



MISO Generation Interconnection Process and Challenges

MIPSYCON

November 6, 2018

Agenda

- High Level Process Overview
- Current Challenges and Solutions to MISO Interconnection Queue

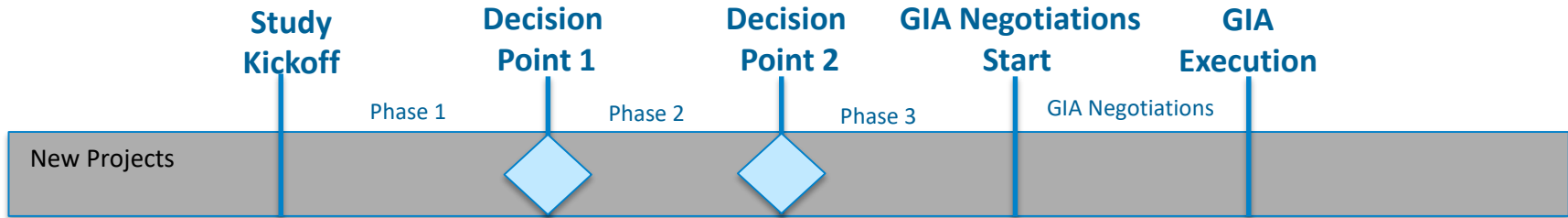
Why a Generation Interconnection Process?

- To study the reliability impact of the new interconnection– FAC-002
- Identify required network upgrades
 - Reliable Interconnection
 - Reliable Deliverability

Interconnection Service Explained

- Energy Resource Interconnection Service
 - Allows for proposed generator to interconnect
 - Allows proposed generator to participate in the real time market
- Network Resource Interconnection Service
 - Allows for proposed generator to sell capacity
 - Deliverability is maintained in the MTEP Process

MISO DPP Process

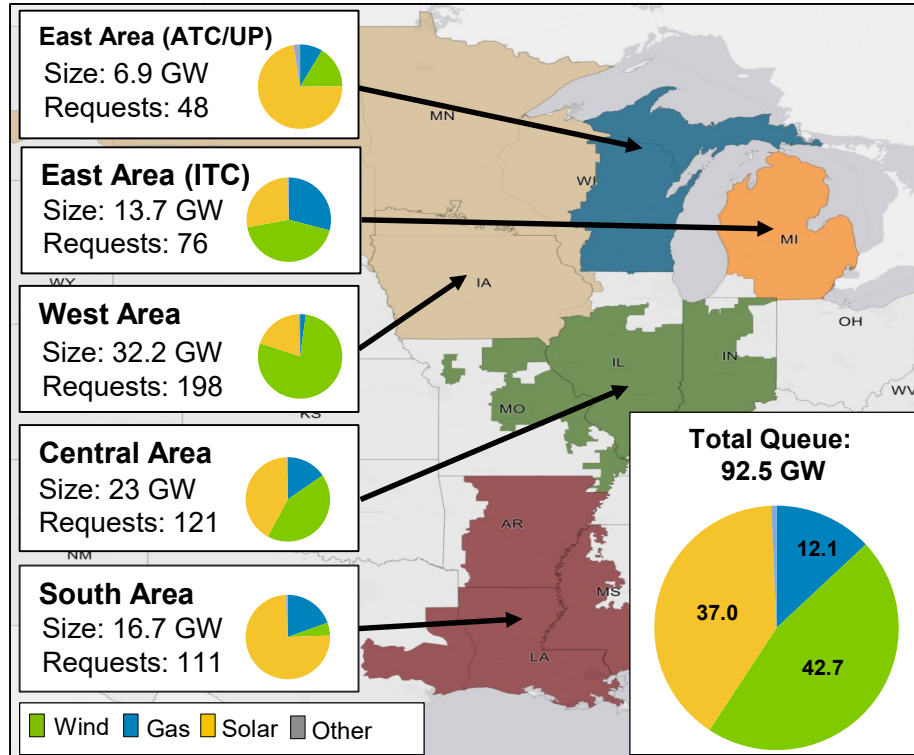


- Each Phase consists of a planning study
 - Phase I – Powerflow Study
 - Phase II and III Powerflow, Stability, and Short Circuit Studies
- Interconnection Customers can elect to proceed or Withdraw at Decision Points
 - Proceeding puts certain milestone payments at risk

Generation Interconnection Challenges

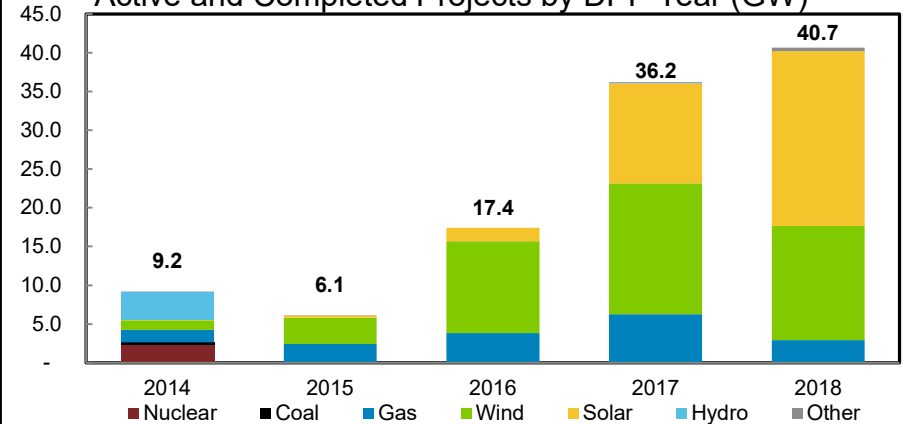
The current generator interconnection queue consists of 554 projects totaling 92.5 GW

MISO Active Queue by Study Area



DPP Trends

Active and Completed Projects by DPP Year (GW)



Notes:

- The queue size grew by 239 projects and 40.7 GW with the addition of DPP-2018-APR queue cycle.
- Detailed queue cycle information can be found on the next page or [MISO's website](#)
- For the latest information on the Interconnection Process Task Force (IPTF) – visit [MISO's website](#)

Current MISO Queue Challenges

- Current total queued generation is approximately 90 Gigawatts
 - For reference total peak load of MISO is approximately 128 Gigawatts
- Non-Linear power system behaviors are being observed in stressed areas
 - Same electrical locations of the transmission system
- Large number of projects requires significant data management
 - Needs to be exported to SPP, PJM, etc
- Project Speculation
 - Project speculation raises everyone's network upgrade costs

MISO Queue Solutions

- Earlier model development
 - Identify issues prior to study kickoff occurs, longer review
- Enforcing the MOD-32 requirements
 - Using standard stability models to increase data capability
- Shift tasks in the process
 - Creation of powerflow models first and then the stability models instead of simultaneous development
 - Delegate plant design issues to interconnection customers
- Site control

Current Results

- MISO April South 2018 Model out for review
 - Study kickoff to occur in first quarter 2019
- MISO February West 2017 using new tariff process
 - Only a powerflow study will occur in Phase I. Stability model development during Phase I.
- Tighter Interconnection Customers requirements
 - Proper model submittal, Site Control
- Project data stored in Model on Demand

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