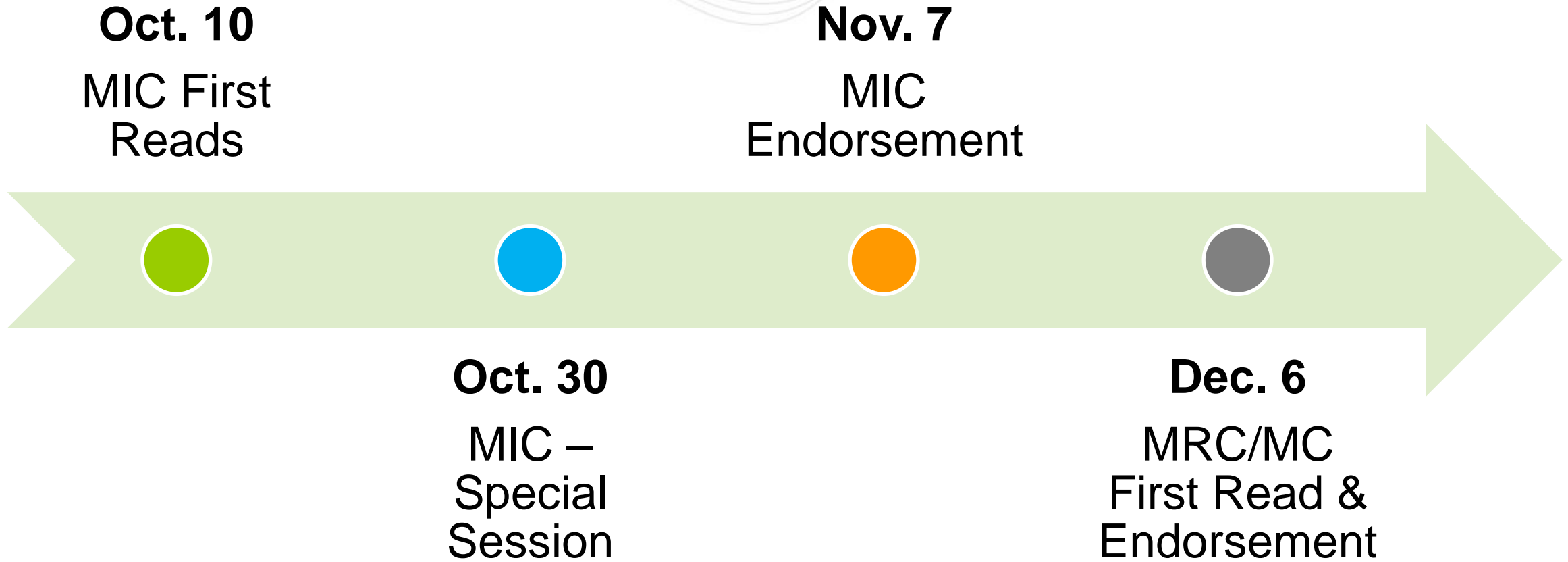




# Gas Contingency Switching Compensation Proposals

Market Implementation Committee  
November 7, 2018

- Issue to address compensation was identified at the December 2017 MRC meeting while approving changes to Manuals M3 and M13 to address gas contingency impact on the electric system
- Problem statement and issue charge approved at January MRC and assigned to MIC
  - Examine costs associated with Operationalizing Gas Pipeline Contingencies
  - MIC Special Sessions started in March



- Two proposals have been developed:
  - Package A
  - Package B (PJM Proposal)
- Both packages address mechanisms for cost recovery from a gas contingency switching event. Differences are highlighted on slides 6 & 7.

- Change governing documents (Tariff/OA/Manuals) to enable compensation for costs associated with fuel switching
  - Alternative fuel cost above active dispatch schedule
  - Pipeline charges – penalty charges, park & loan, documented gas balancing, and other pipeline tariff or documented charges
  - Lost opportunity cost for reduced output

## High Level Comparison:

Design Component	Package A	Package B
<b>Gas Balancing (includes commodity and non-commodity costs)</b>	Similar to Package B, except: <ul style="list-style-type: none"> <li>• Include periods when the unit is damaged during switching</li> <li>• Post-contingency – not eligible if PJM determines unit was unable to operate without switch</li> </ul>	Costs are eligible for recovery
<b>Deviation changes</b>	Period covered: <ul style="list-style-type: none"> <li>• Start – OI issued</li> <li>• End – sooner of:               <ol style="list-style-type: none"> <li>1) Reaches basepoint after returning to original fuel</li> <li>2) 10 AM the next operating day</li> </ol> </li> </ul>	Period covered: <ul style="list-style-type: none"> <li>• Start – OI issued</li> <li>• End – sooner of:               <ol style="list-style-type: none"> <li>1) Reaches prior dispatch point</li> <li>2) Reaches current ECO basepoint</li> </ol> </li> </ul>
<b>Performance Assessment Penalty</b>	Period covered: <ul style="list-style-type: none"> <li>• Start – OI issued</li> <li>• End –unit returns to original fuel</li> </ul>	During the fuel switch, unit is following PJM direction. Period covered: <ul style="list-style-type: none"> <li>• Start – OI issued</li> <li>• End – sooner of:               <ol style="list-style-type: none"> <li>1) Reaches prior dispatch point</li> <li>2) Reaches current ECO basepoint</li> </ol> </li> </ul>

## High Level Comparison:

Design Component	Package A	Package B
<b>Recovery of Day-Ahead profit</b>	Includes Lost Opportunity Revenues Associated with using a Different Fuel (Fuel B). $(\text{Cost of Fuel B} - \text{Cost of Fuel A}) * \text{MWs}$ (MWs includes what that would have been scheduled using Fuel A)	Status Quo
<b>Allocation of Costs</b>	Units with Inferior Service that Displace Units with Firm Service responsible for Design Components 11 and 13c through PJM settlements. All other costs allocated as Package B	Allocated as part of make-whole compensation for reliability and/or deviation
<b>Recovery of future costs realized on future date</b>	Costs are submitted to PJM and the IMM within 5 business days after receiving the bill.	
<b>Value for using limited run hours</b>	Status Quo	
<b>Schedule used in after-the fact settlement (during the transition)</b>	Gen-weighted average cost of the hour(s) in which the switch occurred must be submitted	

# Addendum



	<b>Normal Mode – Constrained Electric/Gas System Conditions</b>	<b>Conservative Mode - Cyber/Physical Threat Conditions</b>
<b>Procedure Triggers</b>	Cold/Hot Weather Alert Capacity Emergency Pipeline Operational Flow Orders (OFO) Pipeline Maintenance Outages / Force Majeures	Pipeline Cyber/Physical Threat
<b>Decision Criteria</b>	Compressor station / Gas pipeline sufficiently redundant?	Credible threats to multiple pipelines in the same area?
<b>Pre-Contingency Control</b>	Status Quo <b>Pre-Contingency Re-dispatch (control to load dump ratings)</b>	Same <b>Pre-Contingency Fuel/Pipeline switch</b>
<b>Post-Contingency Control</b>	Status Quo <b>Post-Contingency Fuel/Pipeline Switch</b>	Same

Generators that switch fuels or pipelines following PJM dispatch instructions either pre-contingency or post-contingency are eligible to recover:

- Documented alternative fuel costs above the active dispatch schedule
- Gas balancing costs (must provide documentation and/or invoice)
- Penalty charges from the primary pipeline and/or the alternative pipeline
- Park and loan and other pipeline tariff charges
- Other documented pipeline costs

- Other recoverable costs include:
  - One start cost per switching event if start is required
    - Additional starts will not be compensated if the unit trips
  - Lost opportunity costs for reduced outputs if applicable

- Generators with emissions run hour limits will communicate such limits to PJM dispatch at the time of the PJM instruction. For units that have run hour limits, PJM will follow the guidance in Manual 13 Attachment M – Procedure for Obtaining a Temporary Environmental Variance.
- Generators that are Opted-in to Intraday Offers may update cost schedule in accordance with their Fuel Cost Policies to reflect the current commodity cost.

## References related to PJM's authority to issue operating instructions

- [PJM Operating Agreement](#)
  - Section 1 (Definitions), Emergency
  - Section 11.3 (Member Responsibilities)
  - Section 10.4 (Duties and Responsibilities)
  - Schedule 1, Section 1.6.2 (Office of the Interconnection, Scope of Services)
  - Schedule 1, Section 1.7.4 (General Obligations of the Market Participants)
  - Schedule 1, Section 1.7.11 (Emergencies)

- [PJM OATT](#)
  - Attachment K-Appendix
- [Manual 03: Transmission Operations](#)
  - Section 5 'Gas-Pipeline Contingency Analysis Procedure'
- [Manual 13: Emergency Operations](#)
  - Section 3.8 'Assessing Gas Infrastructure Contingency Impacts on the Electric System'
- NERC Operating Procedure [EOP-011-1 Emergency Operations](#)

[PJM Operating Agreement](#), Schedule 1, Section 1.6.2 (Office of the Interconnection, Scope of Services) and Parallel Provisions in [PJM OATT](#), Attachment K-Appendix

- (v) Determine and declare that an Emergency is expected to exist, exists, or has ceased....;
- (vii) Coordinate the curtailment or shedding of load, **or other measures appropriate to alleviate an Emergency, in order to preserve reliability in accordance with NERC**...to ensure the operation of the PJM Region in accordance with Good Utility Practice and this Agreement....” (Emphasis added.)



## NERC Operating Procedure [EOP-011-1 Emergency Operations](#)

- “Each Balancing Authority shall develop, maintain, and implement one or more ...Operating Plan(s) to mitigate Capacity Emergencies and Energy Emergencies within its Balancing Authority Area. The Operating Plan(s) shall include the following, as applicable:
  - 2.2. Processes to prepare for and mitigate Emergencies including:
  - 2.3.2. fuel supply and inventory concerns;
  - 2.2.3.3. fuel switching capabilities; and...”

- Assessing Gas Contingency Impacts on the Electric System
  - PJM Actions include:
    - *Notify PJM Members of credible gas pipeline contingency(s) being monitored by PJM via PJM Emergency Procedures application*
    - *Coordinate with the impacted pipeline(s) to confirm projected impact to affected PJM gas generators*
    - *Coordinate with impacted generators with alternate gas pipeline connections or alternate fuel capability to mitigate projected impact to the electric system*
  - *PJM will use best operator efforts to*