

EEMAC: State of the Power Markets

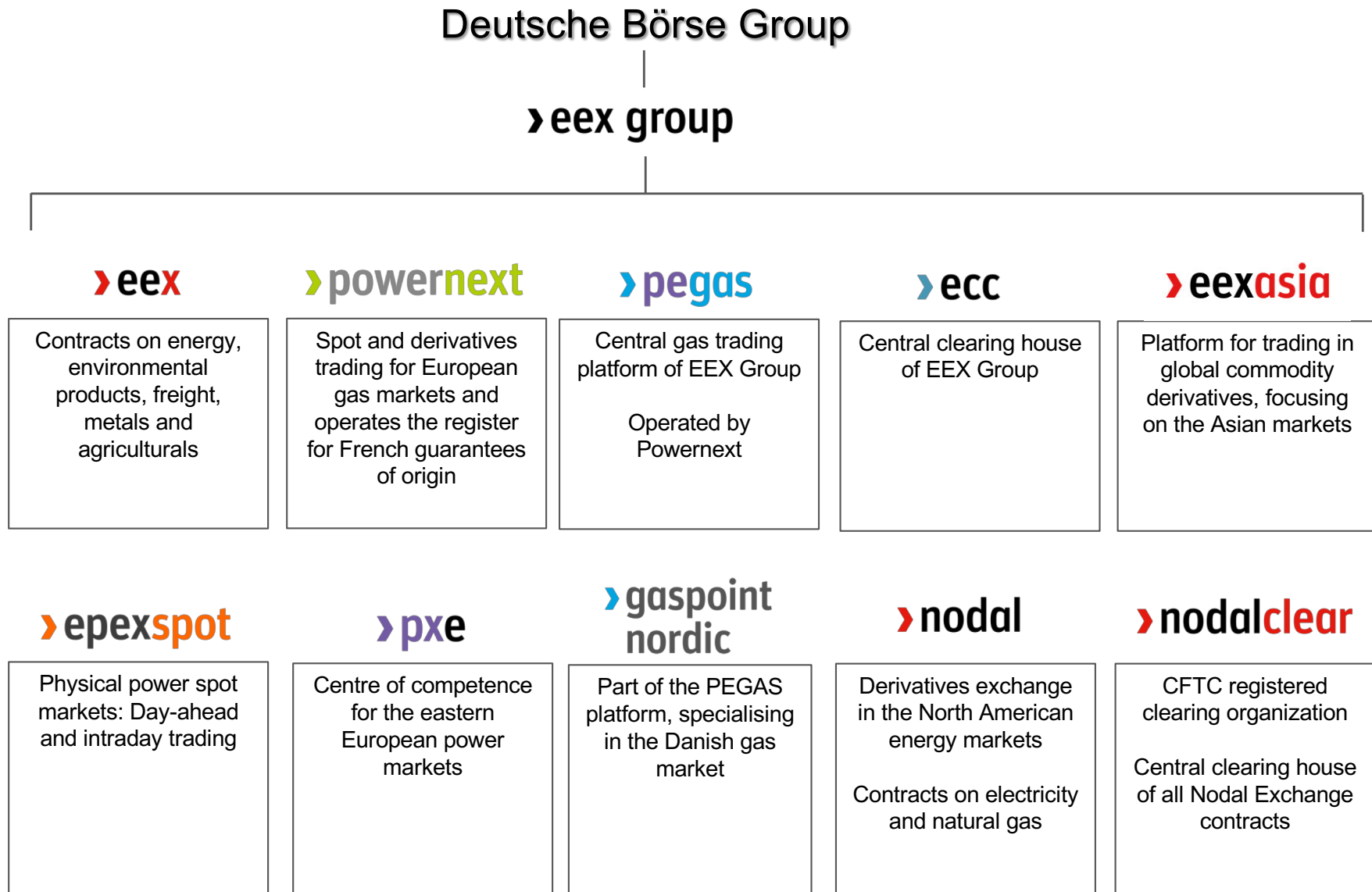
**April 17, 2019
Washington, DC**

**Demetri Karousos
Chief Operating Officer
Nodal Exchange, LLC**

Nodal Exchange Overview

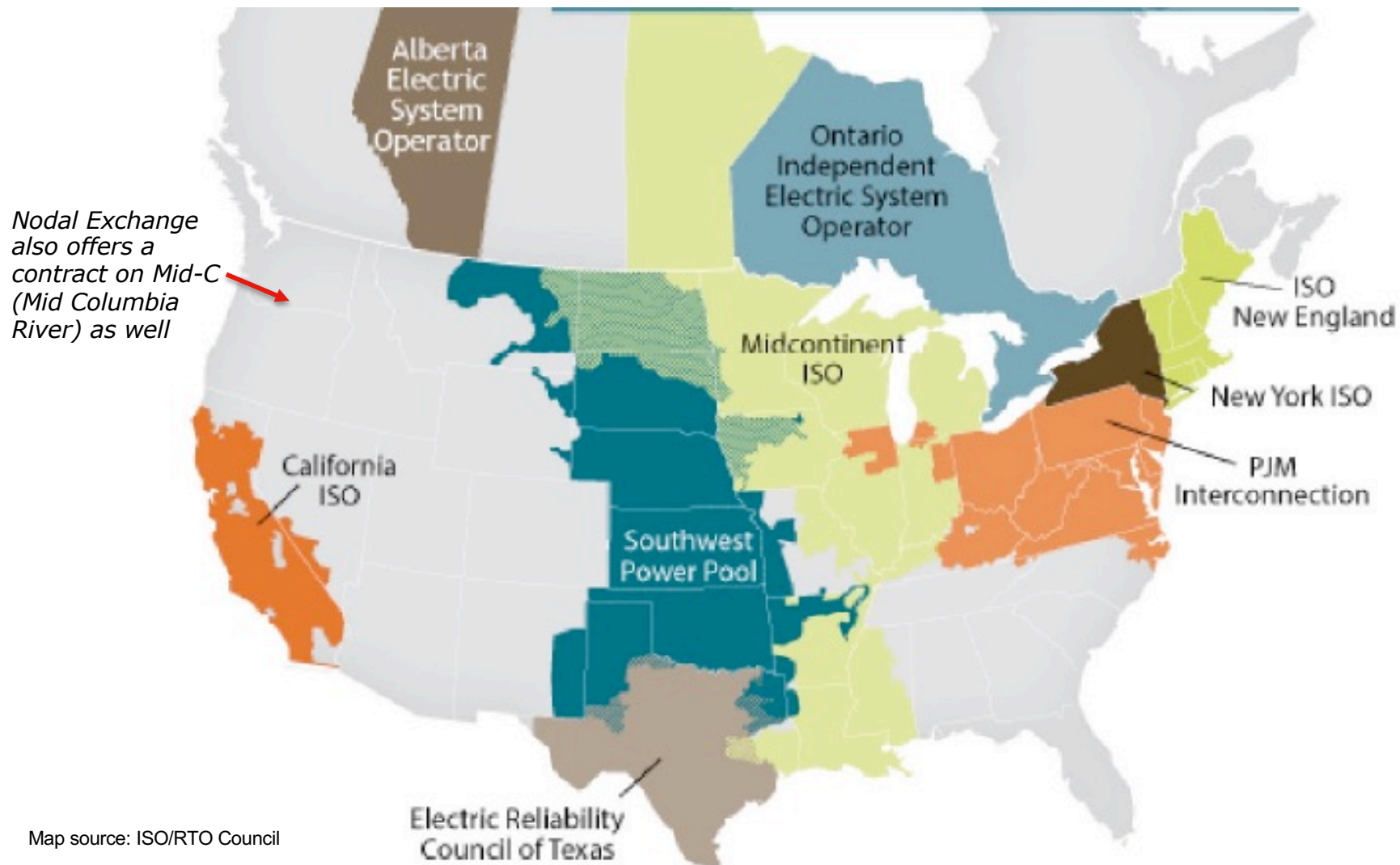
- **Energy, environmental, and logistics commodity exchange**
 - Designated Contract Market under CFTC jurisdiction; all contracts are futures contracts or options on futures
- **Providing ability to trade power futures and options on hundreds of hubs, zones, and nodes across seven organized markets (and Mid-C)**
 - ISO-NE, NYISO, PJM, MISO, ERCOT, SPP & CAISO
- **Natural gas futures contract for Henry Hub**
- **Environmental futures and options**
- **Trucking freight contracts launched March 29, 2019**
- **Multiple platforms:**
 - Nodal LiveTrade trading screen as well as Deutsche Börse Group's T7 matching engine with CQG front-end for select contracts
 - Block trades (e.g., broker) submission for clearing
- **All contracts are cleared by Nodal Clear using innovative portfolio margining using expected short-fall**
 - Nodal Clear, LLC has been permitted to elect Subpart C under Part 39 of the Commodity Exchange Act
 - Nodal Clear was recognized as a third-country central counterparty by ESMA in March 2017
- **Nodal Exchange became part of the EEX Group on May 3, 2017; EEX Group is in turn part of the Deutsche Börse Group**

Nodal Exchange & Nodal Clear are part of a global exchange family



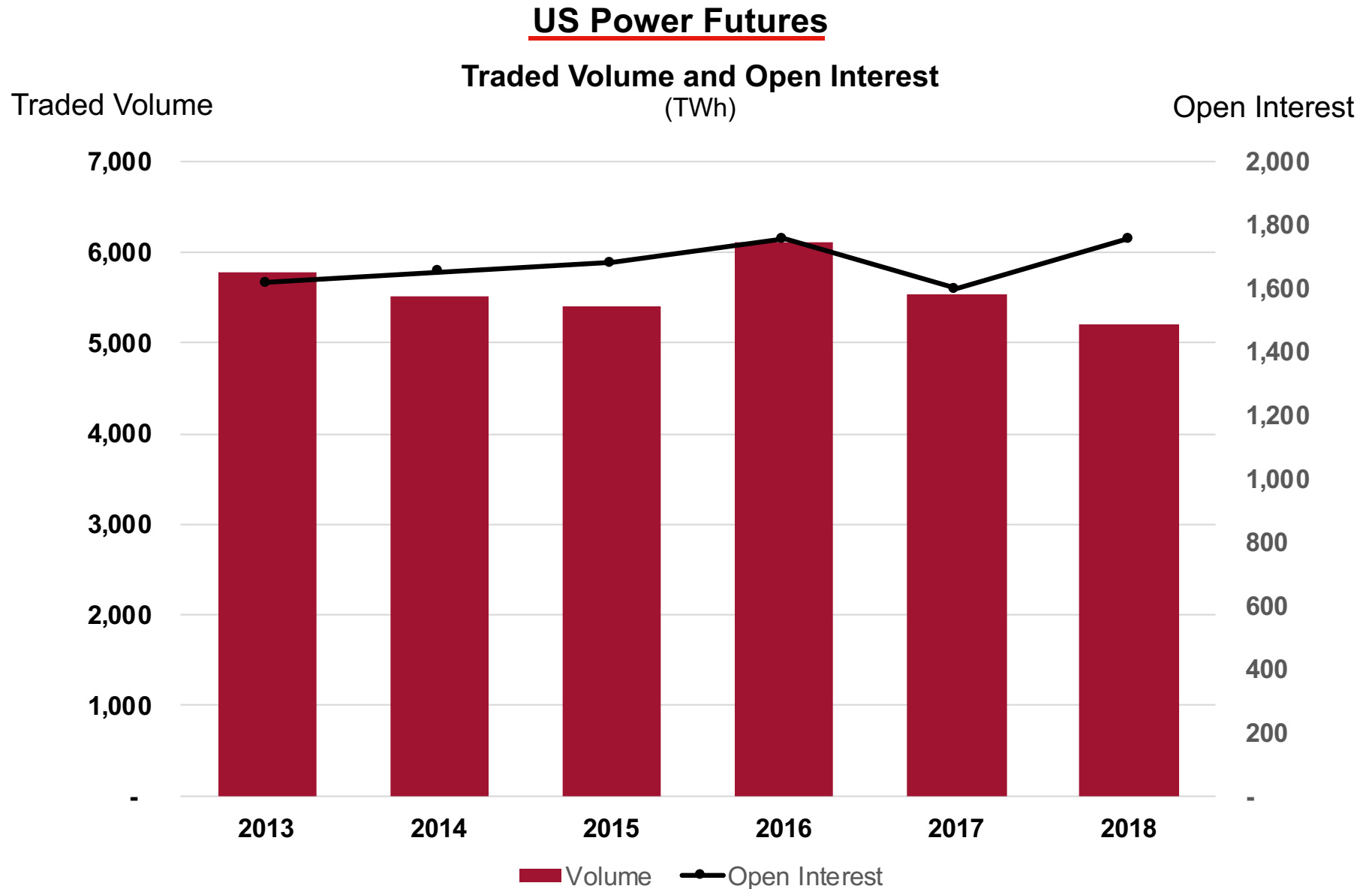
Virtually all power futures contracts settle to the spot markets in the seven organized markets that have gone “nodal” in the U.S.

The spot markets underpinning US power futures are among the most surveilled in the world with the FERC/Texas PUC, Independent Market Monitors, RTO/ISO Internal Market Monitors, and state PUC oversight ensuring safe and transparent market operation



Map source: ISO/RTO Council

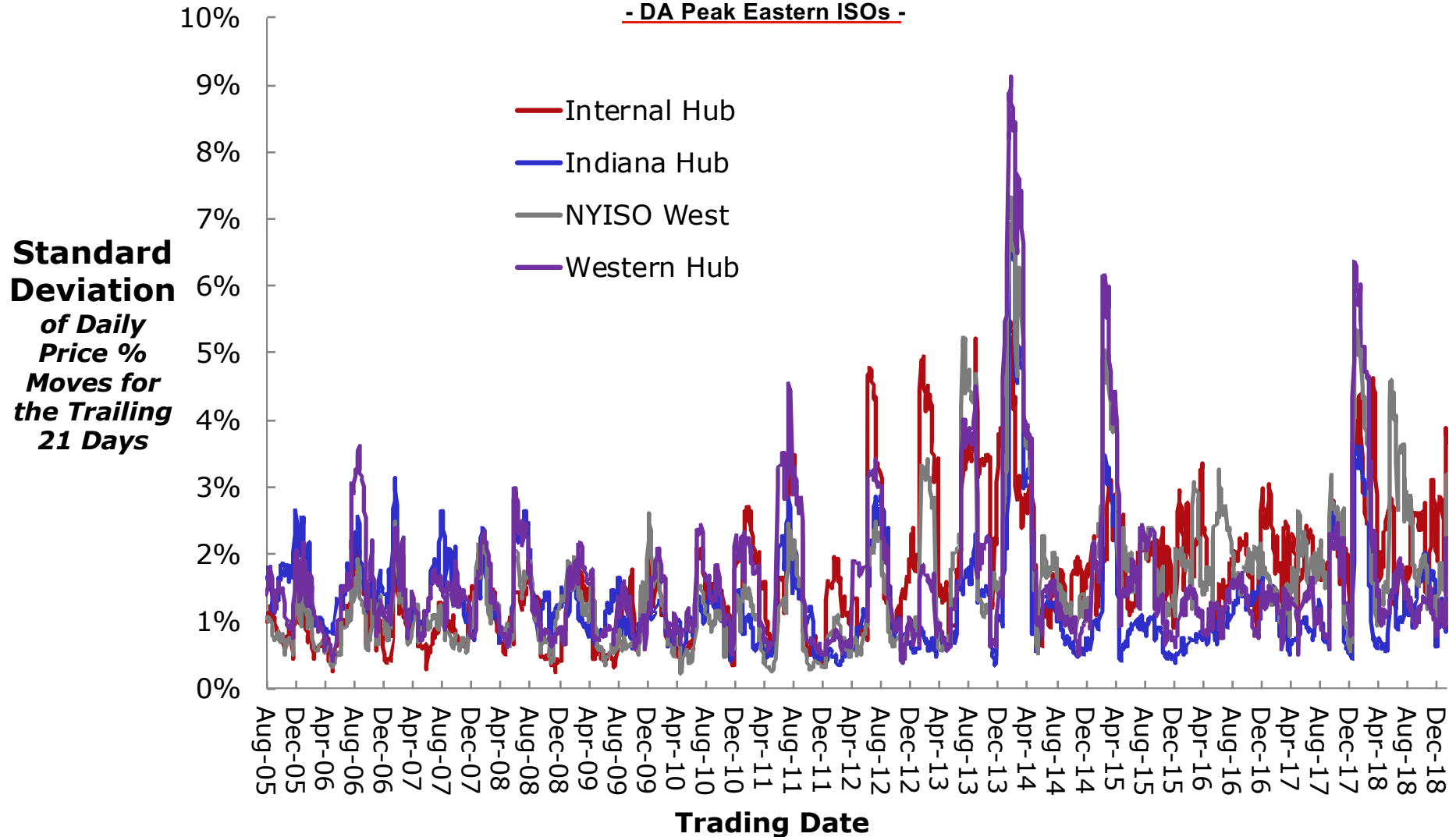
Total power futures volumes are down slightly, though open interest remains at recent highs—signaling a strong hedging need in the market



Price volatility appears to be increasing making hedging even more important

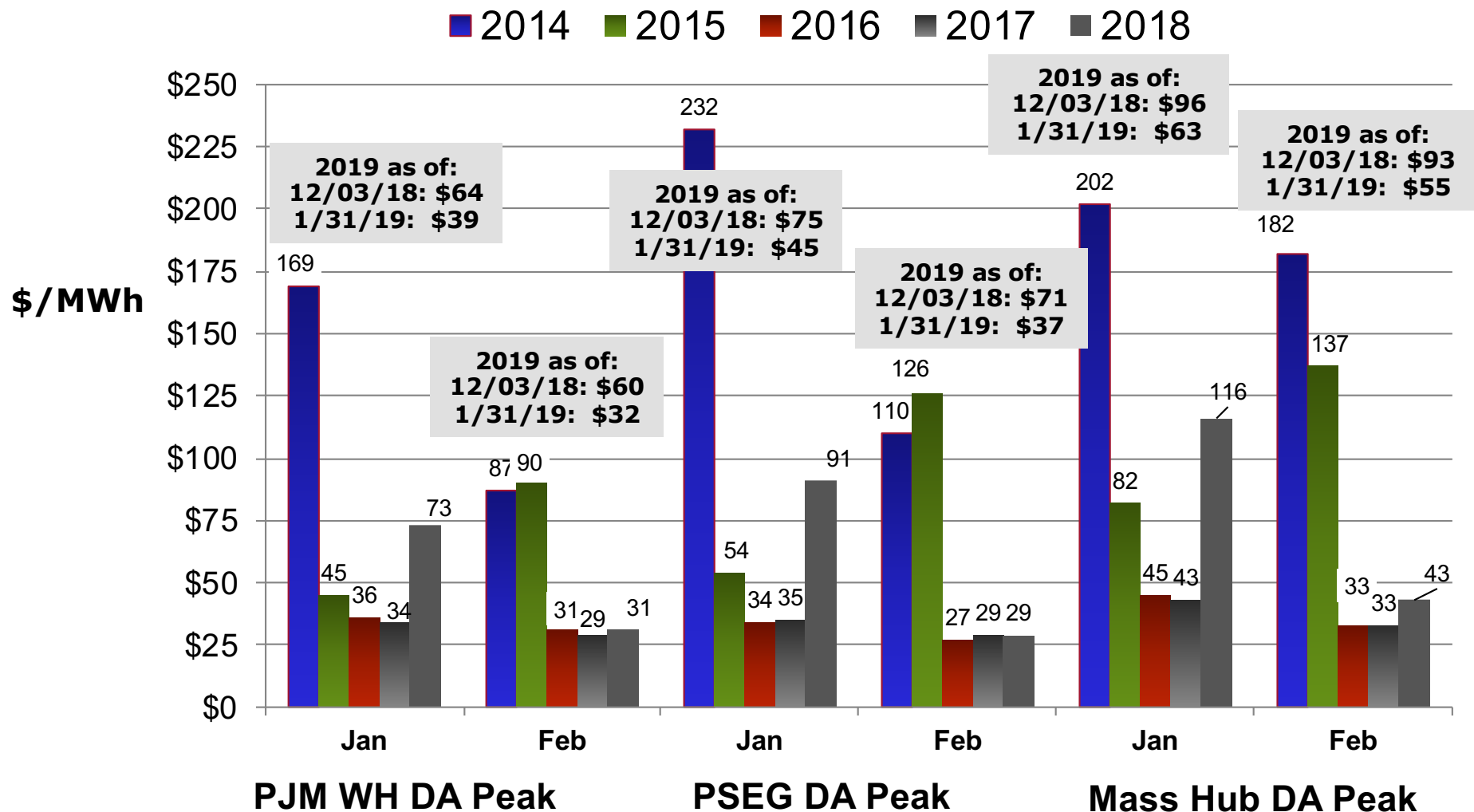
Historical Volatility by Month

- DA Peak Eastern ISOs -

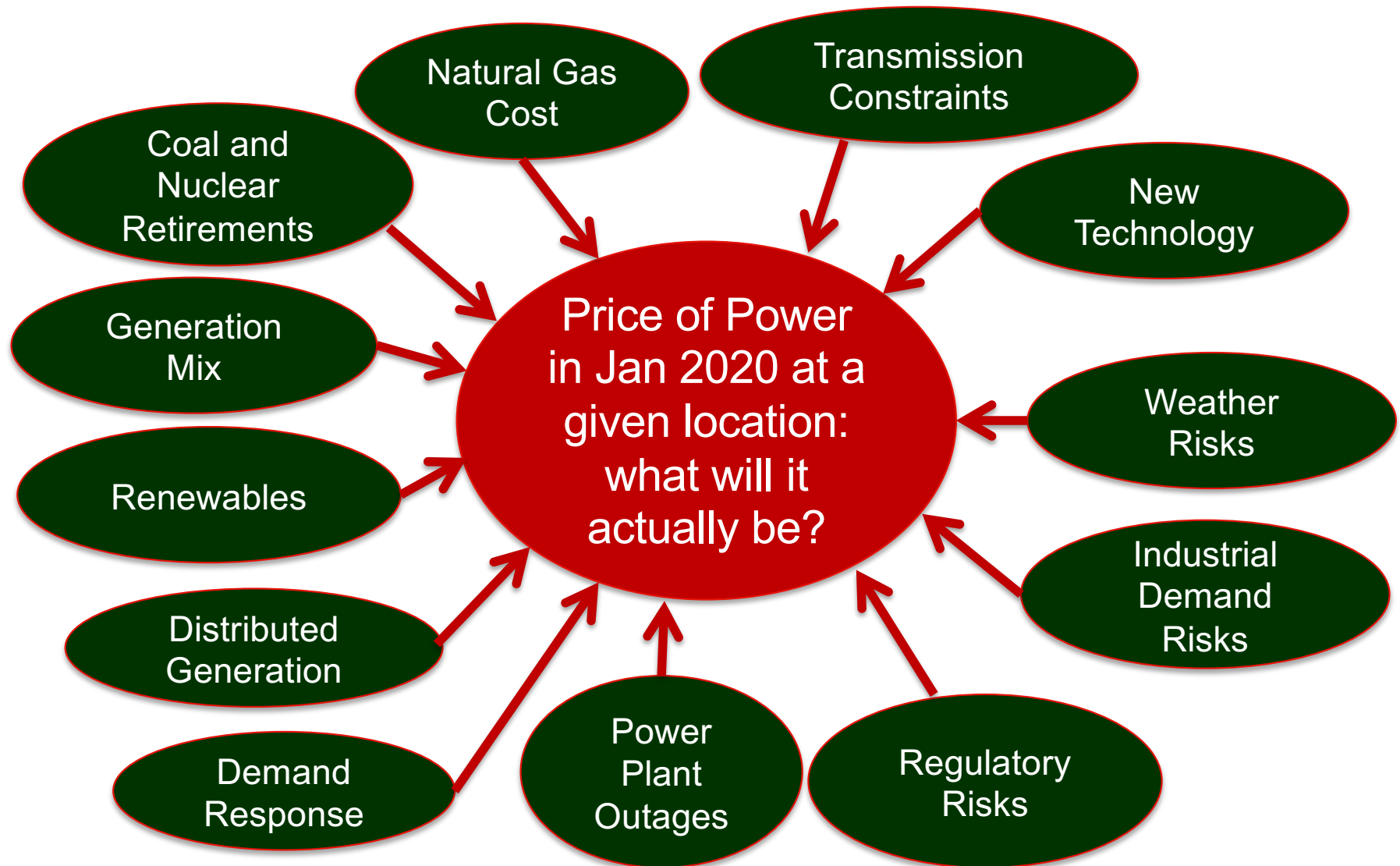


Predicting power prices is not easy...trading futures contracts can provide a hedge for price risk

Wholesale Power Settlement Price by Contract Expiry by Year

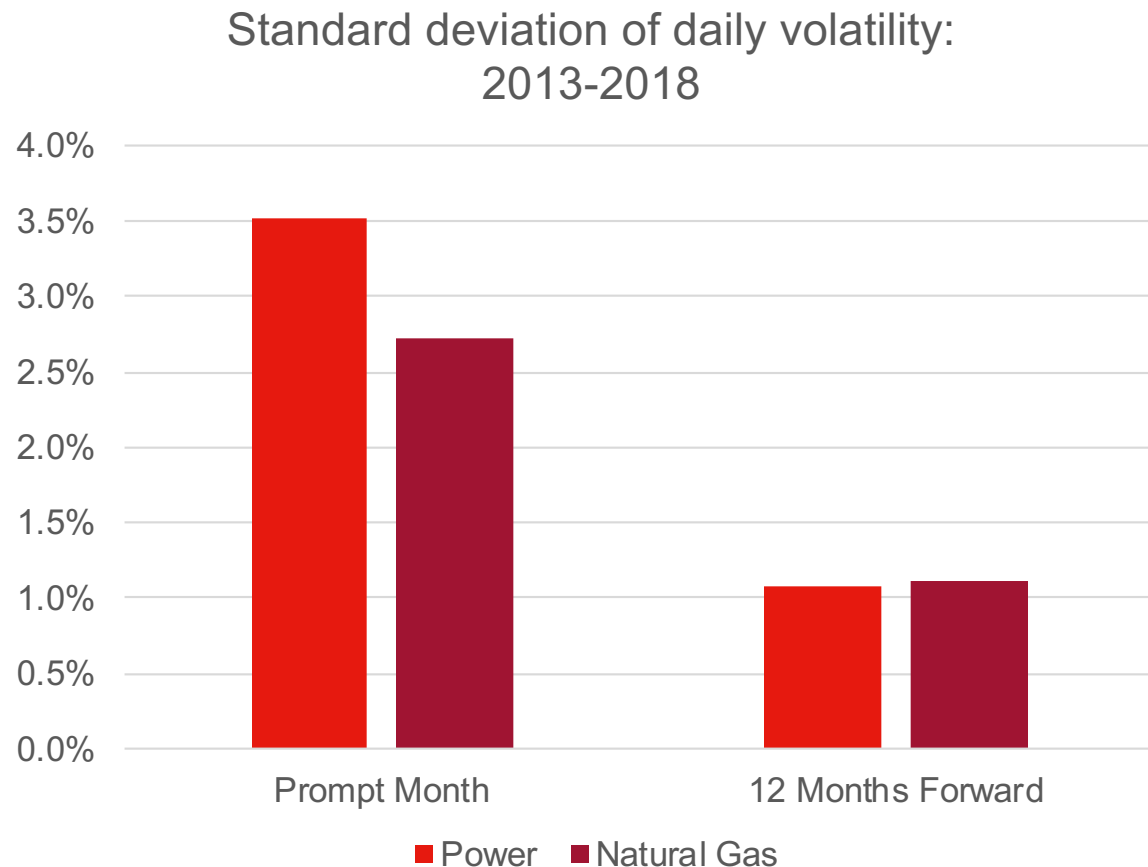


Forward price risks exist for market participants (e.g., generators, load serving entities, consumers)



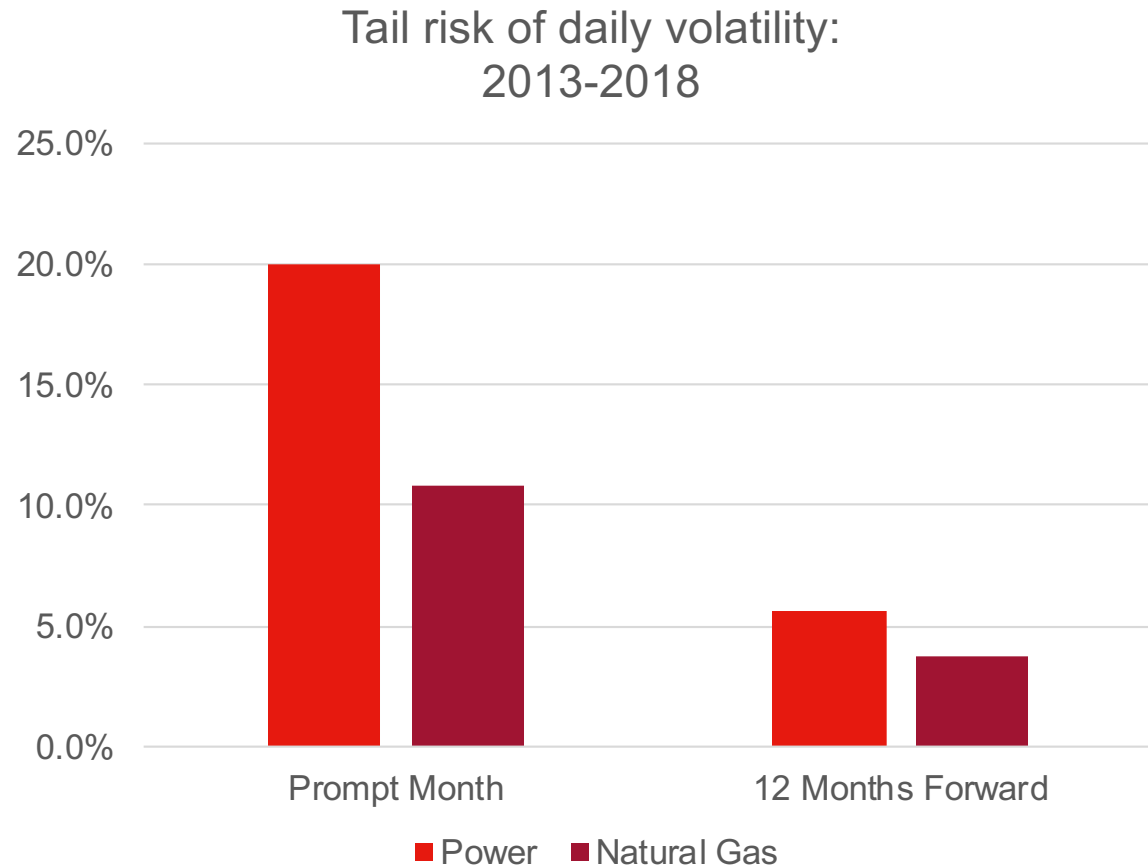
Hedgers' needs to manage price risk can and has been easily managed within the exchange and clearinghouse model

- Using traditional risk measures such as standard deviation, daily volatility for power futures were only 30% higher than natural gas for prompt month expiries
- Even for 2014, the year of the great "polar vortex", power volatility ranked only 74% higher than natural gas
- Outer month volatility was equivalent between power and natural gas



The key is to properly manage tail risk and to understand where in the portfolio the risk resides

- Focusing on tail risk more accurately addresses the exposure that initial margin is meant to cover
- Properly segmenting a portfolio to identify key risk pockets is critical
- Taking measures to avoid complacency during low volatility periods (anti-“pro-cyclicalality”) and addressing liquidity concerns further enhance market protections



Thank you

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