had incorrectly listed Roy Shanker as Cornerstone Research. Please let the record show that Mr. Shanker is an independent consultant, but is still speaking on behalf of DC Energy and Inertia Power, Saracen Energy and Vitol. Additionally, on the fourth panel Stu Bresler will be replacing Tim Horger as the representative from PJM.

Please note that this technical conference is being transcribed. In order to provide an accurate record for the benefit of those monitoring the conference by webcast or in person, please always speak your names and if

you have not already who you ARR representing. Please place your table tag at its edge if you wish to speak. And as it may interfere with room communication equipment, please also silence your cellphones.

Before we begin the panel 1, I want to make a few further announcements that apply to all panel discussions today. We will not be directly addressing optimal conduction or virtual transactions, nor will we be directly addressing MISO and PJM's joint operating agreement in our discussion today. While we recognize that these are important issues related to the topics and our discussion in this conference, we note that they are being addressed in separate discussions. Staff recognizes that there are many issues that can be discussed at this technical conference, and request that you keep your comments on point; we will cut off answers that go beyond the scope of the question asked or the scope of this conference.

Finally, we want to stress that panelists should assume that staff has read your comments in this proceeding and that this conference has been convened to gain additional information and answers to staff questions. We would like panelists to keep that in mind and urge you not to use your time to restate arguments that we've already read in your filings.

So with that, I'd like to begin with staff introductions. And noting there might be some different staff present during different times of the day, followed by panelists introductions.

MS. SCOTT: Hi, my name is Katherine Scott. I'm with FERC OMR East.

MR. SNOW: Shawn Snow, FERC OMR East.

MR. CARTER: Kent Carter for OGC.

MR. KHELOUSSI: Dan Kheloussi, officer on Energy Policy and Innovation.

MR. SOTO: Good morning, Polo Soto, OMR West.

MR. MILLER: Scott Miller, Policy Office.

MR. LARRIEU: Jeremy Larrieu, environment.

MR. EVERNGAM: Scott Everngam, OMR East.

MR. GOLDENBERG: Michael Goldenberg, general counsel's office.

MR. JOHANNING: Randy Johanning, Office of Electric Reliability.

MS. QUINLAN: Panelists, could you please introduce yourself?

MR. ROUSSELLE: Adam Rouselle with TranSource.

MR. SHANKER: Roy Shanker, I'm here on behalf of DC Energy Inertia and Saracen and Vitol, and as stated before I'm here as an independent consultant as sponsored by those entities.

MR. HORGER: Tim Horger, PJM.

MS. QUINLAN: Thanks everyone. To start off our discussion on the first panel on FTR and ARR modeling, Mr. Horger, could you start off giving us an overview of the ARR and FTR process, the modeling of the timeline for it.

MR. HORGER: Sure. Thanks for having me. I'll give a brief overview and if I get into to much detail just cut me off. To start off, the PJM FTR process -- I'll start off with the timeline -- we have many types of FTR auctions and allocations. So we have FTR auctions for annual products, it's a one-year product; we have a monthly product; we have quarterly products; and we have long-term products. And to add to that ARR allocation that is also an annual product which is conducted right before we have the actual annual FTR auction. So for discussions as far as the annual setup and the timeline, I'm really only going to focus more on the annual process because 95 percent of it is allocating that process, so it's really more relevant to this process.

So the annual process, so the timeline. The way we start the annual process is some of the deadlines that are required by transmission owners and participants actually happen before the end of the year. So the annual process would start on June 1st of the planning period, we

would start the previous year typically in the December/November timeframe already start and set up our model and incorporate data to use for this annual model. So the annual model is a really important model and we want to make sure we have all the inputs we need within that. So some of the inputs we would use for the actual annual model is loop flow, for example. So loop flow would be flow impacts from external RTO's. So we do a thorough analysis to look at what the flow impacts are from different RTO's that are outside areas of PJM. We do this based on extensive power code analysis, looking at historical data, flow impacts on certain market facilities and whatnot, and that process we try to finish that up by the second week of February; so currently right now we're working on that process.

The other major thing we're going to look at is transmission upgrades. So if we see that there's going to be a transmission upgrade that could impact congestion that will be in service between the time we're setting up our allocation process our annual FTR process and June 30th we would include that transmission upgrade. So we want to make sure our network model that we use in the FTR process and the ARR process is fairly accurate. The one thing we don't want to do is put transmission upgrades in our model that we are not confident that they're going to be in

service by June 30th. If we're not confident they're going to be in service we will not include them, knowing that the FTR monthly auctions occur, that extra capability would be available at that time. So that's how we model transmission upgrades.

And these upgrades, when we determine these upgrades to model we have a thorough investigation, we work with our interconnection group who will work with transmission owners to verify that these transmission upgrades are going to be in at the time that they're mentioned. And then when we're very confident with this service, we would include those. And this remaining the upgrades that would impact congestion or whatnot, we're not going to look at minor upgrades: Circuit breaker-type upgrades, disconnection, switch type.

Another major input would be obviously transmission outages, and that's always a big topic. The transmission analysis process is also a lengthy process determining what's going to be put in the annual allocation and the annual model. So the way we start off is we will pull a list of transmission outages that is in our Oasis system, which is in our E-Dart system, which is a system used to acquire the outages that are submitted by the transmission owners. We would take that list of outages; we review that list for outages that are two weeks or

longer; we take those lists that are two weeks or longer and we try to narrow it down because obviously we are not going to include every transmission outage that is two weeks or longer. Because what will happen is during the planning period you might have transmission outages that are scheduled two weeks that might be in series, meaning the transmission line, it's just a different part of that transmission line where there could be ones that are in parallel, meaning they might be next to each other, or transmission flow across the code facilities equally maybe. In those cases if there are outages that are at different times of the year, we're not going to schedule those or include both in our model. Because in reality what happens in operation those outages will not be allowed and taken at the same time because a lot of times it could cause reliability issues. So we need to do some discretionary to determine that right altitude and model process. We'll come up with our outage list transmission outages we're going to model and then we will review that with our interconnection group, or even review if necessary with transmission owners to confirm that these outages are correct.

Now, there is a stringent timeline for transmission outages for transmission owners that I could get into more detail if we need to. But outages for

transmission owners, they really need to submit them. The timing for the outages submission is based on the allocation and annual process. So we looked at June 1st as the start of our planning period, the transmission owners need to submit those outages well in advance so we have them included and finalized by February 1st so we can include in our annual process. If the outages change after February 1st, that will be effective that planning period, outages 30 days or longer, we can deny those outages or we can work with the transmission owners to try to reschedule them. So we have tested, to test them.

Some of the other inputs we're going to use is topography, the transmission model and the transmission grading. So the rating the user initially submitted by the transmission owners based on the NERC requirements, we will take those ratings, we will review them, make sure they're consistent between market operators and reliability, and then if we need to make adjustments on those we can make adjustments on those based on what's happening in the markets or if there's special-case funds. Usually there's not that many we make adjustments to, there could be adjustments to those. So we need to include that. That's so many inputs there. We have some miscellaneous inputs where we need to look at the phase-angle regulators that's modelled each year, the flow impacts from those. We need

to look at major reactive-type interfaces, these are IROL-type interfaces, transfer-type interfaces that PJM has. We have four or five that we're really concerned about. We would make sure we look at historical data, kind of the future data, we can look at our market efficiency, market analysis, to determine what is a good proper rating to use that's not too conservative but it is appropriately used. Because the reactive interface rating could have impacts and clears the allocations.

And finally another major one we look at is the coordination with other RTO's. So our major coordination right now is with MISO and with New York ISO. We need to coordinate with MISO to look at what market-to-market flow gates we have. So market-to-market flow gates are specific facilities or constraints that we coordinate with Midwest ISO on a daily basis, but when we do our annual process we need to coordinate to make sure we're including the same flow gates in our model. So we coordinate with -- the two RTO's coordinate to make sure we're using the same flow gates or entitlements which is the amount of usage we're allowed to allocate on each facility, is reviewed for the MISO system, the PJM system, to make sure those total entitlements don't exceed the capability of the line. And that's the review process that we make sure that we do in coordination. And we do the same with the New York ISO,

it's a lot lesser extent but market-to-market flow gates within that coordination process.

So there are a lot of inverts that come into our annual process. We get to about March 1st is when we actually run the allocation. They're all more than modeling-type input; there are a lot of business-type inputs as far as the load serving entities, what their network service peak load is going to be for example. So all the ARR allocations are allocated based on a network service peak load and a zonal base load value. So this kind of pertains a little bit to one of the later panels, but in Stage 1A we have a limit on what we allocate to on Stage 1A, and that's based on zonal base load value. And that zonal base load value is based on the minimal peak hour from the previous year. So it's typically about 40 to 60 percent of the peak load value, and that's what we allocate in the round Stage 1A process. So we need to set up the business rules for that. The EDC's for each actual transmission zone will coordinate with PJM to tell us what the load serving entity's network service peak load is and then we would input that to get the system set up.

We also need to review the list of generator resources that are going to be available in the allocation process. So we have a historical list of resources that have been available since either 1998 for the classic type

of PJM homeland integration since 1998 will be based on the integration date of that transmission zone into PJM. So we would at that point allocate -- we look at the generation resources when that zone integrated into PJM, and if they were a capacity resource at that time they would be available to historical resources.

And that list we update each year if there's retirements. When we update those retirements we really are just finding an equivalent generator either at the same station or a station very close that we think is an electrical equivalent, or possibly we can create what we call thumb generators where subjugate process, we will keep that generator even though it's retired, prices for that station. And that's part of the Stage 1, Stage 1A and Stage 1B, where you're pressed for historical resources. And the idea with that one is to preserve the historical transmission system as it was designed in 1998 for the integration date. So it's really meant to help to make sure their rights are following these historical transmission system.

MR. SHANKER: One thing to clarify is --

MR. KHELOUSSI: Could you state your name?

MR. SHANKER: I'm sorry, Roy Shanker. When you say you keep the generators, you're really keeping the bus as a source, not the generator.

MR. HORGER: As far as the allocation, yes, it's the source. But it's the generator's that allocated.

MR. SHANKER: Yeah, so it's a location that the rights and source have an injection that they're nominated for the ARR's. Several people have asked why you keep generators there, and it's really you're keeping the bus so that you can match the historical injection point, not that there's really a generator there. The network starts empty as populated by the offers.

MR. HORGER: Right, exactly. So it's a financial model. The generator, it's not the actual physical unit. But Roy's right, the physical units could actually retire and there's a possibility that that unit would still be available for bidding purposes for financial allocations. And as I said, the purpose of that is to reserve historical transmission system outlets, and that was the purpose of that. And I think that came out in the long-term transmission rules awhile back.

So that is kind of the model in general. I didn't give a lot of details; I'm happy to answer questions on details of this model. But as you can see, it's an extensive model to get to our typical March 1st-March 2nd deadline when we need to actually run the allocation model and make sure it's correct.

MS. QUINLAN: Thank you, sir. So I think we

will have some follow-up questions about some of the assumptions. But before we kind of dig into those, I was hoping, Mr. Shanker, from your perspective and experience, can you speak to the role of modelling and kind of what you see as the -- and its role of maintaining the integrity of the products, the actual FTR products, and how those kind of link together from your perspective?

MR. SHANKER: Well, in the abstract, the source of any problem in this area is always the divergence between what the model is and some snapshot of reality. If you think about it, many of the things that Tim talked about are annual events that he's converging -- he doesn't have a choice in the way we do things now -- into a single snapshot. And a couple of them are problematic. And actually Tim can comment about how they might approach doing solutions. One of the biggest things is outage characterizations. The finer the time steps within the annual model the more accurate you can be about outages. And if you have a quarterly model or two-monthly model, you can aggregate outages and be much more reasoned or reasonable about what you put in. Initially, that was a computational challenge for PJM to think about the tradeoff of doing that; it still is maybe. And one of the things we have not discussed is we maintain the option product which

consumes a lot of computational capability. And the kind of tradeoff of maybe giving up options or maybe if we even have the technical capability now we could reformulate into linked quarterly representations of the system. There would be issues like that that would go with what would be the zonal base load, would you do it by the quarter? I would argue that you would. That would obviously be a contentious internal debate because people enjoy making their heads spin about the annual zonal base. But nonetheless, that's a reasonable issue to take up. And the tradeoff is by increasing granularity, you improve the accuracy of the model significantly. And it's not really doing anything different than what Tim described, the time step where you have better information.

MR. SOTO: Can I ask really quickly: So when you your talking about quality representations of the system, are you also talking about quality products, so breaking down the ARR from a yearly product to a quarterly product, or somehow change the ARR's during the year to meet the quality representation of the system?

MR. SHANKER: Well, you have two choices: You can make an annual product. But rationally remember we're giving out an entitlement. And the entitlement, if we go -- I don't know if everybody's familiar, at the very

beginning of the market you weren't entitled to an ARR or equivalent or an FTR sourced as a historical generation, you were only entitled to that right if you actually owned the generation. Now, there was a big struggle at the beginning of the market to de-couple ownership from the sources; I want to keep that clear. But in my mind rationally when you would move to -- if you move to something like a quarter or semiannual, you would get your ARR linked to that. And that's why I mentioned things like zonal base load being based on a quarterly target you would get your ARR. And so you would get a vector of 4 zonal base load ARR's, one for each quarter linked to your historical sources consistent with that. And we could change it; for now let's not change other things. But you could change other things. But if we kept the same basic paradigm, the precision that would go with that would be a more accurate representation of what your actual use of the system was, if you believe in the paradigm that says you're entitled to historic use, that would be the case for that, and an enormous step up in the accuracy of outages.

The second thing, which is I think something that we're grappling with daily but still I haven't seen a resolution, and I think it's something that's a work product, is we're talking about better coordination and exchange of FFE's -- sorry, Firm Flow Entitlements -- prior

to each day-ahead market. And what that does is allow the day-ahead models to optimize within the constraints that are adjusted for flow entitlements on the reciprocal flow gates. I have not heard -- and maybe Tim can answer that -- of us trying to approach that problem and the dynamics of that problem. I don't know if there's a quarterly pattern to that or anything else. But that would be a good thing for us to shift into a more accurate representation. And I think an annual model fights with that. I would think that it would be easier for you to summarize patterns of diversity in the system and the FFE's bi-quarter -- that might not be true, I don't know that empirically. But that's the kind of thing where it would be nice to again every time we step one the refinement we step up the likelihood that the characterization is correct, we step up the likelihood that we'll have a feasible match in the day-ahead markets between the rights that's allocated and we remove some of the funding issues, which are the background for a lot of the angst and everything we see.

MS. QUINLAN: Thank you.

Respond.

MR. HORGER: I want to comment on the seasonal aspects. I know there's another panel discussion about comprehensive solutions. But one thing to keep in mind, it is an annual product but for the allocation we have

residual ARR allocations that happen each month. So what that entails it truing up the model basically. So in our annual allocation process it might be a conservative modeling, we have to model the transmission outages for an entire year, and all the other characteristics or inputs into the model. But each month we run a residual ARR allocation. Now, that might not create as much value as an annual product, but the reason we do the allocation is that it does true up the model. And then for the FTR auction, we have an annual FTR auction, and we have all sorts of inner planning period FTR products as far as quarterly products, monthly products, on peak, off peak; they also true up the annual model also. So we need to keep that in mind. I'm not disagreeing a more-detailed model or obviously a model more focused on more certain periods would certainly be a better model, it's more focused to the actual period. But we do true up that model. And I think one of the challenges was with the seasonable model, now we go with quarterly products that's going to add a lot more administrative issues. If we can amend the stakeholders and load-serving entities -- I don't want to speak on their behalf -- but they like that long-term year crop versus annual quarterly crop. So just a little input on that.

MR. SOTO: So the difference between what you're saying is you're talking about a more restrictive annual

product and then flowing up with less restrictive or more precise product. And Mr. Shanker, you're talking about updating the longer-term product as the model. Is that correct?

MR. HORGER: So there's been no stakeholder processes in the past, over five six now. But several times there was proposals to actually change the annual product, remove the annual product, and create four seasonal products. And Midwest ISO that's how they do their allocations, they have quarterly products. So, for example, when you allocate your allocations in March, you're doing four seasons for June-July-August would we the first season and so forth throughout the planning period. So that's a whole different type of product for the annual, which it's not necessarily going to be more conservative, it's going to depend on season and what you're modeling for the season. So in the summer it might be more conservative for reactive interface rating, transfer-type ratings, but it won't be as conservative for transmission outages. But it might be more reflective what the actual model is. Versus the residual allocation, the monthly auctions, we're taking like you said the annual model and then there's monthly models, we're going to use what's actually happening in the month that's more accurate at that time.

MS. QUINLAN: How much activity are you seeing

in these residual, you're calling these true-up?

MR. HORGER: So the residual allocation is not a participation thing. So the way it works is in the Stage 1 process for ARR allocations -- ARR allocations as Stage 1A, Stage 1B and Stage 2. So Stage 1 is going to be dedicated to the historical resources and preserving the rights across the transmission system. In Stage 1A all the right requests are automatically allocated; Stage 1B there's a possibility, and there has been for the past couple years, that AR's have been reduced based on the model network. The way the tariff works, the way the language works, with residual allocations, PJM will automatically take any Stage 1B ARR that was not allocated in the annual process, we will automatically put that in the allocation process. And they will automatically put in that residual allocation process and then we will just tell members if they received it. So it's more like I guess you could think of it as they get their bill and they might get no residual ARR credits because we didn't allocated more of their prorated ones or reduced one of Stage 1B in the annual process. So it's not really an auction type of participation.

MR. SHANKER: It's a residual capability that's seen as they move through the year. And the difference I think I'm talking about, and it's a tougher stakeholder threshold, is the notion of: What is historical

entitlement? And if it's based on a single zonal load base load, which is what we do now, or is it based on something that's more representative of seasonal use? And we have a long history of people's view of their entitlement, meaning their peak load or their zonal base load, depending on the timeframe we're in. And that's not good or bad, it's real. And in and of itself it creates some problems that would go away quickly if true peak load was what you were hedging. We tend to lose sight in all of this that the original objective function as characterized to in the sales job, particularly to the state commissions, because a vertically-integrated company, I'll say L.L.C. now in our world, would be able to totally replicate their original dispatch and energy cost by the use of FTR's as the equivalent of firm transmission.

Once you're state commission and you're one of the original eight companies or people thinking about joining -- I gave a presentation at Dominion when they were joining -- if you wanted to ignore the integration benefits of coordinated dispatch you could self-schedule if everything worked out on the FTR allocations you would be indifferent and your owned fuel factor bill could actually be replicated preintegration with what you had. So that's what we're trying to do. But if you think about it, when you did that you weren't over-hedged right. If my peak was

10,000 in the summer period and 7,000 in shoulder periods and 6,000 in the winter, in order to do that I only did the 10 and the 7 and the 6, I don't need 10,000 all year around. And I don't know if it was lost in translation or it was more desirable or maybe just easier to just do it across the board, but that kind of history makes the flexibility of moving to a greater accuracy, and some of the full-funding issues, much more difficult now. Because people view that over-hedging as an inherit right today.

MS. QUINLAN: All right, thank you. I think we want to dig a little bit deeper now into some of the assumptions. I'm going to turn that over to Dan to ask some more questions.

MR. KHELOUSSI: Thanks. My name is Dan. Thank you for being here. Your question's rough assumption on the simultaneous feasibility test model. Most of my questions will thus be directed towards Mr. Horger, but I encourage the gentlemen to also contribute, if you like, in the next set of questions here. And I'm actually going to start with Mr. Shanker and go back to generators, because you started a good point there. And so I was wondering: Are generators technically needed in the simultaneous feasibility test model and in what sense would you include them?

MR. SHANKER: There's two pieces here. And

actually one I'm going to ask Tim a question.

The network starts empty. A representation of a desired FTR is a source of the same -- the source at the point of injection de facto becomes the generator. So it's an empty grid. So you need injections and basically the auction result is going to be calculated with the -- we were talking the other day about some reference swing bus -- but it's going to be basically a suggestions evolved from the system constraints, the injections there, and then the differences in the congestion components between the buses. Okay. So you need an injection but you don't need a generator. The one question I had that I had asked this question recently that I didn't know is: If we retire a generator, we keep the bus because we want to have the source there, but let's say the retirement of the generator triggered the need for some sort of linear representation of the new reactive constraint, is the a model you have or not?

MR. HORGER: So we retire -- we will first try to get the same bus as another generator, or if there's an equivalent one very close, we would not be close, might not necessarily keep that bus as a dummy generator equivalent there. This retirement generator causes, for example, transmission upgrades or causes some other issues that's developed in our planning process, we would certainly model

that in our allocation process to the extent it's going to be represented in operations and base market, we represent that, yes.

MR SHANKER: And that makes sense stated that way. One would deduce that would happen, but I was about that. So the answer is: You need the injection, and the absence of the physical generator may trigger changes in the system's topology, and Tim is confirming those will be there.

MR. KHELOUSSI: Thank you.

Go ahead.

MR. SOTO: Polo Soto again. I want to ask a follow-up question. Do you really need to use generators as a synch.

MR SHANKER: Sure.

MR. SOTO: Historical generators as a source or could the sources be picked in a different way? Do you have to really go to that historical?

MR. SHANKER: You're talking in terms of the equitable decision as to where one choses.

MR. SOTO: Yes.

MR. SHANKER: This is a history question again. I was one of the people that argued auction everything off and let's instead of doing this all go and argue about who gets what share of the money. So you couldn't just put out

-- start out with an empty system, FTR's and auctions and you have a pile of money at the end and that's their prearranged allocation linked back to the ARR's, we just go someplace else and argue about who gets it. So the answer to your question is: No, you don't have to do it. If you put yourself in I guess 1997 or '96 or '95 when the eight vertically-integrated or partially vertically-integrated companies were differing among themselves and their state regulators, that answer wouldn't have been very acceptable. And the derivation is what I said before, people like the notion that said if it really doesn't work out you can self-schedule and make it look like you did before. And so that property comes from having a source that was a historic resource as a source point for the ARR. There's nothing magic about it.

MR. MILLER: But, Roy, you pointed to the fact that nobody does that anymore. Right?

MR. SHANKER: Actually uses that as the sources.

MR. MILLER: No, sorry. When you said if you wanted to self-schedule.

MR. SHANKER: Nobody does that. There's some people that must self-schedule some things for reasons that I don't know about. But in general I just read the statistic, and Stu is here, Stu is a better answerer of the percentage of the system is self-schedule and a

dispatchable resource.

MR. HORGER: Keep in mind to follow up in mind. So that's a product as the hedging suggests, the ARR's are owned by load-serving entities who want to hedge their congestion costs. Congestion is caused when generations to the load are -- so that's really the key as to why these allocations really need them to be sourcing the generator allocations with congestions that's on the generator load. And I think that's a good point.

MR. SHANKER: The other side is the mapping between current LSC's and ownership entitlements to congestion where the historic source is is not that great. It's a different world. If nothing else, just think about the changes in coal versus gas prices. There are operating issues today, we went through a whole period of time recently where reactive and black start constraints on the system were not being satisfied by the base commitment of the system because used or not used are not committed anymore. And so to me that's a corollary of that is people's assumption where they were having congestion from based on historic sources isn't true anymore.

On the other hand, if you think about it as an ownership right, the system, that is: What did I own in terms of the original configuration of the system and that's what's being represented by the ARR? That's not

necessarily an unreasonable starting point. I think that's more sort of the perspective that Tim was having.

MR. MILLER: The question in that regard, since we are -- these were -- we were trying to make people who had transmission rights before the system was integrated, were trying to make them whole. You in fact in that part of the equation are making them whole just through the ARR's. So whether or not you change the topology to better reflect what the reality of the system is, the ARR's are going to financially make those people who have legacy rights whole, aren't they?

MR. HORGER: I can comment. I dont know that yes, we're going to make them whole. But when you are clearing the allocations there are revenues that the annual are what pay back to the ARR holders. So that revenue is based on the model in which will determine a prediction of what congestion is going to be in the future. So in our annual model really the FTR holders, financial and the physical players, they're bidding in the annual auction what their expectation of what congestion is going to be. So that expectation hopefully align with the ARR allocations, but if that model in that congestion is not reflected out of the annual product may not be the same.

MR. SHANKER: The ARR is a snapshot of an assumed ownership right, okay. It's an abstraction of an

ownership right. But obviously there's lots of different configurations of things that would be consistent with the network service that they could have claimed at the time. So it looks sorts of like network service -- and at some point in the point of service is in there -- network service in 1998 and whatever the reference for each of the additions. But -- and it's one that the benefit of which seems not to have been controversial. If you did my extremes, run the FTR auction and have a pile of money and let people argue about which share is theirs, we'd be here for a couple of years in front of the Commission arguing about that. Whereas, the historic source and the basis for proffering entitlement in the transmission system, that seems to have persisted reasonably well.

MR. KHELOUSSI: Okay. Thank you. Very helpful. Let's move to transmission. Can PJM adjust line limits in the simultaneous feasibility tests? And is this done and on an annual basis? And if not, is adjusting these considered as a way to address it?

MR. HORGER: So the line limits, like you said, they're first determined we pull them from our planning operations that is submitted by the transmission owners based on their NERC requirements. Those requirements are audited and they're pretty solid, those ratings that we start off with in our markets process. So we will take

those limits and for the most part, we're talking about maybe 8,000 facilities and we're talking probably 95 to 98 percent of them we're just going to use those limits based on what is provide. There are certain limits that we might actually have to make adjustments to.

And keep in mind when you're modeling the annual FTR product, the flow contributions to that facility is going to be the internal PJM load generation, what we call market flow, the PJM market flow, there's also going to be an external world flow impact. So what PJM likes to do is we look at these models and we look at their loop flow impacts. Remember when we do the annual product, one of the challenges with the annual product is it's a single loop flow market. So that loop flow or that external flow impact on a transmission facility is going to be constant for the entire year. So one of the challenges is, in real-time, that external flows are going to change all the time. So what we can do, what we do for some of these facilities, specifically the facilities we're going to see historical congestion on, we will take a closer look at those facilities. We need to make adjustments on those facilities to account for those loop flow impacts, we can make those adjustments. So some of those we will make adjustments, and that's to help make sure we're keeping our revenue accuracy or our goals to ensure revenue accuracy

and make sure the congestion is enough to pay the FTR holders and the ARR revenues, the annual auction revenues and ARR allocation rights. So that's what we're going to do for those rates.

There's other adjustments we could make, and some of these might be associated with voltage issues we might see in operations. So sometimes in operations there could be a situation where they have a voltage problem and they need to get a certain generator unit to be online. So, for example, there could be a combustion turbine that need to put online for reliability voltage problems; so they want to make sure that unit comes online. But we want to make sure that unit is reflected in the LMP prices. So in order to do that there might be a lower transmission line lower limits used to make sure we got those facilities incorporated correctly. So we need to model that in our markets too. So we have to look at the history and see if there's a holder time that's a long-term that might require us to use an adjusted limit.

MR. KHELOUSSI: That's the annual model?

MR. HORGER: That could be in the annual or monthly models, yes. Yeah, like I said, we are looking at this model based on what the future model is going to be. The last thing we want to do is allocate too many ARR's or FTR's and find out we totally oversubscribed the system.

In an annual product there's no going back to that. And we've learned that over the last three or four years for some of these. So we do a lot more communication with our planning communications and make sure they're truly happy with their rights. So there's some of the adjustments we could possibly make for transmission lines.

MR. KHELOUSSI: But 95 to 98 percent is what you get from the --

MR. HORGER: Yeah, we're talking about over 8,000 facilities. Off the top of my head is maybe 180. What is the percentage there? We're talking a low percentage. And the ones that are specifically could impact congestion, or we have seen this impact revenue and whatnot. So they're part of some of the processes we need to make sure for the revenue.

MR. KHELOUSSI: Do you share outage information with neighboring systems? I think you mentioned you did on a few -- on a very small number.

MR. HORGER: No. For outages, so -- we incorporated several years ago there was an initiative in the PJM MISO joint common market process where we have a set coordination process we do with MISO. MISO is the one that's the majority of our coordination. So we coordinate transmission outages. And actually we both went down to the transmission outages from the FTR system which is the

data transfer system that's used for all RTO's. And we can pull transmission analysis for the MISO system, for the New York system, and we will incorporate them into our model. Because obviously there are some transmission outages farther west on MISO's system that we don't have in our EMS so we can't model it. So we will include those outages in our system.

MR. KHELOUSSI: Okay. But do you guys coordinate in the sense that, not just taking that information, but talking about it proactively ahead of time?

MR. HORGER: Yes. So for the outages, most of the time we both pull from the data source and review them. If we see a MISO outage RTO group that could be questionable of the timing of it, we'd reach out to the MISO system and say, "Hey, can you reach out to our transmission and make sure that the parameters are correct?" We might do that.

MR. KHELOUSSI: Okay, thank you.

MR. MILLER: May I ask a follow up?

MR. KHELOUSSI: Please.

MR. MILLER: One of the things when one was looking at the 2012 report that PJM issued on the causes of the shortfall in revenue, it cited congestion in MISO, particularly an awful lot of congestion that was thought to

be caused by the introduction of new renewable platforms. And it's been part of the joint market where they're trying to get better at interface pricing. And in that context, it seemed as if PJM and MISO get to a common model then some of these issues would go away. And the question is: I hear you're doing better coordination. My question is, and we're not talking about a single dispatch, but as efficient and as wonderful as many people would love for that. But let's say we get to a common model, would that help at all in some of this allocation issue?

MR. HORGER: I like to think that we have a fairly common model now. We share our model with EMS and what not. Any market-to-market flow gates, any of the facility it's going to impact, we verify our state estimator in that solution with the MISO system to make sure our gentle low distribution factors, which is the impact on those transmission systems, we make sure they're in tolerance and we're comfortable. Because the fact of the matter is we want to make sure the system is reliable there too, so. We do a lot of coordination with the model there. I think as far as that paper is concerned, I think we've come a long way in the regional process as far as steps to help with that process. And the coordination that involves not just transmission outages, involve looking at our entitlement values. Obviously, there's issues with

interface pricing we are hoping to resolve soon where we have a comment on ISO's pricing node. The coordination has been a lot been a lot better and a lot of sharing of more information.

You probably notice that, or people might notice that, the amount of coordinated market-to-market base has been reduced over the last several years. That's more reviewing them with MISO and PJM thinking: Are these really necessary? Were they incorporated in the annual model? We don't want MISO to be patently flow gate. If we didn't coordinate them ahead time and said we will both include them in the annual model. If they need to add those flow gates for reliability, then it's going to have to be added. But it is not specifically necessary to add flow gates in our annual process, then that won't happen. So we have had reductions on flow gates and corresponding market-to-market payments with respect to that.

MS. QUINLAN: Mr. Shanker?

MR. SHANKER: It seems -- this is again educational for me too. It seems that there is a common pressure to adding flow gates in terms of some of the loop flow issues that Scott was talking about. And that's also going to come up with -- it may not be as relevant for the FTR process, but it will be potentially for the capacity performance. I understand that's outside of this. But the

direction --

MS. QUINLAN: I was about to say please not.

MR. SHANKER: But the point is that the coordination in which elements of another system come in their coordination and would share of the flow gate is viewed for the optimization within the FTR model, our function. What's the balance? As you get more and more intermittent to the West -- and we'll ignore the pseudo-tie issue -- just more and more intermittent to the West, why doesn't that generate more FFE's and a need for you to see what's going on in order to enforce the feasibility of the rights that you're allocating?

MR. HORGER: Right. So with the addition to many market-to-market flow gates, it's not really specifically a discretion-type thing. We have certain rules in place that if MISO wants to add a market-to-market flow gate it goes through tests. And if it passes that test, it can be added as a coordinated market-to-market flow gate. But the understanding is not to just add flow gates to add flow gates; they have to be necessary. There could be -- if the other market-to-market flow gates that could be added, we're never going to see them, so we're not going to add them just to add them. If there's a way to get around an outage, an operating procedure, instead of adding the market-to-market flow gate on that transmission

outage, instead of adding that market-to-market flow gate there's an operating procedure that could be done between the RTOs, then take that on.

MR. SHANKER: And increased unit flow.

MR. HORGER: And increased unit flow. So remember there's market-to-market, first of all, the entitlement process, and that's another whole process we're going to be discussed in another whole initiative under PJM. But if there's any loop flow impacts that would be incorporated into our market.

MR. SHANKER: Sorry. Changing it from loop flow to an FFE entitlement would show up in the way you look at the --

MR. HORGER: No, so those entitlements won't change. They can be adjusted based on outage conditions.

MR. SHANKER: Now we've come full loop I think on what Scott's question is, which is -- now I understand what you're asking is -- should that be revisited?

MR. HORGER: Now it's being revisited.

MR. SHANKER: Maybe that's a better statement of Scott's question. Now I get it.

MR. MILLER: Because I can recall WFO being the big issue with New York back in the 2002 timeframe, and that's no longer the big issue. Part of that has to do with just sort of how resources were being used versus the

way they're used now. And just the coordination on that particular aspect seems kind of crucial, particularly if we get into things like whether or not your using imbalance congestion. And that's going to be a delta, and if we could close that to some extent or shrink it, that would seem to be something to shoot for.

MR. HORGER: We are initiating under the JCM process discussions of the 2004 freeze date look at that and processes to make it more up to date, which is critical for PJM and MISO and SPC were all working as three parties to update that. The way it works not is the total congestion doesn't change, it's just really what RTO is paying and it's capitally reflected in the way the system is now, so that's why we are updating in that process.

MR. KHELOUSSI: So we've already covered most of my next question. It's okay. But it's related to congestion and adjoining systems, and loop flow separately. And you've already sort of explained how these are accounted for. I'm not sure if we talked about how the price of the flow gates feasibility test model, and also how these differ from approaches taken in day-ahead and real-time models?

MR. HORGER: So for our coordinating market-to-market flow gate -- I'll speak on that category because that's really where the main inner-region

coordination is, but we need to do this with the New York part 2, the MISO and New York -- we need to honor our firm flow entitlements, and that's based on the JOA requirements. So within the FTR and the day-ahead market we want to make sure we don't exceed those FFE's for these facilities.

MR. SHANKER: That notion is sometimes alienating people. But there's a flow gate there that we're loading. And let's say it could take a hub megawatts of flow and PJM's entitlement is 50 megawatts, the day-ahead model is going to commit as if the facilities had a capacity at 50.

MR. HORGER: Based on the PJM load generation, keep that in mind, but it's going to be looking at the 50 megawatts, as you're saying, would be the flow impact on the PJM internal resources.

MR. SHANKER: And I think Stu Bresler is speaking later and can talk about, and maybe Tim can as well, activities as to the day-ahead modeling and not the annual modeling to modify the allocations. I don't mean --

MR. HORGER: That's the shared. So we have a day-ahead exchange process in place now. Actually, just been recently approved, and we're just starting that off. Where we can work with MISO and share with regions in the day-ahead market. But your purchase entitlements, for

example, we purchase entitlements from MISO in a facility where they have excess entitlements on, and we have efficient entitlements based on the 2004-'03 base load entitlement. So we can do a shared allocation cost and that gets done in our day-ahead process.

MR. SHANKER: And that's good because that would move the congestion rents and the implications of the day-ahead market and not see them as balancing. I never really haven't thought about other than in the aggregate, and I think it actually comes back to -- the more I think about it, to what Scott said revisiting the 2004. Because what we're doing is dickering in real-time to improve the dispatch we have as we are allocating the FFE. And so that goes to day-ahead congestion versus balancing congestion.

MS. QUINLAN: That's where I want to go for a second. So my question, so I understand you're kind of modeling up to your firm flow entitlements in both the annual auction and also the day-ahead. When that changes in real-time, how does that --

MR. HORGER: The real-time, the way it works it's real-time. If MISO needs a market flow relief, they would get PJM and say we need a market flow relief on this specific facility. PJM will re-dispatch to that market facility. When real-time is done, we look at what was our flows compared to our entitlements, and if our flows went

over we would have a market-to-market payment to MISO, MISO says our flows are under the entitlement. So the entitlements don't actually impact real-time, they impact a market-to-market payment process.

MS. QUINLAN: Okay. And in terms of the difference in congestion, that payment would actually end up going through market to market depending on who would --

MR. HORGER: Right. There will also be a balancing congestion. So any facility that is congested in the real-time, they might have balancing congestion. So to the extent that that flow in the real-time market is going to be lower than that flow in the day-ahead market, that would create negative balancing and congestion.

MR. SHANKER: And that's why the swapping is important. Because one of the ways to think about it -- everybody has a little tool to think about it -- is the swapping is the equivalent of reevaluating the day-ahead with the capability is of an internal constraint -- and the model of the day-ahead verus the annual -- then you're going to see the congestion properly characterized and hopefully if you did that it should minimize what we would see in balance and congestion because it would be a more accurate representation of what you commit the system to. Because actually it goes into the, I guess necessarily goes into, the specter of it will show up in the day-ahead and

one of the iterations of the day-ahead models.

MR. HORGER: In a perfect world if you model in day-ahead the entitlements you're supposed to have, the balancing congestion and market-to-market payments should come out to exactly zero. Because remember if you're going to be under your flow in real-time, if you have a positive balance and congestion, you're probably making a payment to MISO if the flow works out that way. Day-ahead model that appropriately to make sure you --

MS. QUINLAN: I understand that's how it could work out. How does it work out? How often is that actually happening?

MR. HORGER: What happens is in real-time it's a little bit of a rule-based thing. Because in day-ahead entitlements, but it's based on honor's general calculations and whatnot. And then we're comparing that to market flows in real-time. So when you do the balance and congestion calculation, it's based on the actual RTO real-time market flow. And the real-time market flow you would think that's pretty starlight-forward. But for the PJM RTS it's the flows are the gentle low flow contribution. In the market-to-market process it's a different type of approach where it's not our only regional basis and it's also not used int he commercial market flow, so we actually reduce the market flow in the

market-to-market process by impact of transactions, firm transactions.

So you have a discrepancy, and that's that discrepancy people might have heard the commercial market flows verus the real-time market flow, the market-to-market base flow. There's a difference there. And you can incorporate in your day-ahead to account for that difference, but that's where we see a lot of that difference.

MR. KHELOUSSI: Okay, I'm going to turn it over to Polo in just a moment, the transmission owners and the information they provide. But other than what we've covered so far and other than the role of the transmission owners, are there any other main assumptions in the modeling for the simultaneous feasibility test that we haven't discussed that you'd like to just bring up?

MR. HORGER: I could discuss the transmission outages, and get into the very strict rules for transmission outages and for transmission rating for transmission owners before the annual process. The ratings, they need to submit them by September 15th of the previous year if there's going to be any changes to the market from the reliability list. So they have to be incorporated early. And also the transmission outages have very stringent rules based on whether rating is in 30 days

and whatnot. So I won't get into details of that.

MS. QUINLAN: So what happens if it initially reported an error or they don't report the outage in time?

MR. HORGER: That's a very good question. If the outages are not submitted on time and they're considered, they get marked as not on time. And they're not on time and they still want to include things, there's a review process. So it's not that they might -- if they don't schedule them on time, we could deny them if we think they're going to cause revenue inaccuracy issues. So the automatic process is they're denied. And they want them to come into play because they really need that, but sometimes there's transmission upgrades, maintenance upgrades, that they really need and they don't want to hear that revenue inaccuracy is a reason we can't schedule our maintenance and all. So we do an analysis to make sure it's not going to cause revenue issues. If it's an emergency outage and they schedule that within three days of the outage and it has an emergency, there's nothing we can do about that, that's going to happen.

MR. SHANKER: How much do you think the movement to a shorter time resolution would improve the accuracy of the outage representation? So if you went to quarterly resolution, how much --

MR. HORGER: In theory, it should not change it

too much. Because, for example, if there's an outage more than 30 days included in our annual process, a transmission owner -- we requested a year in advance, so at a minimum we needed no later than six months in advance before the planning period. So if it's an outage that's going to cover the next planning period between June 1st and June 1st of next year, they either have to be more stringent a one-year minimum, or if it's going to be effective that entire planning period, they need to let us know about that ahead of time. So if we don't know that, we can deny that outage. So in theory we should have all those outages now and we shouldn't be accepting anymore outages besides that.

MR. SHANKER: So the increased in resolution would come from dropping the 30-day because people went to a shorter period?

MR. HORGER: If you had a shorter period it could be possible for the transmission owners to submit them a year in advance might be able to be lower.

MR. SHANKER: And the shorter time resolution might allow you to do that.

MS. QUINLAN: With the exception of obviously emergency outages, how often are you actually seeing these outages as being flagged as out of time? Is that something that's actually really happening?

MR. HORGER: It does happen, and my group will

review I would say maybe one or two a week maybe, saying: Can we change this? Now, keep in mind if it's changing the schedule of that transmission outage from one week to another but it's still within the time period of the auction, that's okay, it can be done. So that idea is for the transmission, and if you need to adjust the time we can work with you to adjust that time, but we -- and they do put a lot of those outages in there, but we do deny some.

MS. QUINLAN: Is there any type of actual incentive that a transmission owner has for delaying reporting the outages from your perspective? And any panelist can respond to that.

MR. HORGER: I think this would be far-fetched because if they do not report the outage and they wait until last minute and do an emergency outage -- I don't know the full restrictions of what's an emergency outage -- but if they do it that way and they're out of the timeline, the worse possibly increased direct URL value is that they could very unlikely be put in. Because more importantly is they're trying to schedule an outage for maintenance and reason and that's normally the driver. They're not thinking about the schedule, doing an emergency outage; it's always extra FTR revenues. They need to get crew on site to do this. Usually it's a transfer site failure or something going on.

MR. SOTO: Are there any incentives to keep the outages short?

MR. SHANKER: That's the other side of the question. I don't think there are reasonable efforts to try to do that. There's not an assignment of responsibility in the sense that like if you go over your schedule you'll pick an obligation. Simple rules like that, they're not that simple. But incentives like that are not in the marketplace.

MR. SOTO: Other than that, are there incentives to reporting an outage, sent or in advance? You might be able to do the outage in 15 days but just to be safe make it 30 days, are there any incentives to keep that short?

MR. HORGER: For the transmission owners?

MR. SOTO: For the transmission owners.

MR. HORGER: The bulk of the outage rules is 29 days. But we look at that, too, we make sure. And we did within the stakeholder process, we're looking at ways to piggyback outages that are in the same area or the same outages, and say if you combine those you have to submit them within the certain timeframes. That stakeholder process, things kind of died out in changes with that respect.

MR. SOTO: But the transmission owners have a little bit of discretion on this or are there certain rules

that basically say this type of outage --

MR. HORGER: Right. If they submit outages less than the time period -- we have a greater-than-30-day outage criteria, we got a less-than-30-day outage criteria, and then we have a less than five days and then we have less than three days. And it's all based on hoping to make sure it's modelled in our process. If they don't meet those deadlines, we're going to decline it.

MR. SHANKER: I think the other side of your question is: FTR's are basically a supply of transmission, is one of the ways of thinking about it. And right now if you don't supply what you're supposed to supply -- and I'm not talking bad faith or anything else, just the reality -- there isn't a consequence in the settlements among anybody other than the FTR holders. So if somebody basically commits to 11 months of supply of a transmission line, and for whatever reasons it's six months, the system goes revenue inadequate and then parties who have nothing to do with that event are the ones that are responsible. And I'm sure you're going to hear later about who pays for what. But that mechanism is missing, that cost causality link is missing in the market design.

MR. SOTO: Yes.

Mr. Rousselle?

MR. ROUSSELLE: There are levels of transparency

with regard to the construction timeline in any particular delays. We're really talking about the accuracy, the reduction of risk, as it relates to this all these scheduled outages. And I know that they're in your models, and we have structure. But if I was a holder of these positions, I'd wonder: When would you update your model with regards to the actual change in the ground? Maybe there's a bad storm, I can't put the trucks in the field for three weeks. Is there any ability to improve the insight of what's happening in the field that might help these stakeholders?

MR. HORGER: So transmission outages, right after it's submitted it's public information. It goes right out there to the PJM website. Unless it's a market-sensitive-type one where impact, a generator where that outage will tell you where that generator is on or off, that could be a marketplace-type one which is be posted. But typically something like that might not be modelled annually anyway because it's just a regular type of situation. So all the transmission outages, as soon as they're submitted, they're public for everyone to see. To the extent there's any changes to that, PJM is aware of that and we will pull those and incorporate those in our next model as appropriate. All the transmission upgrades and the status of those, that's updated on the RTEP page

system.

MS. QUINLAN: PJM market, because they're aware of it, are the FTR holders also made aware of those changes?

MR. HORGER: Any transmission outages modelled in any auction, our annual, monthly, we post before the auction opens. So all that model, it's all transparent to see what outages are modelled. It can also go to our Oasis case because it will be updated there also, but we provide a separate list to say these are the transmission outages we're specifically modeling for that auction period.

MR. SHANKER: And also I don't know if there's a list anywhere, we have a set of rules of that, you're not supposed to change things within certain discretionary things, within X days of an auction or before and after an auction, we have done things on a post-only basis, and notification and things like that. So there is -- I don't think there is --

MR. HORGER: There's a rule that PJM can change anything within the allocation or auction. If there's an auction and we're changing something during the bidding process or during the clearing process because it's a major thing, we would notify the holder. I don't recall that really happening, but we have that model fully updated before the bidding window opens. And in very rare

exceptions we would have to change that if it's a major difference and we would notice someone.

MR. ROUSSELLE: And that's something that's really appropriate. One of things that would interest a holder of these positions I think is most of us spend a lot of time look at data. We're trying to reduce risk, we're trying to better and more reasonably anticipate the outcome of the model that we're running. And the fundamental principle, that will get to I'm sure in a moment, about the ratings and the foundation of these models is the temporal update of that information. And if for example there's a 230 or a 138 or a critical circuit that's an outage and is supposed to be repaired and something happened in the field, flood happened, they can't get back out there for three months-two months, when will the market really understand that that change is about to happen? And will we not know that until the model gets updated? Or is it possible that we could recognize that the market can best appreciate that new delay so far in advance that we would learn in the model? I don't know; it's a good question.

MR. HORGER: As soon as a transmission outage happened, whether an emergency, we require that transmission outage submit that through our Oasis system and that would be public information.

MR. ROUSSELLE: A new schedule would be live.

MR. HORGER: As soon as they could put that in.

MR. SOTO: Good segue. You talked about line ratings. It's good to have as an accurate model as possible and input in that. What are the TO's responsibilities on that side of the information?

MR. HORGER: Right. So the transmission owners are required -- and I got a little cheat sheet here -- for the NERC standard FAT -- 008-3, that's the NERC standard by transmission owners. That is audited and it's really saying that they must meet industrial standards or equipment specifications for when they use the buy-in ratings. And it was PJM CO that there's consistency between operations and planning and markets to make sure we're at a base set, we're using the same set. Now, if the transmission owners want to change the methodology of how they do those outages, they have a deadline by September -- we actually put a spec out of the previous planning area to tell the CO's if you have anything coming down the road, major line-reading changes, please let us know. And by September 15th you can submit that by. And then by February 1st of the planning period of the allocation of the auction the actual FTR, it will be finalized for FTR, and then an official date is March 1st where they shouldn't be changing anything associated with that. Granted there could be changes based on thermal conditions, on

daily-basis operations, things happen with operations, but the long-term rating changes should not be changed.

MR. SOTO: What about upgrades, upgrades to the system? How much discretion does the CO have in that sense?

MR. HORGER: So in our annual process, the transmission upgrade -- and this is even spelled out, I don't know if it's manual or tariff -- any transmission upgrade that could impact revenue accuracy or congestion is going to be in service by June 30th, which is 30 days after the start of the planning period, PJM can model that in our allocation. Like I said before, we don't want to be too jumpy, we want to be somewhat conservative because we don't want to model an upgrade that is canceled or delayed; many transmission upgrades get delayed, it's very common. So what we do is when we look at these transmission outages from their review we work with our interconnection group to reach out to our transmission owners and say you have it listed here, for example, June 1st is transmission upgrade it is going to be in, and you go to the CO to test whether it's going to be active. And then we have that confirmation. And what we do is we post on the PJM website the transmission upgrade will be modelled in our annual process, and any future upgrades that will be in that planning period that we think might impact congestion.

They want to be modelled, but we can list that information.

MR. SOTO: What happens if they do not do it by June 1st, have any incentives?

MR. HORGER: It should be in place by June 30th. But we understand we're using an annual model. If it's not in place, then there's a possibility we could allocate the system for that.

MR. SOTO: Okay. So --

MR. HORGER: That's why I said we're very conservative with what we can model. But we do have to recognize that this could be upgrades that are really going to impact congestion and help us -- could allocate more rights so to the extent we model and are very comfortable with.

MS. QUINLAN: In going back to the idea of having the concept of doing it quarterly, that would potentially be helpful there in terms of having a better sense of letting these upgrades go into place. Is that true?

MR. HORGER: That would allow us to model more upgrades in the annual process, allocation and more rights, and it would be more of a model. And I remember in our monthly auction model we include those upgrades. So monthly models for monthly and quarterly products, when we run those, if those upgrades are in service by the time we

run that auction we will include those in our monthly and quarterly products.

MR. SHANKER: This is another refinement of that. If a stage -- again, more in the form of a question. Stage 1A right becomes unfeasible. You look at any binding facilities and relax it to make it feasible. Right?

MR. HORGER: If there's an infeasible facility, meaning allocated, requested AR's to that allocation process, are over what we're modeling for our case, then we would need to relax the limits.

MR. SHANKER: And what you were just asking interacts with that because it may --

MR. HORGER: With the transmission outages?

MR. SHANKER: Yes, because it would interact with the transmission feasibility. I'm going to defer to Tim as soon as I say this. But the relaxed constraint sticks within the model for the year-round. Right?

MR. HORGER: Not for the year. For the allocation process. Remember there could be some relaxed limits in the Stage 1A that are associated with how the transmission outages are modeled in the process. So those residual AR's, they should turn to residual AR's during the actually planning period because those transmission outages -- and that's an outage for the entire year.

MR. ROUSSELLE: Do those relaxed ratings follow

through into the long-term ARR model for the current term?

MR. HORGER: Yes. Right, there's only one ARR model in that annual process, and they would be included into that whole ARR allocation process. The model does not change.

MR. SHANKER: Unless there's outages.

MR. HORGER: Well, there's outages there, too, because the allocation model -- we're talking about the annual product, the annual allocation model.

MR. SHANKER: The product.

MR. HORGER: Right, that solution.

MR. SHANKER: It would state for us absolutely. And then residual, but all that would happen is you get more money because you switch status in the way you look at it.

MR. HORGER: In the residual, yes.

MS. QUINLAN: We have a few minutes left for this panel, so I just want to open this up. If there's anything further that you think we should be kind of considering in this in the time you have related to modelling, we're open to that.

MR. ROUSSELLE: I think there's a few comments we'd like to make with regards to facility rating. We do know that FAC003 8 and 9 help the utilities understand how to set their ratings appropriately. And FERC form 715

demands facility ratings be filed. And PJM of course attests to that filing. The notion that we're discussing today, I think seems to be, how can we improve the accuracy of the information of the models that we're creating? And when we heard Tim earlier mention a few things about the temporal update models and the deadlines for which the market participants look to the final model or the hard-and-fast set of data that can help us understand expectations, we have to ask: Were the bases upon which we made the reasonable assumptions and relied upon changed during the integrated period? And do these temporal periods upon which the PJM decides to change the models coincide with the times of the utilities or other third parties update their payment? And to the extent that the ratings are applied in the intervening time or a rating is changed after a merchant developer chooses a queue in the rating changes, it can absolutely obviate the need for the upgrade they relied on or not. And the standards with which the ratings are allowed to change that aren't keeping with manual 3A, which are rather well spelled out two times a year, on the normal course and two other times that are emergent with regards to changing the impedance that allows us to change that, how are changes allowed -- we asked a question earlier: How are changes allowed to facility ratings outside of those two periods? Are transmission

owners allowed to change the facility ratings that aren't impacting impedance outside of the two scheduled months of the year that you have? And if they are, do they also then require you to retool the base case out of time to accommodate those changes in the facilities ratings?

MR. HORGER: So, as I mentioned before, the ratings that are updated by the transmission owners, the long-term ratings, there's very specific deadlines and they're tailored to the annual process. So they need to submit them by September 15, which is six months before the actual process. And they should be changing them, those long-term ratings, throughout the years with deductions without exceptions and whatnot.

MR. ROUSSELLE: Well, there will be changes to the transmission owner.

MR. HORGER: Obviously, are they changed? I think that's the core of the question. Well, there would be changes for the transmission owner, but they would not be changed throughout the year. Keep in mind throughout the year you're going to have different conditions: You're going to have summer conditions, winter conditions, you're going to have operational conditions where there's going to have to be changes the operators make based on the weather and whatnot. But the base rating should not be changed.

MR. ROUSSELLE: And does PJM provide

transparency for those upgrades that are in the process, whether they're from the incumbent or merchant or any upgrade, whatever, do you anticipate and provide transparency with what the final rating would be for that upgraded element?

MR. HORGER: The planning phase, we list all the transmission upgrades, whether they're final upgrades, merchant upgrades, whatever. They're listed in there with the description on those. To the extent that there was rating changes in there, I think they would be included. But obviously until that line is in service and there's actually the test, you're not going to know what the actually final rating is.

MR. ROUSSELLE: I think one of the walk-aways for us and our comments are: To the extent the transparency and accuracy of the fundamental data that goes into the model and improve the temporal refresh rate and access to that information for merchants and holders of ARR's that could help us better understand what the outcomes of the model would be in the first place, some of the shifts in ratings could be varied. Thank you.

MR. SHANKER: And just to go back to the shorter timeframe we were talking about earlier. Summer ratings, that's one of the other thing that -- Tim's agreeing, I should have said that before -- that were one of the other

things on my checklist of why I'd like to see that change. Because it changes -- (1) it doesn't necessarily have to be the same as all based on whatever definition, but presumably goes down but the line ratings go up.

MS. QUINLAN: With that, I want to thank you all for this information. It was very helpful. This concludes the first panel.

We are taking a 15-minute break and we'll resume at 11:15. Thank you.

(Whereupon a short recess is taken.)

MS. QUINLAN: All right, welcome back everyone. This will be the second panel where we will discuss the sources of underfunding, the current allocation of that current underfunding, and alternative options for apportionment. Just as a reminder, since you probably just walked outside, please make sure your cellphones are on silent. And you'd took to start again with introductions from the panelists, so Mr. Patton.

MR. PATTON: Sure. I'm David Patton, president for Potomac Economics and market monitor for New York and MISO Texas and the external monitor for New England.

MR. MABRY: David Mabry, representative of PJM Industrial Customer Coalition, a large industrial entity, and also end uses.

DR. BOWRING: Joe Bowring, marketing and,

monitoring for PJM.

MR. BRESLER: Stu Bresler, senior vice president of market for PJM.

MS. SIDHOM: Noha Sidhom, president for Inertia Power, we are a medium-sized trading firm and we're active in all of the markets except ISO New England.

MR. KLEIN: Abram Klein, managing partner with Appian Way Energy, we are a firm in financial systems and a medium-sized company and participate in FTR markets. Historically, I spent about 13 years as head of trading for an IPP where I managed the congestion portfolio for their generation assets, so a lot of familiarity with the FTR market in that perspective.

MS. QUINLAN: Thank you. Particularly because this panel is larger, I really want to remind you that before you speak to make sure you announce your name; that's helpful for people on the webcast and also for the transcript. And, again, if you want to speak, just please put your name tent on its side. And please keep your comments on point. We'll ask questions, and we have a lot to get through on this. And we'll cut you off if you go off point.

With that, I'm going to turn this over to Scott Miller.

MR. MILLER: Thank you, Pamela.

One of the reasons that we're here is because there's been tremendous sometimes underfunding, sometimes a surplus. And this sort of goes to the root of whether or not we have a unjust and unreasonable situation.

So let me first begin with Stu, let me ask you if you could characterize not only the various sources of let's say underfunding or surplus, but also in the case particularly of underfunding what is the rationale for how the underfunding is allocated?

MR. BRESLER: Thanks, Scott. And thanks for having me on the topic today. So to, hopefully briefly, address your first question, which is the sources of underfunding in the FTR markets, part of the technical conference announcement was the sources that's listed in the 2012 PJM report that Scott referenced during the first panel, are they still relevant, if you will. And at a high level there's really nothing new under the sun when it comes to sources of underfunding in the FTR markets. At a high level, there's three stages, if you will, of kind of the contributions to FTR funding as they occur in PJM. And this is different from other markets, but this is how it works in PJM. So we have the FTR auctions themselves, in which case you set up a model that is intended to approximate the actual level of transmission capability that you will see when you get to real-time and near

real-time. You have the day-ahead market in which the FTR's that's sold in the FTR auction are actually valued based on the source of the EMP's that come out in the day-ahead market on an hourly basis. And again in that day-ahead market you set up a transmission model in which you assume a certain amount of transmission capability that will be available in real-time. And then you have real-time, which we refer to usually as the balancing market, because, as we all know in the balancing market, settlements occur on the basis of deviations from day-ahead schedule due to actual real-time qualities. And again in real-time there is an actual amount of transmission system capability that is available for market participants and physical asset owners to flow energy in the real-time system.

If between your FTR model and your day-ahead model there is a reduction in transmission system capability, as a rule, FTR underfunding will result. You will collect less in congestion in the day-ahead market you need to fund all the outstanding FTR. Similarly, if there is less transmission capability available in real-time than you assume would be available in your day-ahead market, then you will have what we call negative balancing which means the congestion that is collected from market participants in the balancing market will be invested in

what is used to pay the market participants as a result of their deviations from their day-ahead schedules. And in the PJM market balancing congestion is incorporated in the overall quantity of congestion selection that is utilized on the FTR. In other words, if you have negative balancing congestion, it reduces the total funds available to FTR's and can therefore result in FTR underfunding.

So on a high level, again, there's nothing really new under the sun as far as what causes underfunding of FTR. In the 2012 report we pointed to four high-level categories of underfunding. And my short answer today is they're all still relevant. So we still have congestion around the boarders of PJM where things like third-party loop flow, impacts of external systems of operations on PJM are harder to predict on both an FTR on a long-term basis as well as a day-ahead market basis. Transmission outages will occur. The first panel went through all the efforts that are utilized and the strategies that are used as accurately as possible in both the FTR models; we do the same in day-ahead. But even between day-ahead and real-time schedule changes occur, emergency outages occur in real-time that we could not have known about from day-ahead, and so on and so forth. So outages can still effect all the transmission system's ability and therefore FTR funding transmission facilities ratings changes, as we

said today, can effect FTR underfunding. Historically, several years ago there were several standards, changes if you will, that required reevaluation of rating methodology, we say a significant number of ratings reductions. In '10-'11, '11-'12, '12-'13 planning years transmission facility rating changes, primarily reductions, were a significant contributor to underfunding. And these loop flows are third-party flows that utilize transmission system capability, but from which congestion cannot be collected because they're not a market participant in PJM. So that is the same as saying the reduction in transmission capability that can be utilized by your internal market participants. We do our best, again, to approximate loop flow models and the FTR model, we do the same thing in day-ahead, try to keep them as consistent as possible. But again to the extent that this condition changes around our system and loop flows are higher or lower, they can result in underfunding or more capability which can actually lead to -- so that can go either way as well.

So from the standpoint of the major contributors, they're all still relevant. Obviously, the proportional contributions of those things will ebb and flow and shift through time. Some of the things that have happened around our scenes we have made a tremendous amount of progress with, as mentioned with the first panel,

particularly with MISO, occurs with other entities as well. So I think we can safely say the proportion from those types of things led a contribution of others has reduced over time. But some of the other things willing still impact FTR funding, and like I said the level 2 depends on what happens between the establishment of the model. So I think that's at least a high-level answer to your question. And I think your second part was how is it a apportioned today. Right?

MR. MILLER: Exactly. Not just how it's apportioned but what's the rationale for achieving the way that you do.

MR. BRESLER: Yeah. Today underfunding is really a portion to all FTR holders throughout an entire planning year in proportion to their FTR in proportion to their FTR outages, as we're going to get to on the next panel, their net prevailing flow of FTR values. Again, by a sort of ratio share of a net-prevailing for FTR planning throughout the entire planning year. So we have underfunding/over-funding that occurs during a planning year, and we utilize over-funding in an hour or a day or a month to fill in underfunding that occurs in other periods. But at the end of the planning year we look back and say: Are we overall underfunded or over-funded? And if there's an underfunded situation, we take that aggregate amount of

underfunding and allocate it back to the entire planning year to all FTR holders, again by ratio share or their net prevailing for FTR values for planning. The rationale there is, again this an annual process at the very beginning, the annual allocation at the annual auction are the vast majority of the FTR values and they are set well before the planning year even starts.

So once you get into a planning year, if you're going to keep the under- or over-funding within the FTR market -- which is I think very strongly what our stakeholders have come out up until now -- the thought is that the Commission spread any underfunding that occurs as widely as possible across the entire market to minimize the impact of that allocation on any one market participant. Because all of them went into the planning year with a certain amount of annual rights that were either allocated or purchased in the annual FTR auction, really with no advanced knowledge as to whether there would be underfunding or not. So the idea really is to collect, or a better term socialize, that allocation of underfunding as widely as possible to impact market participants. That is the way I would articulate the rationale.

MR. MILLER: Okay. Because of course in other markets they're done differently in terms of the underfunding?

MR. BRESLER: Yes.

MR. MILLER: And it sort of relates to what we were discussing in the other panel in terms of incentive to keep one of the sources of underfunding transmission outages to a minimum. For example, in New York underfunding in TCC's is allocated to the transmission owner, which arguably provides some sort of incentive to keep transmission outages lower. But in terms of the allocation of shortages, when it comes to loop flow, you're just trying to socialize that as broadly as possible. Is that correct?

MR. BRESLER: Yeah. One of the points at the outset was that allocation cost foundation, ability to allocate underfunding that's caused by a loop flow to monitor PJM market participants. I had to allocate it some place within the PJM markets. So the idea, again, is to minimize the derogatory impact of underfunding in allocation market participants as much as possible by spreading it as widely as possible.

MR. MILLER: So that's a causation that's outside of PJM tariff. Presumably, if we're talking network system, if we were able to price congestion, regardless of where it's occurring, that would be a significant improvement in terms of the revenue accuracy of FTR?

MR. BRESLER: I think the best way to account for loop flow is to expand the market to internalize as much as possible. So I think we try to take as many steps towards that as we can by virtue of the joint counter market effort, the MISO market-to-market operation that we work on with MISO, the establishment of entitlements that was discussed again on the first panel. So that really is I think an attempt as best we can to coordinate and internalize the loop flow effect to account for it as much of it as possible. You're still going to have some from other external systems.

MR. MILLER: I completely appreciate that.

Before we go any further, do any of the other panelists want to comment on what Stu just said? Dr. Patton?

DR. PATTON: Yeah, I'll jump in. I didn't see any other cards.

As far as causes of underfunding, I think there's a couple of things that are important to recognize. One is with regard to balance and congestion. We talked about it as a reduction in transmission capability in day-ahead and real-time, and that's largely true. But I think there is some aspects of it that are important to recognize. One is if you have an un-modelled constraint, the day-ahead markets are inherently limited in how many

constraints you can model. You have un-modelled constraints that -- for instance, the FTR congestion find and populate that really should have been modelled because they're binding in real-time, that can generate a huge amount of balance and congestion very, very quickly. It does not have to do with rating changes, it doesn't have to do with outages that happen after the day-ahead into real-time, but it can spike your balance and congestion.

And secondly, a factor that we think is a big factor in PJM is interface pricing. To the extent that you -- PJM's interface definition methodology generally on all of their interfaces -- and we can't estimate this, we don't have the data -- but they assumed power that's coming in or going out sourcing in things very close to the border. What it does is it inflates the amount of flows because things are going to happen near any constraints near the boarder. And so what that means is an importer, you may estimate that an importer is going to give you $10 of relief on a constraint, so you pay him $10 only because the power is actually not coming from the boarder, it's coming from locations that are far away from the boarder you may get $2 of relief. That $8 of relief that you didn't get may look like loop flow, and it's going to show up in balance and congestion if you made that payment in the real-time market. It will show up in the underfunding if

you made that payment in the day-ahead market. So that's definitely a significant factor.

I think -- so there's the relationship between the interface pricing work that's going on and some of the discussions that are being had at PJM and others on that particular issue. But the balancing congestion in particular is something that I'd be interested in the rationale for allocating that to FTR holders because it has nothing to do with how many FTR issues -- there's no cost causation basis for it, so it just -- and nobody does it, other than New England, to adopt the PJM's rules. And I think nobody else does it because there's not a good rationale for it.

MS. QUINLAN: Stu, do you want to respond to the question specifically about the rationale for allocating balance and congestion to FTR holders?

MR. BRESLER: Yes, and this is going back to the memory banks as far as the rationale for including balance and congestion. But I think when the PJM market rules were designed and the day-ahead market was created, which was way back in 2000, I think during the stakeholder process where we came up with those market rules the assumption was that balance and congestion could be either positive or negative, it would never really be all that large. And therefore we didn't need to come up with yet another cost

allocation mechanism for a separate congestion bucket, but rather we could wrap one congestion together and utilize the funds of the FTR's. So I think that was the basic rationale for including it all together. I think frankly PJM's opinion on that changed over time on that; I'll get to that later when we talked about solution.

MS. QUINLAN: Joe, I know you indicated you wanted to speak. Stu, I also want you to respond. I think at some point you've indicated that balance and congestion from your perspective does not create revenue inadequacy. And I wanted to see if you wanted to address that now, and also the other comment that you wanted to address?

DR. BOWRING: Sure. So I think it's important to think about the terms we're using. And I'm interested in what the use of the terms of "revenue inadequacy," and others have been using the term -- what is the favorite term? -- underfunding. So I don't actually think there's any such thing as underfunding. What does underfunding mean? Underfunding or revenue compared to some target, the target is the day-ahead target allocations. But there's nothing magical about those, those are really an arbitrary motto benchmark and there's no reason to believe that there's some right associated with that. You go back to the beginning that Stu was talking about a little bit, in fact FTR's were about replacing firm transmission rights,

not just point to point but network service, they were about ensuring that load that pays more than generators received in load buckets got that money back. And there's really nothing more complicated about it. We made FTR's to have our own vastly complicated event, and this technical conference is just the tip of the iceberg.

But the point is that those revenues were paid in excess by load, they were paid in excess because transmission rights exist. Those physical transmission rights exist because load paid them transmission; those dollars belonged to load I think very simple. And the notion that there's some magic about the day-ahead transmission allocation or target allocation really has no foundation in economic or market logic. Congestion is congestion. And when FTR's were invented there was a real-time market. The idea was something special about day-ahead versus real-time doesn't, in my view, make any sense. The total amount of congestion is the total amount of congestion; that's what load has paid and that's what load should get back, it's really the result of the fact that they pay for the transmission system. So I tried very briefly to answer your question, but I probably said a few things that I did before but hopefully not too many.

MS. QUINLAN: Thanks, Joe.

Noha?

MS. SIDHOM: I wanted to touch a couple of things. First, I guess I'll address Dr. Bowring's comments about underfunding and arguably whether or not there is such a thing as underfunding. At the end of the day we have ARR's and FTR's so that folks can hedge against congestion risks. And when there's underfunding it's an ineffective hedge. So it's just good market design to not have balance and congestion allocated to FTR holders.

You know, Scott started out with this line of questioning saying: Do we have an unjust and unreasonable situation here? And we do have an unjust and unreasonable situation here. At the end of the day, FTR's are not the ones causing the balance and congestion issues. We're not causing those deviations. I know this is not part of the UTC, but I just wanted to turn briefly on what Dr. Patton said. You know, yes, UTC's do get paid off the balancing congestion, but they're also highlighting modeling inefficiencies that then get solved in the model and as a result future underfunding. And I think that's something that gets lost in the discussion.

At the end of the day, when we can argue about the semantics of underfunding or revenue inaccuracy, but when FTR's are underfunded there's less money in that pot, people are pricing that into the risk premium, so your ARR's are worth less. And as a result everybody loses:

FTR markets reflect the effective hedge and your and ARR holders are getting less money. And Stu also mentioned we've had underfunding allocated to FTR holders because that's largely what the stakeholder process has been, we ought to do numerous -- we have three or four different task forces on this issue. Nobody's going to vote to get less money. This is when we need the Commission's help with price cost allocation issues. And you guys hare heading in that direction in the price formation docket, I think it's really important to also head in that direction in this proceeding.

MS. QUINLAN: Thank you.

Abram?

MR. KLEIN: I just wanted to point out really quickly to Stu's point that the paper is I think really relevant still today. And it does talk about that PJM believing what FTR -- basically I'm in agreement with what Dr. Patton said earlier, that FTR holders are not the cause of the congestion imbalances and shouldn't be allocated them. And I'd also like to agree with Dr. Bowring, which is the purpose of the ARR's, or the congestion belongs to the load and it's allocated in the ARR market at the beginning of the year. Whether that's day-ahead or real-time, we've been arguing about congestion. So it all boils down to the load. What PJM has done is recognize

that by including congestion imbalances as a cost -- and it's gotten very high and it's become a real market design problem to the point where sometimes during heat waves exactly when market participants need their FTR's we get them zero-percent funding as PJM Technical reported in 2013 unidentifiable -- it's become a problem. And PJM looked back at it and said look our tariff said that there's this basic market design principle that we don't oversell the system, we just sell the number of FTR's or allocate the number of ARR's that we expect to have congestion rents to pay for it at the beginning of the year. To the best of our knowledge, whether that's day-ahead or real-time. And that's what they're doing now to address the congestion imbalances, underfunding, or whatever. And I think PJM is to be commended in trying to solve this problem that way.

The issue is now it's all very complicated because you've basically got ARR holders, ultimately the Stage 1B ARR holders are getting fewer allocated ARR's because the congestion imbalances are put in that pocket. And it would probably make more sense to simply fully fund the ARR's themselves than let the -- and not introduce that uncertainty which is causing ARR's to be worth less at the end of the day.

MS. QUINLAN: Patton, I think?

DR. MABRY: Thanks. David Mabry, PJM

Industrial. I think it really does go back to 1997 when we first put in this market the stakeholders and the eight companies that were all mentioned together, and the idea of the recognition and the Commission had as well, was that load overpays congestion in the market and the FTR processes was a way to return that overpayment to load. We then go to 2003 and put in the ARR process. Also noted was the fact that stakeholders -- many stakeholders endorse that and went far with that along with PJM. We didn't change the allocation. It is again a payment that goes to load it returns money to load. What load got was ARR's instead, so the FTR kind of converted over, if you will, to market-to-market ARR products, a similar logic that the FTR product started with. We put the FTR's on there as far as a way to get a second funds and for a scarce set directing value. But overall load was still to get that money back, and as Dr. Bowring pointed out to get it back.

We talked about folks, about money, the FTR's underfunded and what that means to ARR revenue inadequacy. What we do see when we looked at the monitoring when we put the table back in there, that as load unallocated ARR's. And you look at the load allocation's ARR's as well as the ARR's self-schedule, over the years consistently that has returned the value that is necessary there. So the underfunding portion is happening on that voluntary side of

the marketplace where folks who are going into the auction voluntarily to buy these FTR's because they think there's a value there they can extract, that's where the money isn't coming into place. If you look at -- and forget the tables that you have there, it's one or two pages from the end there -- but it gets into the fact of how ARR's pay back for load when you look at the ARR as well as the ARR's that are converted to FTR's. So from that perspective, from when you go back to what it was talked about, the processes work incorrectly. Where we may be having some disconnect for folks is the voluntary aspect, when folks are going into the market thinking that they can get some value out of it. It's buying anything. I go buy my house; I hope to resell that at a profit. I have no guarantee; I expect that I will. And I may expect that I'm going to make money there, but as the tariff says, it's not a guarantee. I may want to make money there, but it is not a guarantee. And that is a voluntary market issue to get into.

MR. SOTO: Just to clarify: So you think the ARR's are getting enough value at the FTR options?

DR. MABRY: It seems that the present process we have at the moment is that as load, as an end user, that we are getting our money back from the system, if you will, through the ARR FTR mechanism. So if I get the revenue as an ARR holder, I get the revenue from the FTR options, it

seems to be when I look at that, as well as if I self-schedule or convert my ARR to an FTR, when you look at that pot as it comes back to load the money there is adequate to cover that. So I'm getting my money back there.

MR. SOTO: Thanks.

DR. PATTON: David Patton. I want to highlight a couple of principles or thoughts that I think are important to keep in the back of your mind; people often forget these. One is who you allocate the cost to is not necessarily, or it may be almost generally, not who actually bears the cost. And I know that a lot of these debates there's a notion -- I know I run into it in stakeholder processes with almost RTO -- that folks think when they're embroiled in this debate about who we should allocate costs to, if we allocate it to that group then that means they're going to bear the cost and not me.

And I think when David was talking about load, I generally talk about transmission customers, I think we can use those interchangeably. The transmission customers bear this cost regardless of who you allocate it to. I think they bear more costs allocating FTR holders than they do if you just allocated it directly to them. They bear the cost either because you reduce the ARR's that you give them, so they get fewer ARR's; if you allocate infeasible ARR's, you

don't pay them out at a hundred percent so they bear it in that way. To the extent that people buy FTR's that are underfunded -- and let's say they're underfunded at a ten percent level -- they're going to pay a price that is 10 percent less for that FTR than they would have paid. That revenue goes back to transmission customers, so they bear it in that way. The problem is if there's uncertainty with that funding, they're actually going to bear a bigger cost not just receiving the direct underfunding allocation than they do -- than the result of allocating the FTR holders where there's uncertainty and they're going to price that uncertainty in.

But the other thing I wanted to respond to is this notion that there's nothing magical about the quantity. There is something magical about the quantity, it's called the integrity of a financial instrument. Somebody goes into the FTR market and they buy 100 megawatts of a property right between point A and point B, it is highly valuable to honor the hundred megawatt quantity so that they know what they're buying, it makes the product more valuable for either hedging or supporting forward-contracting, and virtually any other market I can think of, if you buy a forward-financial product for something whether it's a pork belly or a gas future, you get what you bought; you don't get some uncertain quantity

that comes out because it just diminishes the usefulness of the FTR product itself.

MS. QUINLAN: We're going to finish this with Stu and then we want to get to some more questions from staff.

MR. BRESLER: I'm sure you have more questions to ask. Thank you very much for some latitude. Just very quickly: First of all, I want to show some balance here. Because I want to agree first of all with much of what David just said. I want to add one more aspect to his points on the day-ahead market and the reason why the day-ahead market is the reference for FTR values. It's not just the quantity that you purchase but it's also the price reference as well. Under the fundamental design of the market the whole idea of price -- it's two to one, you place the day-ahead because by definition you wouldn't have enough funds. The reason why we priced them the day ahead is because we wanted every incentive as possible for market participants to do their business in the day-ahead market because that's where we think they're best able to manage their risks as opposed to relying on the balancing market. And to say there's no importance in the price reference if you do day ahead, so let's say there's no reason to rely on that, and I think that would significantly degrade incentives market participants to freely schedule as

accurately as possible the day ahead because they can't hedge their congestion of their energy solutions in the day-ahead market without that reference. So I think it's actually extremely important, the day-ahead price reference.

It's been pretty well documented the fact that we don't see eye to eye with Dr. Patton on any of these price issues, so I won't go any further with that one.

(Laughter)

With respect to the congestion transactions, I know we're not talking about those, but just from a cost causation perspective, it's important to highlight Noha's probably right that sure, when we see a significant amount of negative imbalances it's because of a model difference between day-ahead and real-time, obviously that serves to highlight more than many otherwise would. The question is: Is this relationship making market inefficiency when there's a significant amount of money to be made on a model discrepancy between day-ahead and real-time? Or are the revenues that are being collected as a result of that model discrepancy contributing to causing that negative balancing, and should there be an accounting for that as to how that negative balancing congestion is allocated?

The last thing I would point out in response to Dave Mabry's comment on load getting what they need to the

ARR's, I think that probably depends on who you ask. I know we've heard from market participants with respect to the reduction in Stage 1B and Stage 2 allocation, that that's not sort of a uniform type of thing. So that's a relationship there I think it's important to recognize.

MR. MILLER: We've touched on this in a couple of ways, so let's just go ahead and throw this out for discussion. One of the sources of revenue inadequacy has been the delta between the value and the day-ahead market and its realization in the real-time market balance congestion. Would there be a problem with just not dealing with the balance congestion there and just recognize the value of the FTR only in the day-ahead market?

MR. BRESLER: My answer to that is no, there would not be a problem with that. We would just have to figure out what to do with the balancing congestion and then how to allocate it, I think. I could go through the stakeholder proposals we had on that. I think there were all efforts frankly to, number 1, trying to broadly allocate and allocate to those who actually cause the negative balancing or benefit from the negative balancing, however you want to say it.

And I think there's multiple ways to go about it, too, you wouldn't necessarily need to completely separate balancing from congestion in FTR funding. You

could separate only to the things that are completely unknown in real-time, like emergency outage, that sort of thing. You could only change the allocations for what's necessary in order to maintain full-funding and day-ahead and nothing beyond that. So there's multiple ways to go about that, but I think a change from where we are today frankly would be beneficial from a market design perspective.

MS. QUINLAN: Joe, you wanted to respond.

DR. BOWRING: Yes. So the notion that balance and congestion don't stand by itself and have to be allocated to the cost I think is simply wrong and it's mis-conceding the issue. When we think about where all this stems from in the real-time market, congestion is congestion. And congestion is still congestion, day-ahead and real-time congestion, imbalance congestion, are all congestion, there's no reason to separate them out. There is no guarantee of an FTR value day-ahead market; there is no property right; and maintaining the alleged integrity of that property right is again somewhat ironic. That's what you're asking load to do. Load pays congestion; that's the source of the money, that's where it came from. We're not going to return all of the load. In fact, not only that, going to force load to guarantee the value of FTR's in the day-ahead market. Again, standing logic on its head as far

as I'm concerned. I think we just need to remember where the money comes from, what the purpose of FTR's is before we start thinking about it FTR's as having some properties in value and guaranteed by load, and it has to be guaranteed by some load. There's absolutely no reason to have a load guaranteed in any market. If you don't like the value it, you don't have to buy it. Or if you want to buy it, you pay less. And in fact that's exactly what we've seen in FTR's when the funding went down the prices went down, people bought more. The market reaction is perfectly acceptable and that's how we expect markets to work.

MS. QUINLAN: Thank you. Before we move on, I want to add another question and kind of expand upon: So I understand what Dr. Bowring mentioned we haven't actually seen this kind of decrease in participation, if I'm characterizing it the right way. And what I want to understand is: As an FTR holder, what tools do you have in terms of managing this risk of underfunding? When Dr. Patton explained how you might devalue the risk, kind of how are you doing that? And has that kind of maybe it's a risk, however you want to talk about it, has it changed over time? And do you disagree, has it impacted participation in the market? And are there alternative options depending on how things happen today that you think

actually help with that? So I just wanted to add those questions to the panel of discussion, and we'll continue. And I have Abram next.

MR. KLEIN: I wanted to, I guess, turn on Scott's question about the day-ahead versus real-time imbalances. And I think it's important to be very clear about what the cause is or the imbalance is. And I'm not going to talk about congestion at all, but let's just talk about deviations, okay. The reality is: If the transfer capabilities is the same between the day-ahead and the real-time, you can change everything and you're still going to have full -- there's going to be no congestion imbalancing at all. So what's happening is it's only the reduction and transfer capability, whether it's from an outage or loop flow that's causing it. But moreover it can also be -- and you may see some deviations making money when there is a transfer reduction in the real-time. And that can be a spurious correlation. Because but for any of the changes, you can have everything remain the same, and if there's a reduction in transfer capability you're going to get the same result from the market. Whether you have incs and decs or anything like that, you'll still get the same amount of congestion imbalance if the constraint is fully -- is binding in the day-ahead market. So if you have the constraint binding in the day-ahead market,

there's no change from the deviation, the reduction is just due to the reduction in transfer capability.

To Stu's point, there can be some circumstances where, because of deviations and incs and decs there's a little bit more flow in the day-ahead market, but can be an exception, and I think it would be worth looking at more extensively thinking about allocating that way. The bigger issue to me is that when you do have loop flows or other things that are unrelated to market participants or situations like in first energy where there was a closed loop flow interface, a lot of those are reliability benefits that you need to run the system, and load ultimately is benefitting from those, and that I think is why the paper in PJM talked about either allocating to transmission customers probably before allocating it to the marginal loss surplus as different ideas.

MS. QUINLAN: I have a "Dave" next, but I didn't actually write down which one it was.

(Laughter)

MR. MABRY: When you're talking deviations, the engagement it's not just market deviation, it's modeling deviations that you talked about in the first panel, it's rating differences. It's the market operator for the day-ahead, it's different rating sets and what's actually real-time. And we talked about transmission outages, does

the transmission owner start the day-ahead? Cancel an outage, does the outage come back earlier or does it come back longer? So it's really any deviation that you have, and it isn't just, as pointed out, one deviation, it's more operator deviations, weather can change. So any deviation really will effect that. So what you have then have is you have the day-ahead market which is a really big payment to premiums that's going to see whether or not congestion shows in the day-ahead or whether it shows up in the real-time as a balancing congestion. So when it gets through that modelling, the day-ahead marketing and how important that is and how it determines the winner and the loser as far as assessing that congestion.

Now, as far as participation of what you're seeing, interestingly when we look at load we've allocated those ARR's and we have the ability to convert ARR's from a market participation of a conversion standpoint going down. It happened in 2008, 2010, 2011 period an anomaly 60 percent of the ARR's. In recent years it was 30 percent. So there is some pullback there that clearly the load is having in recognizing the fact that the FTR's themselves may not be worth that value there; that is kind of the reaction that you're seeing there. And I think that's a natural reaction to the bulk utility, and perhaps load doesn't like that volatility so it stays with the ARR's.

Folks that can manage the volatility may do a better job in that load there and there seems to be a market outreach for those folks and we see them buying those FTR's that are available to them in that market.

MS. QUINLAN: Thanks.

Noha?

MS. SIDHOM: Yes. Pamela, I wanted to touch on your question about what are market participants doing when developing the product. We're basically building that into the price. You saw it from 2011 and 2012 planning period the revenue pot was a billion dollars. We saw underfunding in 2012. In 2013 it went down to six hundred million. All of that is a devaluation, a significant portion of the pot is devaluation. I think that money is really important. And I think that touches on what Dave Mabry said which is ARR holders are not converting or -- really what's happening in the Stage 1B, ARR holders right now, so that we can see the funding levels that we are at is kind of routing policy to the ARR. So that is why I think we have an unjust and unreasonable situation. They got ten percent of their allocation; it's not like all of the ARR holders are really happy with the allocation process that's occurring today.

MR. MILLER: But to follow up in that regard, what I'm hearing -- and correct me if I'm wrong, if I'm

mischaracterizing David Mabry and Joe Bowring -- is that you seem to be characterizing the situation where there is not an unjust and unreasonable situation. That's in view of the fact that there is an insufficient revenue sometimes in the hundreds of millions of dollars each year. And when I say that, because sometimes it's what is so-called underfunding, sometimes it's because it's not realized revenue from the ARR holders because there's been a cutback in the allocation process. So that's okay?

MR. MABRY: I think the cutback that occurred is for ARR's, the amount of the ARR's. The cutback in the reduction of Stage 1B's is undesirable on the ARR front. So that doesn't cling to the balance of the unreasonableness discussion, the balancing offered during the discussion is a day-ahead real-time difference there. What we did with the reduction of 1B's is we reduced the amount of ARR's with the amount of FTR's that are available for sale. But that doesn't get to the question of the balance and congestion or how balance and congestion plays into that funding aspect and the value of that.

MS. QUINLAN: Thanks.

MS. SIDHOM: Yes. And I agree with Dave on that, there are two separate discussions. I think it's something to consider in load and funding and the whole concept of underfunding and revenue inadequacy.

And, Scott, to your point is there an issue with settling the day-ahead, I think we don't cause those real-time deviations. There's not an issue presently in place. After you said it so purely day-ahead, you're encouraging the loads that they have, and as a result you're getting better results.

MS. QUINLAN: Over to Dave Patton.

DR. PATTON: One thing I think, it's useful to keep in mind, because sometimes -- this is a confusing topic because there is price issues and there is quantity issues. So I agree a hundred percent with Stu that the day-ahead price relationship between FTR's and congestion is important. But keep in mind when somebody buys the congestion between two points they can opt to take either, by putting in a virtual load at one location of the virtual supplies, they can opt to take the real-time congestion instead of the day-ahead congestion. So what they're really buying is the congestion between the two. And I agree that as a default, the day-ahead is the best way to compensate FTR's because most of the settlements are in the day-ahead and the day-ahead is put in properly it's going to represent the expected value of the real-time. So the fact that the prices are different between day-ahead and real-time is not a balancing-congestion issue, it's that the quantity is different. And it's important not to think

the balancing congestion as being additive with day-ahead congestion. Sometime people talk about for the total congestion is the sum of the balancing congestion of the day-ahead, and that's definitely not true. If I don't model something as an RTO in the day-ahead, and so the traders and participants that are expecting $10 a difference, they're going to continue to buy and sell until you get a 10-dollar difference, that might result in a quantity cost interface that is 500 megawatts. In real-time if something like that is 100 megawatts, the RTO is going to be stuck incurring a cost that's buy-out that is essentially a bad decision by the RTO. It has nothing to do with the fact that there was congestion missing in the day-ahead, it could be you have 10-dollar difference in a day-ahead and a 10-dollar difference in real-time. Nothing was lost other than there was a modelling error.

MR. SOTO: If a day-ahead is not working properly, is it reasonable to include balancing and congestion in FTR's?

DR. PATTON: I don't think it's ever reasonable to allocate that to FTR holders. Because whether I -- there's just no relationship between balancing congestion and the FTR's that you've sold. And ultimately I think we have to just keep in mind every time somebody says something, what are they really saying? For instance, not

to pick on Joe what when he says why are we asking load to guarantee these rights, it makes it sound like load is incurring costs, right. This is the bill I'm going to send to the load to honor the FTR. The reality is the load is going to pay for this. There's no way around the load paying for this. Either you're going to sell the FTR for a lower price, you're going to allocate fewer ARR's, you're going to pay out the ARR's at a lower level. The load is the ultimate property right holder here because they're -- and I like to say "transmission customers" because it's easier to understand -- they're paying for the transmission system; they're ultimately the ones selling the FTR rights. Anything that diminishes the capability of the transmission system is going to harm the person who ultimately owns it, which is the transmission customer.

MS. QUINLAN: Abram?

MR. KLEIN: I also wanted to turn on one point that Joe talked about, which is the role of the FTR's in these markets. The paper is really good on this in that as part of an LMP market the ISO -- I'll quote from the paper -- "Has an obligation to ensure that the development and operation of market mechanisms to manage congestion." That is part and essential to the LMP market design. When these markets were set up there was a big fight about people who said LMP is way too complex, we shouldn't do it that way,

we need a single-price market in California or initially in PJM or zonal market. And even though that doesn't work from the physics of the grid, that's going to be better for liquidity inn the market so people can hedge because this is way too complicated with all the fights. Well, the answer to that was: No, you can hedge at hubs and then use FTR's, these financial products that are facilitated by the ISO which is an essential part of the market, to get from two-year load or from your generator. And I know from managing a generation portfolio or participating in load service auctions, standard-service auctions, that FTR's are a critical, critical piece of that, and resulted in the forward market for those different locations being pressured down and being more and more competitive. So when a bank would come and offer their service, they're relying on the market.

So if you have the FTR market there, it's available to market participants. And in fact the market participants, the loads, the industrial customers, have gotten very sophisticated about being able to use the FTR market for that. But as PJM identified during 2010 to 2014, the integrity of the product -- and, again, it talks about it in the paper -- was really compromised and they had to find a solution for it because it really is an essential part of the market design, and it's very

important.

I just go back to the heat wave example and their approach: You got the hottest day of the year and PJM's calling thousands of megawatts of demand response, people are very concerned about their positions. And exactly those hours because of balancing and congestion FTR's across the market, including the areas where you have cold or capability, are zero percent funded in those hours when the market is spiking; that can't be the right market design. And PJM stated in its report that that is a market design flaw that they need to resolve. And they're to be commended for solving it, it's just a question of whether they way they solved it is really the best way now.

MS. QUINLAN: We're going to go to Joe, and then I want to go on to another question.

DR. BOWRING: We heard in the first panel about modelling is primarily focused on the FTR/ARR modelling. Don't forget there is discontinuity in the FTR/ARR model, between that and the day-ahead and day-ahead and real-time. And to the extent that those create issues, create balance and congestion, in the office indicated analysis which everyone seems to want to point to, I think the whole discussion of cost causation is way, way off the mark for that reason. But to the extent that modelling issues, I think it is to a very large extent, result in differences

in congestion day-ahead and real-time, that is all the more reason to keep all congestion together. I agree with David, ultimately it is a property right of load. We have to be very careful how we assign those revenues and those contributing to others, the site load, and that's the fundamental issue. Thanks.

MS. QUINLAN: Thanks. I want to take a step to start to talk about -- the step that PJM specifically took related to the reduction of Stage 1B's.

And, Stu, if you can elaborate on the way that different kind of categories of load serving entities are benefitting or harmed from that. And if you could discuss what we saw the restoration of funding, or what you want to call it, because of those actions, and whether or not there was an inequitable cost shift?

MR. BRESLER: I don't think it's a matter of a category, and I'm not trying to pick on your words, I hope you don't take it that way.

MS. QUINLAN: No.

MR. BRESLER: It's more what we're referring to when we refer to the cost shift that we believe has become inequitable to the point of being unjust and unreasonable is we have a situation where we're required to allocate Stage 1A ARR's regardless of whether they are feasible. So we've had to in the last several years -- and it's moved

around on the system -- the comment areas have been fairly consistent. But over the years we've had areas of the Northeast part of the system and public service transmission territory by the PPL, and mostly because of outages that we're required to model because of the long-term construction-type outages, we've had to allocate infeasible Stage 1A rights. And what we did with respect to the Stage 1B and Stage 2 is, as a result of the fact that we were over-allocated in some areas of the system, we modelled more of the outages that we had scheduled for the upcoming year in all areas of the system, and therefore resulted in allocating less Stage 1B in other areas, if you will. So the shift is more along the lines of LSC's in one area of the system where the other getting more or less simply because of whether the Stage 1A rights in that area happened to be feasible or not. So that was what we referred to as the shift.

So as part of the stakeholder discussion, one of the options was to eliminate the full allocation requirements, Stage 1A. Frankly, load serving entities across the board feel that it is extremely important that they maintain the property rights that they have with the Stage 1 rights. They were developed pursuant to the Energy Policy Act of 2005, and the long-term transmission rights sort of guarantee, if you will, for those load serving

entities. So I certainly understand that position, we understand that position. So to the stakeholder process, we're in that situation now, can we find a way to make sure, to the greatest extent we can, not to get ourselves into this situation again by making room for transmission upgrades further in advance? I know you have the next panel on the modification for this proposal, but that's essentially where we came at it from, is let's put something int he planning process that allows us to see the potential need for transmission upgrades further in advance so that we don't get into the over-allocated Stage 1A in the first place and don't have this over-/under-allocation of ARR's and cost-assisted in the allocation.

MR. SOTO: Are infeasible ARR's a proper representation of the property right?

MR. BRESLER: Are infeasible ARR's a proper representation of the property right?

MR. SOTO: The question is: Should you be doing this? Should you be allocating a feasible ARR or find a different way to --

MR. BRESLER: Like I said -- the property right is the property right. They are entitled, because of those regulations that I just mentioned, to a minimum level of transmission rights that they can be assured to be receiving year after year.

MR. SOTO: Is it a different way to represent that property right that is less feasible?

MR. BRESLER: I am not sure I can think of one that has the same value.

MR. KHELOUSSI: Just a quick followup. The LSE's that were reduced to form B, they all were still in favor of the requirement of allocating all the 1A?

MR. BRESLER: I don't know. There may have been, but I don't know a single load serving entity in PJM on the stakeholder side that was in favor of removing the full Stage 1A allocation requirement.

MR. KHELOUSSI: Okay. And there's no real difference in that response based on what they got reduced in 1B?

MR. BRESLER: No. My conversations with those load serving entities is that they would rather attack this through different mechanisms to better ensure that they could get that allocation of 1B as opposed to reducing 1A. Because frankly I think they're afraid that, should the situation happen again in the future, they could be the ones not getting their form 1a allocation, they don't want to be in that position.

MR. KHELOUSSI: Thanks.

MR. SOTO: You had a comment.

DR. BOWRING: To take a different stab at your

question. Why it is the products exist but there is no physical corollary? There's no right -- there's no physical transmission. Why is it that the transmission has not been built in order to meet the requirements to provide it? And that's really the question. And I know Stu said we'll get into that more in the next panel. But it's not -- you have to think about both sides of that. It's only unfeasible because the physical transmission is not there. The question is why is it not there?

MR. SOTO: Corollary to your corollary.

(Laughter)

Why is it that property right there when there's no transmission?

DR. BOWRING: Precisely so. To the extent that the law creates that obligation that PJM provide those rights, it has the obligation to provide the physical rights so the financial rights can exist. It makes no sense to assign systems to something that doesn't exist. So to sum up, by guaranteeing funding of FTR's.

MR. BRESLER: Like Joe was saying we want to make sure we build the physical capability for the rights we want to allocate, and that's what we tried to do in our funding.

MS. QUINLAN: I want to make sure I get to everyone. Abram, then Noha, then Dr. Patton.

MR. KLEIN: I'd like to respond to your question. One of the things you get from PJM is if you do merchant transmission you get ARR's, and that's how you fund the merchant transmission. And then at the end right before the project is built you get at lease 80 percent of it, they'll do a final modelling of it. But over time between different years there can be new market-to-market flow gates or coordinator flow gates or things that result in maybe that wouldn't have been available initially. But you've spent now millions of dollars on a transmission upgrade. So part of the market design for merchant transmission is to say that things are guaranteed just as they're guaranteed for load as part of their grandfathered business rights. So I do think there is a good public policy reason for having Order 681 in the Stage 1A ARR rights being guaranteed. I do think Mike though has a very clever solution on this that reduces the cost shift between market participants.

So what MISO does is it will basically guarantee the Order 681 Stage 1 ARR so market participants get the full quantity of what they expect; it's not de-rated. And that allows market participants to get the ARR's that they expect and make financial transactions based on those ARR's, and market participants are happy with that. The infeasibility uplift is then charged to all ARR holders as

an ARR infeasibility uplift. And as long as you didn't have congestion balances in that pockets that's getting charged to the ARR holders, it wouldn't be particularly large I don't think; at least that's how MISO does it. So they spread that across all of the Stage 1 ARR holders, whether you were one of the ones that was guaranteed. So you're paying a little bit of uplift for everybody, and I think in MISO it's been about 95 or 90 percent. But once you get your ARR money you already got a huge amount of price uncertainty about what your ARR's are worth. So having a little bit of an extra tax on that for the infeasibility uplift is not too much to pay, and market participants I think really appreciate that aspect of the market design in MISO.

MS. SIDHOM: I just wanted to briefly respond to a comment that Dr. Bowring made about the answers we should make them feasible by building out the transmission system. I absolutely think that FTR should be excluded in investment signals into the market so that we can effectively build, but I don't think the answer is just to overbuild the system. That's what we saw happen at ISO New England and as a result you've got ratepayers that are paying for that for years to come. I think what we want to do it build smart, and I don't think we can build smart without accurate FTR prices.

MS. QUINLAN: I want to keep going down the line. Dr. Patton?

DR. PATTON: Yeah, I think I'm glad Abram described what goes on in my sector. I wouldn't describe it as eliminating cost shifts. In my mind, if transmission owners get together and make an agreement that says why don't we share the costs of infeasibilities in the future so that there's infeasibilities on MISO's, let's spread those costs, or on your system, let's spread those costs, to provide from some future uncertainty, there's absolutely nothing wrong with that sort of agreement. So it's a deliberate respond to cost shift is what it is, or it's a hedge against infeasibility in the future. I think my preference would be to issue rights that are feasible in the first place, but I don't see any tremendous problem with this.

The one thing that seems really bizarre is this idea of building transmission to eliminate infeasibility. Fundamentally, you should build transmission when the value of the transmission is greater than the cost of building the transmission. The value the transmission is related to the congestion value; it has nothing really to do with the infeasibility that may exist. I think that bears on my -- and I haven't been involved in the development of PJM's proposals, but I don't understand the second component of

their proposal.

MS. QUINLAN: Mr. Mabry.

MR. MABRY: I'm getting into the value of the transmission and the use of FTR's value where transmission visibility. Certainly, something that needs be addressed I think would be the socialization that goes on. We talked about that incident in September when that closed loop interface resulted in everybody getting hit on the FTR side. Presently, right now the way it is is all FTR's, if you have one bad FTR that shows up the deficiency is spread out and socialized among all FTR holders. I don't know what signal that provides to say, Hey, this is the area if you're spreading the hurt to everyone here. It seems -- I think Joe talked about it before -- geographical subsidizations going on might need to be addressed to provide those better signals and to award the good FTR paths, the path that has the ability that are and aren't in jeopardy here, then also send the correct market signal to folks to avoid this area, avoid these FTR's, avoid these paths, there's a problem there, things don't get funded, for whatever reason they're not doing its job, different funds from markets that happen you shouldn't expect a guarantee on the revenue there. And then cross subsidization within the FTR is something you should be addressing, buying futures for that.

MS. QUINLAN: So, Joe, I know you want to respond to another comment, and I'm going to add an extra question to it, which is: The direction cost that you have mentioned before and Mr. Mabry just brought up, if you can elaborate a little bit more about what that actually means? And do you see an alternative to that what's happening now?

DR. BOWRING: First, just to comment on the MISO method. We're constantly creating capability, and then we're going to figure out a complicated way to allocate it back. Seriously, why are we tying ourselves in knots, wrapping ourselves around the axle on purpose? It makes no sense. If you resolve the direction that PJM was to making it feasible, then you have to build transmission and start to jointly make it feasible. If you don't want to have that order in place, that's fine, don't put it in place. But to say you're going to have to accept the fact that is infeasible and direct them to make it feasible and come up with a complicated way to make somebody else pay simply makes no sense.

But to go to the geographic subsidization, so I carefully didn't bring up these points because you directed us not to tell you what we already told you.

(Laughter)

So that was point that has been brought up is number -- I don't know what point it is -- four and a half.

For example, PJM mentioned in the paper that there is a lot of underfunding -- I even used the term, I slipped -- a lot of revenue inadequacy associated with the MISO interface. There are lots of spots when you look in the system to the way to ultimately look at persistently revenue-deficient paths. So the notion that we're socializing at all, it removes incentives, removes incentives to be smart about FTR's, removes incentives to pay too much for bad FTR's, and now they're going to get smoothed out over the entire system. So the way to deal with geographic cross subsidization is to try to de-subsidize it, to either sell it by path if that's technically feasible, or at least recognize that there are areas of the system that are persistently short revenues for modelling the system. And you should have any FTR's there because you're simply creating an issue that you're passing on to everybody else.

MR. KLEIN: I think David Mabry said something that highlights the fact that FTR's are really not the cause of congestion and balances. And it goes back to the energy September 2013 incident. Imagine you had that situation and you decide all right, we're going to allocate the situation and decide Cleveland to just the FTR's that are going into Cleveland. So the FTR's, there was no congestion in the day-ahead market; they're trying to hedge what's happening in real-time, there's no congestion in the

day-ahead market; in real-time there's massive amounts of congestion; and then you go to the FTR's holders and say, Well, these FTR's the ones that are responsible for congestion have to fund it. It's not the FTR holders that are responsible for that congestion and balance, it's a reliability charge to the load inside that area.

Now, one option, if you wanted to look closely at interfaces and things like that, is you could -- and I think I wouldn't advocate this -- but if you were going to say that somebody caused this it would be the day-ahead load int hat location. That would include the decs and it would include the up-to congestion that's synched in that location because they're the ones who benefited from the day-ahead from the fact that things spiked in real-time and they covered it, and you could try to allocate it that way. But the FTR holders are completely unrelated to that congestion and balance.

MR. BRESLER: I think a little bit just maybe from a potentially-different perspective on what was being said about the geographical issue. The way I've always looked at it is we have an annual product, and whether you like it or not it's an annual product. And to take something that happens in real-time in a very localized area of the system and say that you're going to allocate the impact of that to FTR holders in that very localized

area of the system, is simply undoing what you did on an annual basis. If you're going to do that -- I should have said somewhat facetiously because I don't think we should do this -- but if we're going to do that we might as well go to a daily FTR option or a daily ARR-type allocation or even something retroactive. Because you remove the certainty that the annual product provides by moving to something where you're allocating more geographic based on what actually happens. So that's my take on this geographical subsidy or geographic allocation issue.

MS. QUINLAN: Mr. Mabry?

MR. MABRY: Just following up on this discussion about the Cleveland area. One of the more interesting or important things to remember was the fact that the closed loop constraint was not modelled in the day-ahead market. And, again, it highlights the fact that the day-ahead market determines where that congestion shows up. Had that constraint been modelled in the day-ahead market and had it found, that congestion would have been day-ahead congestion. Instead, because it isn't modelled in the day-ahead market, it's associated with real-time market, now that becomes balance and congestion. And it really shows kind of the king-making that can go on with the day-ahead market and the market operator and what constraints are in there. And for those reasons,

congestion is kind of that part and parcel that needs to go together here, because otherwise we would have somebody else choosing in the system.

MS. QUINLAN: Okay. Well, thank you everyone. With that, we're just about out of time, so I think we'll break here.

We'll take a break for lunch and we'll resume with panel 3 at 1:30. Thank you.

(Whereupon a lunch recess is taken.)

MS. QUINLAN: All right. Welcome back everyone. We're going to start off with panel 3. In panel 3 we will discuss PJM's proposed modifications in its October 2015 filings. The panel will discuss both the proposed one and half percent adder and the proposed change to the net portfolio positions.

Just as a reminder, particularly since we're returning from lunch, please silence your phones. And, again, as we go through please announce yourself for the webcast. I think everyone only has water in here, but just as a reminder, no beverages outside of water, coffee or anything else, is allowed inside the Commission meeting room. So to start off, could the panelists please introduce themselves.

DR. POPE: I'm Susan Pope from FTI Consulting representing Elliott Bay Trading.

MR. LIEBERMAN: Good afternoon. Steven Lieberman with Old Dominion Electric Coop.

DR. BOWRING: Joe Bowring, market and monitoring, PJM.

MR. HORGER: Tim Horger, PJM Interconnection.

MR. SHANKER: Roy Shanker on behalf of DC Energy, Inertia, Saracen, and Vitol.

MS. QUINLAN: Thanks. So we're not going to do -- as I said earlier, we can assume that staff has read your comments, and obviously we're going to jump into some more detailed questions. Again, please try to keep your answers to the questions that are asked and we will cut them off if you go beyond the scope, which we appreciate we haven't had to do as much today. Starting in the one and a half percent adder -- as I understand it from the question possibly starts with Tim -- from the filing the one and half percent adder would be applied across all zones but it wouldn't replace the actual forecast for each zone. The one and a half percent adder would be added to each of the zonal forecasts that are more targeted for those zones, and regardless of what those forecasts are the effective growth rate is the blanket adder that would apply to everybody. Is that correct?

MR. HORGER: Yes.

MS. QUINLAN: What is the rationale for using

one and a half percent blanket adder for each one, regardless of what its actual expected growth rate is?

MR. HORGER: Right. So this is also ten-year analysis. The idea with the ten-year analysis, why we have this ten-year analysis, is to make sure that long-term rights are guaranteed for at least the period. It came out from the 2006 code of regulations that talk about a minimum for long-term rights for a ten-year period. That's why we have this ten-year process. So what we do is we make sure that the ARR will be feasible for a minimum level, a Stage 1A level, for a ten-year period. The ten-year period, when we do that analysis, in order to escalate the ARB request -- not specifically the load but it's the ARB request that we're escalating in this analysis -- we escalate those over a ten-year period. And that's based on the PJM load forecast, the ten-year zonal encroach rate. So that will actually get applied across board. And we do use the individual ten-year encroach rate for each zone when we do that analysis.

Now, the proposal was, you know, thinking we need to be more conservative, or I guess the word is more "aggressive," to make sure we can identify these facilities that could be feasible in the ten-year period earlier on in that process. So the PJM and its stakeholders reviewed this process and said how can we make sure we don't get in

a situation, like we did already with the ConEd facilities, where there was an upgrade, they went through a gateway process, was approved and put into the PJM RTEP for this ten-year analysis but frankly it was too late. So how can we avoid that situation? And what we did is we looked at historical numbers as far as the growth rate, what we viewed as the AR's over ten years, and our first shot was to say okay, this is the value, it's only one and half percent. We also threw out to the stockholders: Do you want to use three percent, or two percent? We used different numbers, and based on the stakeholders' feedback and through the senior task force process, we really fell down on one and a half percent. The basis was that's what it historically has been and really just to double it, basically.

MS. QUINLAN: So you mention the Grandbury Gateway Project and how that was not identified in time. Was that not identified in time because the growth rate that you were assuming was incorrect?

MR. HORGER: If the growth rate we were proposing was used were identified it would at least one year over. I know that's not the question. So that's not the only reason. So we did not identify that with the proposal, we would still not have identified it at the time, maybe one year earlier. Most of the reason we did

not identify that was more of external flow systems on the PJM system. Remember when common-integrated PJM, that was less than ten years before we did the analysis. So now common integrated PJM we did our analysis, we did a lot of tests, we have more external work flows from outside the common area coming on the PJM system, where common was now part of the PJM system. And it was identified that we needed an opening in that area. And obviously it was kind of past the earlier within that ten-year timeframe, so we got caught behind in that respect.

MS. QUINLAN: So I guess I'll ask in another way. Is the expectation going forward that PJM's comfortable with the growth rates that you're using? Or is this another way of thinking that you're under-forecasting? I'm trying to get a sense of whether or not there's actually something wrong with the expected growth rate. If not, then is the concern about using the -- what did you say? The base of the zonal peak? -- is there a concern about actually using that as the right number to be using this? I'm just trying to understand what's the driving issue other than here's a blanket adder, let's get amore precise methodology of actually determining what the real expected growth rates are for these zone.

MR. HORGER: Right. And the idea is to be aggressive enough to look at what we can identify in the

zones. Remember, if we identify a facility in its ten-year process in year five through ten, we're not going to recommend that as an upgrade. It's not going to be recommended -- depending on how long it will take to construct that project -- we would identify that in our process earlier in the process. And it could trigger upgrades, yes, the proposal could trigger upgrades. But it's not necessarily that facility would have been identified anyway, it's more to identify earlier in the process and to be able to look at if that trend's going to continue that facility would need to be upgraded and then we would trigger the upgrades at that point.

MR. MILLER: Let me ask a follow up because it relates to a question I was trying to get at and it relates to the issue of forecast and growth rate. And I know there's a little bit of an apples-to-oranges comparison. But in the parameters that you released in for the at years in the upcoming auctions, the growth rate on average across the system is down by three percent, and in some areas it's down by as much as seven percent. So it seems to me that you're just putting an adder on top while at the same time you're adjusting your growth rate. So why not just incorporate this into the -- why is this a good way to attack forecasting when you were already making adjustments in your load growth forecast?

MR. HORGER: Right. So the load forecast you have to have increased several years. And part of that is a lot of back case, and that was done to help improve the accuracy, a lot of energy efficiency programs across -- I'm not going to get into the reasons why the loads -- that's more the load forecast for actual planning purposes, and whatnot. We apply that to this plan of the markets' ARR ten-year analysis that apply to a base load level. I think we need to remember that that base load physically was 40 to 60 percent of a peak load level. So most of the time these upgrades are already identified through reliability in the RTEP process anyway. So the idea with this is if it's not already identified there then we need some type of adder to add on to the forecast to identify these facilities earlier. And we talked about help us not get into that situation we did before with Grandbury Gateway Project, maybe we can identify facilities earlier in that process. The actual whether it could be a different way, absolutely. This is part of the stakeholder process where we actually did get some agreement that, yes, one and a half percent would we a good number if you went forward with it, so that was part of the consensus-type solution.

MS. QUINLAN: Mr. Shanker?

MR. SHANKER: Yes, thank you. I have very few comments and they go back to the predicate of your

question, a couple of items that I thought were incorrect, and somebody can disagree. But first, it was repeatedly stated that the mandate to create infeasible rights came out I guess of EPAct and the ERO 6-12-18 process. And you should look at the November 2006, the Commission's order expressed no compulsion to be had infeasible right added. The Commission said they were unhappy with the pro-rationing approach that PJM adopted. That was in November. January PJM came forward with a voluntary we'll add these. Everything we're talking about is built up on a four-meeting settlement process that took place between November and January, November 6th to January 7th. So it might have been two and a half months.

The other thing to think about is you had some questions earlier I guess in our first panel, about Tim and sources and retired generation. My understanding is that the one and a half percent is going to be applied in the notion that you would look at this visibility vis-a-vi the historic sources. You may be -- and correct me if I'm wrong -- increasing take-away capability from a place where there is no longer a generator, there is a potential source for designating that as a source for a right but there's no operating requirement.

The third item is elsewhere, if this was congestion-driven or some benefit-driven rather than the

extraction of you got to have something that's infeasible, which we self-impose, is in the RTEP process, there was a direct request benefit TEP that would evaluate this if it fell within the criteria, which are typically congestion-based improvements. And I think those are the items, and I think those set up the answers that you got from Tim in the other exchanges a little bit better.

MS. QUINLAN: Thank you.

And, Steve, I'll get to you in a second. I wanted to ask one more question since you brought that up. And this is to anyone on the panel. But I'm trying -- in understanding when you're doing a ten-year test for the ARR you're going to be using a different forecast for the ARR in your test when looking at on a peak basis looking out. But in your RTEP studies you're doing a series of reliability tests, and sometimes you're identifying upgrades that are addressing what were previously would have been infeasible ARR's but those upgrades were already going to be in place for other reasons. But with the Grandbury Gateway project, that's different, that was a specific transmission project solely for the purpose of addressing infeasible ARR's. And I'd like to hear what logical basis the panelists think there is for upgrading transmissions solely for ARR's capability. And also for Mr. Horger, can you explain exactly how that's paid for and

what part of cost allocation processes follow that transmission project? So I'm not sure who wants to go first on that.

MR. HORGER: Let me make sure I understand correctly the process. The ARR's ten-year process, what we do is we go through a ten-year period reducing that forecast applied to a zonal base load value, like I was mentioning is 40 to 60 percent of the peak. What we do is we incrementally increase the requested ARR's in the Alpha state 1A process, but we only increase the capacitor of the generator resources. So most ARR holders are going to request AR's to having that them passed; so they might be maxed out already. And then what we do is we load up the next valuable generator resource based on historical LMP's, and we slowly load it up until we meet that pass, I guess you could say. So that's kind of how the process works, where it's not necessarily tied to retired units or base load, it's the request load period and then to make sure that additional requests, assuming they're going to request the higher, would reflect how we would forecast this outfit. That's how we forecast out there.

MR. SHANKER: Your cost to allocation question, it's the same as any -- it wouldn't change. Right now it's derived to the beneficiary of the Stage 1A rights.

MS. QUINLAN: So is the transmission project

cost allocation defects analysis, is it allocated to the entity that would have those Stage 1A's? Who's paying for that transmission project?

MR. HORGER: So it will go based on the ARR holders.

MS. QUINLAN: So if the ARR holders are paying for the transmission upgrade and then the point of the transmission upgrade is to prevent the infeasible ARR's, is that taking money out of one pocket and putting it in the other? And is there a cost benefit analysis or some kind of sense whether or not that makes sense to do?

MR. HORGER: No cost benefit analysis, but the idea around the process was neutrally was, in my mind, to make sure we reserve those base level historical rights, which was a requirement based on the code back in 2006, long-term rights. So we need to make sure those rights will be allocated for that ten-year period, and that's the process that's done for that.

MR. SHANKER: And I think, as you're discovering, it's circular. If the person is paying for it in the allocation -- they have the rights to ask for those now, in fact, I can go in and we would probably dig a little bit. But if I said I wanted it to be feasible, presumably I could do it on a merchant basis. And it would be a little bit different, the process would be a little

bit different, but the net result would be the same. But the predicate of mandating them to be feasible is really sort of the starting point, and everything is also built up from there.

MS. QUINLAN: So, yes, Mr. Lieberman.

MR. LIEBERMAN: First, I want to thank everyone for having me on the panel today. I appreciate the opportunity to present our point of view here.

Previous panels on this panel referencing the load. I'm here as the load. So when we talk about load in any manner, here stakeholder processes, at the end of the day, load does pay. So we're talking about this four and half percent adder right now and the basis for it and all these good things. There's something to recognize, and that is that this benefits the load. One and a half percent adder will allow for the potential addressing of inadequacy of infeasibility in ARR's. We have this question that there's some potential for ARR's to be infeasible. This is an opportunity that the stakeholders coalesced around to address that. Through a recognition of adding some amount, Tim and his group could see a problem sooner than later.

And what's the benefit of that just as an aside? Quite simply, there's a cost. Generally, the sooner you build a project, if you get those benefits of those, but

there's also material savings of cost, there's inflation. So the sooner you can build a project, you can build it this year instead of next year, generally you can save on one year's inflation or these sorts of things. When you have a transmission project of this nature I'm talking about -- these are not backbone projects, these are little things, at least that's my understanding, we're not talking tremendous transmission projects here, otherwise those would be caught up in the RTEP -- they have a finite amount of cost. We're not talking about paying a transmission project for more than it would cost. The cost of that transmission project could be recovered in 10 years; it's still going to be recovered in 10 years, just one year earlier with the savings of the payments for that transmission project sooner.

So we're not paying for more; load isn't shelling out more dollars. Instead we see this on our side. It benefits the modelling, it allows the group to see something sooner. And as we said -- the way I think of this is there's the ten-year analysis that he does. There's a lot year 11, year 12, and see what's going on out there in the fringes of the transmission system. But, again, if you identify something way out there, it doesn't mean it's getting built. It just gives his group maybe another five-six years to continue to study it. And at

some point it in time it does get built. Or some other project came along, be it generation or transmission, to solve that issue. So it's not a mandate that a project get built. We need to understand that this one and half percent adder by itself, you could -- if you're using Mr. Shanker's words, should it be two percent, one and a half, a half, whatever, you can pick the value, but there really is no downside for having it included, for Tim's groups.

MS. QUINLAN: Okay. So, Tim, if this was in place, if you had the one and a half percent adder back in place around 2010, can you just walk through how you think things would have played out differently?

MR. HORGER: Right. So I'm assuming your specifically to the common area?

MS. QUINLAN: Or if you think you would identified other potential and feasible ARR's that you haven't had to the adder?

MR. HORGER: Right now the main entity building specific common facility. I can tell you with that Grandbury Gateway project that that was put in service one year earlier, our average saving we would have built up to be eight million dollars in revenues associated with those ARR's, those infeasible ARR's. That's based off a three-year planning period average.

Keep in mind also that the Grandbury Gateway project, that was actually studied as a market efficiency project one year before it was recommended as a ten-year ARR project, and it did show market benefits, the threshold to the market efficiency, the benefits have to outweigh the cost by at least 25 percent and it didn't meet that threshold. So it was actually a beneficial project to help congestion in the annual, so it got put in there. So we could have got it in a year earlier if we would have had rules, and that would have helped it looked like 48 million dollars right there.

MR. MILLER: So it sounds like what you're describing is this is something that's a solution mostly for Western PJM, the ConEd area. Let's say, let's back if out to 2008-2007 timeframe, would there have been other facilities outside of the ConEd area that reasonably might have been added that would have led to the creation of more feasible ARR's?

MR. HORGER: I don't know that's before the time this process was actually incorporated. But we did not identify any facilities besides that facility. We have seen many infeasibility, I would say in different areas, but we go to our planning department and they tell us well we already have upgrades in that area. For example, in PSEG there was instability for three or four years in the

project. But the major project was in the RTEP, and that's going to fix it. So if there's already a project approved, we can apply that; and that happens most of the time. And what we want to do is tackle those situations where we already are not capturing it through reliability it and the RTEP process, we can capture in these facilities, even earlier. It wouldn't be recommended eventually to anybody unless there's some drastic difference in the load forecast in one area to another but if we can identify these earlier, we don't take lightly just putting these projects in the RTEP, we have to make sure we're seeing the numbers.

MS. QUINLAN: Just one final question on one and a half percent and we can move on. Assuming you had the one and a half percent adder in place, how confident are you that that would be effective in preventing/giving you a sufficient head's-up notice that will prevent infeasible errors from going forward? And anyone else can comment on that.

MR. HORGER: So I'm confident in the process now. And I would think with the additional one and a half percent that's just going to give us a little cushion of confidence, I guess you could say, which would provide us earlier. That doesn't mean something would happen differently. Now, if there's a drastic change in the way the ARR's are requested in the Stage 1A process, then I

would expect some major difference there. But remember the Stage 1A is based on a classic set of historical resources that is in synch at a zone. So you're not going to get much different from one year to the next of the ARR's that are requested. People are requesting the valuable pack; historically they're very similar each year. So we anticipate seeing each year in the ten-year analysis very similar to the constraints, it's just a matter of like I said identifying them earlier. So I am confident it will identify -- and I'm still confident in the process now.

MS. QUINLAN: Okay, thank you.

So we can move the panel on to discussing netting for the remainder of our time. And I will turn this over to Scott.

MR. EVERNGAM: Thanks, Pamela.

Before we get into the relative benefits of the current way we settle in the PJM versus PJM proposal, I have some very basic questions on how panelists believe FTR should be valued, and I'll give them to everybody. First scenario: Should the value of an FTR from A to B, plus the value of an FTR from B to C, equal the value of an FTR from A to C? If not, why not? And would this be different under the current netting were PJM's proposal eliminated netting?

Roy?

MR. SHANKER: Good question. And the answer is it ought to be equivalent to A-C. The most straight-forward explanation of why that should be is that if you did a powerful analysis of all those components in, everything between the source and the synch would cancel out. And you would get your A to Z. So be the X, Y, Z, W, whatever else, and end with the C, and if you work each of the congestion components and look through what you're doing, everything will cancel out with the source and synch. So it should do that and there are very good reasons my you want to do that.

The basic step in the market was to get something that was the equivalent of financial equipment from transmission and you are going to be able to replicate that with rights that are structured in this way. I think that was the observation that came very early on in the market, that if you had what we would call hubbing you could go from -- if you had a B to C hub and A was your generator, you could swap any other generator you had from X to A and you would still have your generator to synch transaction in place. I use the word sometimes "transitivity," I am not sure that's mathematically precise.

MR. EVERNGAM: No, that's mathematically precise.

MR. SHANKER: Okay. And that property is very strong. Everything you do, no mater how you shuffle these, you'll come back to that's the use of the system.

MR. EVERNGAM: Before I move on to the second part of the question, is it working that way now and would that change under the PDL proposal?

MR. SHANKER: Structurally it's working that way. There's an overlay of how the funding applications are. And the funding application now for netting, in my view, are net positive, keep it neutral. If you break this and do the netting, that would not be true. Because if you can imagine say a zigzag line between A and B and any component of that is negative, essentially they would not offset and it would be left with a net liability on any of the negative components. And breaks simple A to B --

MR. EVERNGAM: We'll have detailed questions later. Keep it to yes or no.

Susan, next.

DR. POPE: Roy covered most of the points that I was going to make just to -- I was just saying -- Susan Pope -- Roy covered a lot of the points I was going to make, but just to elaborate on them a little bit. In terms of the physical interpretation of what the FTR's are, in terms of this linking property -- or what did you call it? A transitive-type property -- Roy described how if you do

power transaction from A to B and from B to C, we all know that the power flow is just as if it went from A to C. The other piece of that is that we also know that the congestion cost for that transaction, the congestion cost calculated between A and C is exactly the same as if you calculated from A to B and from B to C. And the reason that FTR's were designed that they would have that property, that the congestion rent payments on the FTR would be the same from A to Z, is to mimic exactly that congestion cost component. Because of what Roy has said previously, which is that the intention to make these financial equivalent of firm trade transmission. So I agree with the point that parties aren't using FTR's very often, they're not using them like for transmission anymore; they're understanding that there are more valuable ways to get there, power and doing it that way.

But still that's an underlying property that supports fungibility and the trading of FTR's. The processes like that supports the fact that you can -- and it supports the fact that all FTR's settle exactly the same way, the negative FTR's and the positive FTR's, their settlements are calculated identically, the congestion component, the baseline congestion component at the source. Because they are all settled identically, they can all be traded together and reconfigured in the same auction, and

that's a very fundamental component of FTR's, the principle design feature of FTR's. So it's really important.

And then Roy was saying also this whole notion of decomposing around the hub has been very important I think to the development of liquidity in the markets. And because of that the proposal is going to get rid of that aspect of FTR's because it really has the potential to effect not only FTR's but how energy is traded.

MR. EVERNGAM: We'll get into that.

Joe?

DR. BOWRING: Yes. Again, what the lady said about the implications of the removal are incorrect. We'll get into the details.

MR. EVERNGAM: We'll get into the details. Let me just do one more. One more high-level example: Should the value of an FTR from A to B be the negative of the value of an FTR from B to A? Again, if not, why not? And will that change?

MR. SHANKER: The answer is: You said it as the negative? And I think I heard it as the negative.

MR. EVERNGAM: Yes, the negative.

MR. SHANKER: And the answer is exactly right and that's in fact how it would clear in the auction today. And, again, so the settlement value is a marginal A to B, sells for five dollars, the marginal B to A pays minus $5,

whichever way you want your convention. So that's true. And, again, when you look at what happens in the system and you decompose it and all the impacts and flow gates and everything else, that's what you're looking at. So if you calculated it out, it would turn out to be the negative of it.

MR. EVERNGAM: Thank you.

Susan?

DR. POPE: When somebody needs an additional positively-valued FTR for heavy purposes in the market today, the way they can get it is if somebody else is going to offer a counterflow. And so somebody else is willing to take on the potential payment obligation for making an additional positive FTR available. And the reason that parties selling the counterflow and the party wanting to buy an additional FTR could get together and make that exchange is because the value of an A-to-B FTR is opposite of that from B-to-A FTR. So if a party who wanted to go and buy an incremental prevailing flow FTR thought that was going to be only worth seven dollars after applying the funding ratio, and the party that was selling the counterflow knew that they had to pay the full amount of the congestion rents that they were owing for their counterflow, there would be a wedge between what a party was willing to pay for that A-to-B FTR and what the party

was going to supply the counterflow needed to be paid in order to be held whole for the payments they would have to make. So if you don't have those payments equal and opposite, then you're going to have a situation with a party that wants additional hedges in terms of prevailing flow FTR's may not be able to go out and get them, it's going to be much more difficult to buy a hedge.

MR. EVERNGAM: Thank you.

Joe?

DR. BOWRING: So contrary to implications that counterflows -- and the immeasurable properties that don't actually create capabilities on the system. And in fact if people understand what the payment obligations of these are, they will enter into a trade; this reflects those, that happens in markets all the time. There's no requirement that they would be subject to netting in order for transactions to occur.

MR. EVERNGAM: Thank you.

MS. QUINLAN: All right, so I want to jump into the proposal. Can you give some context as to, from your perspective, or the rationale, why it was initially set up to where the portfolios were netted? And what, if anything, has changed that would warrant eliminating the netting?

MR. HORGER: Right. So, why it was actually set

up that way, I don't have a correct answer to. That was part of the original design as far as having them -- I don't think it was actually spelled out honestly within the tariff any way more than that's how settlement would implement in that process. So I don't know if there was full policy discussion around that, and I don't think I would find a policy discussion.

(Laughter)

So that's the way it is now. Did you have a follow-up question?

MS. QUINLAN: The second part of that was regardless of the situation by which it was initially set up that way, is there something that's actually changed? Has anything actually changed that's requiring this move so that you're proposing to eliminate the netting?

MR. HORGER: It actually this topic came up at an FTR task force probably four years ago now, this was brought up as to why we're doing it this way. Why are counterflow FTR's who -- they pay upfront, so they're not exposed to congestion in the data market, why could counterflow offsets the prevailing FTR's. And what we're seeing is they can actually reduce the hedge product for the prevailing FTR. So when you think back, most prevailing FTR's or annual FTR's that are self-scheduled, they don't need counterflows to require those FTR's. So

they're the ones who really are the FTR design was mostly designed for the hedge congestion. So when we have situations where we're underfunded -- and granted when we're almost a hundred percent funded these rules don't make it there. And the goal is to be right around a hundred percent. But when we are exposed to underfunding, the situation where we present excess counterflow -- and I agree there could be counterflow that are hedging based on A-to-B paths -- but there's a lot of counterflow in the market that are there just so they can hope that there's no congestion in day-ahead market and they're just financially trying to incorporate money in the auction in hopes that that congestion doesn't show up. That's where you see a lot of counterflow FTR's. So there also could be some that aren't doing that hedging, but I don't think there's a majority of them are actually doing it. So we want to make sure we preserve the FTR and not devalue it when there is underfunding, that's kind of the word.

MS. QUINLAN: But if you eliminated the ability to not have those positions, does that actually address the underfunding or does it just move money around?

MR. HORGER: It's going to move money around. What it could create possibly is confidence to the holders. What's it's going to do is from a percentage-wise it's going to look like a higher revenue percent. Because now

the way the revenue percent calculation is done, you're going to have -- it's based off the prevailing flow only -- you're going to see an actual revenue adequacy percent is higher. So people could argue that now that you see a higher revenue adequacy percent in the FTR auctions, the bidders, specifically the financial buyers, are going to have more confidence and they might not devalue their bids, I guess you could say, the potential side of it. But it is going to shift power and effect the total.

MS. QUINLAN: Mr. Shanker?

MR. SHANKER: Let me answer in reverse order. Tim said the right thing: The congestion rates do not change. So the thermal lines that we distributed did not change. If you shuffle it around by giving more to one party, and if you want to say taxing or charging an asymmetric amount to another, and you create a new participant that looks at the amount of money the person would get money transferred to receives, then you could call it them getting paid more. I don't want to say they get a higher funding level; they get paid more because we just rearrange the money. And so, I mean, if you start from settlement, I can reshuffle the settlements so you could get something we could call a hundred percent funding all the time. I'm not sure anybody would be really happy with the result. But starting from settlement and working

towards design is exactly backwards.

But your first question was: How did we get here? If you read the tariff, it is what it says. But, again, in 2006, it's ER-06-12-13, late in the process a request prior to the -- I may have the ordering slightly shuffled -- prior to the ER order ODEC asked for a clarification with an example that looked exactly like the PJM examples today. They said if you had 100 prevailing and 50 count flow, we would like to see it that you allocate on prevail. The Commission agreed with it, and then on clarification rehearing, whatever, PJM came in and said: Are you really sure you want that? The guy who has 100 versus the guy who has 150 counterflow, if you want, the goal here, the discussion was in the context of full funding and the objective was not to double-point or double-hit, or whatever the expression was, and that the right expression of the obligation was the reduced 50 megawatts because that's what they were using on the system and they should not be allocated and uplift for double payment for the revenue inadequacy. So there was an exchange, and we can afterward send you the paragraphs and all that, but there was a discussion and an explanation that in choosing -- if you read the examples, exactly what is in front of you today, PJM supported it and the Commission said, Yeah, we got the point, we don't want to

double-point, and the netting makes sense to us.

MS. QUINLAN: Do you still want to speak?

DR. POPE: I was going to refer to the same set of briefings and orders as Roy. But I also wanted to react to one other thing that Tim said, which is by eliminating netting he said it looks like there's a higher payout ratio. And that's really important, it makes it look like there's a higher payout ratio. But as Roy said, there's really no additional money. The amount of shortfall in the day-ahead market hasn't changed, there's just a rearrangement of who's paying it. And we can do lots of different kinds of accounting examples where we change how the money is allocated and we change different kinds of ratios. But the thing that is missing in those kinds of static looks where you just rearrange the dollars in a spreadsheet is you miss what the incentives caused in sort of a dynamic sense while you change how you're allocating the payments. So I think one thing's missing in a lot of these discussions is not just how do numbers change and how can we make it look like there's a higher payout ratio, but what happens when we change the way that this rate is charged? And what happens down the road? And we haven't solved the underfunding issue, but have we created the potential for additional problems by this rearrangement that we're doing?

And I think another thing that Tim said that I think is important is that hopefully the payout rate shows a hundred percent. And I think everybody would agree that we wouldn't all be in this room -- we probably wouldn't care too much about whether we have money or we don't have money if the payout rate showed a hundred percent. But the problems can occur when you have underfunding to a great extent, or possibly as DC Energy has opinioned out, when you have over-funding. So when you have either one of those situations and you start to take the market dynamics into account, you have to start to worry about making a decision to change something that FERC originally agreed with on the thought that, Well, this is going to be okay as long as we're right around a hundred percent.

MS. QUINLAN: Mr. Bowring?

DR. BOWRING: So being a proponent of just moving stuff around on spreadsheets and reshuffling and just doing arbitrary stuff, I would like to respond to both of my preceding colleagues here. So is it true that congestion doesn't change? But what does change is who's contributing to the funding and who is not, who is paying and who is not. And that matters, it certainly matters for both static and dynamic reasons. And we believe that it's more efficient and more consistent with the market efficiency to do it the way we're suggesting as to remove

netting. And I'll talk about that in a bit more.

But the history of development, I think I agree with Roy, he certainly pointed to the right things. Now, whether that was a clear decision that everyone understood or were somewhat confused, I'm not sure, but I think it's certainly worth looking back at it. I think you can read it as a leading conclusion. But we know what the current status quo is.

I think it's important to think about what the standard is when you think about netting. So when we think about the standard we think about it as positively-valued FTR's get the same payout ratio, and that does that occur with netting and it would occur with the absence of netting.

MR. SOTO: Is it a problem with netting or is it a problem with the metrics creating the counterflow FTR's?

DR. BOWRING: Well, it's not the counterflow, it's negatively-valued FTR's. But if you think about it, negatively-valued FTR's are also treated differently depending on where they are on the portfolio and what the nature of the portfolio is. Now, if you simply to have negatively-valued FTR's, you'd only pay one less the payout ratio. Again, that's not only asymmetric but it's an inconsistent treatment of the payment of negatively-valued FTR's. And the same thing happens on the other side with

positively-valued FTR's, their actual payout ratio depends on the nature of the portfolio. Again, we confess you can think inconsistent with a sensible market signal.

MS. QUINLAN: Steve?

MR. LIEBERMAN: Thank you. Steve Lieberman. I appreciate the followup because the characteristics made, I was going to add to the discussion.

The treatment of negative and positive holdings in your FTR book really depends on how those are structured. If you have them all in one book, it's certainly different than if you have a book of just negative and a book of just positives. So understanding what Joe just said is actually very important and key to this discussion.

I want to just also remind people why we're here as well, and that is because of a problem statement that PJM going forward to the stakeholders that was focused on two areas: Underfunding, I would prefer to call it as Joe would have "revenue inadequacy."

DR. BOWRING: That's how we look at it.

MR. LIEBERMAN: And the ARR's in Stage 1. This happened in May 2014. Since June of 2014 FTR's have been just about, if not fully funded, fully revenue high. So we look at this and we say there's an underfunding problem. I don't know where this underfunding problem is, you can't

look at the data showing the areas of an underfunding problem. We have the surplus, we have the area 115, the problem area the covers '14-'15, '15-'16. Again, fully funded. So these discussions addressing an underfunding problem are nonexistent. I expect we're going to hear some solutions to underfunding, because that's the focus of the next panel; and I, again, struggle to understand that. But I will ask, in line with the comments I know you read and we offered: To consider the stakeholder process as the body that should vet and discuss any issues outside what was filed in this docket, which is the one and half percent adder, and of course the netting, is also not considered bifurcating these issues -- and I realize in this discussion it makes sense to do that -- but in the stakeholder process, where this came up and it was ultimately filed by PJM, you come up with a proposal that maybe has components that you don't like and has components you do like. And you have to sort of weigh: Do I like this package enough that I'm going to support something that may not be to my best interest in order to see the ball move forward? So I caution everyone about considering that there is a way that we can have this part of the protocol and that part. It really is a collective filing here, and I think we've discussed the benefits for both pieces. Thank you.

MS. QUINLAN: Steve, thanks for your comments. I just want to make one clarification that, although I understand this was the proposal that went through the stakeholder process, it didn't receive the significant stakeholder support from vendor 205. Correct?

MR. LIEBERMAN: Yes, that is correct. If you look at what it needs to go from 205 to 206, it fell short. But since you brought it up, I'll make this point: Since Old Dominion Cooperative is the stakeholder that moved it from the task force to the ARC in consideration. Again, to give the opportunity to look at the what was published by PJM, and I will say there is some peculiar sector selections by certain members that may have biased the outcome of the result.

MS. QUINLAN: Just to clarify from the Commission's perspective and staff, we're reviewing this is a 206 filing and reviewing it under those burdens.

Dr. Shanker?

MR. SHANKER: Thank you. There's three or four points that came up. One is I think the respect of what's counterflow, prevailing flow, and looking at it differently, I think Susan and I both commented that at the margin people's expectations match right now with netting, so an FTR is an FTR. We settled ours, okay, so it would not be atypical for let's say a zero-expected value FTR to

be -- say let's make it real simple, negative a dollar 50 percent of the hour, positive a dollar the other 50 percent -- it serves its hedge purpose and someone walks away totally content with zero. That property goes away as we discussed when you have the negatives. But I would challenge you to think about it in another way, which is in any given hour all you're going to see is all the FTR positions and you're going to see a plus number and a negative number, and whatever, for this day an hour. Don't tell me which are the counterflow and which are the prevailing flow. Those are bad words here; we use them to simplify the discussion, but it's "positive target allocation" and "negative target allocation." It's a valuation of a right that can go in both directions, it is symmetric, the settlement is symmetric. The power flows are represented exactly by the values in that hour. And there is this sort of perverse notion that someone is gaming the system by having a counterflow and that's somehow not right, when what's really happening is they're buying a FTR position whose values can change and who right not are settling neutrally.

There was a comment about portfolio. I agree portfolio is relevant, but it's relevant only in the context of the overall portfolio of the individual. Some of it is net positive; all the properties we have talked

about apply. My understanding -- and this is in the record you have in front of you -- there's various numbers, I think the lowest I saw was 85 percent of the participant, and I think it's higher with the discussions with people, harboring a net-positive situation. So all of these netting discussions we're talking about and the associated power flow implications and funding flows are true.

To the extent someone is negative under the existing provision, Joe was right, they are treated differently and they're harmed and they actually increase the funding of the market because they're over charged. Elliott Bay's witness, Mr. Lonergan, had a discussion that I think showed very simply -- and it's a simple rule of pro-rationing everybody and then there would be so much.

And then the final element that's been brought up is, well, maybe we'll go positive. Mr. Lieberman mentioned this from ODEC, and I would ask you to consider what the proposal of the market being over-funded would be with the removal of that. And what you're going to do is create an enormous incentive for someone to have a positive, anticipated positive-targeted allocations. So A to B and B to something similar to A, instead of netting to zero -- which is what we would like to see because that's what the power flows are doing and everything else -- is that person's going to walk away with a share of the

over-funding for doing nothing. And if you're going to engage in this, I strongly want you to acknowledge that you are aware of the incentives you're creating when you make such a change because I don't think it's fair to the market participants. I've had this discussion with Joe about 50 times: If you want a role that's not real good, I may not agree but I want it in writing that you understand that it's a bad rule and bad incentives.

(Laughter)

MS. QUINLAN: We will have questions about manipulation. But I want to get through comments first so we can table that, and I promise we will get do it.

So I think, Ms. Pope, you were up next.

DR. POPE: Yes. Roy made most of the points I was going to make. And I'm not going to favor because I know we want to get onto the discussion of some of the manipulation issues.

Just two quick things: I just wanted to agree with Mr. Lieberman that the most important thing that we need to solve here is the underfunding issue. Really, we need to kind of get to that and focus on that and the netting or no netting issue will disappear into the sunset hopefully. On the voting issue -- and I apologize if I didn't hear this, and maybe you all are aware of this, but my understanding -- and I don't have the details -- is that

the votes through the sort of subordinate committees leading up to the MCC were not as close as the one-vote difference that you see when you look at the MCC. So that is something I just wanted to mention.

And, then, the other thing is just in terms of the negatively-valued portfolios, the portfolios on net have a liability, I agree that they are being harmed under the current netting system. I think that the current netting system as simply as shorthand accounting for what should have been the system all along, which would have been to apply the funding ratio equally to all FTR's and therefore treat all FTR's the same. Netting is kind of an accounting shorthand to get there, and it does have the property that parties with negative portfolios are not treated the same way. I agree, I don't think that they're -- it's not a large part of the market if you look at it. A lot of people have very mixed portfolios, positive FTR's and negative FTR's. So there aren't a lot with negative portfolios. And some of them, if you look at them, you also start to wonder, Well, I'm not sure they intended to be there, but this is an indication that, as was being said, FTR really is synched all the time. You can intend to adjust the net-positive situation and you end up in a negative situation, and that's just the nature of that, so.

MS. QUINLAN: Mr. Lieberman.

MR. LIEBERMAN: So real quickly, as you keep in mind, this is a 206 proceeding, so we have to have the burden of showing something as not just and reasonable. And what we're not trying to show is that underfunding is not just and reasonable. So the underfunding is -- again, that should to be the problem. So what it he problem? Why do we make the filing? And it has to do with the near erosion of Stage 1B and Stage 2 ARR's. So you question that you have, allocated, it has to be feasible even if they're not able to do it, do some voodoo on his side to make it happen.

So the focus is: What's just and reasonable? And the solution is, quite simply, these two components in this file. So you're right, it is not a 205, it is a 206, but the burden should not be -- it doesn't address underfunding.

And I appreciate hearing from the doctors on the ends here, you're referring to me I look forward to -- I think I had some things said positive about the two smart people. So thank you.

DR. BOWRING: So I just wanted to say that we want to support position that I don't want to say that you recognize it's the wrong thing to do but you're doing it anyway. So don't quote me when I said that. But clearly we have not agreed it's the wrong thing to do. We think

the implications are positive, the incentives are positive. I agree with Roy that it didn't make sense to not necessarily to include positive counterflows, but we're really talking about negatively- and positively-valued FTR's and that's a more comprehensive term.

I'm glad to here both Roy and Susan recognize that negatively-valued FTR's are treated differently depending on the nature of the terms under the status quo. They have yet to state, at least explicitly, recognize the same things also to positively-valued FTR's, and that's also an issue with the nature of the portfolios. So while I understand that the proposed solution from their side is to only require negatively-valued FTR's to pay back one minus the payout ratio, that doesn't really make a lot sense. They're a source of revenue; it's not long revenue, we might be long revenue, that might make sense, but we're short revenue. And by doing that we're engaging in one of our revenues that are required to pay into the pot of total congestion, which goes to positively-valued FTR's. And it does in fact, changing this does in fact change the payout ratio of positive FTR's without any question. It doesn't increase the total value of congestion, but it does increase the payout ratio of the devalued FTR's, and that's part of solving the overall problem. Thanks.

MS. QUINLAN: I understand you're saying that,

from your perspective, the current system does not treat positively-valued FTR's depending upon on people's portfolio. Under the proposal, would that also -- so are you saying under the proposal they would also treat negative-valued FTR's the same way under the new proposal?

DR. BOWRING: Yes, removal of netting would result in treating all negatively valued the same, as well as all positively valued.

MS. QUINLAN: Okay.

And, Roy, did you want to respond to that?

MR. SHANKER: Yes. First, Joe slightly misquoted me. I talked about portfolios and net-positive position, okay, and a that's the total, not individual; and that's a big difference. The properties we discussed for a net-positive portfolio transcend everything within the net-positive portfolio. If you have a net-negative portfolio, which is the vast minority, they would be treated differently because they are net negative, not because they have a negative per se but because they are net negative; they could have a lot of positive and negative. And in that circumstance they would be treated differently and they would be harmed; and that's the point Susan's making.

So the goal is to find, at least in my view, the closest way to mimic what you're actually using on the

system, it's the financial equivalent of firm transmission, that's what we always come back to. And when we're in the realm of parties with net-positive portfolios and trading between them as well as you look at it, we preserve all the properties that we wanted to see among the underlying -- they want to be able to hedge from A to B, I want to be able to enter into symmetric transactions, someone who had the same expectation, in the margin and the auction I pay five dollars, the person from A to B, the other person pays ends of the pot really because it's clearing negative five dollars. Those properties disappear because their expectations will be different. And the reason their expectations will be different is exactly the opposite of what Joe just said -- Dr. Bowring, excuse me. It is exactly the opposite because they won't clear it. Because the person's who's picking up that counterflow obligation, the net-negative allocation, is going to see a liability that is different than the credit on the other side.

And so it's exactly not the same and it will lead -- you saw several discussions under the terms liquidity and efficiency -- the net effect is if somebody sees something on the expected negative side versus on the expected positive side, they will value it differently and it will lead to a spread. And in various discussions with depending on what jacket you go to, sort of a prima fascia

evidence of inefficiency and if you want to equate that with reduced liquidity, then that is that bid spread. And that's exactly what you're creating with the asymmetry of the treatment here. The person on the negative side is going to ask for a higher compensation than the one on the positive side for the same A to B because they will not be settled out the same. And that difference in compensation means, instead of them clearing with the same expectation, given the level of underfunding that I'll pay you five dollars or I'll pay five dollars and then the other one will receive five dollars, they'll ask for a different amount. The negative party will ask for more and that will essentially reduce -- I look at it in terms of the spread -- it will increase the spread, it will reduce the analogous statements about efficiency and liquidity. And that's just real; it's going to happen.

This is when Susan talked about static versus dynamic. Static is I'm moving money around in my market, and Joe and I disagree with what that may mean. But I see a dynamic. A dynamic is you're creating all these changes and incentives and you have to accept that you're changing incentives.

MS. QUINLAN: Mr. Horger?

MR. HORGER: Did you want to counter? I'll help you get moving.

The one thing we need to keep in mind: I know this whole A to B, A to C, all that talk, the fact of the matter is that most of these net counterflow positions are really not doing that, that's really not what we're seeing. I'm not saying there are people that do that, and I'm not recommending that if something comes out of this that we treat them differently because our settlements would never be able to handle treating one holder doing that A to B versus -- we just can't do that. But I don't think that's the majority of what's really going on, but I'm not saying that doesn't -- but we need to keep that in mind, most of these net counterflow positions are really financial players that might not be doing this piggybacking over payers.

The only other thing I wanted to mention was -- make sure I can get it in here -- is that: If for any decision that would be made by the Commission, that we request that it be made by April 5th in order to incorporate -- if not, though, we would just incorporate any changes that would associate the settlement purposes the following planning period. We just -- for the timing purposes, we wouldn't want any FTR holders participate in the auction without a decision. So whether it guides your decision or not, just let me know if decided after April 5th it will be incorporated in the '17-'18 timeframe.

Thanks.

MS. QUINLAN: Thank you. And one followup -- and I'm going to try to characterize some of the comments that were received, and I'm not going to attribute them to anybody because I might be characterizing them slightly wrong. But I believe there are comments that were mentioned that the current construct is like an unfair process, which means the types of market participants, and specifically the roles of the financial marketers versus a traditional load serving entity. And what I want to understand better is: As I do believe from some of the things that we read is that there are load serving entities that do hold counterflow FTR's. And is there a barrier for LSE's or challenges -- and I do understand a little bit more detail if panelists want to speak to this kind of subsidy between like classes of type of participants and types of market participants.

MR. SHANKER: I apologize because it goes to what Tim said. And other people can answer. Who do you think is on the other side of the person that is getting the counterflow? There's some mystery man that has failed to enter into the transaction? There's a willing seller or buyer, depending on your side, on the other side. So I mind it totally anomalous to say, Ah, this class has done something distinguished. The symmetry you put in the

market that create the other side. Now I'll let other people comment. But I just couldn't --

(Laughter)

MS. QUINLAN: Joe?

DR. BOWRING: At least for ARR holders, it's not purely voluntary, it's enough bilateral transactions to be able to enter into a rating voluntarily. But holding that aside, we have not risen market familiar with which show some proportion of different types of FTR instruments being held by various classes, primarily the financial and non-financial. In my recollection, I don't remember the exact numbers as to counterflow, but it's somewhat disproportionate to the financial, but it is incentive. But it doesn't mean that you can hold or don't hold negative positions. And we would not say that our load serving entity be treated any differently than a financial entity with a negative position; they should be treated the same. It does turn out, if you look at the net balance that the financial participants benefit from, is somewhat disproportionate template result of the nature of the current holdings; it doesn't have to be that way, and that's our position. We didn't say that what you indicated, and our position doesn't depend on that kind of assertion.

If I could just one more thing, which is it

that: It is appropriate to have asymmetry for negatively-valued FTR's and positively-valued FTR's when there is underfunding, but revenue inadequacy, is appropriate. Because negatively-valued FTR's are a resource of revenue, and when you have revenue inadequacy positively-valued FTR's are being paid less than a hundred percent. What' snot appropriate is that asymmetry among and in between positive FTR holders within that class, they're treated differently while knowing this same thing is true. Thanks.

DR. POPE: I wanted to respond on a few things. First of all, with respect to the elimination of netting, if I'm understanding/remembering the question correctly, I think the question was: Would that effect the market participants differently? The issue that just pertains to effect on net market or would it effect load serving entities and other market participants? And I think the answer is yes. You can have very different effects on different market participants, depending on whether or not they hold an FTR portfolio that has positive target allocations and FTR portfolio that has a mixture of positive and negative allocations, or whether they're primarily holding a portfolio that has a negative target allocation. They're going to be in different spots depending on, for example, if you think about parties that

have FTR's were endangered by ARR's, it's going to depend on where their historic generations are. So they are going to be in different positions, they're taking those ARR's because they want that hedge, it's something valuable they can get. But some of those ARR's are saying a lot more than others: Some of them they're going to flip, they're going to be positive during some seasons and negative during other seasons. So there are going to be wealth transfers here among parties that are getting ARR's depending on just historically what the generation sources are relative to the same, and what they're kind of balance of negative and positive target allocations are.

Just a couple other points, and if I mischaracterize anybody please tell me. Tim, I think you were saying that the A-to-B and B-to-C issue was something that was not particularly relevant for counterflow, holders of counterflow. Is that correct? That holders of counterflow wouldn't necessarily be interested in making those kinds of exchanges.

MR. HORGER: I guess I wanted to get to the point that's how all counterflow type of positions, that's what they're trying to do, get to A to C and doing it through segments to help hedge their risk, and whatnot. But we got to keep that that's not always the situation; there's many financial positions out there that are purely

-- and physical priorities can do the same thing -- are out there purely to try to collect money in auction and hope that congestion doesn't show up. That might not be associated with anything, but I didn't want that to be lost in the conversation.

DR. POPE: Okay. So I think the whole issue of trying to preserve the property of FTR's, that they can be sort of decomposed into these different segments, to me that's a separate issue. That's a property of FTR's that, as somebody who has worked in market design, I'd like to see FTR's for everybody, FTR's. Particularly for anybody, a load or a generator, that's trying to create a hedge. It's not something that really has to do with whether or not the party that wants to do that decomposition will be accounted for or not. I think that's one of the issues.

I just wanted to go to another thing. This is going back a couple of comments, I apologize for that. Which is, again I don't want to mischaracterize Dr. Bowring, but the whole issue of whether or not the elimination of netting in contrast with heavy netting moves you to a situation where there's increased equity in the sense that parties who have differently-composed portfolios of FTR's, with the elimination of netting there is more equity in the treatment for parties who have put their portfolios together in different ways. And I think you

said this, Joe specifically, about the negatively-valued portfolios. And the one point I wanted to make there is that: If you take a look at some of the examples -- and I think Elliott Bay had one of these in one of the filings -- if you take a look at the examples and you compare the situation of a party that has relatively-small positive portfolio and acquires an additional FTR that is provided by another party, some counterflow, versus a party that has quite a large positively-valued portfolio, and again acquires the same incremental FTR from the party counterflow, what you see is that if you take the full amount of the payment on that counterflow rather than parading it by the target allocation, if you take the full amount what you find is that you're able to pay the additional positively-valued FTR out of that amount but there's an additional amount that you're collecting from the counterflow that goes to all the positively-valued FTR holders in proportion to their holdings of positively-valued FTR's.

So the result is, in that transaction, if you have that transaction occurring by a small market participant, it's getting a very small share of that additional money being paid in the negatively-valued FTR. But if you've got that same transaction, that same incremental FTR being acquired by a party with a large

positive portfolio, they're getting a much larger share of that additional money that's being paid in by the negatively-valued FTR. So what you have here is you do have an instance in which two parties, because they have different-sized portfolio, you end up with the asymmetry acquiring exactly the same FTR without netting.

DR. BOWRING: So, just very briefly. I am glad you recognize that there's an asymmetry. The problem is the asymmetry that derives from the current system which you're reversing, and if you have an asymmetry in the current system and you reverse it it's going to locate the metric. But the point is the end result is symmetric. The end result is that all positively valued target allocation FTR's is the same payout ratio and all negatively valued FTR's is going to have the same payout ratio; that's what you get. In fact, you get there by reversing the current set of subsidies that is asymmetric, as you point out, is not surprising; it's in fact to be expected.

MR. HORGER: Sure, it's recognized.

MR. SHANKER: First, the composition of positions and the adjustment is relevant. If somebody has an A-to-B FTR, let's say 100 megawatts, and agrees to release 50, they would be I think under the proposal that Joe has come forward with or PJM, both, and ODEC, they would be seen as having a 50 megawatt net A-to-B position,

okay. If they have 100 megawatts of A to B and then they bought 50 megawatts of counterflow, they would get a different settlement. Now, that should be very troubling to you. What's the difference? There should be no difference, yet there is in the way that it's settled.

The other issue is everybody continues to act as others as prevailing flow. I've said before we should talk about positive allocations and negative allocations. But understand that a simple A to B held by any party that may be net positive is made up of a very large number of components, some of which could be negative. If we go into the math -- I don't want to burden everybody with this and the power flows again but it's very insightful -- but the congestion components are differences between the reference bus A and reference bus B and it becomes the difference between A and B, each one of those is a function of the shift factor of the flow of the power between those locations times the shadow place of the binding constraint. So you're going to add up every binding constraint and I guarantee you it will be very atypical not to see one that has a negative flow position. So each flow gate that contributes to that, some will be positive and some will be negative, and so it's totally arbitrary.

Why am I stopping at A to B? Why don't I go down and take a look at the flow gates and net them there?

What's the difference? I think the difference is that you shouldn't be doing it in the first place, but nonetheless it's arbitrary to instill some level of aggregation which you think is equitable and another level of aggregation which you think is not equitable. And that's why it's so troubling to try and see this sort of good and bad and prevailing and counterflow. The net thing that's going on at the base level of the system is identical and is an aggregation of component flow across the scene.

MS. QUINLAN: We're going to take a comment from Joe and then we're going to get into some questions on manipulation.

DR. BOWRING: Just very quickly. All the things Roy said about the actual loads in fine; it just doesn't apply to what he thinks it applies. In fact, the netting/non-netting does not have a negative effect when you recognize that FTR's can be made of components. In fact, it will tell you exactly the way it suggests so. Of course that's the way FTR's work. But this does not lead to the conclusion that Roy would have you believe.

MS. QUINLAN: Thank you.

Jeremy?

MR. LARRIEU: I want to reiterate sort of -- this is in regard to earlier, this is in relation to Stevens' affidavit submitted with the protest of DC Energy

initial power and veto. So I wanted to sort of open up with just Mr. Horger, and then I'll talk to everyone else. In the event of a surplus, holding wash or wash-like FTR positions such as A to B and B to A, A being rule to collect the over-funding allocation of the prevailing flow portion.

MR. HORGER: So if I understand you correctly, you're talking about the manipulation possibility that was brought up at the end of the planning period where someone if we see that revenue inadequacy is going to we over a hundred percent and they take that risk, they have to take that risk that it's actually going to be over a hundred percent, that they can buy equal and opposite position, from A to B, from B to A per se, in the auction to help inflate their positive value, which would then impact the payout ratio at the end of the year.

MR. LARRIEU: I'm going to get there. Let's start at the very beginning. I own an A-to-B and B-to-A FTR. And the code there is surplus. Do I collect a portion of that surplus even though I have no exposure to the congestion rate?

MR. HORGER: Under the current rules?

MR. LARRIEU: Under these proposed rules.

MR. HORGER: Proposed rules, it would be you would collect a portion -- it would have to be very

significant, the fact that we materialize anything we have 00 participants each month, two billion dollars' congestion. But, yeah, there would be a difference in your value.

MS. QUINLAN: And under the current construct?

MR. HORGER: Well, the current construct if that's netted out it would be zero.

MR. LARRIEU: The thing is the next level, if prevailing FTR's would mathematically increase the holder's share, the over-funding allocation would be able to increase its share but it's holding large amounts of wash or wash-like FTR holders throughout the entire system?

MR. HORGER: Obviously CDM would have to check that. It would have to be a significant amount -- and Joe would talk about this, too -- it would have to be a significant amount of offset paths that would increase that value because it would have to be done closer to -- if you're confident that the revenue adequacy is going to be over a hundred percent, that you would increase significantly to actually see value in the market, I would think.

MR. LARRIEU: What tariff provision or market design feature would prevent somebody from accumulating larger amounts of FTR's?

MR. HORGER: With any product that effects

market manipulation, we would hopefully capture and we report that to Joe. Not only that, most importantly the members typically see if there's market manipulation and they would report that to us, too, if they're suspecting something. So there's a lot of quote-unquote police out there that police this issue, I would think. As far as the actual rules to prevent it, I'm sure that any market manipulation, by definition you can't be doing that. I don't know if there would be specific rules like procedurally-wise that would prevent that very difficult challenge.

MR. LARRIEU: So the market design itself would not limit the amount of wash-like, that's your position?

MR. HORGER: Right. I mean, our goal for PJM would not be able to lease it more. I think that would be a pretty big challenge. Because it's not always A to B, B to A, it could be getting that extra prevailing to pass -- it could be a little bit difficult.

MR. SHANKER: First, I think I intellectually object to jumping to the conclusion that is responding to the incentive that you're debating and putting in front of people is the basis for manipulation, okay. We're sitting here discussing creating an incentive to hold prevailing flows and what the property for that incentive, whether they're over-funded. So you should weigh that, there's a

just and reasonable and unjust and unreasonable consideration here and you should weigh that.

And what I was trying to say before is I would hope that would be part of the consideration you have as to whether or not you adopt something. But when you create those incentives, someone following the incentives, at least philosophically in my belief is, is they would be wrong not to follow the incentives, at least you're going to get up there and define the rules explicitly in a fashion. So you don't have to say if I have three of these positions I'm okay, but if I have seven it's not okay because that's the threshold that another stakeholder or Tim or Joe will complain. It's either appropriate and you want the incentives in the marketplace, and you write the rule that way and you intend for people to follow it; or if you don't intend to do it, the obligation rests either on PJM or in the Commission in approving the rules. It's not a subjective evaluation that gets processed by Joe after the fact or the Commission after the fact in light of the circumstances where all these properties are fully discussed and disclosed right now. And that's very troubling to me unless it gets processed fully. If you say you don't like that incentive, remove it, that's a good result. But to say the incentive is there and we'll figure out how to deal with it later and somebody later will

decide whether it's manipulation or not, so we follow the incentive is very, very troubling.

MR. LARRIEU: Dr. Bowring?

DR. BOWRING: The idea that we should have a bad rule about how we pay FTR's and avoid creating a bunch of incentive to exercise market power is, again, I think backwards. But, just to answer directly: First of all, there are some limits on what you can do. For example, the credit requirements associated with doing CIV, if you go and fill in the FTR's and you're close to the end, those are just actual limits on it. But there are also rules on wash trades; it doesn't matter if there are incentives in wash trades, wash trades are still manipulation. No matter how many incentives, you have to do wash trades. So it's good enough to have a rule, I don't know where you got the threshold five is bad and four is fine, there is no threshold, if it's a wash trade it's a wash trade.

As Tim pointed out, this is all the more reason to continue to have some transparency in the FTR markets so everybody could watch it and not just a few people. And, finally, this ignores the fact that under the current design there are strong incentives to use negatively-valued FTR's to offset positively valued, and that's particularly when you see the reverse happening, when you see potential revenue shortfalls coming. So incentives is positive

income and does exist in the market; we are always having to deal with it. That's certainly not the case that the current design is perfect with respect to incentives for market manipulation, and the fact that the one particular small defense reason not to do it the right way.

MR. LARRIEU: On the issue of wash trades, I was thinking the pure wash trade as an example to sort of simplify. But it seems like the same goal of achieving a larger share of surplus allocation could be achieved with several pathways, some level of risk, but near zero would achieve the exact same thing as maybe wouldn't qualify legally as a wash trade, or they would. But aren't you concerned about having a market design where we backstop the legal regulatory avenue?

DR. BOWRING: I think it's a concern with all market designs. As I pointed out, the current market design has very simple issues: They go the other way; they're incentives to engage in the upcoming behavior. So the notion that someone thought of a particular incentive in this market is not a reason not to do it wrong, it's just a reason to decide whether the behavior described is actually manipulation or whether it's not. Apparently the person posing the market manipulation may need to think about it a little bit more. Certainly, a straight wash trade is manipulation. But that's why we have rules on

market manipulation, and they exist in all market designs. Because no market designs have perfect set of incentives and no market actually has perfect behavior all the time.

MR. GOLDENBERG: Is there any reason PJM has proposed this net position by the end of the year? Wouldn't that solve the problem, if nobody did any over-collection or an under-collection?

MR. HORGER: I think, in the spirit of transparency --

(Laughter)

-- FTR results in whether our participants calculates that except themselves, where PJM proposed that it's out there.

DR. BOWRING: I'm sorry, I didn't mean to dump that on Tim. We are seeing PJM in the market might not be able to see that.

MS. QUINLAN: Dr. Pope?

DR. POPE: I just wanted to address Dr. Bowring's comment that under the current system with netting there's an incentive to take on counterflow FTR's -- sorry to use that term, Roy -- in order to kind of provide an umbrella to shield payments by positively-valued FTR's. And I think it's really a distinct situation, it's not analogous to what we're talking about here for the over-funding situation in any respect. And the reason is

that -- well, here's my perspective: I don't understand the situation in which a party could take on additional counterflow FTR's in a way in which they wouldn't have to pay the market price or be paid only the market price for taking on those FTR's. The only way that there would be an incentive to take on additional counterflow to shield additional prevailing flow -- again, apologies to Roy -- would be if somehow you could get overpaid somehow for taking on that counterflow. And it's just not apparent to me how that can occur when transactions are occurring between willing buyers and willing sellers and the most somebody is willing to pay for a counterflow FTR is equal to the expected payment from the prevailing FTR's payout ratio. Because it's an equilibrium right now and I don't see where there's the potential, unless there's something I'm missing, for somebody to be manipulating that.

MS. QUINLAN: We're going to listen to Dr. Bowring, and then I'm going to cut that there and go to break.

DR. BOWRING: I thought I was one of the participants in this proceeding that pointed this issue out. But the reason that can occur is that you add a negatively-valued portfolio and you are only having to pay back one times the payout ratio, and also increase the effective payout ratio for your positively-valued FTR. So

there's the incentive, it's very simple.

MS. QUINLAN: Well, thank you.

That concludes panel 3. We'll pick up panel 4 at 3:20. Thank you.

(Whereupon a short recess is taken.)

MS. QUINLAN: So we'll be starting panel 4. We'll be talking about alternative ideas alternative to the current ARR/FTR constructs, items that will be kind of looking to hear about/touch upon some of the issues that were identified earlier today. I want to go through for the panelists to reintroduce themselves, as you knew, but just kind of walk us through how this will go. Panelists at a time will be able to speak for about -- we're going to keep it to no more than five minutes. And after that we'll kind of have questions from staff and questions from panelists and we'll move on to the next panelist, and we'll be starting with Dr. Bowring.

If we can please have the panelists introduce themselves and then I'll going to turn this over to Scott Miller.

MR. WADSWORTH: My name is Joe Wadsworth, I'm with Vitol. We are a commodity transacting and investment firm. We are active in all the structured wholesale energy markets at North American.

MR. SINGH: I'm Harry Singh. I'm with J. Aron & Company, Goldman Sachs, as far sustaining power markets and market maker. And I'm very interested to being involved in the FTR's.

MR. BOWRING: Joe Bowring, market monitoring at PJM.

MR. BRESLER: Stu Bresler, PJM.

(Laughter)

DR. PATTON: David Patton, I'm thirsty.

(Laughter)

Potomac Economics.

MR. MILLER: Great. Thank you all for agreeing to participate in this more speculative endeavor. Oh, wait, speculation, that may be bad.

But, anyway, in the discussions that have been going on with regard to the FTR market and PJM there have been several ideas that have been thrown around. And since we got a 206 filing on an issue that seems to have generated a lot of fire and fury and hundreds of millions of dollars -- how did you put it, Joe? Revenue inadequacy -- we thought it would be necessary to step back, it would be useful to step back and see if we were to sort of start from scratch or at least take a broader view of this, if there are other solutions that would come up or that other solutions that people would have. So what we'll

do is we'll have each of you, if you could give us your thoughts on this question, the possibility of more comprehensive solution to the current situation we have in the FTR/ARR market. You may feel there's not much really wrong with it. But we'd like about five minutes of your perspective from this broad point of view, and we'll start with Joe.

DR. BOWRING: Thank you. So a lot of what I planned to say in this panel I've said already so I won't repeat it, so I don't get yelled at. But just to reiterate just at the very high level, the reason we have FTR's in the first place is very simple: The return of the system will replace firm transmission as we said, what that means is that the return the dollars that load pays which aren't excess of what generation gets paid -- there is extra money, there is congestion, it belongs to load -- that's why we're here, that's what this is all about. The convoluted market design got layered on on top of that, but that's what it's really about, that's the most fundamental point. And the initial FTR design did that, it returned all congestion to load.

But then at the very outset unnecessary in my view complexity was introduced by what's been referred to as assigning FTR's to LSE's based on historical development of that. So that didn't have to be done in the first

place, it's a notion of the property rights and particular transmission lines and particular flows from all these particular things, that didn't have to actually be addressed, it didn't have to be done that way. In fact, the design could simply have been to return all that congestion dollars to load. That could have been the simple design, but we went down the path of assigning the property rights to particular transmission and load patterns, and I think that's partly where we got off track. It's very hard to do that accurately -- I would say impossible to do it accurately -- and certainly the case if you're relying in 2016 on 1998 gentle load patterns you can be sure that it is wrong, it is very wrong. To be assigning gentle load lifts and loads really does not make any sense.

The introduction of the ARR/FTR distinction, in my view, further muddied the waters and created this break between congestion and expected value of congestion based on FTR's. One of the points I don't think have been made today is that FTR easement in the darkest days was the lowest levels of revenue inadequacy were profitable, highly profitable. So it's an interesting question about how competitive the market is when it does not bid the price to the point where the FTR's remain extraordinarily profitable even in times of significant revenue inadequacy.

So just to keep it simple: There is a simple solution to all this complexity, and that would simply be to recognize to the congestion payments belong to load and figure out a way to return it directly to load based on the amount of congestion they pay, period, end of story. There's no reason for load to be paying financial participants to create hedges and support those hedges; there's lots of private hedging vehicles, people are smart, can create hedging vehicles. There's no reason that the load payment should be the source of those funds. And there's nothing in the inherent logic of LMP or FTR's or congestion that dictate that result. So, again, just very simple and probably somewhat dramatic proposal. Thank you.

MR. MILLER: Thank you, Joe.

Next, Harry, why don't you give us your perspective?

MR. SINGH: Thank you, Scott.

So I've been following this issue for about five years. And when we started looking at it in 2011, FTR's had significant, what Joe wold call revenue inadequacy. Over a period of about four years there was about 1.4 billion dollars of revenue adequacy of which 90 percent, about 1.28 billion was from balancing congestion. So at that time we stumbled upon this observation, if you will, that the design of PJM FTR's system is a little bit

different from other RTO's, by combining real-time and this other piece -- California called it "real-time congestion offset," PJM called it "balancing congestion" -- and because it had never been big until that time, nobody focused on it. And it has various components, and the chart that you have in my slides, things like outages between day-ahead and real-time, things like un-modelled loop flows, things like the application of interfaces -- PJM calls that "uncontrollable adequacy" -- and at the same time PJM has always had a tariff of Section 7.5 in the attachment K appendix that says you got to make a best effort to ensure that these FTR's, these contracts, is revenue adequate because it's intended to be a hedging instrument.

So what has happened over the last two years, to the current planning year and the last planning year, is PJM has said we haven't really been able to get balancing congestion down from this 300 million or so average value over those planning years, and we need to somehow account for that in the allocation. So they significantly reduced the ARR allocation. So I agree with the panelists in the prior panel, there is no under-funding problem today. And what had happened is it's shifted to load serving entities having fewer ARR's. So, then, what is the problem? The problem then takes two dimensions: One of them you heard

about is the potential cross subsidy between Stage 1A ARR's, which is about 30 percent of the problem -- there's a chart that speaks to that in my slides. So it's not all of it. So, then, if one LSE is getting an infeasible Stage 1A but another LSE is not getting Stage 1B, most people would agree that's not right. And the question for you is: What do you do about it? Do you -- Joe has a solution in his eight points, don't allocate infeasible Stage 1A. Others say, Well, that was a bargain made in EPAct. I was at the Commission and helped write what started -- and nobody really imagined that this would be such a big problem one day.

The other extreme is to do the one and a half percent transgression. But then we also heard from dummy generators that's disconnected from the physics. And that doesn't seem like a sensible use of ratepayers' money. The idea there was that maybe it's time to reform the 1998 reference year, so that was the thing of that dimension. The other piece, the bigger piece, is that it's also Stage 1B reduction that corresponds to offsetting the balancing congestion. And that piece has cross subsidies, too, because the balancing congestion occurs in certain parts of PJM, the big outage in PSEG and another utility. If the Stage 1B happens across the board, then you would argue that's maybe not entirely fair. And it's sort of the flip

side of another point in Joe's eight points which is there shouldn't be this geographical imbalancing and congestion. Well, it's the same problem with the Stage 1B reduction. So I think that is sort of where we are today.

The third piece is that there was so much focus on what's the intent of FTR's, and Joe alluded to it, it's just to allocate the money that PJM collects. If you think that's the aggregate, nothing is wrong, everything is fine, and you can go and read the sale of market, see the height of the polar vortex, you will find that ARR's and FTR's perfectly offset the load congestion. The metric of load congestion is day-ahead plus balancing. And by definition, that will always be true. But if you're looking at a load serving entity or a generator that is scheduling in the day-ahead market and is exposed to congestion in that market, that's not very helpful. So we have a chart that shows you, in terms of integrity of the FTR product on an hourly basis, the scattered block, that funding can be zero. And it's really hard to go if you're a hedger, not a spec participant -- because the speculator participant can always pay less and then it's to the profitable instrument, profitable trade -- if you're trying to hedge then it's almost impossible to answer the question: Should I buy two FTR's, or three FTR's? And that's the conundrum. So PJM has rested. And our question of does this experience of

either being massively-under-funded or in the regime of surpluses, are we better off with a design that separates the balancing congestion from the day-ahead?

And we have seen in California, they shared their view of their experience, they had 107 million dollars in balancing congestion in calendar year 2014. In calendar year 2015 it was less than half, 50 percent. So because it is not hidden away in FTR's, there is much more focus and much more effort in reducing it. So I think, regardless of where it is, PJM should, even though they have had some progress, do better in improving the modelling in the day-ahead.

And then finally my last point would be: Don't leave it to the stakeholders because it's just a very difficult problem. Thank you.

MR. MILLER: Thank you, Harry.

By the way, for those who are still hanging with us on the webcast, first of all, good for you.

(Laughter)

But, secondly, anything that's been submitted to us and referred to by panelists have been posted, they're available in I believe e-library under --

MS. QUINLAN: I think they should be available on meeting notice page through the calendar. The documents will be added to the docket, but I do not believe they are

there right now.

MR. MILLER: So the meeting notice, if you hear panelists referring to something that's on the meeting notice and will be added to the docket. So everyone will have access to it.

Pamela and I were just passing notes in terms of going along, whether or not to keep having you give presentations. And we agree that maybe a little bit of questioning in between would be useful.

First of all, Harry, I'd like to pose something to you so that if you had to come up with some fix, I won't say a solution because you're basically saying, to some extent, the revenue is there, it would be just to separate the balancing congestion from the FTR. Is that correct?

MR. SINGH: You heard this from David Patton, you heard this from Stu. If you're just looking at what is the better market design, I think the question that most people would say that that's the better market design. Because this was an instrument that was designed to be a hedge in the day-ahead market. And in talking to -- it's a pity that Roy Shanker is not here -- it was three individuals when PJM started out was a real-time market that evolved to a settlement market. Probably remember that, in California started out with a multi-settlement market and went to LMP and notal pricing later. And I

think that people at PJM forgot the map that was in the market. If they want to respect the simultaneous feasibility and revenue adequacy constraint then you got to tie things to the first of the binding settlements in that series of markets.

And the thinking was that, Well, if you put the real-time along with the day-ahead, we're sort of preserving the connection to what PJM had when they had a single settlement market. But that was not the case. Day-ahead congestion plus real-time congestion does not equal the congestion that would have occurred in a single settlement system. So I give you the metric: In PJM you could have a building model of day-ahead congestion and you could have 300 million dollars of negative balancing congestion. Total congestion by definition would be 700 million. So are load serving entities really exposed to 700 million dollars of transmission? No. This is actually potentially even more congested than that day-ahead congestion metric.

So all this is very confusing. So purely from the perspective of market design, I think no question about it, I would like balancing and congestion to be separate. But it has been a very contentious issue, and certainly, for the record, PJM's proposals when it came out, I abstained it. So maybe I would have been the pivotal vote

or something.

(Laughter)

I think this is a lot of good work for the Commission because the Commission has done a good work in terms of enforcement. But to the question, it is also an equally-important area. So the Commission believes that that's a better market design, maybe it's for you to guide PJM on that. But we've certainly tried and I've debated Joe these past four years and we have not been able to bridge that gap on what's the purpose of FTR's. Is it just to distribute a bunch of money? Which is how Joe sees it. Or is it to be the equivalent of firm transmission service and be a hedge between the source?

MR. MILLER: Are there other panelists? Because I want to make sure we get to the other panelists. But do we have anyone else here on staff who has a question? Okay, great. Why don't we move to Joe Wadsworth at Vitol.

MR. WADSWORTH: Thank you. And thanks for pronouncing Vitol correctly. I often hear if I'm making good points it's Vitol, if you don't like it then it's Vitol.

So I've actually prepared comments, if you don't mind I'm just going to read from these, I'll try to keep it succinct and short. Unfortunately, it's not going to be anything you haven't heard already. A lot of points that

Harry made, the way that he described the problems and the history of it and where we are today. So we sort of swung from bad market design into sort of a bad-action offset, that bad market design. So I'm going to go through what I think are some solutions, but you've heard these before. So I'm going to cover three areas: One is redefining PJM's FTR product; and the second is what is used for the allocation process annual FTR auction; and then the third is either restricting or shaping the ARR allocations. So the first one, redefining the PJM FTR product, this may be the most critical part of any comprehensive solution for improving PJM congestion. FTR's were designed to be a first settlement product. And PJM settlement energy market linked with the product shouldn't be defined in the day-ahead congestion buy. The settlement against the market that PJM collects for day-ahead congestion find -- as we all know, the current definition of PJM FTR is the value of the FTR is established by the congestion component, the day-ahead LMP's, the pay outcome blend of day-ahead and real-time congestion dollars. This is directly in conflict with this foundational principle that the FTR product is a first-settlement product.

So to appropriately redefine the FTR product to be aligned with this principle, we must remove congestion from the settlement of FTR's. This notion is supported by

PJM -- Stu said it this morning -- but they were very clear this morning in this report from 2012, the discussion option for investing the FTR underfunding. But they said it after that, too, they said it I believe in some filings that were made to the Commission, I think even the most recent one in a footnote in that answer to a filing that we did. This notion was also supported by market design experts who developed the models for the underlying ISO and energy markets, redefining PJM FTR product to be settled with their own day-ahead congestion funds would line up the valuation product and the payout of the product to be in the same settlement market.

So let's not forget that these structured markets were put in place many years ago to provide a competitive environment through integrated utility structure. We made a commitment to product that would attract competition and provide value in a manner that traditionally didn't exist. It's imperative to remove the impediments that restrict the function and underline the integrity of these products so that the markets can be successful. And I would even argue that, in the price formation docket, the Commission has recognized this: We need products with integrity; we need markets to work; and we need clear signals. In this particular case, including balance and congestion in the settlement of FTR's, with no

full-funding guarantee, is undermining the integrity of the product. It took massive underfunding, though, to bring this to life, that there are serious flaws in the market design, the significant one being the inclusion of congestion and the settlement of this product.

So there are benefits to the market as a whole in redefining the PJM FTR product in a manner that removes balance and congestion. There's increased profit into the FTR product; this has been talked about on a previous panel in the a.m. If there's increased confidence, intuitively you would think this would mean the reduction or the removal of this premium FTR auction participants utilized. Removing or reducing this premium will lead to stronger values for ARR's than what might have otherwise occurred, development of benefits of the ARR holders and transmission customers. But I do you want to make one special note on this. Just because FTR auction participants build in this risk premium where it's perceived they are best positioned to asset this risk doesn't mean that they should bear the cost of balancing congestion. The product was never intended to have balancing congestion. Why include the need for this risk premium at all? The second point, the FTR product becomes a much better hedging tool for market participants, found a hedge basis risk in the day-ahead market; people have said this before. This is a benefit to

many types of market participants: Generation owners, load servers, trading entities, and other entities that use the product as part of a portfolio transactions.

When it comes to allocation of balancing congestion, the cost causation may be difficult in some situations. But the Commission has dealt with this type of situation in the past with marginal loss surplus where causation couldn't be determined. In order to figure out who should receive the allocation of each fund, ended up distributing these funds broadly to transmission customers. I think this is very relevant to this current situation. It's also relevant for allocating balance and congestion to locate who benefits from the sale of the underlying transmission capability, it's the transmission customers as other people would say. Allocating balancing congestion to transmission customers would match up with what happened historically, transmission customers benefited from the sale of transmission service and would pay for any re-dispatch that was needed to make those service fees.

MR. MILLER: We're trying to keep it to five minutes. So you said you had three big points to make.

MR. WADSWORTH: Yeah, I do. But I do want to offer up alternatives, and that's sort of important about my comments. I know you want to go through this, but we're here to discuss solutions so I have a bunch. And I

apologize for taking more time.

Another alternative is to just simply allocate underfunding from FTR to ARR holders. This is what FERC approved for ISO New England in 2008 as part of the ISO's plan to implement long -- term FTR markets. So in a nutshell, for any month during the year that FTR's are underfunded, the ISO would simply allocate the underfunding to ARR holders except when underfunding was caused by a catastrophic event. This, in essence, shapes the ARR product, rather than reducing the capacity that's allocated to the beginning of the year. This has been implemented but it's not because of this design, it's because of other things: Trying to get agreement on collateralization of a long-term product, so I won't get into that. I believe MISO uses an approach that is -- I would go one step further and say over-funding should also be underfunded back to ARR holders as well.

Another thought is to just spread the congestion of our broad base of real-time megawatt hours. I think politically this seems countered, but I have to say it might not be great from a market design perspective, and many other panelists have covered that. And I'll just say it would lead to a lower-dollar-per-megawatt-hour value I think it's good and bad. I think it's good because it's growth; I think it's bad because it's easy to over look at

that point and I would think the pressure to actually control balance and congestion -- but it is imperative for PJM to continually strive to minimize allocated congestion.

Other panelists have referenced that other markets use this type of construct or similar types of construct that PJM is unique; I won't go into that. Improving the models, PJM has made a lot of effort to improve their FTR day-ahead real-time models; I won't go into everything they've done. But I will say that I think they're doing good work there, I really do. One metric I will say: I got in a conversation last week with a PJM staffer was that balance and congestion, at the height of underfunding, as a percentage of total congestion was something like 30 percent, and it's now down to something like 15 percent. And this came from a trusted colleague. I think there's an additional improvement, though, and Roy touched on this this morning, we should seriously consider shaping the annual model for ARR allocation and FTR auctions. I won't go into all of the reasons; I think Roy did a really good job of talking about the benefits of that. It just gives you a better look at the transmission system rather than doing a snapshot upfront.

Then the last point I'll talk about is just sort of the restricting or shaping of the ARR allocations. PJM clearly identified the guarantee of the feasible rights as

a problem, they made that very clear in their 2012 report. And we know what they've done since then, they've restricted ARR allocations post-Stage 1A; I think that's great, I think that's a swing offset of that market design. I think we can do better. I mean, the simple solution is just don't do that. Honor simultaneous feasibility. The FTR product was designed based on the notion of simultaneous feasibility. So don't do it. It's like going to the doctor and saying, "Doctor, it hurts when I kick this rock." The doctor says, "Don't kick that rock." Just don't do that. But I know that that's politically sensitive, that's very sensitive, and that may be the most obvious statement made of the day, but it is.

And so an alternative then again is going back to the ARR. So, in other words, go ahead, allocate the infeasible rights, but to the extent that the infeasibilities create underfunding of FTR's then charge back to the infeasible rights. So, again, to the extent that it occurs, charge it back to these holders; and if it doesn't, fantastic. But intentionally introducing the infeasibility just seems to be problematic.

So those are my comments. I appreciate you letting me go through them. And thank you.

MR. MILLER: Thank you, Joe.

I think next we will go to David and then Stu

and then we'll have more questions. Sorry, Dr. Patton.

DR. PATTON: No problem. So I'll start off by saying I think it is important to understand why FTR's exist, I don't believe they exist just to distribute congestion revenue. We can get into those in questioning. I think Joe recognized or his proposal might have been just to get rid of FTR's altogether because you could distribute congestion revenues without FTR's, and that would be a choice. The reason we have FTR's is because you have an opportunity to create a valuable financial instrument that can be funded by the congestion revenue and creates value that you want to get just taking the revenue and the day-ahead market and distributing it to load. So if that's why we have FTR's, then you have to think about how do we maximize the value of that financial instrument? The financial instrument itself should embody a well-defined set of economic property rights. But in making a decision on whether PJM's current tariff or their proposed changes or frankly other RTO's tariffs are just and reasonable, I would advise you to adopt some principles rather than just look at instrumental changes and ponder equities and so forth.

The three principles I would propose are: That settlement obligations should be as well defined as

possible, minimize uncertainty; secondly, the settlement of FTR's should be nondiscriminatory; and thirdly, that FTR shortfall costs should be allocated as consistently with cost causation as you can. I think judged against these principles it would be hard to conclude that PJM's current tariff is just and reasonable; I think their proposal makes it worse.

But why am I here?

(Laughter)

I don't necessarily have a stake in PJM's tariff being jut and reasonable. The problem is you have two RTO's in the late '90's/early 2000's that were simultaneously the first RTO's that were coming into existence and creating a lot of neutrals, and they were MISO and PJM. They independently looked at a lot of these issues and came to very different answers. To PJM's credit, they were very successful in marketing their market software: They marketed it to New England, MISO, SPP, and others. And for convenience, a lot of those RTO's accepted the market rules that PJM came up with. So to the extent I believe PJM's FTR underfunding rules are not just and reasonable: MISO's are only slightly better than PJM's because they don't allocate balancing congestion to FTR's; New England does so much transmission so they have no congestion anymore, so it's almost hard to care. So if I

were in your shoes, I would be tempted to find that the PJM tariff is unjust and unreasonable, my actual advice to you would be to issue a NOPR and declare all of the RTO's that underfund FTR's as unjust and unreasonable, and provide some principles that would allow you to move to a more efficient alternative and get people to stop fighting about FTR funding issues.

And so here is the alternative that I think would be just and reasonable, looks an awful like New York because I think they did come to the right answer or something very close to the right answer. Step 1 is self-allocating balance and congestion to FTR holders. This is particularly important in PJM. Not only does balancing and congestion really have nothing to do with the underlying congestions, it's really more of an artifact of modelling differences between day-ahead and real-time. But this is a big issue in PJM, and I just want you to think about the scope of these differences. MISO has 20 percent more congestion than PJM and their negative balancing congestion is 30 million dollars. New York's balancing congestion is 5 million dollars. New York as an advantage over PJM and MISO because there isn't as much uncertainty with loop flow eating up transmission so you're always going to get more balancing congestion associated with loop flows and MISO and PJM. But compared to MISO's $30

million, PJM has had a sustained $300 million; that's an order of magnitudes bigger. That should shock you. It's almost -- if MISO had 300 million in balancing congestion I would be going nuts because it just represents that there's a growth in consistency between the day-ahead and real-time model that is costing a lot of money to leave unresolved. And I think Harry's right, that when you put that into FTR underfunding it becomes less transparent. So I think in addition to not allocating the balancing and congestion, all RTO's ought to make it a very high priority to identify the causes of balancing congestion and eliminate them because it does lead to higher cost to customers and higher production costs.

Secondly, fully fund the FTR's: They don't cause the underfunding; it makes them more valuable; and by fully funding them you're going to generate more revenues which benefits the transmission customers, and it benefits the transmission customers that are receiving allocations and using them for hedging.

And then thirdly if we fully fund them and then we have to do something with the revenue inadequacies. And I think you alluded to this on your first panel . (1) My recommendation is to do something similar to what they've done in New York, which is to allocate the shortfalls that are due to transmission outages to transmission owners who

actually effect those outages; and the balance of them to transmission customers who ultimately are the property rights holder for the system. It is a very effective means of getting transmission owners to schedule their outages when they express them to and not cause significant congestion; to make them as short as they can be; to maintain their systems in ways that avoid forced transmission outages. Right now if you don't do that then the incentives are very weak for good outage scheduling behavior. And ultimately allocating the rest of the underfunding transmission customer I think actually reduces the cost that they bear because the uncertainty created by underfunding causes prices to fall more than the revenue inadequacy itself because of the uncertainty. So the folks that are buying FTR's are de-rating the price by more than the expected value of the underfunding. Now, one important thing that that does is it allows the RTO's to negotiate inequitable cost allocation.

So whatever you thought your historic rights to the transmission system and MISO -- and I have no problem with this -- they share the infeasibilities and they share the costs that are incurred to try to maintain their historic transmission rights. You can do that through cost allocation; it doesn't have to be the case that cost allocation penalizes the transmission-owning areas where

the infeasibilities are the largest. But it makes it very transparent what the cost allocation is. And once you negotiate it -- and this happened in New York -- it's very contentious negotiating the cost allocation for any shortfalls that would exist. But once you get it right everyone's basically happy: Everyone knows what the deal is, knows where the dollars are going to flow. And we haven't had a significant issue with these issues in New York since that time.

MR. MILLER: Thank you, Dr. Patton. I do have a couple questions with regard to what you just said. First of all, your characterization of the difference of congestion in MISO versus PJM $30 million to $300 million. To what extent could that be characterized as the difference in terms of the membership and the types of transactions that occur? What I'm thinking of specifically is that in MISO that are an awful lot of vertically-integrated utilities whereas in PJM there's a lot of load that's aggregated from generation and transmission ownership.

DR. PATTON: I don't think any of that is related to that. Again, balancing congestion arises because your day-ahead market has scheduled 100 megawatts across a constraint and your real-time market has to pay generators on both sides of that constraint to reduce the

flow to 70. So I don't think it matters who your participants are. In fact, in MISO -- one of the reasons I'm so concerned about vague assertions that virtual trading is harmful is that it's the virtual traders and MISO that rectify economically -- well, I may not characterize the behavior of the regulating entities of MISO.

(Laughter)

To the extent that they don't behave like maximizing differences, the virtual traders correct all those issues. Because they come in, they're price sensitive, they tend to be relatively risk neutral. And so we get a set of day-ahead schedules out of the day-ahead that is pretty efficient. But it's really that modelling discrepancy, either the modelling discrepancy or your loot flow assumptions. If you assume that they're going to get 100 megawatts of loop flow over in interface, a 200 megawatt interface, and then in real-time, whoops, it's 150, you just lost half of your transmission capability. And that's going to generate balancing congestion because you're going to have to move your generators to make room for the loop flow. So both of those are modelling issues and both of those would cause me to be calling MISO repeatedly asking them to work with me to figure out what is wrong.

MR. MILLER: Thank you.

Stu, do you want to clean up on this one?

MR. BRESLER: As is typical I think -- I don't have too much new to say, but I will I think repeat some of the points that were made earlier.

First of all, I don't think PJM or RTO construct is in need of a complete overhaul, I don't think it's in need of an outright replacement, if you will, an alternative solution. I do, however, think that there are areas for further investigation and adjustment, regardless of the outcome of the two proposals that are the subject of the 206 filing that lead to this technical conference. So just to go through those relatively briefly. I think Dr. Bowring mentioned the outdated nature of the source points utilized in the Stage 1 ARR allocation. And certainly PJM would agree that the system has evolved quite a bit since 1998 and the various integration time period into the zone that integrated in the PJM, which formed the reference here for the source points. Those are the ARR allocations. And then certainly the transmission system itself has evolved as well through many transmission upgrades since that time as well.

So I think it makes a lot of sense to evolve the set of source points utilized in the ARR allocation in order to keep up with the system as it evolved as well. I

think that frankly dovetails with the current -- and I would say should be continued -- process by which transmission upgrade triggered Stage 1A feasibility. I think that makes a whole lot more sense when the Stage 1A source points are evolved with the transmission system in order to make sure those upgrades are in fact relevant from the standpoint of delivery of energy from actual physical generation resources to economically-served load. So that certainly is one I think fertile area of further work.

Just to say on PJM's behalf so I don't have to rely on Joe Wadsworth down there, PJM agrees that the allocation accounting about the balancing and congestion we should look at. I agree with the other statements that have been made with respect to the purpose of the FTR product, the initial design of the day-ahead market, and the use of the FTR's in the day-ahead market, the incentives to participate in the day-ahead market. I do not think, however, that FTR's should be guaranteed whole funding. I think to the extent that there are changes in the model from when the FTR/ARR allocations, FTR auctions, were conducted, and those conditions that are appropriately modelled in the day-ahead market and the expectations of the physical reality of real-time, that they cause underfunding then, again, there should be no guarantee. However, while we continually strive to make sure that our

day-ahead model is as close to what we're going to see in real-time, that those two models match, I would love for somebody to tell me how we can be expected to predict that emergency outage that occurred in the common zone. This one happened last week, the cost was 3 million dollars in negative balancing congestion in a single day. So these things are going to happen.

Again, I think that there's ways to account for balance and congestion that can be distributed as broadly as possible given the fact that cost causation -- I am not sure there is away to do it consistently with cost causation, nobody really causes a situation like that -- and to spread the pain, if you will, as broadly as possible. But on the other hand, I think that the comments that have been made today about the integrity of the FTR product and the intent with which it is being designed as being a congestion hedge day-ahead market is extremely important. I think that's think we need to look at. We have looked at it a lot in the PJM stakeholder process, so I think I would also concur that Commission guidance in that area would be extremely helpful in this stage, especially from the standpoint of the better market design, if you will, from that standpoint of the treatment of the balance and the congestion.

To switch gears a little bit, and I won't talk

much about virtual transactions, but I will refer briefly to a paper that PJM produced back in October of last year on the value of virtual transactions only to point out that one of PJM's available bidding points for virtual transaction in the day-ahead market. Because there is the possibility that, given the availability of some of those bidding points, that there's a possibility for virtual transactions to be able to earn revenues without really contributing to the attrition of the operating of the two markets. And the reason I mention that is because I think that theory extends to the FTR markets as well. So for example, in our monthly FTR auction, we allow FTR trading between individual nodes and the model. And I think that opens up a significant possibility that there could be FTR trading that takes place that's not necessarily enhances the efficiency of the FTR operations, and yet provides the opportunity to earn revenues as a result which could obviously show up as underfunding. So I think that deserves a look as well as we go forward.

And then last but not least, there's been reference to some of the other markets and how the other markets conduct their FTR auction, the system capability, that they make available for sale. They restrict the system capability they make for sale beyond what is one hundred percent of their expectation of what would be

available when you actually get to real-time operation. That is another design chain that PJM can evaluate which would certainly help with the negative balancing congestion, I think, due to the fact that those things flow from a FTR model to the day-ahead model and then FTR to real-time. So that may be another beneficial design change that we can make. Although, I think when you couple that with changes to the accounting of balancing and congestion, there may be less of a need for it.

So those I think are four points I would make as far as enhancements that we should continue to evaluate, again, regardless of the instant case. But, again, I don't think a complete overhaul or elimination of the FTR or ARR can happen today, and that an alternative allocation of congestion is necessarily in the best interest of the market as they operate for the benefit of the load. Thanks.

MR. MILLER: Thank you, Stu. And just to try to sort of characterize the reason that we're trying to have this last panel to look at a comprehensive way I think -- and I don't want to speak for myself, but I think I speak for many staff who have been following the PJM process. We appreciate how hard you folks worked on that, how many proposals you went through with the stakeholders. You were never able to reach a 205 threshold. And it suggests that

it required more sort of a comprehensive look at just the nature of the proposal that PJM filed with us on behalf -- not even on behalf of the stakeholders since it was a 206. So that's why we're here.

And I heard an awful lot of agreement between many of the panelists, but obviously not a hundred percent. Let me just reach out because I think one of the things we would benefit from is hearing the interaction between panelists. Harry, I'm going to ask you to react to Stu's proposal and how it conforms to your thoughts in terms of the FTR product and what would be useful.

MR. SINGH: So I heard Stu pretty much agree with what is in Dr. Bowring's filing on the 1998 reference to reform. And perhaps that's something mitigating the Stage 1A feasibility and then sort of climbing out of it. I think that's a very good suggestion. I also am closer to Stu in terms of not looking to radically change the PJM FTR/ARR construct because every market is different. I think a lot of things should be left to stakeholders such as: Should you have seasonal or should you have annual? That's not some technique in any book, so I don't think that's the kind of decision that should be imposed by the Commission; it should be chosen by the stakeholders in each market. So I think I'm again with Stu on that. I think that every market is different.

In terms of balancing congestion being smaller, PJM was 20 percent of day-ahead in 2014, in 2015 it was 15 percent. So I think they deserve credit for moving in the right direction. So certainly not meaning to be critical. I think the biggest issue before you, like I said, today is PJM's filing, the unjust and unreasonable argument was that the ARR allocation has been reduced. So what particularly is unjust and unreasonable and how do you get out of it, that's really the focus. And as things stand today -- I'll just give you some numbers -- it was in the last planning year balancing congestion was 233 million dollars; the end of year surplus was 110 million dollars. Which means PJM generated a total surplus of 330 million dollars. So that's all what load serving entities are paying.

The unallocated Stage 1B ARR's were 257 million dollars, again higher than balancing congestions. I think it's really important to understand and agree that it's not a partial shift issue, it's really a market design issue. And I think I have challenged Joe, Dr. Bowring, on many panels that if you can explain to me what's wrong with my math, I think the last time I asked that question -- no, it was in November at New York, and you still owe me some numbers. So that's really the thing. So I'm pretty much in agreement with Stu and I think that it's really this design issue that's the biggest one, and the Stage 1A.

MS. QUINLAN: I have one rather specific question about updating the source points from the 1998 model and what that would mean. So, you mention that -- I think you said it would still be important to fill transmission upgrades to make sure that works so that would make more sense if it was using a model that was evolving to reflect the current system. My question is: Would you even need to do that if it was reflecting -- if you updated the model, would the congestion be identified as a market efficiency project at that point? Would we even need to have transmission built solely for that purpose?

MR. BRESLER: Well, it's hard to say. Certainly that has been the record so far. Like Time said, we've only had one transmission upgrade that's been identified because those Stage 1A ARR long-term infeasibility, right. Every other time we see infeasibility in a ten-year analysis, we already have an RTEP upgrade or a market efficiency upgrade in the plan that would relieve the other constraints that we see. So it's hard to say. All I'm saying is certainly if we had alignment between the actual sources that are being utilized to serve load and the actual sources that are being utilized as source point in the ARR allocation, we'd have alignment that you'd actually ever did see long-term infeasibility.

MR. MILLER: Joe, I certainly wouldn't want you

to restrain yourself too much. So do you have anything you want to reply to anything that you heard since you spoke?

DR. BOWRING: I hate to interfere with the lovefest up here. The comments of all my fellow panelists have illustrated the key divide, and that's: What is the source of the money? They all want to get past the source of money, but we created a perfect product: It's using somebody else's money, we created this we created this hedge, we can get it to everybody/sell it to everybody as often as we require. And it's awesome. And we should require that it be fully funded with somebody else's money. So we need to remember what the real source of FTR's are. And if you go back and look at 1996-1997, the filings of PJM, it's very clear what they were about, it was about returning dollars to load that belonged to them because they paid the transmission that permitted cheaper power to be imported into an LMP load pocket that was paid for by load, paid in excess by load.

So we heard that the purpose of FTR's is -- and I wrote it down -- to create a valuable financial instrument funded by congestion. This subsidy load for congestion -- I agree it is valuable -- we have to look at whose funding it. Everyone else here pretty much said that FTR's are sort of this product created because they make markets so efficient and they allow people to hedge.

That's all true, but they're using funds that are not simply a pot of money which is available to give to wherever we think the best use is. In fact it already belonged to somebody, it belongs to the load that paid for it. So I think I -- I've said it a bunch of times today, I won't say it again -- but that's the divide I think is illustrated very, very clearly here.

And that leads to the best-of-balancing question. Because balancing congestion is congestion, in fact FTR's were invented not in the day-ahead market but in the real-time market. And there's absolutely no basis for asserting that it was intended to, or should logically, be based on purely a day-ahead product; that's not the way the market works, that's not the way congestion works. And the fact that, even if it's all modelling issues, even if every dime of balancing congestion is modelling issues, why does it make sense to impose that on load? Why does it make sense not to impose it on all FTR's? Clearly everyone's aware of that, everyone's aware of that here, it's clearly transparent. Why doesn't the pressure derived from that transparency all be done to make the model better if indeed that's possible? So imposing on load I think removes the incentive from all the market participants sitting up here to try to talk with them into making it --

(Laughter)

MS. QUINLAN: Everybody has put their cards up, but I actually went in that order so it's really simple.

DR. PATTON: So thank you for that opportunity.

MR. MILLER: Do you feel better, Joe?

DR. BOWRING: A little bit. Only a little.

DR. PATTON: So I'll answer Dr. Bowring's question: Why should load pay for this? Because load is going to pay for it anyway; there' just no way of getting around it. So, take a simple numerical example: Let's say you sell a bunch of FTR's, they're all worth $10 this year. And then let's say balancing congestion emerges that imposes a two-dollar cost. So now we're going to start funding the FTR's at 80 percent. When you issue those FTR's and you collect revenue, either you issue them to the load or you sell them to folks, they're getting 10 dollars of value for those FTR's. You start allocating balance and congestion to them, now they're getting $8 of value. So the FTR holders, instead of paying $10 they're going to pay $8, right? Who lost the $2? You never lost the $2, it was the load. Now, they get $8 for every FTR they sell instead of $10. So if I say allocate the balancing congestion directly to the load, who's bearing the $2? Well, the load is bearing the $2.

So I think it's silly to argue about whether load should pay balancing congestion or not pay balancing

congestion. Load is going to pay for the balancing congestion. The problem is if balancing congestion is highly uncertain, FTR holders aren't going to pay $8 for the FTR, they're going to pay $7 for the FTR. And how much have loads paid them? They've paid $3 even though balancing congestion is $2.

So ultimately it's going to benefit the loads to make the FTR product as clear and maximize the integrity of the FTR product. This is not a us versus them or who's bearing the cost, because I think at the end of the day it's always going to be the loads bear the costs, to making those processes as transparent as you can and when you have balance and congestion and infeasibilities, allocating, being very transparent about how those costs get allocated so it's as equitable as it can be is the best approach.

MR. SOTO: So, if I understand what you're saying, you're saying that load is going to pay no matter what. So the question is not who do I locate it to but how do I minimize the cost to load?

DR. PATTON: Yeah. So you should ask yourself: Are we doing something that is increasing the cost to the load? And in my opinion anytime that you create an uncertainty that forces the buyers of this instrument to build in a risk premium that's going to increase the cost to the load and it's going to create an apparent profit for

the buyer of the FTR, it' snot an actual profit because to the extent that they're not risk-neutral and they're pricing the risk of a fluctuating balancing congestion -- someone earlier was talking about how in extreme conditions FTR funding has gone to zero. So if I'm somebody who's relying on that instrument either to hedge or support some position I have and I'm watching it fluctuate like that, the mean value might be X but that doesn't mean I'm willing to pay X for it. And if I reduce the amount I'm willing to pay, the more I reduce it, the more the market reduces it, the more loads are going to pay. There's just no reason to pose that sort of uncertainty on an FTR holders.

MS. QUINLAN: Stu?

MR. BRESLER: This is Stu Bresler. Just a couple quick questions.

(Laughter)

I don't think I'm very far off from Joe as far as the theory behind the FTR. I agree that the whole purpose is to provide a hedge against congestion for the firm hedges to sort of lead the network customers to transmission service uses. I also agree in the initial implementation in 1998 they were only a real-time product because it was only a real-time market. When the day-ahead market was created there was a market design decision made, and it changed. And FTR's were changed to a day-ahead

product, and there was a very good reason behind that change, and that was, again, to solidify the incentive, with all the other incentives that go along with day-ahead market, to participate in the day-ahead market. I think it's critical that it be preserved.

And the other thing I would say is the FTR product was created in toward to be -- as I think Dr. Patton said -- in order to create a comfortable product around the main transmission service. So not just to allocate one transmission service, but rather to allow it to be tradable, if you will. Because I want to enhance the value for the purpose of getting that value back to the load. So that's why the FTR was created, and I think it's worked. If you look at the market of PJM, you're going to see financial players that participate in the market, in other flow and physical players, and that counterflow makes more available for physical market participants to obtain. So I think the theory has worked.

That being said, I do think that, again, balancing congestion needs to be addressed. I do think that (1) it does not need to get allocated on technical load. I think cost causation breaks down a bit because nobody causes the things that cause negative balancing congestion. So allocating it as widely as possible potentially to include FTR holders, deviation, load,

financial partners, as widely as possible would, again, mitigate the impact of that allocation on any one market participant, which I think is the best you can do with something like that. So I do think that there is a way to get to achieving I think the goals that everybody has stated up here. But I do think there are a couple critical things we need to keep in mind.

MS. QUINLAN: Harry?

MR. SINGH: Yes, I just want to say the disagreement that Dr. Bowring noted, it's not rally a disagreement. I agree with him that the purpose is really to get the money back to load. I think the disagreement is only on that narrow element on what is the preferred definition of the product, a day-ahead or a day-ahead plus an allocation of the real-time fees. I think the vast majority, we agree, going over allocated Stage 1A, improve the models. So I just don't want you to get the wrong impression there.

And I think, if it was really the case that there was something so terribly wrong in having the day-ahead definition that completely overturns the premise that this is for the load, then every other RTO would be having an unjust and unreasonable outcome. California can't imagine PJM accepting their customers pay for real-time balance and congestion when there's a better

alternative. So that's really the very narrow disagreement. Otherwise, I think we're pretty much in sync with each other.

MR. WADSWORTH: Thank you. I largely agree with what Stu explained as sort of the intent of the product when there's a two-settlement system really is the product settles in the day-ahead market. It's a first-settlement principle which I kind of rushed through in my comments, but that's an important one. I do you want to say, though, when Stu talked about we do need to address the balance and congestion piece of FTR's, we should remove it. You talked about allocating, I had mentioned that -- I wasn't thinking of including FTR holders in that because, again, you're violating that first-settlement principle. FTR's have nothing at all to do with the real-time market, right? Or anything that happens in the real-time market when there's a two-settlement system.

MS. QUINLAN: Joe?

DR. BOWRING: Just very, very briefly. First, when there is a substantial amount of varying, I think it would be certainly true, the prices go down. But what else happens? The volume goes up. They offset one another, sometimes their revenues are higher, sometimes they're not, but it's certainly not obvious because there's a certain negative frequency and that load goes up, clearly is not

true, empirically not true. But that's a fairly minor point in the scheme of things. The broader point is that revenue come into the load, they're not -- they should be -- they're not being effectively returned to load using this method, particularly not percentage because congestions is not really congestion, it's something else, and the day-ahead market should be somehow separated from that. As much as it is true that the FTR product changed when day-ahead product was introduced, it also came to be -- the PJM tariff is very clear, congestion is congestion.

It's different than California, that's right. So the fact that markets differ is interesting. I try not to ever use that as a rationale for arguments on the correct design. I think the correct design ought to stand on its own. So, while it is interesting that they're different, I don't think that's really dispositive. Thank you.

MR. MILLER: Joe, I wanted to go back to something that you said in your opening statement, I wanted to make sure that I got it. You said that if you just allocated, it sounded almost as if you were willing to do away with FTR's and if you just allocated the congestion so that, you know, back to the load, however you did it, in other words you got the congestion and you just allocated back to load, that would work just as well in terms of

equity issues. Is that correct?

DR. BOWRING: Yes. I mean, there are markets, again I can think of a market like the FTR market where someone else funds your hedge and the money's coming from some other group of participants but it's funding your hedge. So, yes, what I said could be interpreted that way. It could also be interpreted as something we find the FTR's to do the following prior to the FTR/ARR split. Because once you split those, the FTR product is different than when we simply have FTR's and ARR's. So it could be done in a number of ways, but either of those could certainly mechanically handle it.

And one of the other side benefits is to ensure that the allocation of the congestion goes back to those who are actually paying it. I mean, one of the issues with this 1998 gentle load business is that include -- doesn't have much to do with who's actually paying congestion now. So that certainly is addressed.

MR. SOTO: If not the FTR's, what are the -- allocate the congestion to load?

DR. BOWRING: You could simply do a base share of congestion payments.

MS. QUINLAN: Do any other panelists want to respond to Dr. Bowring's proposal?

MR. SINGH: I think I would say really quickly

that that would be an example of one of the more radical changes to the design.

MR. WADSWORTH: I mean, on top of that we're talking about unwinding market mechanisms which we have committed to years ago. I think we're actually in the process of improving markets mechanisms, and again I'll refer to the price formation docket. I mean, to recognize there are issues in the energy industry is going back several years with things such as uplift, price signals, and transparency, why unwind it? We need to commit and actually make it better, make the products work better.

DR. PATTON: Yeah, certainly I disagree. I think that it ignores the fact that the value-added FTR's as an instrument to facilitate the trading of the property right associated with transmission, it assumes that the load serving entity has the highest value used for that. To the extent that that's not true, the FTR product is an ability for the person who values it the most highly to buy it; it creates the ability for others to sell counterflow FTR's to make even more FTR's available; and it gives you an instrument that could motivate efficient transmission investment to the extent that you get transmission rights for those who are expanding the grid. So it has a slew of benefits that would all be lost if you just decided let's just make this a giant cost allocation and send the money

back to load.

MR. KHELOUSSI: Can I ask a quick question? For Stu, is the cost of Stage 1A infeasibility sort of what created the ConEd line?

MR. BRESLER: In most recent years, we have been seeing it in less fewer areas of the system, if you will. So, like I said, we had seen it in three areas of the system simultaneously several years ago. ConEd is really what's left as far as the most recent allocation, we expect that to go away with Grandbury Gateway in 2017, so. We don't know if it will pop up someplace later. The only other thing I will say in response to the other comments, in an effort to say something new, is I'm not sure I understand the issue with the ARR/FTR split. If you're going to run an annual FTR auction, you have to have some way of allocating the revenues. And the impetus behind the ARR design was to make sure that we allocated as many rights as we possibly could to load serving entities -- I shouldn't say "load service entities" -- to make sure that the customers paying the cost of transmission service are the ones that actually get the rights first with really only the residual that is open for auction, if you will, along with the ability for those entities, to which they were allocated, offer them for sale as well. Again, that involves the benefits of the products that Dr. Patton

talked about.

So I think as long as you're going to auction often your FTR's, as Dr. Patton spoke to awhile ago, you got to have a way to distribute the revenue. There are certainly many way to distribute the revenue, but I think the theory behind the fact that it hasn't been created was to do exactly what I think Dr. Bowring said, was to get the balance back to the load to the ones that paid across the transmission system. Now, there may be a better way to do it, but that's the theory of mine.

MS. QUINLAN: Harry?

MR. SINGH: The one thing I wanted to mention that I forgot to earlier is the level of the surplus. So it's a big surplus. So when PJM is overly conservative in the allocation and you end up with a big surplus, what's the best thing to do with it? One of the things we thought of is if we fix balance and congestion, maybe it's not unreasonable to return that surplus to load serving entities rather than to the FTR holders. So that's a very specific consideration. Another variation would be that PJM right now is using the surplus to fill in the underfunding that has occurred in certain months. In 2015 March had a very high level of balancing congestion relative to -- they had 50 percent. But the running surplus helped fill that hole. So is it possible to expand

this concept from one planning year to the next so that PJM has a lot of money left over? Rather than giving it back to the FTR holders at the end of the planning year, you could keep it and then help/not be as conservative in the allocation the next year. So maybe have a multiyear look, that's one other idea for consideration.

MS. QUINLAN: I want to ask for a little bit more detail, Stu, about your thoughts related to kind of how you go about updating to try to -- update the models for the first ones that aren't -- for 1998. Is the implementation of that something that's challenging? Speaking only for myself, it seems there is a lot of benefits of doing that, are there downsides to doing that? Are there challenges implementing it? What are the other sides of that? Equity issues, what's the downside of doing that?

MR. BRESLER: Yeah, we actually had a big stakeholder discussion in the past that didn't make it into the packet, that actually got voted on by the upper-level committees. So some of the concerns that I think were expressed -- and I probably won't capture all of them, so I apologize to any of my stakeholders, I don't want to misrepresent their interest, but. Some of the concerns we heard were really I think along the lines of: What if the point that a unit that is retiring goes away is a valuable

point and now you're taking that point away from me, you're get to reassign me to some other generator that is less valuable than the one that's going away? I don't think you could characterize that as an equity issue, but it certainly is a concern about what is the value of what may have been a very valuable tool. So certainly I understand that concern.

But I think there's certainly -- we came up with this this historical Stage 1A source point a more important point in the first place which implemented whereby we could make sure we replace the nodes or what physical resources are retiring with those that sort of are the most valuable ones to be replaced with, if you will. That was some of the proposals that we reached forward with. I won't pretend that that was the design in mind, but I'm saying that this is the kind of work that would achieve the objective of staying up with the current state of the system.

MR. MILLER: On the basis of what your characterization is, and I understand that it's a rough characterization, that just sounds like the opposition that anybody would have to any entitlement.

MR. BRESLER: Well, it's uncertainty, right? It could be replaced with a more valuable product, we don't know. It's sort of like the annual product that be have

today, there's submitting and resistance and more seasonal talk. So they get a right and they get it for the whole year, right? So I certainly understand that. But I think there's some consternation about I'm not going to get one that's a valuable as the one that I already have or not. What you have is knowing what you have is a good thing, so.

DR. BOWRING: Can I just make a brief comment about it? I think this is literally one of the ways that the focus got off track from the very beginning was assigning FTR's based on gentle load patterns. And it was questionable at best when it was done. I'm not sure I would suggest the way I think about it now is not the best substitute we have and figuring out what we're going to buy or buying or not buying from, but to think about a different method including the relative contribution to congestion. Because that's really the underlying fundamental, and that was the fundamental reason for assigning the FTR value in the first place. I'm not suggesting that everyone stop addressing, mind you. But on the issue about the allocation, rather than trying to guess a gentle load point, which is I think pretty hard to do, almost possible, think about a different conceptual process, then you're not saying you're buying from a guy that has a less valuable area, but actually to focus on how much congestion people are actually paying.

MR. MILLER: Joe, before we go on to Stu, it sounds -- and I want to make sure I'm characterizing this correctly -- that in that respect you're similar to what Dr. Shanker was talking about, which is let's say you auctioned everything, you recognize that of course the revenues will go back to load. And you're just auctioning and there's some sort of transparency in terms of how relative the market can value that in the auction to how valuable they are to relieving congestion. It sounds like you might be, with certain caveats, be willing to go in that direction.

DR. BOWRING: I hate to say I agree with Roy. Part of what he says doesn't really matter, and part of it does matter.

MR. MILLER: Let me just say I thought I heard him say; we'll have it in the transcript.

DR. BOWRING: So, based on how much congestion we actually -- maybe allocating on the load and how much congestion they're actually paying instead of assuming that it's going to manipulate gentle load.

MR. MILLER: Right.

MS. QUINLAN: Stu?

MR. BRESLER: I think, in the interest of time, generators work really well for ARR allocation, and I'll get to that in discovery because we're constrained from the

historic viewpoint. I think we need to maintain certainly the entitlements somehow that the firm transmission customers receive today. Like I said, our load serving entities are very attached to their Stage 1A allocations, they think they're extremely important, so we need to make sure there's something directly analogous to that minimal right, if you will, I think. But certainly there's a design for that. I'm not sure I'd agree with Joe that the initial implementation of FTR allocation was so far off base; it was from home capacity resources to the loads you serve. You can't get much closer to the congestion exposure than that; right? So I think that was actually a very good initial design. When we designed the annual auction and we had allocated these revenues from the annual auction, then, yeah, we had a plethora of options open for us. Roy went through some of the ones that were actually discussed, some more allocations that were not tied to generator source point. Frankly, I think we involved it with the amount from what we initially had, and that's just the way it came out. So certainly, just because we did the price system, that doesn't we have to always do it in the future. We don't have to have a design discussion here now, but I'm not sure that maybe by ration share you're indicating the right way. But if it's supposed to be a reflection of the fact that firm transmission customers are

paying embedded cost to the transmission system, maybe it's something by ratio of that embedded cost they're paying or something like that. But certainly there's a way to do it, I'm sure.

DR. BOWRING: So I think that the original reliance on gentle load is sort of a last gasp at contract path when you're moving into the LMP market. Again, I'm not sticking to that reason. Of course I was not suggesting we change some of the fundamental things like the Stage 1A necessarily until that's all worked out. But it is -- it would not I think -- use of the payment of transmission is clearly the right measure, is not the right metric. The reason for paying for congestion matters is because you get a congestion benefit. But anyways, Stu said, I think it's interesting to have the preliminary discussion, it's a complicated discussion to redesign, but I think that's a way to go.

MR. MILLER: I think we're close to summing up. So let me just throw something out there just to get some sort of reaction to sort of see how close we are. What we're dealing with is a 206 filing, we're stepping back, we got to determine whether or not to meet the unjust and unreasonable and whether or not the proposal, if it is unjust and unreasonable, whether the proposal is the right way to go. But we've heard an awful lot of discussion, and

let's understand that anything we're saying here has nothing to do with what the Commission will actually do. We're staff; we don't have anything to do with that except that we try to keep them as informed as possible and help them make the best decision possible. But it sounds as if there's a great deal of difficulty getting the vast number of stakeholders that PJM has, and it's a system that is right next to a couple big systems and it's a very complex interface, and there are other things that are being done in other dockets and other proceedings that may be helpful. Would it be fair to say that this is something that may need some sort of Commission direction or help in this regard? Because we had wanted the stakeholder process to work, but I think there's a recognition that there are some things that are just equity issues that hard for a stakeholder process to deal with. And quite frankly, in the case of congestion and the adjoining systems outside of the control of a specific tariff, I'd just like people's reaction to that.

MR. SINGH: I'll take a stab at that. What I would say is what you have right now is a set of rules that force PJM to make a guess on balancing congestion, and they end up either under-allocating ARR's, which has been the case this year and last year, or masterfully underfunding FTR's. So neither of those two is an optimal result. I

don't want to speak on the legal definition of "just and reasonable," but I don't think it's good market designing.

MR. WADSWORTH: Obviously, as a stakeholder body, we've not been able to get over the threshold question of? What's the definition of a product and what are be going to do to integrate it into the day-ahead, what are we going to do with the balance and congestion? So I do think in this case on some direction from the Commission would help. As I said before, we've made a commitment to markets. We want products to work the way they were intended to be designed, and if the stakeholders cannot reach that conclusion then I think the Commission needs to step in and guide us.

DR. BOWRING: I presume the stakeholders made it very clear in the system when they said emphatically not to include balance and congestion. The negative of the decision, as well as the positive, is the fact that they didn't come forward with what was proposed by the panelists here is not mean the decision wasn't made; it was made.

MR. KHELOUSSI: Can I follow up and ask what else was particularly popular, unpopular in the stakeholder history, for the record?

DR. BOWRING: I personally don't remember. There were a million votes and a million conclusions, I really don't remember, Dan.

MR. BRESLER: We had 27 packages from the stakeholders at one point, so I think it's impossible to do a fair characterization. The fact of the matter is on many of those -- really one of those packages, you had people on all sides of every action -- that's even that one package came out. So it's very difficult to do a fair characterization there. Sorry, while I have the mic, to directly end your question, to be repetitive of what I said before, I think the balancing and congestion issue is one that could really use direction from the Commission. The other three points I think I have mentioned is: We have had another stakeholder discussion to say it has been exhausted at this point.

DR. PATTON: Just from participating in other stakeholder processes, cost allocation issues tend to be the most difficult ones. And I think from -- so our perspective is always? What's the most efficient? What will provide the best incentives? But that's almost nobody else's objective in the stakeholder process. And it becomes very difficult, I went through this notion of what the allocated, the best group that's actually going to be borne by the group, it's very hard to penetrate stakeholders on that sort of argument even though it's absolutely true.

So what we found is that cost allocation is one

of the most difficult ones, especially to the extent that it effects the efficiency of a market outcome for stakeholders to buy themselves, navigate without Commission direction. And another observation I would make is in looking at the two proposals that have come out of the PJM stakeholder process I think there's something evidence that has failed. The netting idea is very, very bad. It increases the discrimination between two identical products that are going in different directions. You sell them in the same price in the FTR market and then you want to sell them in the day-ahead in the two different prices, that's just fundamentally flawed. And the manipulation concern you have is absolutely real: You should never create an incentive that you know is going to just infect people to engage in conduct that's inefficient.

And the load thing is equally confounding in terms of how that's a good idea because it seems to just promote building transmission that's not necessarily economic. And neither one of those seem to get to the core of any of these issues that we've been talking about.

MS. QUINLAN: I'm sure people would be able to respond to that, but I'm going to take that as the end of the panel. We'll close that out for the fourth and final panel of the day. And I want to thank panelists and all the panels, all the comments people submitted so far, and

all the people who sat in the room today or on the webcast and hung out with us and listened to quite a bit of really interesting discussion. I think we've heard a lot of information today and I think it was incredibly informative for staff. We have to regroup ourselves and determine what, if any, additional questions we have. And we intend to kind of put those questions and any additional guidance in the notice seeking post-technical conference among us. So we're not going to announce the schedule today, but we will be issuing a notice to the effect that there potentially might be some additional questions and what kind of feedback we're looking for. So with that detail, I'd like to say thanks again to everyone and we will conclude for the day.

(Whereupon the FERC technical conference scheduled for 9:30 a.m. on February 4th, 2016, was concluded at 4:47 p.m.)