



**Item 8: ERCOT Assessment of Independent  
Consultant Recommendations on the PJM  
GreenHat Default**

*Mark Ruane*

Director, Settlements, Retail and Credit

Finance & Audit Committee Meeting

ERCOT Public

August 12, 2019

# ERCOT Assessment of Independent Consultant Recommendations on the PJM GreenHat Default

## Introduction

- As previously reviewed with the F&A Committee, GreenHat Energy LLC (GreenHat) defaulted on a position of 890 million MWh Financial Transmission Rights (FTRs).
- Following the default, the PJM Board of Directors commissioned independent consultants to review the default and identify contributing:
  - decisions and mistakes made by PJM,
  - aspects of PJM's tariff and other governing documents, and,
  - misconduct by a third party.
- At its April 8, 2019 meeting, the F&A Committee requested a summary of the consultants' recommendations.
- This presentation addresses the consultants' recommendations as well as current ERCOT practice with respect to the recommendations.

# ERCOT Assessment of Independent Consultant Recommendations on the PJM GreenHat Default

## Summary

- The ultimate loss to PJM stakeholders from the default is not yet known but some estimates have exceeded \$400 million. The total loss allocation will not be known until all positions are liquidated or until the FTR terms end for any non-liquidated instruments. To date, approximately \$116 million has been uplifted to the PJM market.
- The consultants retained by the PJM Board were:
  - Robert Anderson, Executive Director of the Committee of Chief Risk Officers
  - Neal Wolkoff, former Chief Operating Officer of NYMEX and Chairman and CEO of the American Stock Exchange
- The consultants issued their report to the PJM Board on March 26, 2019.

# ERCOT Assessment of Independent Consultant Recommendations on the PJM GreenHat Default

## Contributing factors

- At a high level, the report identified a number of contributory issues:
  1. PJM's Credit Policy did not address key risks.
    - Collateral mismatched with risk
  2. PJM did not implement suggested changes after earlier material FTR losses.
    - More frequent FTR auctions and mark-to-auction mechanism
    - Position limits
    - Base collateral on forward-looking metrics
    - Shortened settlement period
  3. Credit personnel did not sufficiently know their customer.
  4. PJM management failed to establish robust risk management procedures.

# ERCOT Assessment of Independent Consultant Recommendations on the PJM GreenHat Default

## Contributing factors

- (continued):
  5. PJM staff did not act expeditiously to stop GreenHat market access.
  6. PJM mistakenly relied on a GreenHat pledge agreement.
  7. PJM incorrectly believed that the situation would not worsen.
  8. PJM staff lacked qualifications and training.
  9. There were design flaws in PJM's FTR market.
    - FTR auction frequency
  10. Unwarranted confidence and lack of sense of urgency.

# ERCOT Assessment of Independent Consultant Recommendations on the PJM GreenHat Default

## Recommendations

- The report contains a number of recommendations. These are grouped thematically and mapped to the identified contributing factors.

A	Advance best practices into the credit policy under the FERC tariff
B	Clarify the role of PJM as a financial market risk manager
C	Build customer awareness beyond market procedures and rules
D	Implement technical practices for participant risk management
E	Bring on board and develop new expertise in risk management
F	Increase frequency of long-term auctions
G	Organizational changes

- PJM has indicated its general agreement with the recommendations and is reviewing implementation strategies.

# ERCOT Assessment of Independent Consultant Recommendations on the PJM GreenHat Default

## Comments

- It should be noted that not all recommendations would be applicable to ERCOT.
- Comparing ERCOT practices to the recommendations, no material gaps were noted. In most cases ERCOT practices already meet the recommendations made to PJM. These include:
  - “Mark-to-auction” of CRRs
  - Frequent auctions of long-term CRRs
  - Minimum collateral requirements
  - Defined default timeline

# ERCOT Assessment of Independent Consultant Recommendations on the PJM GreenHat Default

## Comments

- Recommendation areas where ERCOT work is ongoing:
  - Market entry qualifications (background checks, rejection of non-qualifying entrants)
  - Enhanced position reporting
- To better ensure the appropriateness of ERCOT credit methodology, ERCOT has issued an RFP for an independent third-party review of credit methodology and practices.
- Detailed recommendations from the PJM report, and ERCOT status with respect to the recommendations, are on the following pages.



# ERCOT Assessment of Independent Consultant Recommendations on the PJM GreenHat Default

## Detailed recommendations

Theme A: Advance best practices into the credit policy under the FERC tariff

Recommendation	ERCOT Status
<ul style="list-style-type: none"> <li>Incorporate mark-to-auction values from more frequent auctions as a basis for collateralization of FTR positions.</li> </ul>	<ul style="list-style-type: none"> <li>ERCOT CRR collateralization incorporates most recent auction values as well as worst-case historical values (Protocol section 16.11.4.5).</li> </ul>
<ul style="list-style-type: none"> <li>Retain the existing \$.10/MWh minimum collateral requirement, in addition to the purchase price, pending availability of more precise metrics for “original margin.”</li> </ul>	<ul style="list-style-type: none"> <li>ERCOT requires locked collateral for CRR auction participation, and there are minimum collateral requirements for all Counter-Parties. (Protocol sections 16.11.4.6.1 and 16.11.4.1).</li> </ul>
<ul style="list-style-type: none"> <li>Eliminate the FTR undiversified adder because it does not correlate to market risk.</li> </ul>	<ul style="list-style-type: none"> <li>NA. ERCOT calculates CRR portfolio-specific risk adjustments (Protocol section 16.11.4.5)</li> </ul>
<ul style="list-style-type: none"> <li>Declare default when a margin call is unpaid within two business days, without negotiation.</li> </ul>	<ul style="list-style-type: none"> <li>Collateral requests must be met within two Bank Business Days (Protocol section 16.11.5). Per the Standard Form Agreement, the defaulting Counter-Party has an additional Bank Business Day to cure the breach before termination.</li> </ul>

# ERCOT Assessment of Independent Consultant Recommendations on the PJM GreenHat Default

## Detailed recommendations

### Theme B: Clarify the role of PJM as financial market risk manager

Recommendation	ERCOT Status
<ul style="list-style-type: none"><li>• Revisit the stakeholder process to better facilitate member-to-PJM direction on financial policies and procedures.</li><li>• Financial committee participants should have appropriate expertise.</li><li>• The number of financial market committees should be minimized to streamline decision-making and enhance accountability.</li></ul>	<ul style="list-style-type: none"><li>• Per the ERCOT Credit Work Group (CWG) Charter, CWG participants must meet defined qualifications.</li><li>• There is also a Market Credit Working Group reporting to TAC through the Wholesale Markets Subcommittee (WMS). These two credit groups meet concurrently to minimize overlap.</li></ul>
<ul style="list-style-type: none"><li>• Work with FERC to establish appropriate flexibility in market rules, such as discretion to address unanticipated market emergency events.</li><li>• The proposed financial markets Risk Oversight Committee could serve as a check on inappropriate use of discretionary authority.</li></ul>	<ul style="list-style-type: none"><li>• With respect to credit issues, Protocols do allow ERCOT discretion in the event of market emergencies (Protocol section 25.4.2 and 25.4.3)</li><li>• There is no ERCOT Risk Oversight Committee, but oversight can be provided by the Board of Directors and the F&amp;A Committee.</li></ul>

# ERCOT Assessment of Independent Consultant Recommendations on the PJM GreenHat Default

## Detailed recommendations

Theme B: Clarify the role of PJM as financial market risk manager

Recommendation	ERCOT Status
<ul style="list-style-type: none"><li>Examine the specifics and cost/benefits of outsourcing the administration of all or part of the FTR market.</li></ul>	<ul style="list-style-type: none"><li>ERCOT has reviewed options for novating CRR exposures to a third party in the past and determined it was not cost-effective.</li></ul>

# ERCOT Assessment of Independent Consultant Recommendations on the PJM GreenHat Default

## Detailed recommendations

### Theme C: Build customer awareness beyond market procedures and rules

Recommendation	ERCOT Status
<ul style="list-style-type: none"><li>• Perform background checks for member applicants, and for non-public companies, the three senior officers</li></ul>	<ul style="list-style-type: none"><li>• Not done; under review by stakeholders</li></ul>
<ul style="list-style-type: none"><li>• Confirm that applicants actually employ the risk management systems and processes as represented</li></ul>	<ul style="list-style-type: none"><li>• ERCOT requires an annual attestation of risk management capabilities, and does limited reviews of supporting policies and procedures for selected entities (Protocol section 16.16).</li></ul>
<ul style="list-style-type: none"><li>• Provide explicit power to reject applicants not meeting background and regulatory standards (with an internal appeals process)</li></ul>	<ul style="list-style-type: none"><li>• Power to reject applicants is limited. Under review by stakeholders and ERCOT Legal.</li></ul>
<ul style="list-style-type: none"><li>• Update market participant financial qualifications annually</li></ul>	<ul style="list-style-type: none"><li>• Audited financial statements required annually; unaudited financial statements required quarterly (Protocol section 16.11.5).</li></ul>

# ERCOT Assessment of Independent Consultant Recommendations on the PJM GreenHat Default

## Detailed recommendations

### Theme D: Implement technical practices for participant risk management

Recommendation	ERCOT Status
<ul style="list-style-type: none"><li>• Clarify with the IMM expectations regarding participant risk management behavior.</li></ul>	<ul style="list-style-type: none"><li>• ERCOT communicates identified issues to the IMM.</li></ul>
<ul style="list-style-type: none"><li>• Establish position limits for FTR based on participant capitalization and position tenor.</li></ul>	<ul style="list-style-type: none"><li>• No position limits in place. Positions are constrained by collateral requirements.</li></ul>
<ul style="list-style-type: none"><li>• Create FTR participant reporting. Include statistical studies of exposure, tenor, collateral, marks-to-auction, and interrelationships of these factors.</li></ul>	<ul style="list-style-type: none"><li>• Exposure and collateral reports posted twice daily (Protocol section 16.11.4.7). However, there are not full statistical studies. ERCOT staff are looking at enhanced reporting.</li></ul>

# ERCOT Assessment of Independent Consultant Recommendations on the PJM GreenHat Default

## Detailed recommendations

### Theme E: Bring on board and develop new expertise in risk management

Recommendation	ERCOT Status
<ul style="list-style-type: none"> <li>Establish a Chief Risk Officer (CRO) position over financial markets.</li> </ul>	<ul style="list-style-type: none"> <li>The ERCOT VP - Commercial Operations has oversight over financial market activity.</li> </ul>
<ul style="list-style-type: none"> <li>Create a Board committee to oversee financial market risk to oversee the CRO and the recommended Independent Multi-discipline Group (see below).</li> </ul>	<ul style="list-style-type: none"> <li>ERCOT financial market risk oversight is by the F&amp;A Committee.</li> </ul>
<ul style="list-style-type: none"> <li>Form an Independent Multi-discipline Group of PJM managers chaired by the CRO to foster inter-company communication of risk issues.</li> </ul>	<ul style="list-style-type: none"> <li>Existing risk management process reviews and communicates financial and non-financial risks across all areas of ERCOT.</li> </ul>
<ul style="list-style-type: none"> <li>Implement training for risk management.</li> <li>Plan and practice response to stress scenarios.</li> <li>Consider risk management certifications.</li> </ul>	<ul style="list-style-type: none"> <li>ERCOT does promote appropriate training. No formal framework for stress scenarios or promotion of risk management certifications.</li> </ul>
<ul style="list-style-type: none"> <li>Stay current with peer practices.</li> </ul>	<ul style="list-style-type: none"> <li>Ongoing communication with other ISO/RTOs and participation in industry associations. However, these are not specifically risk-related.</li> </ul>

# ERCOT Assessment of Independent Consultant Recommendations on the PJM GreenHat Default

## Detailed recommendations

### Theme F: Increase frequency of long-term auctions

Recommendation	ERCOT Status
<ul style="list-style-type: none"><li>• Include long-term FTRs in monthly or bi-monthly auctions.</li></ul>	<ul style="list-style-type: none"><li>• Two Long-Term Auction Sequences (LTAS) annually. Each LTAS consists of six auctions that take place throughout the year (Protocol section 7.5.1).</li></ul>
<ul style="list-style-type: none"><li>• Convene a committee of FTR traders with PJM Credit and Operations to explore approaches to more frequent auctions.</li></ul>	<ul style="list-style-type: none"><li>• There is ongoing stakeholder review of CRR auction structure.</li></ul>
<ul style="list-style-type: none"><li>• Conduct a general review of PJM markets to evaluate risks and rewards of potential structural reforms.</li></ul>	<ul style="list-style-type: none"><li>• Structural market reforms, such as Real-Time Co-optimization, are ongoing.</li></ul>

# ERCOT Assessment of Independent Consultant Recommendations on the PJM GreenHat Default

## Detailed recommendations

### Theme G: Organizational changes

Recommendation	ERCOT Status
<ul style="list-style-type: none"><li>Identify the critical departmental components to the PJM financial markets business and align the organization accordingly.</li></ul>	<ul style="list-style-type: none"><li>All “financial markets” functions are under Commercial Operations.</li></ul>
<ul style="list-style-type: none"><li>Create a culture and environment that encourages staff to challenge internal assertions and test their own assumptions.</li></ul>	<ul style="list-style-type: none"><li>In place at ERCOT.</li></ul>



## Questions