The Road to FTR

The path to a financial congestion cost hedge mechanism

The Recommendation

- On June 17th the Congestion Hedging Task Force (CHTF) made a recommendation to Market Working Group (MWG) that SPP adopt a financial mechanism for hedging transmission congestion costs in the future markets.
- MWG adopted this approach

Who Is the CHTF?

- CHTF representatives included:
  - State regulatory staff
  - Load-serving members
  - Transmission Owning members
  - Power Marketers
  - Merchant Generators
  - SPP Staff
  - Industry consultants

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Why Do Anything?

- The future market cost/benefit study shows an opportunity for significant savings through an SPP-wide centralized unit commitment
  - Estimated at $100M/yr = **$BIG$**
  - Reminder: Unit commitment must be a DA process due to physical plant characteristics

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Decision Process - Is Change Necessary?

- To realize the **BIG** benefits SPP will implement a DA energy market, with centralized unit commitment

But…

- Existing process impedes full use of a centralized commitment process
- Today, MPs use their own Day Ahead (DA) commitment and schedules as a hedge against cost to serve load – "my unit serves my load, so I know the cost"

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Decision Process - Is Change Necessary?

- Current process has its own problems…
  - That "known" hedge may be removed in real-time (TLR and CAT cuts to schedules, etc) losing the price assurance upon which that the commitment was based
  - Result is that today we have a hedge that continually changes as schedules change
  - So what? All of this has been happening for decades. How is that a problem now?

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Change **IS** Necessary

- Realizing the **BIG** savings will require change –
- Specifically, *generation owners must turn the commitment decisions for their own units over to the market*.

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Change is Necessary – HOW ?

How do we convince the MP to let someone else make commitment decisions for their resources, and them live with the results?

By indemnifying them from the cost impact of those decisions.

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Change is Necessary – HOW ?

Developing and settling a financially binding energy solution and congestion hedge in the DA time frame will provide price assurance.

That price assurance will allow Load Serving Entities to turn over the generation commitment decision and economically offer into the DA market

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Wide Range of Initial Positions in CHTF

- FTRs - No way – Never!
- Hedges must be physical
- FTRs - the only way to go – why don't we already have them?
- Everywhere in between
- All meeting participants displayed an open mind and shared a desire to learn, understand and make the best decision

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What was the CHTF Decision Process?

- Thorough, reasoned approach
- Reviewed the decisions of other RTOs
- Analyzed numerous complex examples
  - Engaging in these discussions and extensive "what-ifs" provided the most learning
- Asked questions like:
  - How would your company evaluate a recommendation?
  - What would the ultimate impact be to rate payers?

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Decision Process - Areas of Concern

- How comparable is it to your hedge today?
- Are the results of the process transparent to the participants?
- What is the availability period of the mechanism (Hourly, Daily, Monthly, Yearly)?
- How well does the mechanism minimize the need for uplift?

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Decision Process - Areas of Concern

- Does the mechanism:
  - promote full and efficient use of the transmission system?
  - increase the capability of participants to trade energy bilaterally?
  - support the use of and development of energy trading hubs?
  - allow a participant the opportunity to place a value on the right?
  - require the scheduling of Native Load?

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Decision Process - Areas of Concern

- How tradable are the rights?
- What is the complexity level of the hedging mechanism?
- What are the system changes necessary with each mechanism?
- Does the mechanism provide any incentive or disincentive with regard to achieving expansion and improvement of the transmission system?

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Decision Process

Inescapable Conclusion…

- There is no single perfect solution
- Every option involves compromise and tradeoffs

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Congestion Hedging Examples

Review Fundamental Elements of LMP Market

- ALL load pays the LMP at its location
  - Regardless of any other arrangements
- ALL Generation is paid the LMP at its location
  - Regardless of any other arrangements

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Congestion Hedging Examples

Simple “System” Description:

- One Market Participant with…
  - One Load Location: 500 MW
  - One Cheap Generator: 500 MW @ $20
  - One Expensive Generator: 500 MW @ $70

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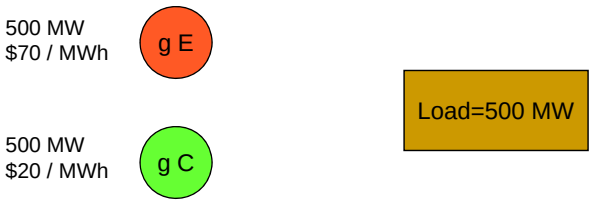
Simple “System” Diagram

Two generators and one load



All generation and load is offered into the DA market

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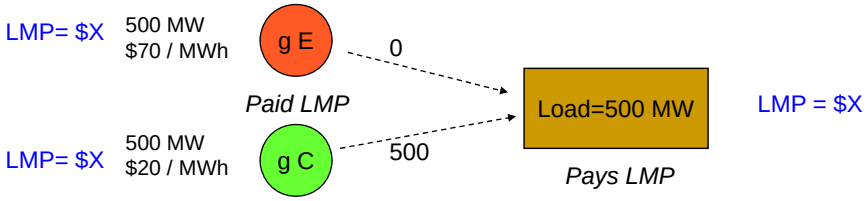
Scenario N

DA, No congestion, All of gen C is deployed



No Congestion → LMP at all locations is the same

Regardless of LMP magnitude, the dollars paid at load equal dollars received at generation

Net transaction with market = zero

Cost to serve load is just the fuel cost at gen C

The effect is as if gen C energy was delivered to the load.

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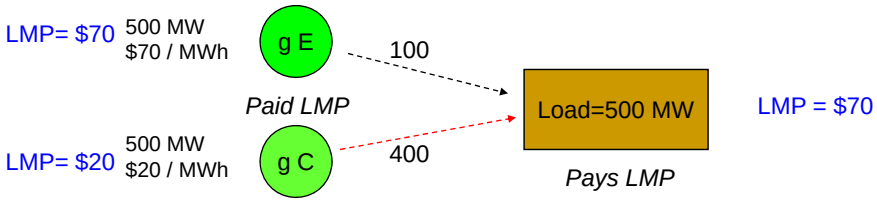
Scenario C (Congestion)

DA, WITH congestion, Gen C is Limited

LMPs are assumed for illustration purposes



With Congestion → LMP varies by location

$ paid at load = 500 x $70 = $35,000

$ received at gen E = 100 x $70 = $7,000

$ received at gen C = 400 x $20 = $8,000

Net market transaction is to PAY (35 - 8 – 7) = $20,000

Cost to serve load is own fuel cost PLUS $20,000 in congestion cost.

A hedge is needed.

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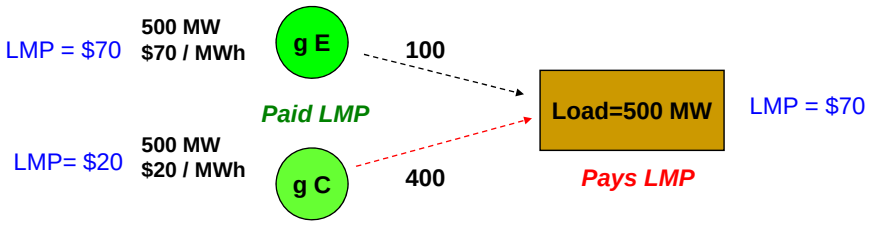
What is Congestion Cost?



- The difference in the injection point (generation) LMP and the withdrawal point (load) LMP times the MW quantity
- 400 * (70 – 20) = $20,000
- Money paid by MP, and over-collected by RTO
- Aka “Congestion Rents”

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Hedges can take three basic forms.

- Pro-Rata
- Transactional (physical)
- Independent (Financial)

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Analysis Review – **Pro Rata**

- In the **pro-rata** method congestion over-collection is returned to the MPs through some static formula.
  - Consistent with postage stamp transmission cost allocation

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Ruled out **Pro-rata** approach early

- Reason is that the hedge has no relation at all to the commitment or operational decisions
- All congestion costs are spread as uplift (RNU in today's EIS market)

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Analysis Review – **Transactional** (aka physical)

- Tied to actual operations
- Value as a credit against the congestion charge on a schedule (transaction)
- Could apply to both firm and non-firm schedules
- Simultaneous Feasibility is assured in near real-time
- Schedules are cut if infeasible

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Analysis Review – **Independent** (aka financial)

- Not necessarily tied to actual operations
- Value as a credit against the congestion charge between two locations
- Value can reverse (becomes a charge) if structured as an Obligation
- Can be structured as an Option
- Supports the ability for Auctions (easily tradable)

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Analysis Review – **Independent** (aka financial)

- Simultaneous Feasibility still assessed but much further in advance of operating day
- System differences in DA Market model from model used to grant hedge may result in hedges no longer being Simultaneously Feasible
- Historically, this results in some form of allocation of revenue collection shortfall.
- This can also result in excess revenue when system changes result in more system capability in the DA

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Reviewed Other RTOs

- Midwest ISO
- PJM
- ISO New England
- New York ISO
- California ISO (future market design)
- ERCOT Nodal Market

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Basic Identical Traits

- **All 6 transmission congestion hedging models are financial rights models *independent* of physical transactions**
- **All 6 conduct Annual and Monthly Auctions of transmission hedges**
- **All 6 allow non-utility entities to participate in the transmission hedge auctions and to hold transmission hedges**
- **All 6 have a secondary trading system to facilitate tracking ownership for "outside the auction" trades of transmission hedges.**

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Thoroughly Considered Transactional

- Requires Schedules to receive congestion credits
- Similar to today, so not intimidating
- Drawbacks
  - NLS difficult to manage, especially during CAT cuts
  - Don't know hedge until DA, then too late to react
- Imbalance Offset method was developed
  - Automatically determined deliveries from owned generation and removed those MW from the congestion calculations
  - Through detailed examples, determined that it results in double counting congestion credits in some cases
  - Solution would be very computationally complex
  - Little transparency of results

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Thoroughly Considered Transactional - 2

- Tried a hybrid method with some portion monthly commitments, and some DA
- Unwieldy and ran into problems of competing priorities
  - Which firm is firmer in SFT analysis?
- The level of complexity and transparency issues ultimately ruled out the imbalance offset and the hybrid approach

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Evaluations of Transactional and Independent Mechanisms

- If continuing to hedge for physical transaction delivery were the only objective, the transactional based hedge would be viable
- But there are issues today regarding physical delivery and point to point Firm transmission service
- Available transmission service is very limited on a short-term basis and the queue is significantly backed up with requests for long-term service
- Reconfiguring existing service to new points of receipt and delivery is very difficult to accomplish while maintaining Firm status.

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Evaluations of Transactional and Independent Mechanisms

- Transactional also requires self-owned resources serving congested areas to be scheduled using Native Load Schedules. These are often difficult to manage for larger fleets using service on several congested paths.
- Curtailment of schedules in the DA solution (vs managing real-time CAT curtailments) could help with this management but it is still undesirable to have to manage schedules to your native load.
- Curtailment even at the time of the DA Market results in MPs not being certain of their hedge position until there is little time to mitigate their exposure through other means.

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Evaluations of Transactional and Independent Mechanisms

- A financial hedge gives participants the opportunity to handle all of these possibilities within the market system
- Transmission Service is still required to be purchased per the requirements of the Tariff for NITS and PtP service.
- That service will be the basis for determining an initial allocation of the financial rights

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Developed Consensus

- Could make either work
- Some stated a preference for Transactional (physical)
  - That is the business we are in
- Most stated that their choice was not overwhelming in either direction, but preferred Independent (FTR)

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Primary Reasons Given for FTR

- In the end, the majority were in favor of the independent financial transmission right mechanism as providing more flexibility for trading and reconfiguring the hedges, removing the requirement to manage Native Load Schedules and better supporting the establishment and use of trading hubs within SPP

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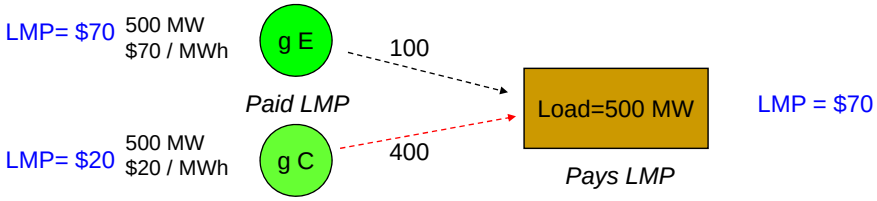
Scenario C - Repeated

DA, WITH congestion, Gen C is Limited

LMPs are assumed for illustration purposes



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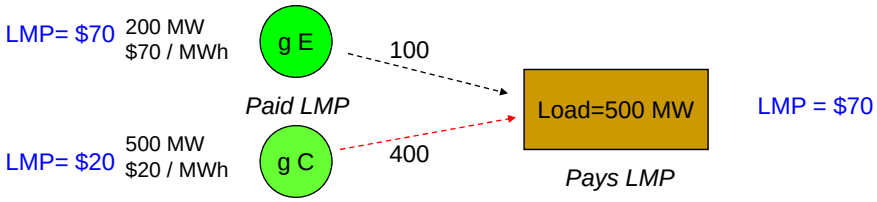
Scenario C

DA, WITH congestion, Gen C is Limited

Use FTR-like Hedge



No change in energy charges

$ paid at load = 500 x $70 = $35,000

$ received at gen E = 100 x $70 = $7,000

$ received at gen C = 400 x $20 = $8,000, netting to a cost of $20,000

FTR (E to Load) revenue = ($70 - $70) X 100 = zero

FTR (C to Load) revenue = ($70 - $20) X 400 = $20,000

The Net market transaction is ZERO

Cost to serve load is own fuel cost

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Simultaneous Feasibility and Revenue Neutrality

- FTRs must be aligned with the physical capability of the system.
- Failure to do so will result in a mismatch between the amount of congestion charges collected and paid back, leaving SPP either long or short
- SPP must remain revenue neutral
- Any mismatch is eliminated through uplift

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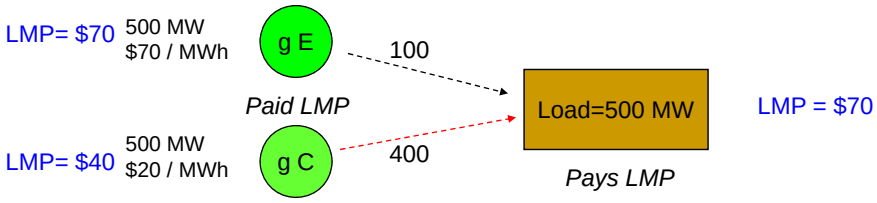
Scenario C

What if FTR (C to load) had been for 500 MW?



No change in energy charges

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$ received at gen E =	100 x $70 = $7,000
$ received at gen C =	400 x $20 = $8,000, netting to a cost of $20,000
FTR (E to Load) revenue =	($70 - $70) X 100 = zero

FTR (C to Load) revenue = ($70 - $20) X 500 = $25,000

The Net market transaction is $5,000 paid by SPP to MP

SPP is now short $5,000, and must collect that amount through uplift

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Simultaneous Feasibility Evaluation and Enforcement is a Necessity

- The example shows how non-feasible FTRs result in mismatch
  - Cost recovery through uplift is undesirable
  - The charges have little or no relation to the activity resulting in the mismatch
- SFT evaluation is similar to the analysis performed in granting transmission service
- However, when granting Firm transmission service, a conservative level of counterflow impacts has to be assumed because scheduling a Firm reservation is optional and cannot be counted on.
- With Obligation FTRs though, counterflows provided are required through financial enforcement

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Independent from Expected Energy Delivery

- The next example looks at the use of an FTR as a hedge when a resource is out of service
- One of the benefits of the independent hedge was that it was not tied to expected physical energy delivery.
- The example shows that the hedge remains in place from an offline resource and results in the cost to serve load as the cost at the resource instead of the cost at the load.

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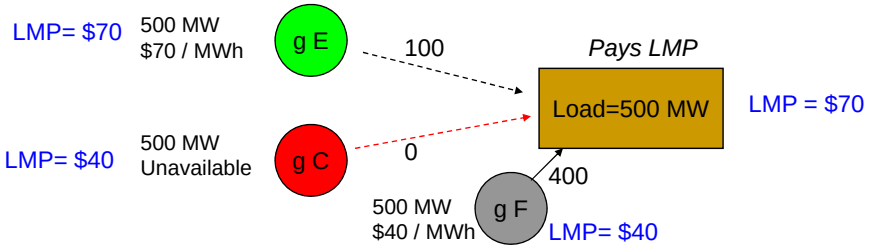
Scenario CH w/Outage

DA, With Congestion, Gen C unavailable, gen F and gen E are deployed. FTR from gen C to load. Gen F not owned by Load



- $ received at gen E = 100 x $70 = $7,000
- $ paid at load = 500 x $70 = $35,000
- $ received at gen C = 0 x $40 = $0
- FTR C-Load still = 400 X $30 = $12,000

Without hedge$_C$ cost = $28k

- **Net market Settlement for Load (35 – 7 – 12) = $16,000**
- **Cost to serve load is fuel cost of E plus cost of remaining energy need priced at C LMP instead of Load LMP. Hedge still in effect to offset full exposure to Load LMP even when resource not available.**

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Potential Cost Obligation

- One of the primary concerns with Obligation FTRs is cost obligation.
- Because the proposed FTRs are of an obligation type, when congestion costs reverse, the holder is obligated to pay that difference.
- In the next example, the load is now served by the higher cost resource of the Load MP but congestion is reversed
- The FTR increases the overall cost to serve above and beyond the marginal cost at the Load.

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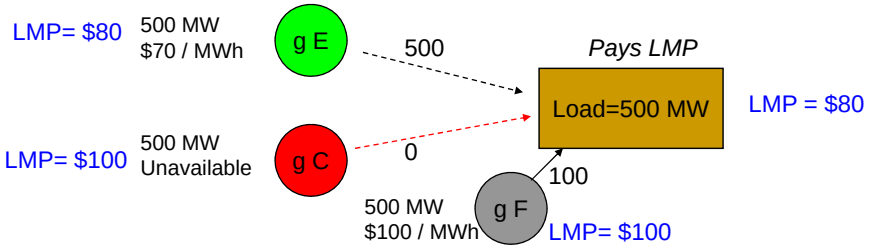
Scenario CH w/Outage – Cost Obligation

DA, With Congestion reversed, Gen C unavailable, gen F and gen E are deployed. FTR from gen C to load. Gen F not owned by Load



- $ received at gen E = 500 x $80 = $40,000
- $ paid at load = 500 x $80 = $40,000
- $ received at gen C = 0 x $100 = $0
- FTR C-Load now = 400 x -$20 = -$8,000
- **Net market Settlement for Load (40 – 40 + 8) = $8,000**
- **Cost to serve load is fuel cost of E plus counterflow obligation.**
- **FTR is now a cost obligation with unit out and congestion reversed.**

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A Word About the Acronym "FTR"

- The term "Financial Transmission Rights" is misleading at best
- FTR (as SPP is using it) conveys *NO RIGHTS AT ALL* to transmission service
  - Transmission service will be acquired as in the past
- An FTR on a path is NOT a right to move power over the path.
- An FTR is a right to the receive the congestion cost on a path
- Perhaps we should use another term, like *Transmission Congestion Right*

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Develop Independent Hedge Design

- Last several weeks of CHTF activity were devoted to developing as much detail as possible on FTR design
- RSC has authority over FTR allocation and any transition mechanism
- CHTF Report describes the details of design that CHTF suggests get adopted
  - http://www.spp.org/publications/CHTF%20report%206-17-2009.doc

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Recent History of Concerns

- Fear of being forced into FERC's Standard Market Design
- Concerns that LSE would lose the guarantee of using own resources to serve load, and be forced to buy from the market
  - Remember California?
- Retail Access initiatives

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Responding to the Concerns - Who Plays?

- One of the design elements the CHTF is recommending is that the initial allocation of hedge rights is based on existing firm transmission reservations
  - Only parties that can own firm transmission rights will be allocated financial rights
  - ONLY rights that the holder CHOOSES to not accept and convert to FTRs will be available in an auction

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What is the Goal?

- The goal is to create a hedge against transmission congestion that allows the MP to offer resources into the centralized commitment and DA market with a reasonable assurance that they will derive a benefit.
- Creating a deep, liquid FTR market is not a goal.

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Summary

- CHTF believes the Day 2 markets will be cost-beneficial
- The comparative analysis of transactional versus FTRs shows both can be made to work. FTRs get the nod because…
  - More flexibility for trading and reconfiguring
  - Removes the requirement to manage Native Load Schedules
  - Better supporting the establishment and use of trading hubs
- Allocation should be restricted to holders of firm transmission rights

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References

- Specifically, See the CHTF Report for a thorough description of the CHTF decision process.
  - SPP web site/Org groups/MWG/CHTF/documents or
  - http://www.spp.org/publications/CHTF%20report%206-17-2009.doc
- Generally, there are numerous FTR papers available publicly on most RTO websites. See the CHTF meeting minutes and material for references, links and examples reviewed

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BOD Initial Reactions

- Definitely opposed to FTRs
  - Bad Press across the country
  - Bad Press from regulators in the region
  - Much of their concern is based on a lack of understanding and information, and connotation of “FTR”
- Definitely opposed to non-stakeholder’s involvement
  - Siphon off money
  - “Take” away LSE’s rights
  - The term “auction” was a red flag because it was not clear that the auction was only for allocations that holders had chosen not to convert to financial

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BOD Position After Presentation

- Understand that it is a complex subject
- Understand the need for education of all parties that will be involved in the decision process
- Understand that time is of the essence
- FTR is not a transmission right
- Appreciated the information
- Seemed supportive of the effort (if not yet ready to endorse the outcome)

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