External Clearing of the FTR Market
Overview of Implications, Benefits & Challenges

Presentation to FRM STF
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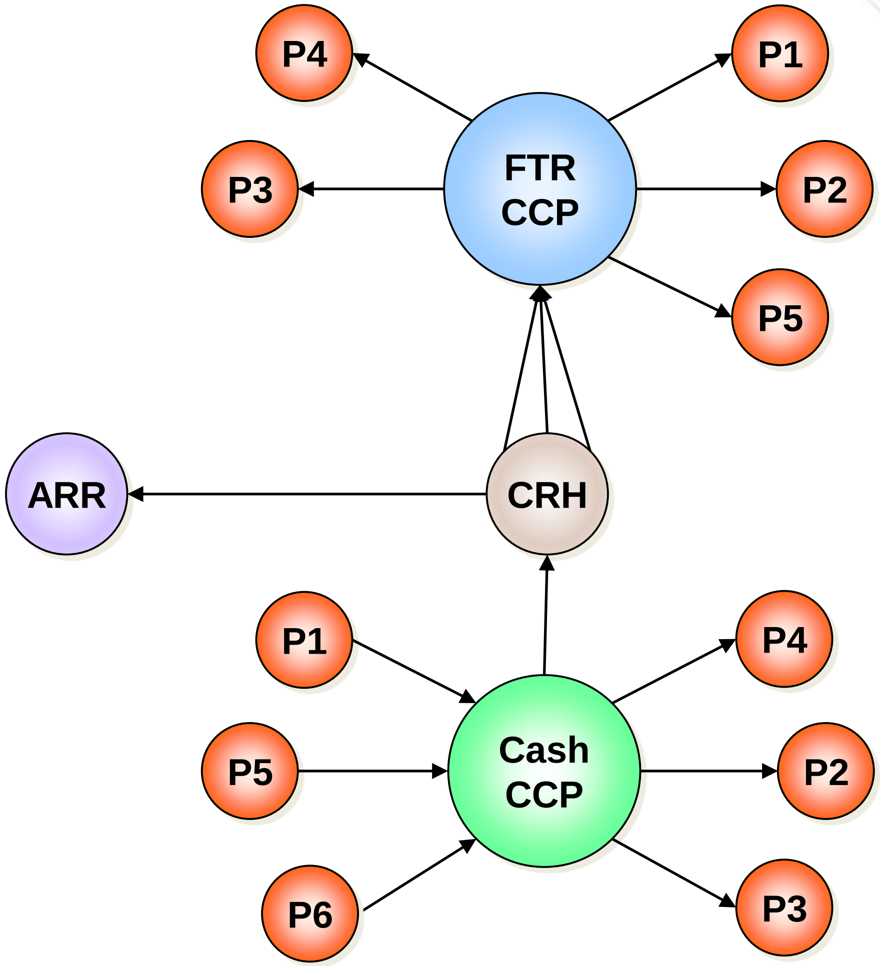
Novation to the External CCP



The position paper on FTR Default Allocation and Central Counter-Party recommended:

- Establishment of a separate FTR CCP
- Clear definition of the PJM entity responsible for writing FTRs, and bridging congestion rents from the DAM to FTR final settlement.

These proposed structures remain unchanged, but clearing would add an additional element

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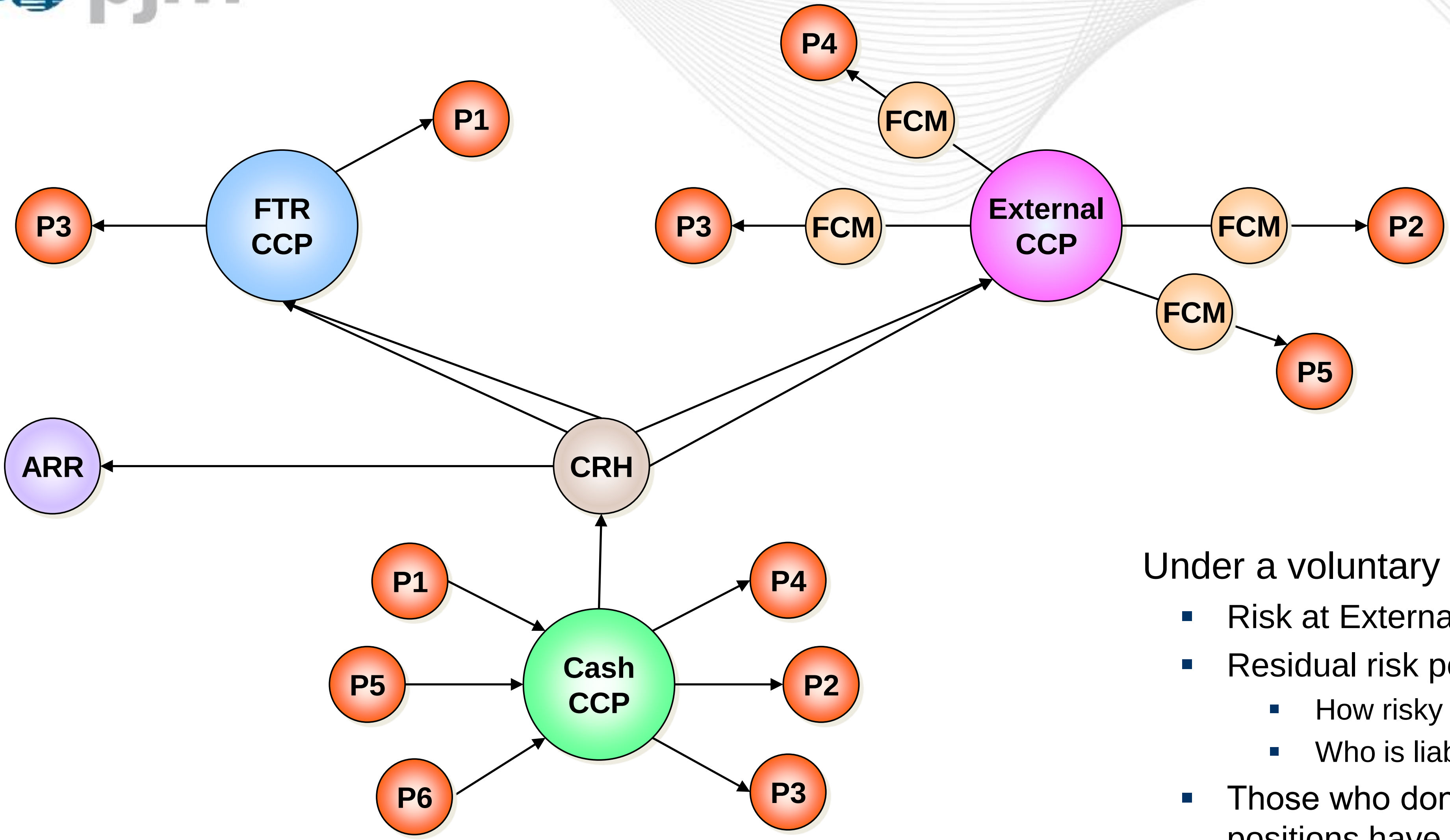
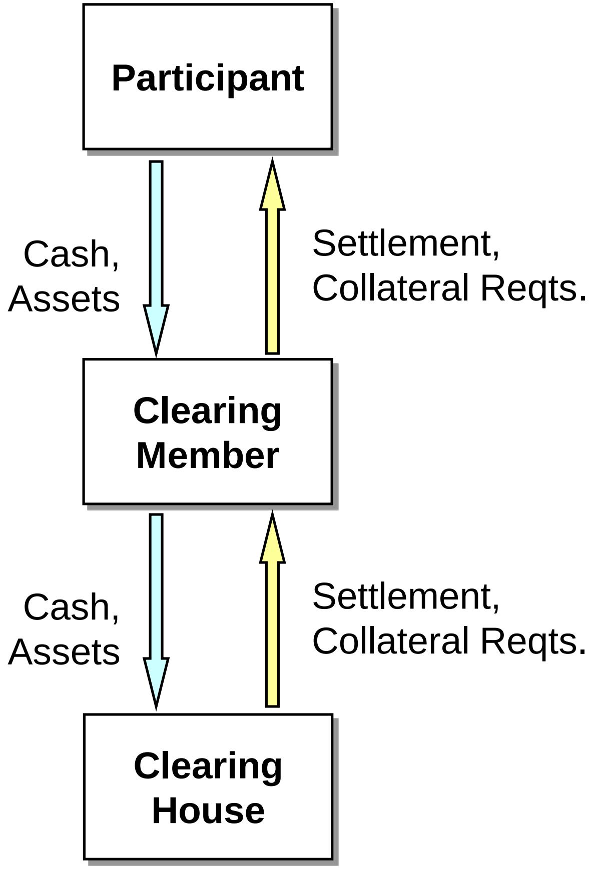
Novation to the External CCP



Under a voluntary clearing model:

- Risk at External CCP is isolated there.
- Residual risk pool at PJM:
  - How risky is this?
  - Who is liable for defaults?
- Those who don't wish to (or can't) move positions have an option.

Credit Intermediation

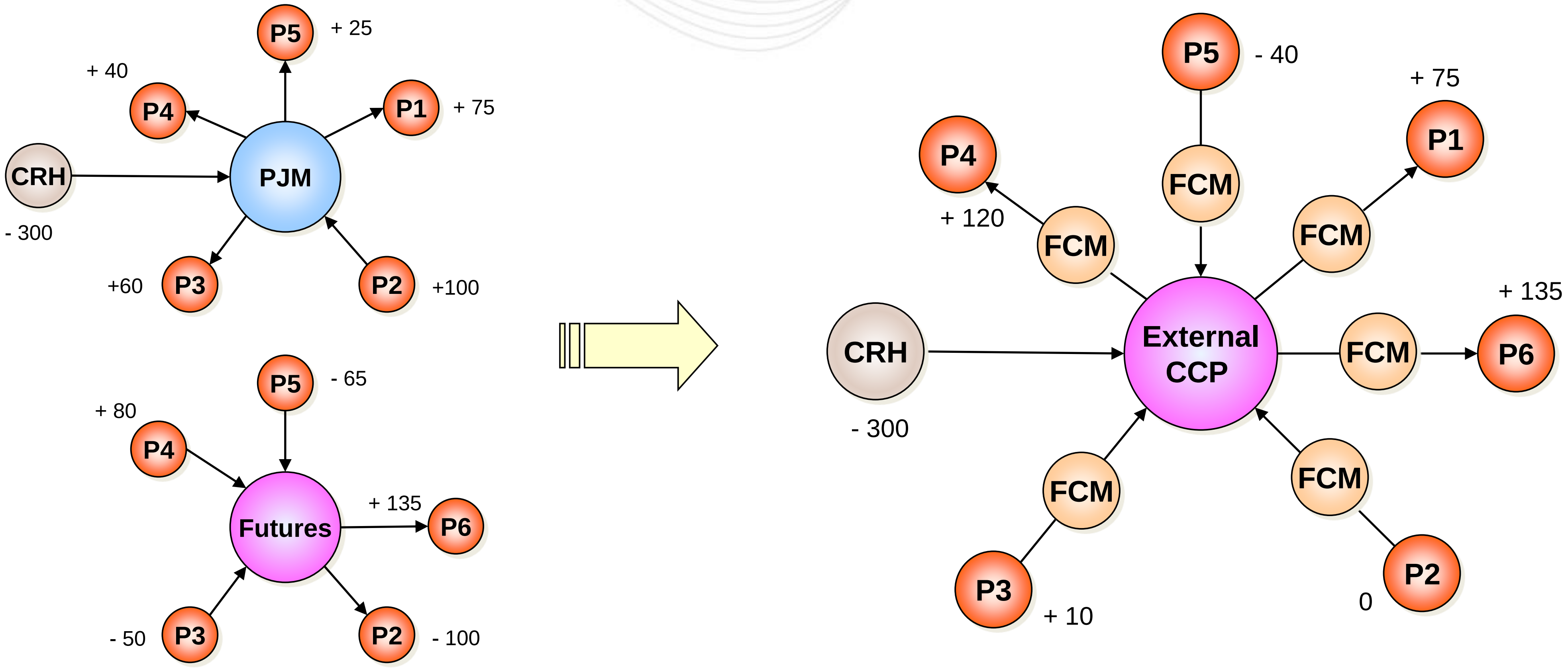


All clearing is through intermediary FCMs

- FCMs are first line of defense in clearing structure
- FCM may limit participant exposures, due to both their assessment of participant risk, and FCM’s own exposures
- Can establish multiple FCM relationships
- Some participants may not be able to obtain an FCM relationship

Netting of Positions

The FTR, or its ‘legs’, can be netted against futures positions, thus reducing exposures and initial margin requirements.



Initial Margin / Portfolio Margining

Portfolio margining provides for capital efficiency in the margining of risk-correlated positions.

FTRs involve some unique considerations, however:

- Price correlation of locations impacted by the same constraint.
- Ability of 'reconfiguration' via the FTR auction to allow sharing of liquidity amongst non-identical products impacted by the same constraint(s).
- Does margining model capture the sensitivity of prices to stochastic events that might not be represented in historical datasets?

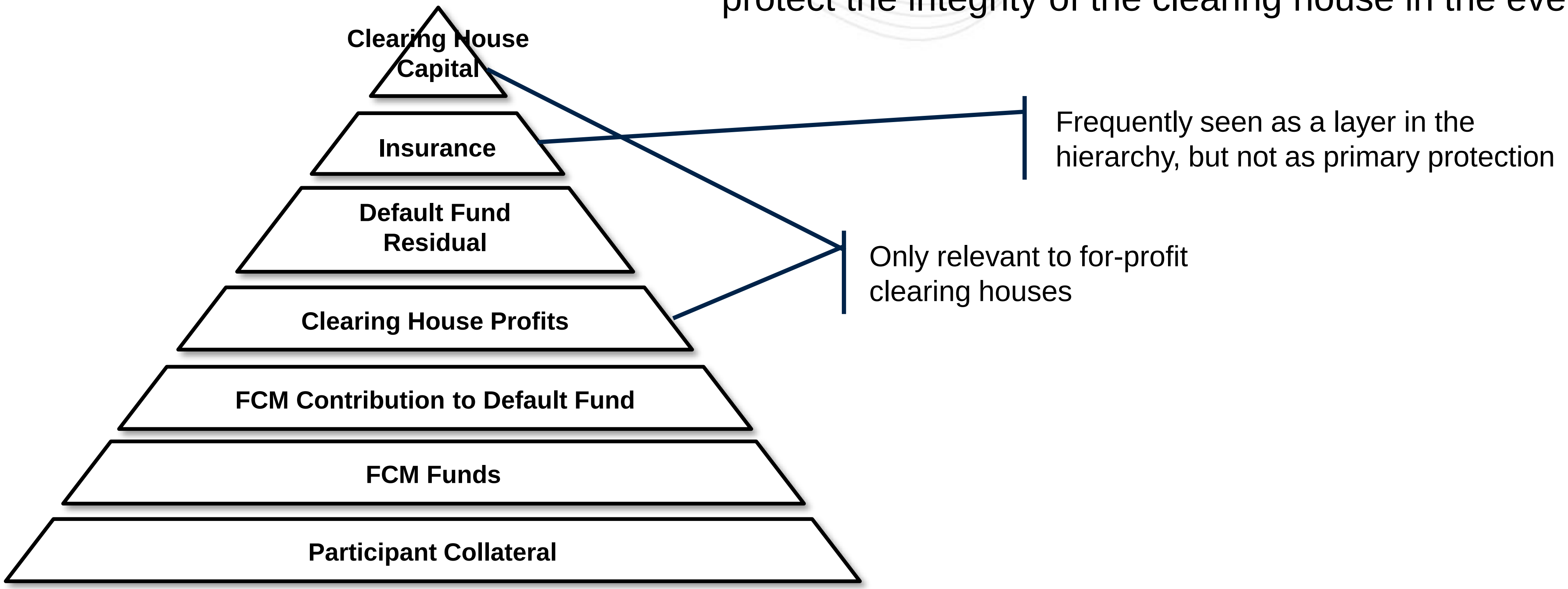
Also allows margin offsets against other markets, including other FTR markets that may clear.

Liquidation, Variation Margin

	PJM FTR	External
Trading Frequency / Liquidation Opportunity	Monthly 5/year for Long-Term FTRs	Daily
New Settlement Prices for MTM	Each Auction	Daily
Variation Margin Posted As	(Currently) Collateral; one-sided [Would require financing if cash; two-sided]	Cash; two-sided [Requires financing of cashflow deficit]
Time to Post/Pay	1-2 days (recommended)	Overnight

Trade Guarantees

Clearing houses have an extensive trade guarantee structure to protect the integrity of the clearing house in the event of default.



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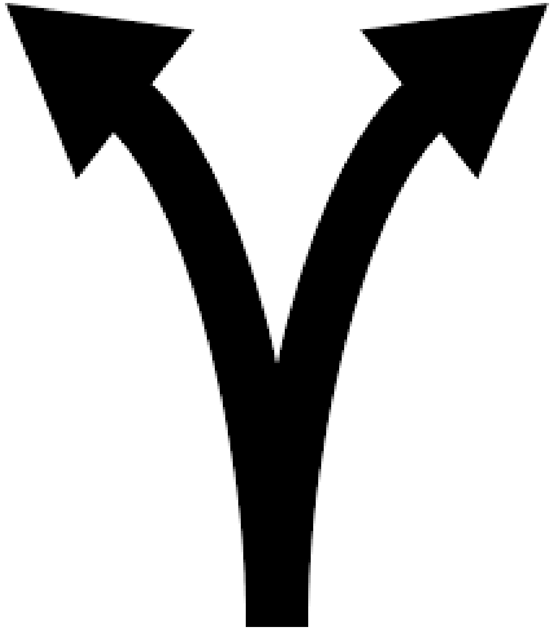
Voluntary Clearing

Nodal's Voluntary Clearing solution provides the choice of whether to utilize Nodal or remain in PJM risk pool.



Benefits	Implications & Challenges
Substantial risk is transferred from PJM to the clearing house	Residual risk pool remains at PJM. Will this degrade in quality?
Freedom of choice for participants	Some participants may not be able to secure an FCM relationship
Nodal has offered managed data services for risk processing, member qualification, and financial and market surveillance	PJM continues to be responsible for managing residual risk, and maintaining capabilities for such, creating potential duplication of cost.

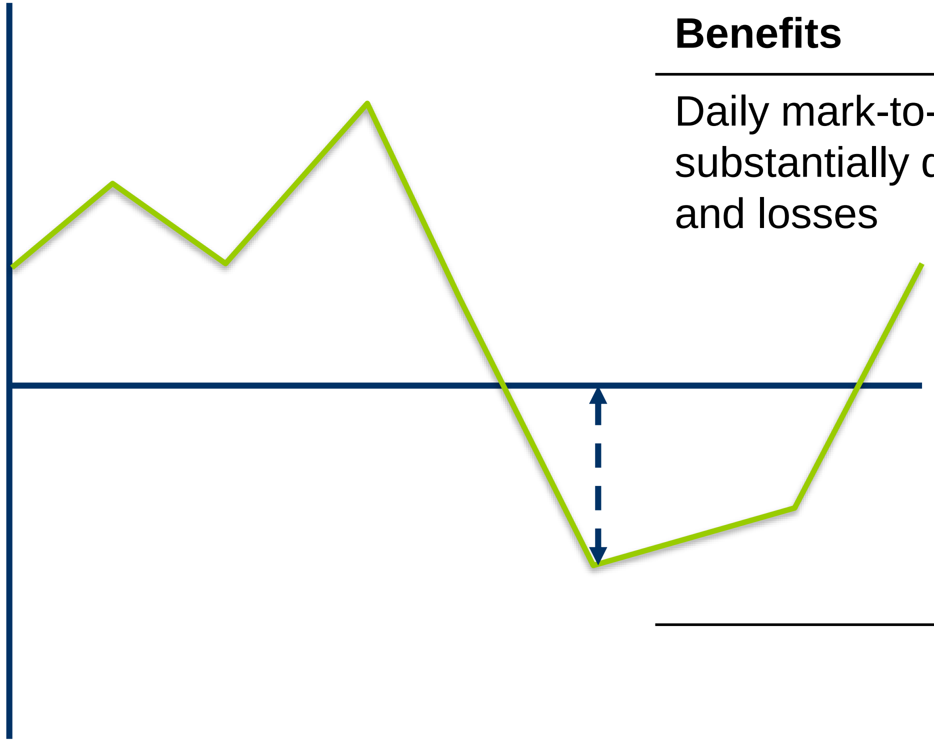
Product Gap

All generation nodes and aggregates are covered, but not load nodes:

Benefits		Implications & Challenges
Nodal proposition covers >99% of MWh exposure	→	Can’t reach a ‘fully cleared’ state unless and until resolved

Variation Margin and Line-of-Credit

Nodal proposes industry standard variation margining. PJM, as Congestion Rent Holder (CRH), will hold a net short position, which will fluctuate in value and frequently be negative.



Benefits	Implications & Challenges
Daily mark-to-market provides substantially quicker realization of gains and losses	Potential to result in a cashflow gap (temporary; all positions net to zero at final settle). Must be financed to a high degree of confidence (Nodal estimate ~$1.5 billion) [Note: per the Variation Margin and Settlement paper, the same challenge would exist if PJM were to implement cash-based, two-sided variation margining]

Put-Back of Positions

A novel and important feature of the Nodal proposition is the requirement that, in the event the line-of-credit is insufficient to meet a variation margin call, the positions would be exported from the clearing house via EFRP.

Benefits	Implications & Challenges
Highly improbable	But still plausible
Avoids PJM CRH going into default, or needing to post initial margin as protection against this.	Requires PJM to maintain FTR credit risk management capabilities (potentially addressed through Nodal Data Services)
	Participants who netted to zero between FTRs and futures would find their positions in each re-established. Does this mean the two are not truly fungible?