



Market Participation and Registration of Co-Located Load and Generation (PAC-2024-4)

Consideration of Zero-Injection GIA

Planning Advisory Committee

February 25, 2026

Updated 2/23/26
Cover- title updated
Slide 3-minor edit

Purpose

To begin laying out a proposal for formalizing Zero-Injection Generator Interconnection Agreements (ZGIA)

Key Takeaways

- ZGIAs—when the load and generation are co-located—represent one solution that can facilitate large loads, but ZGIAs do not facilitate netting of generation with any associated or non-associated load
- In many respects, a generator with a ZGIA is comparable with other generators, and elements of this proposal reflect that alignment
- Today's presentation provides detailed interconnection and planning elements of the proposal; MISO will further elaborate market, reliable operations, and resource adequacy components of the proposal in future meetings

ZGIAs are an element of MISO's large load approach which can be readily formalized; the stakeholder engagement process is moving quickly to enable speed to power

Where we've been, where we're going

Dec. 2025:
Discussed initial ZGIA concept

Planning Subcommittee
(Open issue: PAC-2024-4)

Jan. 2026:
Described how ZGIA resource configurations may lead to reduced transmission network upgrade needs

Moved discussion to the PAC

Focusing on: Consideration of Zero-Injection GIA

Today (Feb. 2026):
Discuss a proposal for formalizing ZGIAs

Future:
Proposal elements distributed among relevant stakeholder groups for finalizing

Details on Next Steps slide

MISO proposes the following framework for formalizing ZGIAs

ZGIA Proposal Considerations

1

Interconnection process

The ZGIA interconnection process will use frameworks currently in place across replacement, surplus, and ERAS processes

2

Planning for the load interconnected with the ZGIA

MISO's planning processes will remain unchanged, reflecting the presence of the ZGIA as a Non-Transmission Alternative, and resulting in full services/obligations of firm NITS load

3

Resource adequacy participation

ZGIAs are similar to other resources that have not been studied for deliverability and will be treated similarly

4

Markets and Reliable Operations

MISO's markets, combined with monitoring of ZGIA injections and associated load withdrawals, will serve to maintain reliable operations of ZGIAs

Although the elements of the framework are written in a decisive style, this is a proposal built from stakeholder feedback, known stakeholder priorities, MISO's reliability responsibilities, and MISO/stakeholder guiding principles

Defining our terms: In the context of ZGIAs, netting refers to the offsetting of an obligation for a load to procure or pay for a service

“No Netting”

MISO proposes that—in the context of obligations, expectations, and benefits of being a Network Load—any and all load associated with a ZGIA resource **MAY NOT OFFSET (i.e. MAY NOT NET)** its Network Load/NITS service procurement or payment obligations under Module B of the MISO Tariff due to the presence of a ZGIA.

- “A Network Customer’s monthly Network Load is its hourly Load (60 minute, Hour); provided, however, the Network Customer’s monthly Network Load will be its hourly Load coincident with the monthly peak of the pricing zone or system where the Network Customer’s Load is physically located”
BPM 012, 3.1.8.1 Overview
- “Unless specifically designated as Point-To-Point Transmission Service, all Network Customer Load is reported as Network Load. This includes Grandfathered Load or Load served by Behind-the-Meter Generation.”
BPM 012, 3.1.8.2 Data Requirements

Energy Market Settlements

There are some purposes, such as market settlement obligation to purchase energy, for which the existence of a ZGIA (or any generator) could offset an obligation of the load. In the case of energy market purchases for real-time load, the energy market purchase of quantities of energy by the associated load are offset by the presence of the ZGIA resource, if the resource is not a market-registered resource.

1.

Interconnection Process: Overview

The ZGIA interconnection process will use frameworks currently in place across replacement, surplus, and ERAS processes

- a) ZGIAs will be limited to loads at the same bus, or at buses deemed near-equivalent based on a study performed as part of the interconnection process, using criteria currently in place for the retirement/replacement process
- b) Elements of the process will resemble the surplus, replacement, and ERAS processes in terms of study aspects, timing, and financial/other obligations
- c) The ZGIA study requirements are elaborated, and will include a requirement for a RAS if deemed necessary to maintain reliability

1a. Interconnection Process

ZGIAs will be limited to loads at the same bus, or at buses deemed near-equivalent based on a study performed as part of the interconnection process, using criteria currently in place for the retirement/replacement process

Evaluation of load/generation buses will use the Generator Replacement POI change evaluation criteria already in place:

- Generation and large load are co-located in Bench case, and generation connects to a new POI in Study case, comparing Bench and Study cases:
- POI buses must be at the same voltage level
- No new constraints added due to the POI change in AC Contingency Analysis
- Dfax change is less than 5% from existing POI to new POI in Base case

Base Model and Input Files

Latest MTEP 5-year out models and Input Files for Contingency Analysis and Dfax Calculation

Assumptions

Zero-megawatt GIA studies will use MTEP models and not consider queue projects in the models

1b. Interconnection Process

Elements of the process will resemble the surplus, replacement, and ERAS processes in terms of study aspects, timing, and financial/other obligations

- Require a contractual off-take agreement between the generator and the load it is co-located with that has a set length of time.
- Require ZGIA requests to meet all modeling and application requirements as other interconnection requests
Example: 100% Site Control (Site and POI) for ZGIA projects upfront will be used in part to validate applicability
- D2/D1 Study Deposits will mirror current Surplus/Replacements requirements
 - Study deposit amount to \$150,000 + D1 (application fee). Any remaining funds after the study has been completed will be refunded.
- ZGIA studies will be conducted on a quarterly cadence; no more than 10 ZGIA projects will be studied per quarter

The ZGIA study requirements are elaborated, and will include a requirement for a RAS if deemed necessary to maintain reliability

- ZGIA will include stability/short circuit studies to ensure no impact on the grid
 - No opportunity to mitigate – stability impacts will require the resource to go through the DPP
- The ZGIA will include a requirement for a Remedial Action Scheme (RAS) if deemed necessary to maintain reliability
- MISO does not propose to limit the duration of a ZGIA; ZGIAs are self-limiting due to the inability to inject or serve loads other than those clearly identified in the agreement

2.

Planning for the load: Overview

MISO's planning processes will remain unchanged, reflecting the presence of the ZGIA as a Non-Transmission Alternative, and resulting in full services/obligations of firm NITS load

- a) The ZGIA is included in the MTEP study as a Non-Transmission Alternative and the load study will incorporate the approved ZGIA and the accompanying contractual off-take agreement (see 1b) and will require notice of agreement termination to inform MTEP process of the need for updated study requirement
- b) MTEP load study will include the outage events of the generator, reviewed in January PAC and expanded upon today

2a. Planning for the load

The MTEP load study will incorporate the approved ZGIA and the accompanying contractual off-take agreement (see 1b) and will require notice of terminated PPA contract to inform MTEP process of the need for updated study requirement

- Contractual arrangements are required in MTEP to replace transmission build with Generation or Demand Response options
 - The contractual off-take agreement identified above (see 1b) will serve this purpose
 - There is also a requirement to notify MISO in adequate time the exit of the contract to allow the planning process to identify and act on other solutions
- Submission of a load to the MTEP process that relies on generation requires a contractual agreement between the generator and the load it is co-located with that:
 - Has a set length of time
 - Requires notice of cancellation to move solutions through MTEP process
- Refer to BPM-020 4.3.1.2 and Att. FF Section I.D.1.b

The ZGIA is included in the MTEP study as a Non-Transmission Alternative

MTEP Studies

Reliability Testing

Ensures compliance with NERC standards and local planning criteria

- Analyzes multiple horizons: **2-year, 5-year, and 10-year** future conditions
- Tests under various load conditions: **peak, shoulder, and light load**
- **Steady-State Analysis** (thermal and voltage limits)
- **Voltage Stability Analysis** (PV/QV curves, reactive reserves)
- **Dynamic Stability Analysis** (transient angular and voltage stability, damping ratios)

Contingencies

Evaluates NERC TPL planning events (P0–P7) and extreme events

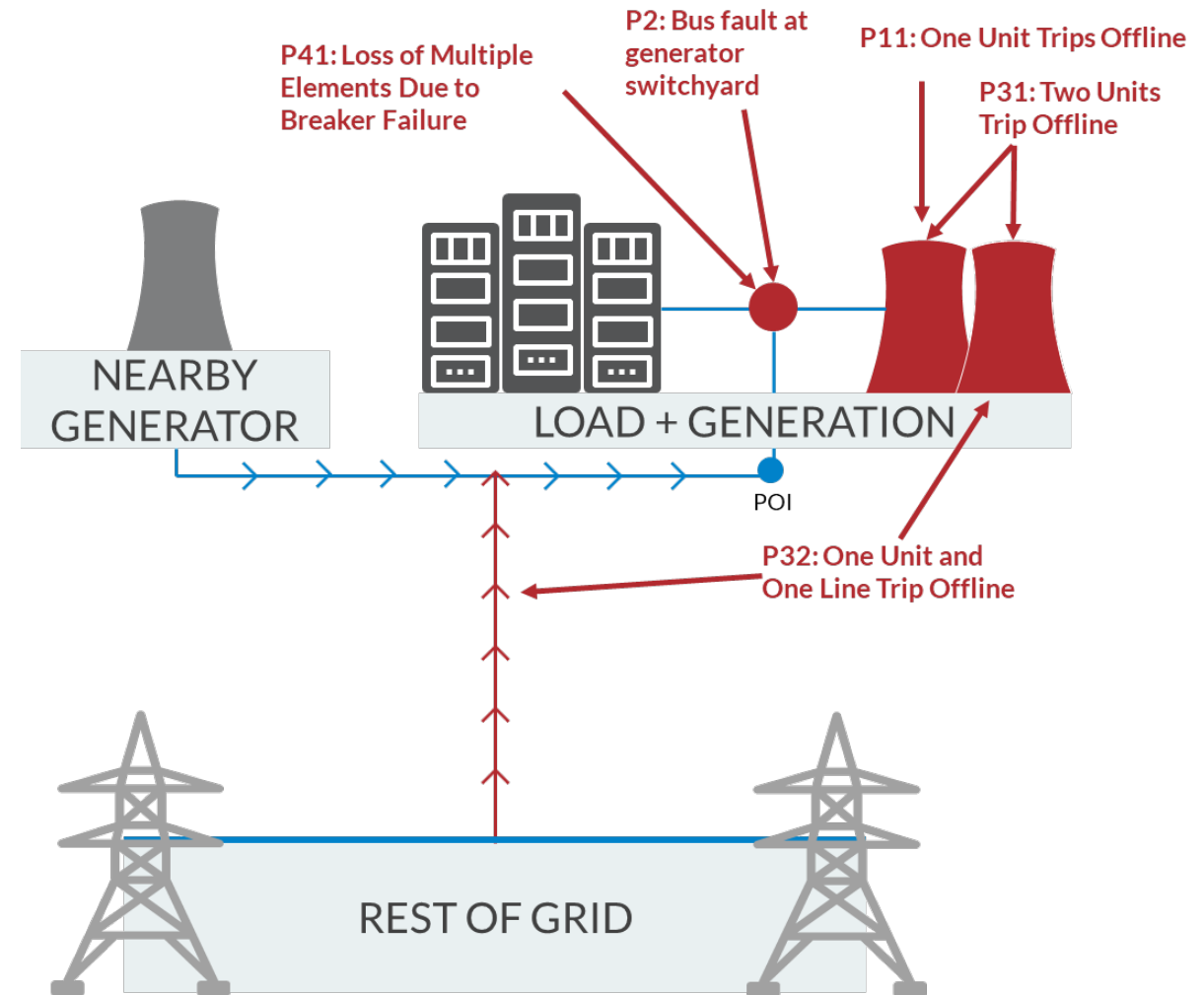
- Includes single and multiple element outages, breaker failures, relay failures, and common structure outages
- Selection focuses on contingencies that produce the most severe system impacts
- Considers both steady-state and stability extreme events
- Contingencies are developed collaboratively with Transmission Owners

MTEP reliability studies will always include scenarios where ZGIA resources are offline

Contingency analysis in the load study

Several NERC-defined planning events require contingencies that take the ZGIA resource offline:

- **P11: Trip of 1 generating resource**
Depending on plant configuration, this may be part or all of the generators at a given plant.
- **P2: Bus section fault at generator switchyard**
- **P3: Trip of 1 generating resource followed by trip of one other facility, including another generator**
- **P41: Loss of multiple elements due to breaker failure after loss of a generator**



3.

Resource Adequacy Participation

ZGIAs are similar to other resources that have not been studied for deliverability and will be treated similarly

- a) A ZGIA resource will be eligible to offset the capacity obligation of the contractually associated local load(s), but will not be able to offset any other loads
- b) It will be accredited based on MISO's currently applicable (and moving forward, filed and approved) accreditation rulesets, according to its asset classification and its resource registration status (e.g. Generation Resource, load-modifying resource, etc.)
- c) It will qualify for zonal resource credits (ZRCs) that will be limited by either their Schedule 53 Direct Loss of Load accreditation, or the capacity obligation of the local load, whichever is more limiting

4.

Markets and Reliable Operations

MISO's markets, combined with tracking of ZGIA injections and associated load withdrawals, will serve to maintain reliable operations of ZGIAs

- a) The load and resource must both be independently monitored and metered in MISO's network model
- b) A ZGIA resource not at the same POI as its associated load will be required to register in the commercial model as the applicable resource type. A ZGIA resource at the same POI as its load will have no additional obligation beyond any already-applicable tariff rules for that resource type
- c) Market resources must maintain market offers such that the resource maximum limit is less than or equal to the demand of the associated load.
- d) MISO will monitor each ZGIA for injections, and will consider penalties for any injections. MISO notes that for all resources, injecting more energy than the resource interconnection service limit can be cause for termination of the interconnection agreement

Stakeholder Feedback Request

MISO requests feedback on **ZGIA Proposal Framework (PAC-2024-4)** by Friday, March 13, 2026.

Please provide feedback on the following:

1. MISO requests detailed feedback on the elements of the ZGIA proposal relating to the **interconnection process** – both overall, and element by element as appropriate. (Proposal consideration item 1)
2. MISO requests detailed feedback on the elements of the ZGIA proposal relating to **planning for the load** – both overall, and element by element as appropriate. (Proposal consideration item 2)
3. MISO requests initial, directional feedback on the outline of elements of the ZGIA proposal relating to **resource adequacy participation** and relating to **markets and reliable operations**. (Proposal consideration items 3 and 4)

Feedback requests and responses are managed through the Feedback Tool on the MISO website: <https://www.misoenergy.org/engage/stakeholder-feedback/>

Possible Tariff and BPM Changes to Support ZGIA

- Att. X changes required to formalize the interconnection process of ZGIAs
- Changes to Att. FF possible to clarify obligations of ZGIA-associated load using the ZGIA as a Non-Transmission Alternative
 - Clarifications to BPM-020 Transmission Planning for incorporation in MTEP studies
- Tariff Module C change to require market registration of ZGIAs not electrically identical to associated load
- Tariff Module E-1 change to effectuate details of Resource Adequacy treatment
- BPM changes accompanying these Tariff changes

Next Steps

MISO is finalizing a plan for developing and formalizing this framework with the other impacted Main Parent Entities. Next steps will be confirmed and communicated through the Steering Committee.



Provide Feedback

Due: Friday, March 13, 2026



Interconnection Process
Discussion

PAC: April 22, 2026



File Tariff Language

June 2026

Contact

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Appendix

FAQ: How does the ZGIA proposal relate to a choice I can make to be a behind-the-meter resource?

- Resources that connect to a transmission facility (regardless of whether that connection is directly to a transmission facility, or to other customer equipment that connects to a transmission facility) must participate in the interconnection queue process of the Transmission Owner of that transmission facility.
 - As a result, the ZGIA solution is a potential solution for these facilities, but other “behind-the-meter” solutions are not
- Resources that connect to distribution facilities, or other facilities that are not transmission facilities, must participate in the applicable distribution queue of the system they connect to
 - As a result, the ZGIA solution is NOT a potential solution for these facilities