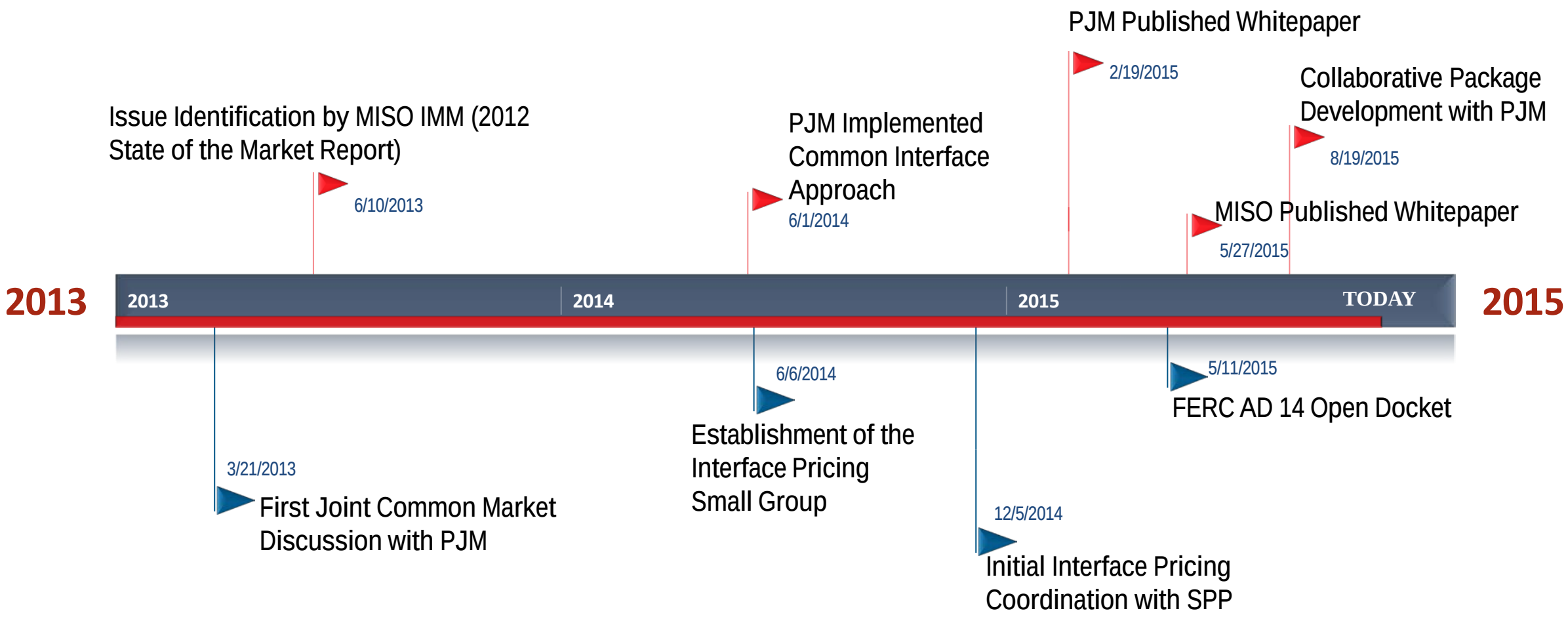
Joint Common Market

MISO-PJM Interface Pricing Update

Outline

- Interface Pricing History and Issue Description
- Solution Option Comparison and Decision Matrix
- Coordination Update
- Collaborative Approach Description
- Supporting Analysis
- Timelines

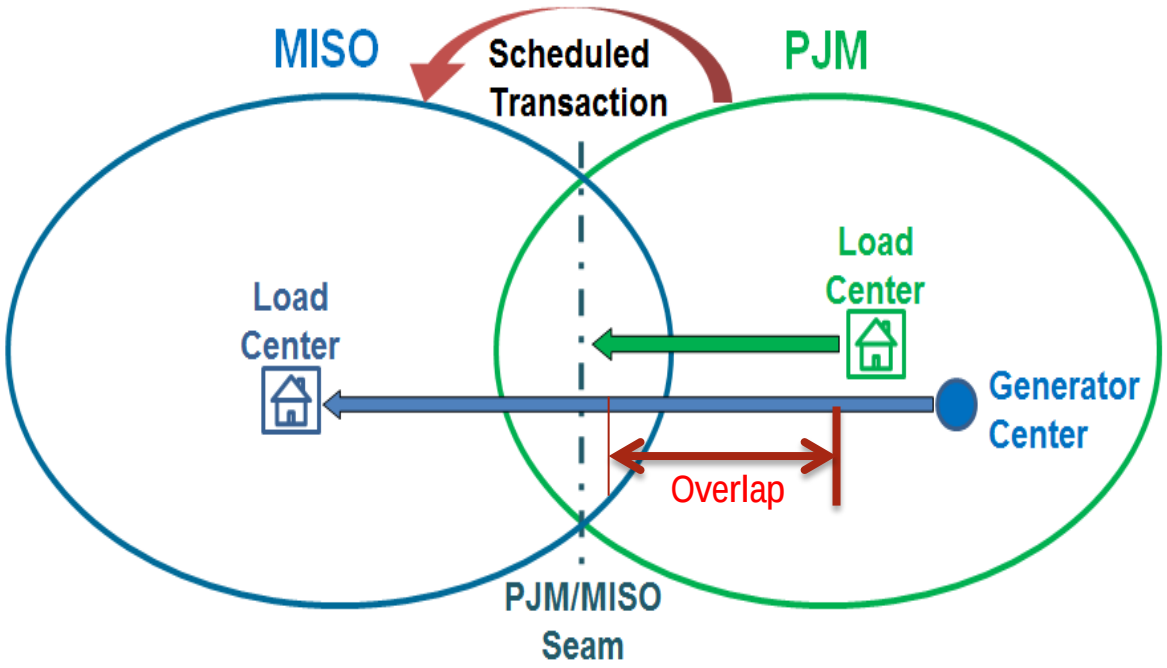
History


PJM Published Whitepaper
2/19/2015
Collaborative Package Development with PJM
8/19/2015
Issue Identification by MISO IMM (2012 State of the Market Report)
6/10/2013
PJM Implemented Common Interface Approach
6/1/2014
MISO Published Whitepaper
5/27/2015
2013
2013
2014
2015
TODAY
2015
6/6/2014
5/11/2015
FERC AD 14 Open Docket
Establishment of the Interface Pricing Small Group
3/21/2013
First Joint Common Market Discussion with PJM
12/5/2014
Initial Interface Pricing Coordination with SPP

Issue Statement

- The root cause is that MISO and PJM use different methods to model power flow impacts of interchange transactions on M2M constraints

PJM's Path: PJM load center to the seam



MISO's Path: PJM generation center to MISO load center

Issue Statement

- This modeling overlap causes two main issues
  - Duplicative settlement with the transaction (over & under payment)
  - Revenue imbalance (congestion collected <> congestion payment)
- There are potential unintended consequences
  - Price volatility on M2M constraints will create uncertainties for Market participants to schedule efficient transactions
  - Price efficiency on Non-M2M constraints

Solution Option Comparison Matrix

- **There are four proposals focused on interface re-definition and interface price re-formation.**
- **Due to implementation challenges associated with alternative 1 and 2, MISO and PJM have developed the collaborative solution (alt 4) to seek incremental improvements.**
- **MISO IMM has raised concerns regarding alternative 4, and has been collaborating with MISO on the additional analysis.**
- **Alternative 3 is the preliminary hybrid approach from MISO IMM.**

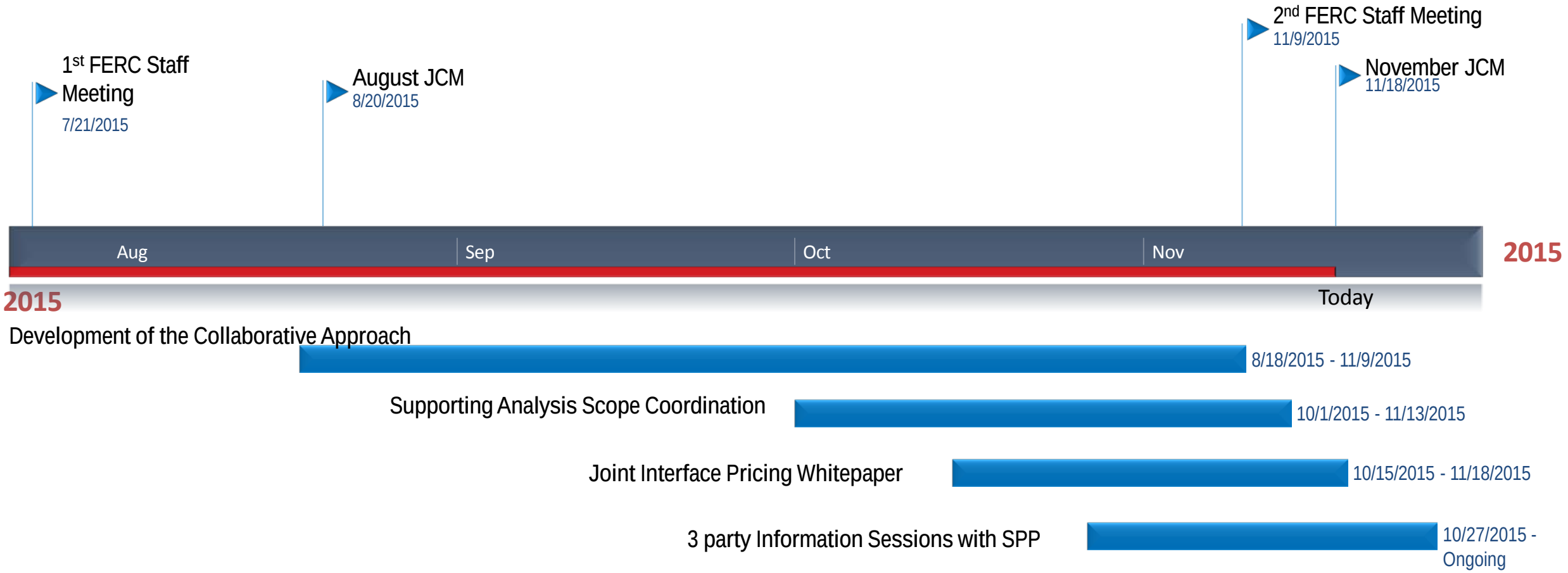
Design Components	Alt 1. Centroid to Centroid Approach (Original Proposal)	Alt 2. Common Interface with Commercial Flow Approach (Original Proposal)	Alt 3. MISO Incremental Improvement Approach(Hybrid of Alt. 1)	Alt 4. Collaborative Approach (Hybrid of Alt. 2)
Interface Definition	Centroid to Centroid	Common Interface at the Seam	Centroid to Centroid for MISO Common Interface for PJM	Enhanced Common Interface at the Seam
Transactions' Impact in Non Monitoring RTO's Price	Exclude	Include	Exclude for MISO Include for PJM	Include
Commercial Market Flow in M2M	Exclude	Include	Exclude	Exclude
FTR & DA Adjustments	Yes	No	Yes	Yes
Number of Interfaces	2	1	2	1

Preliminary Interface Pricing Decision Evaluation Matrix

Category	Alt 1. Centroid to Centroid Approach (Original Proposal)	Alt 2. Common Interface with Commercial Flow Approach (Original Proposal)	Alt 3. MISO Incremental Improvement Approach (Hybrid of Alt. 1)	Alt 4. Collaborative Approach (Hybrid of Alt. 2)
Earliest Implementation Time	TBD (2018+)	TBD (2017+)	Q3 2017	Q3 2016
Implementation Feasibility (practical, effort. and timeline)				
Eliminate Duplicative Congestion Settlement for Both RTOs				
Eliminate Revenue Imbalance for Both RTOs				
Impact to Non M2M Constraints (additional analysis being performed)				
Reduce Price Differential Volatility at the Seam (additional analysis being performed)				
Seams Consistency (practical, method)				

Undesired ------> **Desired**

Coordination Update – Collaborative Approach



Collaborative Interface Pricing Solution Strategy

- Take action to resolve Interface Pricing concerns by implementing a practical & collaborative method to:
  - Eliminate revenue imbalance (duplicative settlements)
  - Introduce proper interface price signals

- Incorporate an ongoing performance evaluation approach to incrementally improve Interface Pricing through:
  - Enhance granularity
  - Enhance market efficiency

Supporting Analysis

- Enhanced Common Interface Analysis:
  - Historically congested M2M constraints
  - Flexible generators impacting these M2M constraints
  - Generator weighting factors based on flow contributions
- Price Incentive Analysis:
  - Historical market data on all congested M2M and Non-M2M constraints
  - Establish reference using marginal resources
  - Calculate sensitivities for centroid to centroid approach and enhanced common interface approach and reference comparison
  - Reconstruct congestion prices

Summary of the Collaborative Approach

- Pre-Implementation Activities
  - Develop & Adopt a Common Interface Definition
  - Adjust FTR and DA Limits to offset deviations between commercial market flow and market-to-market market flow
- Post Implementation Activities
  - Measure performance and make adjustments as needed
  - Improve modeling as appropriate
- Ongoing Market Efficiency Activities
  - Address commercial flows
  - Improve shadow price convergence
  - Evaluate non M2M constraints impacted by transfers

Pre Implementation Activity Details

- Develop & Adopt a Common Interface Definition
  - Focus on historically congested M2M constraints
  - Determine significant flexible generators impacting these constraints – IDC model
  - Using PROMOD perform economic interchange simulations
    - Perform 8760 hours of simulation for 2016 planning year
    - Identify flexible generators when historical M2M constraints are present
    - Identify weighting factors for generators based on flow impacts
  - Conduct analysis to measure performance against existing data to agree on the final interface definition

Pre Implementation Details Continue

- Adjust FTR and DA Limits to offset deviations between commercial market flow and market-to-market market flow
  - Evaluate the difference between typical RT commercial flows and M2M flows associated with M2M constraints

Commercial Flow	Market Flow	Current DA Limit (FFE)	Transaction's Impact	New DA Limit = Current + Transaction's Impact
100	125	**100**	-25	**75**
125	100	**125**	25	**150**

Post Implementation Plan

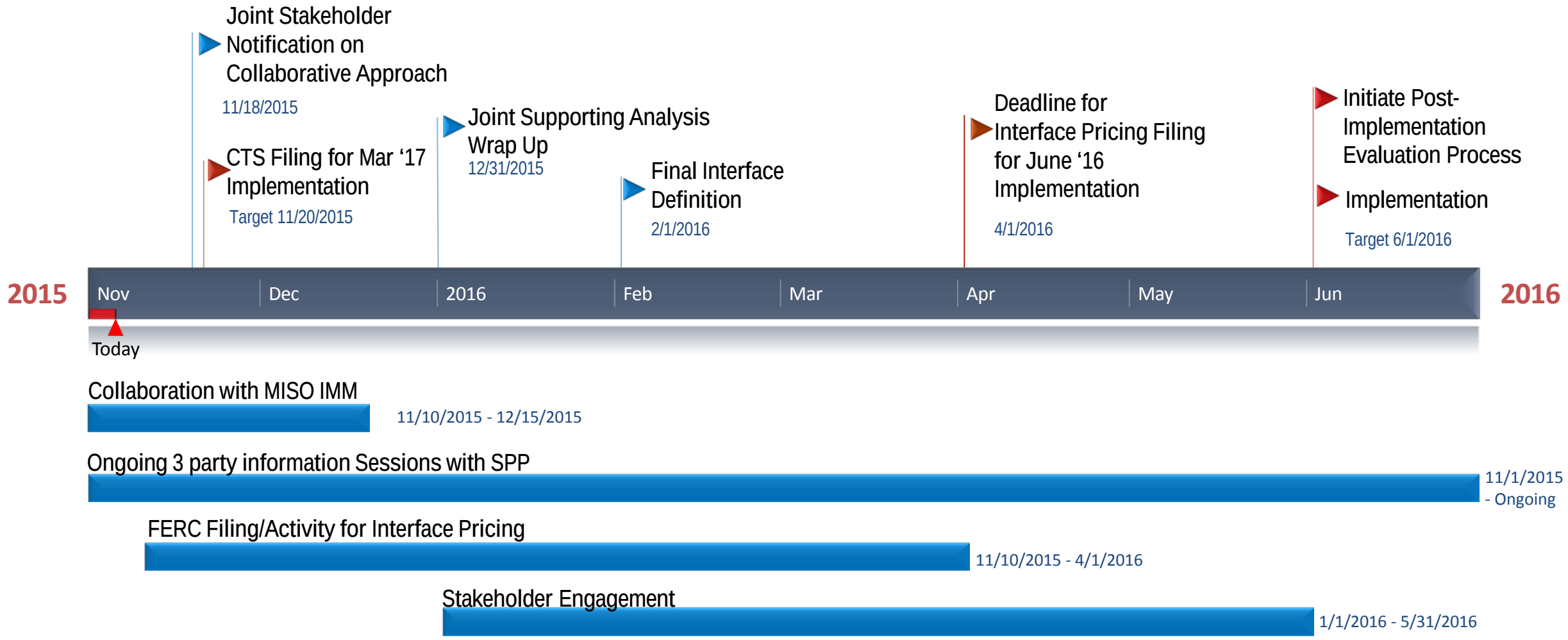
Monitoring Process and Mitigation Options for the Collaborative Approach

Key Concerns	Performance to Monitor in Post Implementation	Mitigation Options to be Evaluated for Quarterly / Annual Enhancement Opportunities
Price Signal	• Congestion transaction incentive for M2M constraints • Shadow price convergence for M2M constraints • Interface price volatility • Price signal for Non M2M constraints	• More granular common interface definition • Address volatile constraint control due to shadow price swings • Improve shadow price convergence for M2M constraints in general • Potential to capture non M2M constraint interface price impacts jointly
Revenue Imbalance	• Uplift or FTR imbalance	• Day Ahead M2M coordination • Monitor the impact of commercial flow

Detailed Joint Timeline Targets

- Collaboration with MISO IMM
  - Dec 15,2015
- Joint Supporting Analysis Wrap Up
  - Dec 30,2015
- Developed final interface definition
  - Feb 1, 2016
- FERC Filing/Activity
  - CTS
  - JOA changes for Interface Pricing Implementation
- Stakeholder notification
  - JCM Starting Nov 18,2015
- Implementation
  - Absent any unforeseen outcomes or impacts that we had not previously considered
  - Target June 1, 2016

Detailed Joint Timeline Targets



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