



Interconnection Process Working Group (IPWG) Conference Call & Webex

July 22, 2025

10:00 am to 1:50 pm ET / 9:00 am to 12:50 pm CT

Dial in and Webex information available at www.misoenergy.org

Minutes

1. Administrative Items (David Mindham)

a. Welcome and Roll Call

Public Meeting Announcement

The meeting was called to order at 10:00am ET/9:00am CT.

Chair: David Mindham

Vice Chair: Angela Maiko

MISO Liaison: Ryan Westphal (for Kyle Trotter)

Stakeholder Relations: Mandi McGirr

Participants:

Aaron Demuth, OTP	Andrew Kienitz, MN Power	Chad Craven, Savion
Aaron Stoll, Grid United	Andy Cotter, ATC	Chandana Bommareddy, InnerGex
Aasawari Pawar, Grid United	Andy Kowalczyk, SREA	Charlotte Thomasson, BayWa
Abhilash Muthumani, Tensaka	Andy Zhou, Elevate Energy	Cheng Luo, Sargent & Lundy
Abigail Reid, MGE	Anna Basimamovic, RPU	Chengyue Guo, ATC
Adam Renfandt, NDSG	Anthony Rotar, Heelstone Energy	Chip Estes, Not Provided
Adam Stern, New Leaf Energy	Antonio Santos, Nexamp	Chris Norton, AMP
Adreanna Dillen, Spearmint	Apoorva Desai, Alliant	Chris Stoltz, PGR
Akeyo Seun, Pattern Energy	April Phelps, Entergy	Christian Bernardi, Potomac Economics
Alan Castillo Monreal, Ulteig	Arash Ghodsian, Invenenergy	Christopher Plante, WEC
Alan Comnes, New Consulting	Bakhtawar Khan, Gabel	Christos Ghionis, Gekterna
Alan Mok, Duke	Barbara De Abreu, Doral Renewables	Ciaran Gallagher, Clean Wisconsin
Alex Fosnaugh, Energyre	Barton Norfleet, PSC MS	Cindy Guillot, Cleco
Alex Judson, Sun Hawk	Ben Dayman, MEC	Cindy Hammarlund, CES
Alex Kloiber, CIPCO	Ben Kaldunski, Xcel	Clayton Hall, Duke
Alex Penney, Deriva Energy	Bijoy Chatt, IBV Energy	Clayton Robinson, Cirdelio Power
Allie Koeplinger, MI PSC	Bill Booth, Michael Best	Cliff Sikora, Earthrise
Allison Dever, Ampliform	Bill Turnbull, MEC	Cody Anderson, OTP
Amal Mallavarapu, Eniplenitude	Brad Pierson, Walden Renewables	Cynthia Bothwell, U.S. DOE
Amanda Kastenschmidt, DPC	Brad Pope, OMS	Cynthia Crane, ITC
Amber Joyce, MDU	Bradley Luckton, WPPI	Dahlia Byles, Ulteig
Amir Rostami, Enerzinx	Brian Giggee, MDU	Dan Alfred, CMS
Amrit Srivastava, Epe Consulting	Brinda Malladi, Arevon	Dan Stroh, Ameren
Andrew Ford, GDS	Carlos Escala Roque, NextEra	Darian Lafferty, Hoosier
Andrew Grieve, Jupiter Power	Carolyn Wetterlin, Xcel	Dave Galarowicz, Alliant
	Carrie Rowland, Swift Current Energy	Dave Harlan, Veriquest
	Carson Hemphill, MEC	David Davis, Apex
	Carter Scott, CPS Energy Consulting	David Hennen, Ameren
		David Johnston, IURC
		David Leventhal, AES
		David Osterkamp, ITC
		David Sapper, CGA
		David Savage, IURC

♦ Post Only

√ Potential Voting Item

^ Feedback Request

* Verbal Report



David Ticknor,
RES Group
Deral Danis,
Pattern Energy
Derek Snyder, OTP
Derek Sunderman,
Savion
DeWayne Todd, Alcoa
Dhruv Gupta,
Solar Proponent
Dio, PIQ Energy
Drew Siebenaler,
Epe Consulting
Dylan Stockert, MDU
Eric Bryant, Urban Grid
Eric Stephens, AMP
Erik Hanser, LARA,
MI PSC
Erin Chiari,
Jupiter Power
Erin Murphy, NextEra
Evan Shea, NextEra
Faizan Hajam, Zero
Emission Grid
Farah Neha, Advantage
Renewables
Forrest Tingo, LSBP
Frederick Salvo, Baker
Donelson
Ganesh Velummulum,
New Edge Power
Gimod Mathew, Grid
United
Ginger Hodge, CES
Greg Weiss, Ameren
Hannah McCorry, ICC
Harriet Walsh, Orsted
Harron Rasheed Mir,
Zero Emission Grid
Hicham Khireddine,
National Grid
Hilary Gold, Entergy
Humberto Branco, Rev
Renewables
Hunter Burgett, Strata
Clean Energy
Hussein Ghitani, Hanwha
Renewables
Ian Reichardt, Silicon
Ranch Corp.
Isaiah Carter, CMS
Jacob Lampi, CIPCO
Jake Chapman, LA PSC
Jamal Khudai, ATC
James Brown, Hoosier
Jason Edwards, DM3
PSC
Jason Harchick, Oriden
Power

Jason Mazigian, BEPC
Jaydeepkumar
Senjaliya, Ulteig
Jeff Kelley, NIPSCO
Jenny Liu, Jupiter Power
Jeremi Wofford, Ameren
Jeremy S Jones, Entergy
Jerry Martinez, Sol
Jessica Willey, Xcel
Jim Waight, Siemens
Jodi Walters, CMPAS
Joe Downie, Acciona
John Brodbeck, EDP
Renewables
John Liskey, CUB MI
John Miller, Clearway
John Thomassen, MGE
Jonathan DeMay, Nexamp
Jonathan Pagnussat,
Arevon
Jordan Johnson,
CenterPoint
Jorge Martín, Diverxia
Jose Villarreal, Acciona
Joseph Silvers,
PowerGEM
Josh Grindeland, PGR
Josh Kelly, Atwell Group
Josh Kinney, Hexagon
Josh Tellier, ATC
Justin Salinas, Enel
Justin Stewart, Ameren
Justin Stewart, Ameren
Kathryn Wilhelm, Alliant
Kellie Lovan, KY PSC
Ken Dell Orto, Entergy
Ken Gavin, DTE
Kenneth Foladare,
Tangibli Inc
Kevin Kingsley, MDU
Kristen Parker Long,
Entergy
Kristy Rennick, CMS
Kurt Vanderlick, Cleco
Kyle Lockhouse,
Sunraycer
Leemen Weaver,
NextEra
Leighton Good, MPR
Liam Obrien, IURC
Lindsey Duke, Path Co.
Liqin Jiang, Duke
Lisa Barrett,
Advanced Energy United
Lisa Silverwulf, HDR
Lise Trudeau, MN PUC
Liv Crowell, Ameren
Mabry, Samson, Entergy
Madeleine Balchan, Xcel

Maggie Kristian, Geronimo
Power
Manuel Ordóñez Webb,
Ameren
Marshall Courtney, PGR
MaryClaire Peterson,
Entergy
Massamba, BrightNight
Power
Matt Stobb, AES
Matt Wells, MPW
Matthew Jackson, FERC
Max Blackburn, Invenergy
Max Reitz, Ameren
Maxx Snell, MDU
Meghan Tinnea, Advanced
Energy United
Melissa Seymour, Sun2o
Michael Dantzler, Ranger
Power
Michael Declan Crouse,
IBV Energy
Michael Ridenhour, Ameren
Michael Saer, GRE
Michelle J Mancheski, WE
Energies
Mike Cronier LRE, LRE
Mike Gahimer, Arevon
Mike Malguarnera, BW Solar
Mike Matheson, DM3 PSC
Mike Schowalter, Fresh
Energy
Mike Tabrizi, Zero Emission
Grid
Mike Vanvoorhis, Alliant
Miles Larson, LSBP
Mitchell Monke, High Life
Solutions
Mitchell Myhre, Alliant
Moe El-Gafy, NSCE
Mostafa Nazemi, Tesla
Mostafa Sedighizadeh, SPP
Nahreen Mahmud, UNO
Naishadh Hegde, Ameren
Narayana Srinivasa, CA
Nelson Ferris, Ameren
Nicholas Lorenz, MPW
Nick Schroeder, MGE
Nick Tenney, CMS
Nikki Kniepmann, Ameren
Nitin Kushwaha, Geronimo
Power
Noel Darce, Stone Pigman
Orijit Ghoshal, Tract
Palmer Barefield, Zero
Emission Grid
Pavan Sajja, Pattern
Energy



Phillip Beharie, Cordelio Power	Sam Roberts, TED	Thomas Chamberlain, Entergy
Pratisha Solanki, New Project Media	Sameer Surampalli, Idemitsu Renewables	Thomas McNailen, Advantage Cap
Preston Hart, OTP	Sandeep Tadepally, RWE	Thomas Siegrist, SMXB Law
Quinn Beckham, KEC	Sangeetha Rajasekeran, Nira	Thompson Adu, Engie NA
Rachel P. Gabel	Sanjay Bhatia, Savion	Tia Elliott, Pelican Power
Raj Pudhota, TED	Sarah Baxley, Grid United	Tim Ellis, Clenera
Rakhi Ramteke, InnerGex	Sawyer McClure, WPSCI	Tim Tessier, Iowa OCA
Randi Nyholm, MN Power	Seth Simmer, 174PG	TJ Cochran, Ameren
Randy Johanning, ATC	Shane Shields, Birch Creek	Tom Bambrick, Azimuth Renewables
Rebekah Kelman, Cordelio Power	Shannon Dancier, Ulteig	Travis Stewart, Gabel
Regan Fink, PGR	Shashank Swaminathan, IBV Energy	Trev Comstock, Grid Astra
Rhett Edward Trease, Duke	Shawn Welch, Doral Renewables	Trey Mayeux, Cleco
Rhonda Peters, CGA	Shilpa Toppo, 174PG	Tricia DeBleckere, OMS
Richard Seide, GridStrategies	Shivam Sharma, Alliant	Tushar, Grid Astra
Rishabh Gupta, Pearl Street	Sirisha Tanneeru, Elevate Energy	Tyler Bergman, CGA
Rob Wells, ITC	Soufiane Louwahi, Epe Consulting	Tyler Jorgenson, OTP
Robert Barrera, Vesper	Srijan Karim, MEC	Udit Gulati, NextEra
Robert Vosberg, LPSC Staff	Stacie Hebert, OTP	Venkat Thekkemadom, Grid Astra
Rory Jones Acciona, Acciona	Steve Coleman, Not Provided	Victor Olorundv, Enbridge
Ruchi Singh, Urban Grid	Sujeet Urwan, MRES	Vince Vandaveer, Ameren
Ryan McKeever, Husch Blackwell	Sumit Mundade, Treaty Oak Clean Energy	Virginia Paschal, Cordelio Power
Ryan Wernette, WPSCI	Summer Fabus, EDP Renewables	Wendy Anderson, MN Power
Ryan Wilhelmus, Big Rivers	Susan Rossi, Xcel	Werner Roth, TX PUC
Rylan Hanson, OTP	Susan Stanfill, PGR	Weston Smith, Alliant
S Bhowmik, Capital Power	Temujin Roach, EDFR	William Andrew Rice, Entergy
Salim Almenshad, Ameren	Terri Gheckat, Entergy	Xiaohuan Tan, Hitachi Energy
	Terry Jarrett, Healy Law	Yvette Gerber, Azimuth Renewables
	Thomas Banks, ESA Solar	Zach Fjestad, OTP
		Zach Van Ness, Matrix Renewables
		Zachary Callen, ICC

b. Review Agenda

The agenda was accepted as posted.

c. Review Meeting Minutes / Action Items

The minutes were accepted as posted.

Action Item	Owner	Date	Status
MISO requested feedback on Recommended IBR Modeling Requirements (PAC-2024-2) by June 17, 2025.	Stakeholder Relations	6/3/2025	Closed
MISO requested feedback on Phasor Measurement Unit (PMU) Data Streaming (PAC-2024-2) by June 17, 2025.	Stakeholder Relations	6/3/2025	Closed



MISO requested feedback on MISO-AECI Joint Planning Agreement Draft by June 20, 2025.	Stakeholder Relations	6/3/2025	Closed
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d. Review Management Plan

The management plan was reviewed.

2. Liaison Report (Kyle Trotter)

- **MISO Feedback Responses**
 - **Inverter Based Resource (IBR) Performance, Modeling, and Conformance (PAC-2024-2)** – Stakeholder feedback received expressed concerns about model submission and model usage; stakeholders asked MISO not to apply requirements retroactively. MISO shared that tooling to aid testing and reporting requirements will be explored and that some suggested updates to the test criteria were incorporated. Contact: Alan Urban
 - **Phasor Measurement Unit (PMU) Data Streaming (PAC-2024-2)** – Stakeholder feedback received was largely supportive and informative. Point of Interconnection (POI) placement had broad technical support. Cost assignment will need to be worked through all the corner cases. Contact: Brian Kiefer
 - **MISO/ Associated Electric Cooperative, Inc (AECI) Joint Planning Agreement (JPA)** – Stakeholder feedback received had general support for clarifying study procedures between MISO and AECI. Coordination on Limited Operation Study: MISO and AECI decided to retain the current language in the JPA to allow flexibility for future improvement. Non-material clarifications and corrections were made. MISO is planning a tentative FERC filing in September 2025, pending the July feedback request at the Planning Advisory Committee (PAC). Contacts: GI-AFS@misoenergy.org or Madison Pitts.
- **Generator Interconnection Queue Improvements (PAC-2023-1)**
 - **Expedited Resource Addition Study (ERAS) Informational Guide** – ERAS was filed with FERC on June 6, 2025 (ER25-2454); September 2, 2025, is the estimated first study kick-off if approved by the requested effective date. The application submission window for proposed first study cycle is August 6 – August 11, 2025. BPM-015 updates will follow. Contact: Sydney Yeadon Cooper
- **Generation Replacement Process Enhancement (PAC-2023-4)** – MISO filed with FERC on March 28, 2025 (ER25-1802). Attachment X was revised on the topic of appropriate POI for replacement projects. FERC issued an Order approving the filing on May 27, 2025. This issue will return to the PAC for a recommendation to change issue status to Completed. Contact: Huaitao Zhang
- **Point of Interconnection (POI) Tool Update** – The MISO POI Map is migrating to a new version of CartoVista. Migration is scheduled to be completed by the end of September 2025. The POI Tool is located on the MISO website at Planning > Resource Utilization > Generation Interconnection Queue. Contact: Ryan Westphal
- **New Generator Interconnection Application Portal** – The new generator interconnection application portal launch will occur later this summer. To prepare, create a [Help Center](#) account if one doesn't exist, attend upcoming the GI Queue Process Workshop, and review the training materials. Contact: Rob Lamoureux
- **Upcoming Events/Workshops & Announcements**
 - Futures Redesign Workshops – July 25, Aug 29, Sep 24, Oct 29
 - MISO Initiatives to support Reliability Imperative Workshop – July 30
 - MISO Transmission Expansion Planning (MTEP) Workshop – July 30
 - FERC Order 881 Coordination Workshop (Closed) – August 19
 - Generator Interconnection Queue Process Workshop – August 25
 - Renewable Manufacturer Data Gathering - request for follow-up by July 31
 - Annual Customer Survey - Open July 8 - 29



3. **MISO Posted Items** (Kyle Trotter)
 - a. **FERC Status Report**
 - b. **Definitive Planning Phase (DPP) Study Cycle Update**
 - c. **MISO-AECI JPA Redlines**
4. **Inverter Based Resource (IBR) Performance, Modeling, and Conformance (PAC-2024-2)**
 - a. **Proposed IBR modeling requirements** (Alan Urban)

MISO proposed revised requirements for dynamics models used in the interconnection process (to become a new appendix to BPM-015) based on stakeholder feedback received. MISO proposed a plan to implement these requirements and process into future DPP Cycles. BPM-015 Appendix G redlines are posted with IPWG meeting materials.

MISO is seeking input from stakeholders to refine the proposed IBR modeling requirements, with the goal of finalizing requirements by November 2025. MISO is considering feedback received on model submission timing. MISO agrees and will not apply the proposed modeling requirements retroactively. TSAT Software is the standard for both MTEP and DPP stability analyses and would therefore require any UDM submitted to be TSAT compatible. MISO believes three models submitted at application will provide the most benefit to the interconnection process.

MISO reviewed stakeholder responsibilities. MISO will explore development or procurement of a tool to automate testing and reporting. MISO is expanding details on parameter verification requirements. MISO is targeting mid-2026 implementation of these requirements for the DPP 2025 and DPP 2026 cycles. The group discussed OEMs, balancing reliability risk with model availability, clarification on Electranix requirement versions for PSCAD models, and requirements of UDM.

Next Steps include:

- Exploring tool feasibility
- Seeking feedback on implementation and parameter verification
- Final proposal to be drafted and shared for September IPWG

Stakeholder feedback is requested on the proposed implementation plan and revised requirements. MISO requested feedback on **Proposed IBR Modeling Requirements (PAC-2024-2)** by August 5, 2025

- b. **Phasor Measurement Unit (PMU) Data Streaming (Srivatsan Lakshminarasimha for Brian Kiefer)**

MISO discussed its proposal to add a MISO standard for streaming synchrophasor data from new interconnections. MISO currently has a basic synchrophasor system today and mounting evidence, combined with projected resource state, is pointing to the importance of increased grid dynamics monitoring. MISO would like to have PMU observability at all new BES interconnections. MISO is beginning to draft GIA requirements in PMU installation.



MISO reviewed what synchrophasor data is. MISO proposed the following: The GIA will be updated to require the installation of PMUs on the generator feeder at the Point-of-Interconnection for all new BES generating facilities. Data should be streamed minimally at 30 samples / sec and adhere to MISO's PMU integration requirements. Align PMU installation and maintenance similarly to existing relay and SCADA roles and responsibilities.

MISO discussed previous stakeholder feedback received and points for GIA consideration, including the location of PMU installation. MISO provided an overview of PMU data use cases. MISO does not need NERC Critical Infrastructure Protection (CIP) designation for PMUs at this time. MISO will not be using PMU data for operational decisions. MISO will post proposed changes and request stakeholder feedback at the September IPWG and will start to define specific PMU requirements, with the goal of filing proposed GIA changes by the end of the year. BPM edits will follow.

The group inquired about the requirements of PMU, PMU equipment and installation costs, operating maintenance cost – cost allocation, and the effective date. Regarding PMU data from the generator feeder, MISO clarified its intent is to be the POI on the high side of the transfer. The implementation details will be covered in the agreement. MISO clarified these changes will be applicable to new GIAs.

5. Order 2023 Update (Rob Lamoureux)

MISO provided an initial overview of FERC's recently issued Order on MISO's Compliance for 2023/2023-A. The June 26, 2025, Order accepted most of MISO's proposed GIP revisions and Independent Entity Variations (IEVs). MISO is still reviewing the compliance directives. MISO will use the guidance FERC provided on the Order to refile within 60 days. MISO provided some examples of GIP changes under development – and reviewed what was and was not accepted in the Order.

The group discussed the following topics in the examples provided in the materials: Alternative Technologies for Interconnection Studies, DPP Studies Penalties Structure, POI Heatmap, and Co-location of Interconnection Requests. The group inquired about penalties. MISO clarified that part of its internal assessment, collection, and disbursement is under review. MISO is still working on where to get the money from; the order is clear on what to do with the money – that money is to be dispersed to pro-rata customers that have not withdrawn. It reduces some of the initial costs. FERC is clear on what MISO needs to fix in the compliance filing.

Next steps include

- Continued internal assessment discussion of FERC Order
- Future updates at PAC/IPWG
- Within 60 days file to make MISO GIP fully compliant
 - Compliance filings are due August 25, 2025

6. Attachment GGG Improvements (PAC-2024-6) (Simon Guo)

MISO updated stakeholders on this issue. MISO's Merchant High Voltage Direct Current (MHVDC) BPM creation is nearing completion. MISO revised the draft of the BPM to include



responses to stakeholder feedback received. The ongoing focus will be finalizing the initial BPM and starting the preparation of FERC Tariff changes and filings.

MISO reviewed the improvement perspectives on process and documents, updates on the MISO HVDC BPM creation, MISO MHVDC studies, concerns on EMT models and studies, and planned potential Tariff changes. BPM language was added for clarification and the group discussed the contingent clause based on the future decision from FERC on the corresponding Tariff Changes. The revisions to the BPM include stakeholder feedback. BPM creation and calling for stakeholder feedback is targeted for Q4 2025 and Tariff filing and changes in 2026/Q1-3.

For market related questions on HVDC, MISO encouraged stakeholders to follow issue MSC-2024-8 at the Resource Adequacy Subcommittee (RASC) and then Market Subcommittee (MSC).

7. Surplus Interconnection Attachment X and BPM-015 Updates (PAC-2025-3)[^] (Clare Little)

MISO proposed enhancements to Attachment X of the Tariff and BPM-015 related to the Surplus Interconnection Request process. MISO proposed to address and improve several items in Attachment X and BPM-015 that are related to Surplus Interconnection Studies. Updates will clarify expectations on the Commercial Operation Date and create more efficiency in the process. Attachment X Surplus Interconnection redlines, and BPM-015 Surplus Interconnection redlines are posted with IPWG meeting materials.

MISO reviewed the following items:

- Increase the study deposit to keep up with current and expected study costs
- Pause the Surplus Interconnection Study commencement until the Modifications are completed and consider Surplus Request withdrawn if a Modification is submitted after the study commencement
- Require submission of Surplus Requests one year prior to the Commercial Operation Date
- Continue limited Interconnection Service of one year for both planned and unplanned retirements of the original interconnection unit
- Utilize the latest DPP Phase 3 models if the Interconnection Customer Decision Point II has passed

MISO confirmed the timeline to submit will be at least one year. The group discussed the proposed change to the study deposit of \$150K – and the request for one year for the COD.

Next steps include:

- August 12: stakeholder feedback due on proposal (IPWG)
- September 3: final proposal presented to IPWG
- October 8: PAC - feedback request
- November 19: PAC - final presentation
- Q1 2026: tentative FERC filing

MISO requested feedback on **Surplus Interconnection Attachment X and BPM-015 Updates (PAC-2025-3)** by August 12, 2025.



8. Generator Replacement Attachment X (Winnie Nguyen) and BPM-015 Updates (PAC-2025-4)[^]

MISO proposed to address and improve several items in the Generator Replacement Process. Attachment X Generator Replacement redlines and BPM-015 Generator Replacement redlines are posted with IPWG meeting materials.

MISO reviewed the following items:

- Increase the study deposit to commensurate with current and expected study costs
- Enhance Reliability Assessment Study to cover the potential available grace period
- Update language to clarify Commercial Operation Date requirement
- Add language to specify modifications timeline
- Flexibility for the operation continuation of Existing Generating Facility
- Update language about the DPP models used in Replacement studies
- Add language to include Replacement Requests for queue projects that have not yet been built
- Update Replacement unit definition to include Existing and Surplus units

MISO clarified that any unused funds from the \$150K study deposit will get refunded. The group discussed the 3-year grace period. MISO explained the difference between short/long term, if there is problem with reliability then the original unit has to stay online until the problem is resolved and may not get a 3-year grace period.

The group inquired if surplus units were already able to be used as replacement generators. MISO acknowledged there is an increased interest, surplus units have always been able to be used as replacement generators, but it wasn't clear before, this update will clarify that in both Attachment X and BPM-015.

Next steps include:

- August 15: stakeholder feedback due on proposal (IPWG)
- September 3: final proposal presented to IPWG
- October 8: PAC - feedback request
- November 19: PAC - final presentation
- Q1 2026: tentative FERC Filing

MISO requested feedback on **Generator Replacement Attachment X and BPM-015 Updates (PAC-2025-4)** by August 15, 2025.

9. New Business (All)

None

10. Action Items (Mandi McGirr)

Action Item	Owner	Date	Status
MISO requested feedback on Proposed IBR Modeling Requirements (PAC-2024-2) by August 5, 2025.	Stakeholder Relations	7/22/2025	Closed



MISO requested feedback on Surplus Interconnection Attachment X and BPM-015 Updates (PAC-2025-3) by August 12, 2025.	Stakeholder Relations	7/22/2025	Closed
MISO requested feedback on Generator Replacement Attachment X and BPM-015 Updates (PAC-2025-4) by August 15, 2025.	Stakeholder Relations	7/22/2025	Closed

11. Adjourn

Meeting adjourned at 1:11 pm ET/12:11 pm CT

Next Meeting: September 3, 2025