

GIA APPENDIX C TRANSMISSION INTERCONNECTION REQ MISO

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* References to ITC are references to ITC Holdings Corp. together with all of its subsidiaries, unless otherwise noted.

Appendix C To GIA

Interconnection Details

1. GENERAL INTERCONNECTION AND OPERATING GUIDELINES

- 1.1 Applicability.** These guidelines are applicable for all generation types, synchronous and Inverter Based Resources (“IBR”). Additionally, IBR references are applicable to Grid Following (“GFL”) and Grid Forming (“GFM”) technology. Where necessary, sections will be specific to the generation type and/or IBR technology. IBR plants shall meet Appendix C performance requirements as required per Table C-1. Generating Facilities Replacement and Surplus Interconnections shall follow DPP-2023 Requirements.

Table C-1

Appendix C Subclause	Required by Appendix C for DPP-2021	Required by Appendix C for DPP-2022	Required by Appendix C for DPP-2023 and later
1.13.1 Current Priority Operating Mode	X		
1.13.2 Analog Measurement Window	X	X	X
1.13.3 Current Blocking	X		
1.13.4.1 Reference Point of Applicability	X	X	X
1.13.4.2 AC Voltage Protection - Continuous	X		

GIA APPENDIX C TRANSMISSION INTERCONNECTION REQ MISO

1.13.4.3 AC Voltage Protection - Transient	X		
1.13.4.4 Frequency Protection	X		
1.13.4.5 AC Overcurrent Protection	X	X	X
1.13.4.6 Rate-of-change-of-frequency	X	X	X
1.13.4.7 Phase lock loop (PLL)	X		
1.13.5 Active Power-Frequency Control	X	X	
1.13.6 Reactive Power-Voltage Control	X	X	
1.13.7 Current Injection During Ride- Through	X	X	X
1.13.8 Battery Energy Storage Systems ("BESS") and GFM Requirements.	X	X	

- 1.2 Applicable Standards.** In addition to applicable design standards identified in the GIA, Interconnection Customer agrees to comply with the most recent Transmission Owner substation/transmission/protection design guides, standards, and specifications, where applicable, for the design of and procurement for this interconnection. The Transmission Owner design guides, standards, and specifications are available upon request.

If Transmission Owner design guides, standards or specifications do not address a particular item or issue, Interconnection Customers shall use any other nationally or regionally recognized standard, guide or specification. If there is a conflict between any other standard, guide or specification used by the Interconnection Customers and the Transmission Owner's design guides, standards and material/construction specifications, Transmission Owner's design guides, standards and specifications shall apply.

- 1.3 Communication Requirements.** Interconnection Customer shall provide analog and digital signals including hardened voice communications, as requested by the Transmission Owner and/or the Transmission Provider for RTU/frame relay/or public switched telephone systems, as further defined during detailed engineering and design of the Interconnection Facilities. Interconnection Customer agrees to transmit these signals to Transmission Owner's control building or to such other location as specified by the Transmission Owner during the detailed design of the Interconnection Facilities and Network Upgrades. Transmission Owner shall provide Interconnection Customer with the necessary substation information at the Transmission Owner's signals demarcation point. Interconnection Customer will pay all costs associated with receiving such information from Transmission Owner. The

specific location of the demarcation point will be established during the detailed design of the Interconnection Facilities.

- 1.4 Metering Requirement.** Interconnection Customer shall be responsible for all interconnection metering.
- 1.5 Grounding Requirements.** Interconnection Customer shall design, install, and maintain grounding facilities to ground the Interconnection Customer's Interconnection Facilities, in accordance with Applicable Reliability Standards and Good Utility Practice. Interconnection Customer shall be responsible for detailed modeling and evaluation of the interconnected grounding system at the location of the Transmission Owner's Interconnection Facilities and Interconnection Customer's Interconnection Facilities. If Transmission Owner so chooses, Transmission Owner shall have the right to approve the grounding system design to ensure that the grounding system properly protects the Transmission Owner's Interconnection Facilities.
- 1.6 Transmission Line and Substation Connection Configurations.** The Parties agree that the connections between Interconnection Customer's Interconnection Facilities and Transmission Owner's Interconnection Facilities will be as configured in Exhibit A2-2. Exact transmission line locations will be developed by Transmission Owner during the detailed design and regulatory process. Interconnection Customer shall provide the space necessary for the Transmission Owner's placement of the transmission line facilities.
- 1.7 Unit Stability Requirements.** Interconnection Customer agrees to operate its Generating Facility in accordance with the stability requirements identified in the Interconnection Evaluation Study and Interconnection Facilities Study reports, or their equivalent, prepared for this interconnection and which have been posted on the Transmission Provider OASIS. Interconnection Customer agrees to operate its Generating Facility within the operating requirements of the Transmission System, and the rules of the NERC, Reliability Coordinator and Transmission Provider.
- 1.8 Equipment Ratings.** Transmission Owner will determine the individual equipment ratings for specific Transmission Owner's Interconnection Facilities and Network Upgrades during the detailed design of the facilities. Interconnection Customer shall size the Interconnection Customer's Interconnection Facilities using Applicable Reliability Standards, Good Utility Practice and the information provided in the Interconnection Evaluation Study in order that the Interconnection Customer's Interconnection Facilities appropriately coordinate with the Transmission Owner's Interconnection Facilities.
- 1.9 Short Circuit Requirements.** Transmission Owner will determine the required short circuit ratings for all Transmission Owner's Interconnection Facilities and Network Upgrades during the detailed design of such items.

Interconnection Customer agrees to provide appropriately sized or short circuit-rated Interconnection Customer's Interconnection Facilities comparable to those required by Transmission Owner using Applicable Reliability Standards, Good Utility Practice and the information provided in the Interconnection Evaluation Study.

1.10 Synchronizing Requirements. In addition to requirements defined in Section 2 of this Appendix C, at the Transmission Owner's discretion, Transmission System bus potentials will be furnished which may be used by Interconnection Customer for synchronizing the combined Generating Facility to Transmission Owner's Transmission System. This potential will be provided to the Interconnection Customer at the Transmission Owner's signal demarcation point, as necessary.

1.11 Generation Control and Modeling Verification Requirements.

1.11.1 Generator Control. In addition to the requirements set forth elsewhere in Appendix C, the Generating Facility shall be designed and installed with voltage and var controls. These controls shall comply with any Applicable Reliability Standards, industry standards, or Good Utility Practice. The Interconnection Customer, prior to completion of the Generating Facility, shall contact the Transmission Owner for the information required to properly design the phase of the Generating Facility. Interconnection Customer further agrees to comply with any control requirements as specified in the Interconnection Facilities Study and as directed by the Transmission Operator, and shall design and construct each generating unit of its Generating Facility, if more than one unit, to include the capability to install power system stabilizers if later required.

Interconnection Customer will provide Transmission Owner with Generating Facility and Interconnection Customer Interconnection Facilities' operating control setpoints, prior to Commercial Operation of the Generating Facility. Generating Facility and Interconnection Customer Interconnection Facilities and those facilities' operating control setpoints shall accurately reflect the modeling data provided by the Interconnection Customer for use in the Interconnection Studies.

1.11.2 Generator Control Modifications.

If operating control setpoints for Interconnection Customer's facilities deviate from the control setpoints evaluated in the Interconnection Studies, Transmission Owner may request Interconnection Customer change operating control setpoints, and

Interconnection Customer shall revise setpoints as requested. After commissioning, the Interconnection Customer shall notify Transmission Owner prior to revising its operating control setpoints or operating characteristics. Changes to Interconnection Customer control setpoints will be subject to Transmission Planner or Planning Coordinator review and approval. Operation of the Generating Facility with operating control setpoints other than those evaluated in the Interconnection Studies or construction of the Generating Facility inconsistent with the modeling of the Generating Facility in the Interconnection Studies may have a material adverse impact on the Transmission System and may be considered a Material Modification.

1.11.3 Modeling Information. The Interconnection Customer shall provide the Transmission Owner all necessary short circuit, power flow, stability dynamic, harmonic modeling information, facility ratings, and momentary current blocking utilization for the Generating Facility and Interconnection Customer Interconnection Facilities. This modeling information shall be provided prior to energization and subsequently prior to changes being made, in such time as to allow the Transmission Owner to evaluate.

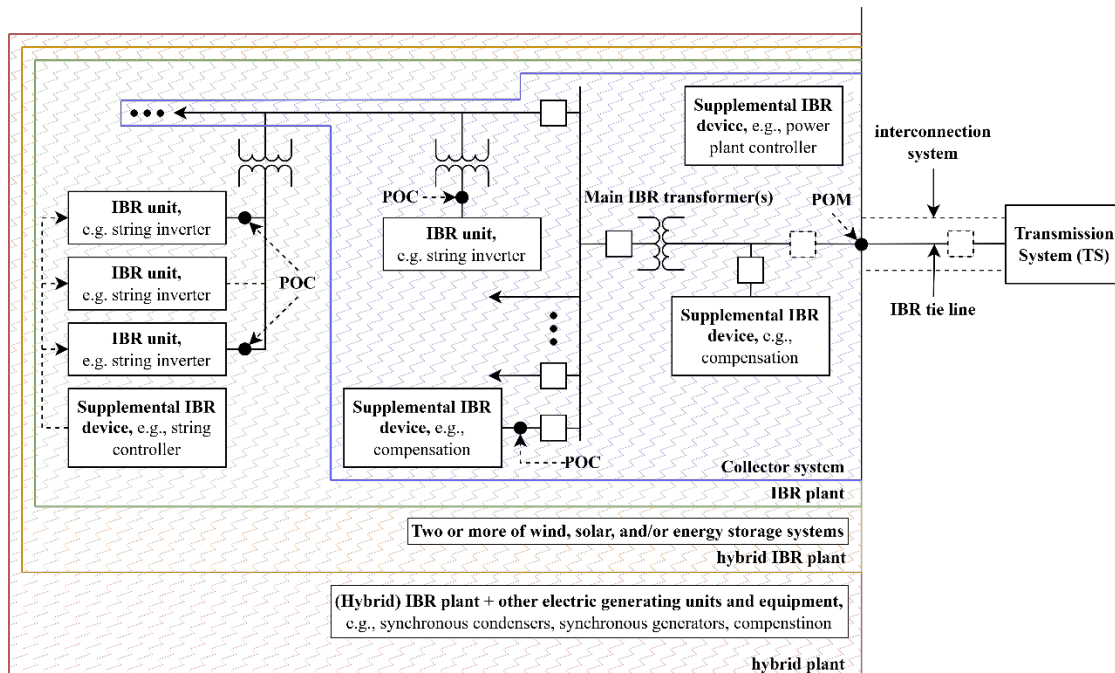
1.12 Power Factor Design Criteria. Interconnection Customer's Generating Facility is designed to be capable of operating within a power factor between 0.95 leading to 0.95 lagging at the high side of the Interconnection Customer's substation's step-up transformer. Interconnection Customer agrees to operate its Generating Facility, as directed, to produce or absorb reactive power at the Point(s) of Interconnection within the design limitations of the Generating Facility. This section shall supersede any other Power Factor Design Criteria requirements within this GIA.

1.13 Power Quality Requirements. Interconnection Customer shall not cause excessive voltage flicker, harmonic distortion, or degraded power quality on the electric facilities of ITC nor its other interconnections. Customer shall comply with all requirements set forth in the up-to-date version(s) of: IEEE 519, 1453, P2844, 1250, 1159, and 2800. Annex A, Figure A.1 and Subclause (a) in A.3 requirements, as well as Table C.1 in Annex C of IEEE 519-2022, though informative in the standard, are included as requirements here. Where there is a conflict between listed requirements, the stricter provision shall apply. Power quality meters shall be GPS time-synchronized using IRIG B.

1.14 Inverter Based Resource Requirements.

1.14.1 Reference Point of Applicability (RPA) – Except where stated otherwise, the RPA for all technical minimum interconnection, capability, and performance requirements referenced in this Appendix C, including applicable tables and figures, shall be the Point of Measurement (POM) as shown in Figure C-1. For requirements in this Appendix C that apply to an IBR unit, the applicable section shall specify the Point of Connection (POC) as the RPA. For purposes of Appendix G, Section A, Subclause 4.3, nominal voltage and frequency shall be the nominal voltage and frequency at the Point of Interconnection (POI).

Figure C-1¹: Illustration of POM and POC location



1.14.2 Current Priority Operating Mode. Unless otherwise agreed upon and noted, under normal operation, IBR generating facilities shall operate in an “Active Current Priority” or an equivalent mode. During fault ride-through, IBR generating facilities shall switch to operate in a “Reactive Current Priority” or an equivalent mode. Post fault, the IBR generating facilities shall return to operating in an “Active Current Priority” or an equivalent mode.

1.14.3 Analog Measurement Window. The following is applicable to all frequency and voltage elements in section 1.14 of Appendix C of this GIA. Frequency tripping calculations shall be over a six-cycle

¹ IEEE 2800-2022 Standard for Interconnection and Interoperability of Inverter-Based Resources (IBRs) Interconnecting with Associated Transmission Electric Power Systems: Figure 1: Illustration of defined terms for ac-connected inverter-based resources (IBRs).

window or greater. Voltage and current tripping calculations shall utilize RMS measured values over a one-cycle or greater window.

1.14.4 Current Blocking. Current Blocking has also been referred to as momentary cessation throughout the utility industry. The Interconnection Customer's facilities shall continue current injection inside the "Mandatory Operation" zone of the frequency and voltage ride through curves of PRC-029. They also shall continue to inject current inside the "Permissive Operation" zone of the frequency and voltage ride through curves of PRC-029 up to the capabilities of the Generating Facility. Current Blocking shall only be permitted if identified as necessary through Interconnection Studies.

1.14.5 Fault Ride-Through and Protection

1.14.5.1 AC Voltage Protection - Continuous. IBR plant and feeder protection shall ride through continuous voltage disturbances per Figure C-2 and Table C-2.

Figure C-2: Illustration of voltage ride-through

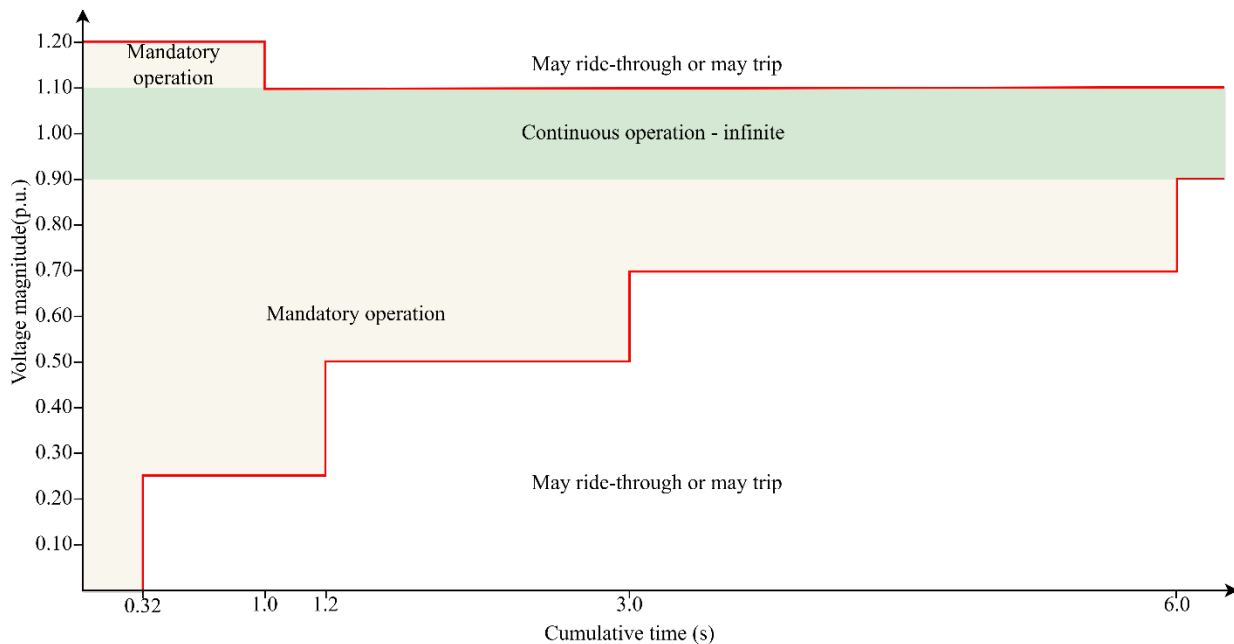


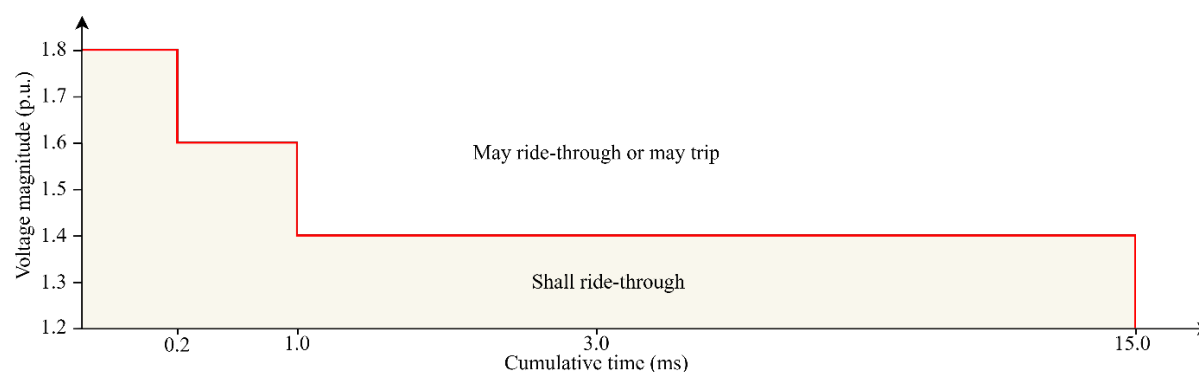
Table C-2² : Voltage ride-through requirements at the RPA

Applicable voltage (p.u.) at the RPA	Operating mode/response	Minimum ride-through time (s) ^a
$V > 1.20$	May ride-through or may trip	N/A
$V > 1.15$	Mandatory operation	1.0
$V > 1.10$	Continuous operation	1800
$0.90 \leq V \leq 1.10$	Continuous operation	∞
$V < 0.90$	Mandatory operation	6.00
$V < 0.70$	Mandatory operation	3.00
$V < 0.50$	Mandatory operation	1.20
$V < 0.25$	Mandatory operation	0.32

^a Specified ride-through durations shall be cumulative over one or more disturbance events within a 10 s time window for the mandatory operation region and a 3600 s time window for the continuous operation region

1.14.5.2 AC Voltage Protection - Transient. The IBR plant and feeder protection shall ride through transient overvoltage disturbances and/or switching transients per Figure C-3 and Table C-3.

Figure C-3³: Illustration of transient overvoltage ride-through



² IEEE 2800-2022 Standard for Interconnection and Interoperability of Inverter-Based Resources (IBRs) Interconnecting with Associated Transmission Electric Power Systems: Table 12: Voltage ride-through requirements at the RPA for IBR plants with and without auxiliary equipment that cause ride-through limitations

³ IEEE 2800-2022 Standard for Interconnection and Interoperability of Inverter-Based Resources (IBRs) Interconnecting with Associated Transmission Electric Power Systems: Figure 11: Transient overvoltage ride-through requirements for IBR plant

Table C-3⁴ : Transient overvoltage ride-through requirements at the RPA

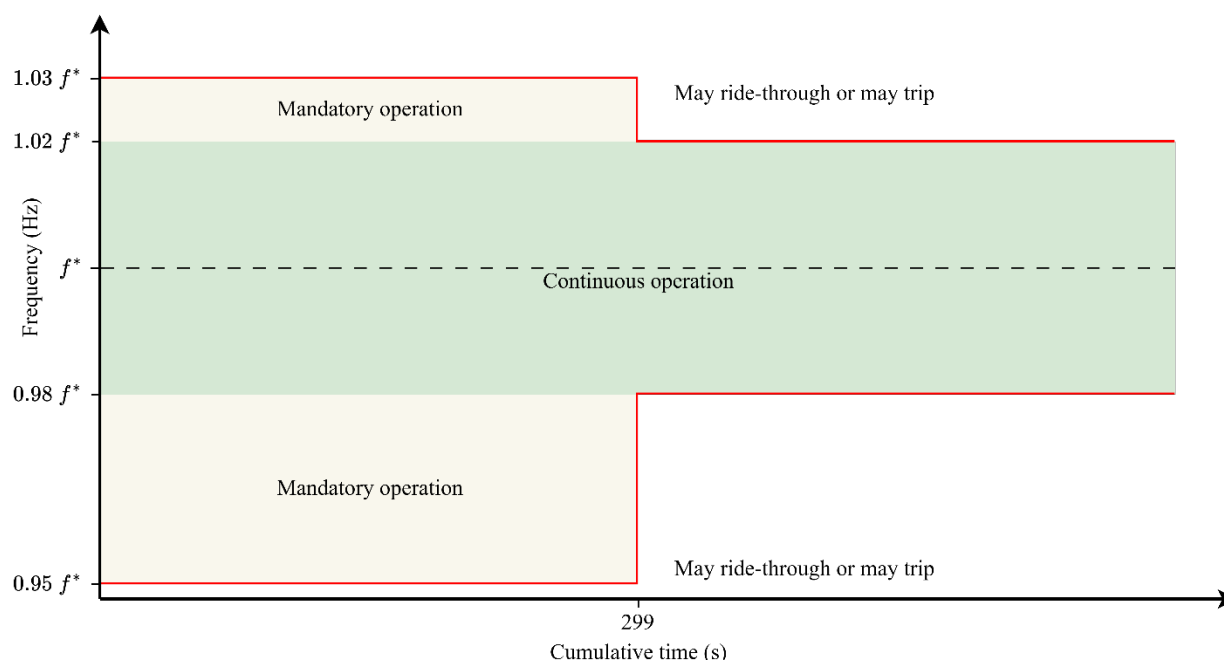
Voltage ^a (p.u.) at the RPA	Minimum ride through time (ms) ^b
$V > 1.80$	May ride-through or trip
$V > 1.70$	0.2
$V > 1.60$	1.0
$V > 1.40$	3.0
$V > 1.20$	15.0

^a Specified voltage magnitudes are the residual voltages with surge arresters applied.

^b Cumulative time over a 1-min time window.

1.14.5.3 Frequency Protection. The IBR plant frequency protection shall ride through frequency excursions as specified in Figure C-4 and Table C-4.

Figure C-4⁵: Illustration of transient overvoltage ride-through



NOTE 1— f^* is the nominal frequency

⁴ IEEE 2800-2022 Standard for Interconnection and Interoperability of Inverter-Based Resources (IBRs) Interconnecting with Associated Transmission Electric Power Systems: Table 14: Transient overvoltage ride-through requirements at the RPA

⁵ IEEE 2800-2022 Standard for Interconnection and Interoperability of Inverter-Based Resources (IBRs) Interconnecting with Associated Transmission Electric Power Systems: Figure 12: Frequency ride-through capability requirements for IBR plant

Table C-4⁶ : Frequency ride-through requirements at the RPA

Frequency Range (Hz)	Operating mode/response	Ride-through time (s)
$f > 61.8$	May ride-through or trip	N/A
$61.2 < f \leq 61.8$	Mandatory operation	≥ 299
$58.8 < f \leq 61.2$	Continuous operation	∞
$57.0 < f \leq 58.8$	Mandatory operation	≥ 299
$f \leq 57.0$	May ride-through or trip	N/A

1.14.5.4 AC Voltage and Overcurrent Protection. If utilized this element shall not limit the Generating Facility ride-through capabilities and as applicable shall be coordinated with the Transmission Owners protection schemes.

1.14.5.5 Rate-of-change-of-frequency. Inverter rate-of-change-of-frequency (ROCOF) protection shall be disabled unless an equipment limitation exists that requires the inverter to trip on high ROCOF

1.14.5.6 Phase lock loop (PLL). The IBR plant shall ride through positive sequence phase angle differences at the applicable voltage within the sub-cycle-to-cycle time frame of less than or equal to 25 electrical degrees per IEEE 2800-2022 section 7.3.2.4.

1.14.6 Active Power-Frequency Control

1.14.6.1 Droop. The control system shall have an adjustable proportional droop with a default value of 5 percent. The droop response shall include capabilities to respond to both underfrequency and over-frequency directions. Droop should be based on the difference between maximum nameplate and zero output (Article 9.6.4).

1.14.6.2 Ramp Rates. The closed-loop dynamic response of the active power-frequency control system of the overall Generating Facility shall meet or exceed the performance criteria specified in Table C-5.

⁶ IEEE 2800-2022 Standard for Interconnection and Interoperability of Inverter-Based Resources (IBRs) Interconnecting with Associated Transmission Electric Power Systems: Table 15: Frequency ride-through capability requirements for IBR plant

Table C-5 : Minimum dynamic requirements for IBR generating facilities⁷

Metric	IBR Plant	IBR Unit
Reaction time	≤ 250 ms	≤ 50 ms
Settling time	≤ 5 s	≤ 100 ms
Settling band	Max (0.5% of nameplate capacity)	Max (0.5% of nameplate capacity)
Damping ratio	≥ 0.3	≥ 0.6

1.14.7 Reactive Current-Voltage Control

1.14.7.1 Plant Large Disturbance Voltage Performance.

1.14.7.1.1 The reactive current-voltage control should be stable for all expected and studied conditions performed throughout the interconnection process.

1.14.7.1.2 The reactive current-voltage control of the overall Generating Facility shall meet or exceed the performance criteria (up to the generator capability) in Table C-5. The controls should be tuned by default to meet these criteria unless identified in the Interconnection Studies.

1.14.8 Current Injection During Ride-Through.

1.14.8.1 Specific to this section only, the requirements are applicable at the Point of Connection (POC) and the Point of Measurement (POM). Reference Figure C-1 of this Appendix.

1.14.8.2 For balanced faults, the IBR shall inject reactive current dependent on the terminal voltage. The difference between reactive current injection during a fault and pre-fault reactive current output shall be incremental and shall not be negative. (i.e. reactive current during a fault shall be higher than pre-fault)

⁷ IEEE 2800-2022 Standard for Interconnection and Interoperability of Inverter-Based Resources (IBRs) Interconnecting with Associated Transmission Electric Power Systems: Table 13: Voltage ride-through performance requirements

1.14.8.3 For unbalanced faults, the IBR shall inject both positive sequence reactive current as well as negative sequence current. In addition, the negative sequence current shall be proportional to the negative-sequence voltage magnitude, with a slope of 4 and subject to a maximum magnitude that utilizes the remaining IBR current capacity. The negative sequence current shall lead the negative sequence voltage using the criteria below:

Type 4 – 90 degrees

Type 3 – between 90 – 150 degrees

1.14.8.4 The Interconnection Customer shall make necessary modifications to the control systems of the Generation Facility as applicable and as requested by the Transmission Owner at any time and up to the capability of the equipment to inject current at the proper magnitude and/or angle for the system.

1.14.9 Battery Energy Storage Systems (“BESS”) and GFM

Requirements. Battery energy storage systems connecting to ITC facilities may be required to have Grid Forming capabilities when warranted by study. Given the rapid pace of the change in the generation fleet, Interconnection Customers connecting BESS are strongly encouraged to request manufacturers of its BESS to include GFM capabilities.

1.14.9.1 In the event a BESS is required to have GFM capabilities, the performance characteristics indicated below may be required. These characteristics would be provided by the BESS within the GFM BESS equipment’s rating limits.

1.14.9.1.1 GFM-Specific Voltage and Frequency

Support: GFM shall provide autonomous, near-instantaneous frequency and voltage support by maintaining a nearly constant internal voltage phasor in the sub-transient time frame, including:

1.14.9.1.1.1 Phase Jump Performance:

GFM shall resist near-instantaneous voltage magnitude and phase angle changes by providing appropriate levels of active and reactive power output in the sub-transient time frame.

1.14.9.1.1.2 System Strength Support:

GFM shall help reduce the sensitivity of voltage change for a given change in current in the sub-transient time scale.

1.14.9.1.2 Ability to Stably Operate with Loss of Last Synchronous Machine: GFM shall be able to stably operate through and following the disconnection of the last synchronous machine in its portion of the power grid.

- 1.15 Energization, Inspection and Testing Requirements.** Before Notice of Commercial Operation is given per Appendix E, Interconnection Customer shall demonstrate to the Transmission Provider and Transmission Owner, if requested by Transmission Owner, through witnessed tests and/or certified test documentation, that the combined Generating Facility will not have adverse impact on the operation of the Transmission System. Such tests and inspections shall include pre-energization testing of equipment connected to the transmission bus, protection and control systems and pre-commercial testing of the governor, excitation and/or power system stabilizer controls. Specific test requirements and documentation need to be arranged with Transmission Owner prior to tests being performed. Protection and control systems include, but are not limited to, AC auxiliary, DC systems, relaying systems, potential and current circuits, and communication systems.
- 1.16 If applicable, the unique requirements, if any, of the Transmission Owner to which the Generating Facility will be physically interconnected.** None identified.
- 1.17 Other.** Interconnection Customer shall provide all necessary easements over all property owned, leased or otherwise controlled by Interconnection Customer, including easements for ingress/egress by Transmission Owner for access to all Transmission Owner's Interconnection Facilities and Network Upgrades that are on the property of Interconnection Customer. Specific real estate requirements will be determined during the final design. Interconnection Customer agrees to grant Transmission Owner reasonable easements in a form that is acceptable to Transmission Owner. It is expressly understood and agreed that Transmission Owner may, during the term of the GIA, make changes to its Transmission System. Interconnection Customer agrees to make any modifications, additions or changes to the Interconnection Customer's Interconnection Facilities that are reasonably necessary or required as a result of such change, modification or addition to Transmission Owner's Transmission System and at Interconnection Customer's sole cost and expense.

2. SPECIFIC SYSTEM PROTECTION REQUIREMENTS

General. The Transmission Owner will construct a protective relaying scheme to protect the Transmission System from faults occurring on the Interconnection Customer's Interconnection Facilities or the Generating Facility and from faults occurring on the Transmission Owner's Interconnection Facilities and Transmission System. Reclosing of generation to the ITC transmission system is typically not allowed. At the Interconnection Customer's request, reclosing may be considered by Transmission Owner provided the operations of the system, the protection of the system, and all other system constraints can be adjusted to accommodate the reclosing request. This will be done solely at the Interconnection Customer's liability. The Interconnection Customer shall not implement any anti-islanding protection schemes that limit ride-through capability. Interconnection Customer will be responsible for providing protection for the Generating Facility and all associated equipment from faults occurring on its facilities and from faults or other electrical disturbances occurring on the Transmission Owner's Transmission System or any interconnected system. The Interconnection Customer will be responsible for removing any fault contribution of the Generating Facility to any short circuit occurring on the Transmission Owner's Transmission System or any interconnected system not otherwise isolated by the Transmission Owner's equipment, such that the removal of the fault contribution shall be coordinated with the protective requirements of the Transmission Owner, as applicable. For example, when the only source behind a transmission line fault is the generator, the local transmission line relaying may not trip and will require the Generating Facility to clear the disturbance. The Generating Facility protection needs to be coordinated with the Transmission Owner prior to implementation and as applicable shall meet the frequency, rate of change of frequency, voltage, overcurrent, and ride-through requirements of section 1.13 of Appendix C of this GIA.

In accordance with Good Utility Practice, Interconnection Customer shall design protection schemes such that no single component failure will prevent the isolation of faults for failed equipment. Meeting this requirement generally means providing redundant or backup protective schemes, with separate sensing sources, separate trip paths, dual trip coils on breakers, breaker failure, separate control power where no single DC breaker tripping disables both protection schemes. Where redundant batteries are not present, both monitoring and reporting to a Control Center for both open circuit and low voltage DC alarming is required.

2.1 Changes to Relay Firmware. Firmware changes on interconnecting line relays shall be coordinated with and receive approval by the Transmission Owner prior to being placed into service.

3. SPECIFIC TELEMETRY REQUIREMENTS.

General: Telemetry is required for the monitoring and status of Interconnection Customer's equipment in a format that is acceptable to the Transmission Owner.

Details of the specific telemetry requirements will be provided during the detailed design of the facilities. Interconnection Customer shall install and pay the installation cost and monthly communication costs of all required telemetry for the Generating Facility and provide the data to the Transmission Owner, typically via ICCP. In general, Transmission Owner requires continuous telemetry of the following:

- 3.1** Status of all circuit breaker(s) capable of disconnecting the Generating Facility from the Transmission Owner's Transmission System.
- 3.2** Instantaneous RMS MW, MVAR, phase voltages, and plant bus frequency compensated the substation high voltage terminals POM. For IBR facilities, data should be aggregated to the POM.
- 3.3** As applicable, each IBR shall monitor and retain measurements per IEEE 2800-2022 Section 11; where reference is made to PQDIF measurements compatible with IEC 61000-4-15 and/or -4-30, the meter shall be Class F1 or better and Class A or better. This information shall be shared with the Transmission Owner as requested within 10 Business Days. Refer to Figure 1 of IEEE 2800-2022 (Figure C-1) for what is included as "Plant" for this section.
- 3.4** Instantaneous revenue quality MW and MVAR; and cumulative revenue quality MWhr and MVARhr at all (or possibly corrected to) Points of Interconnection with Transmission Owner and from the Generating Facility.
- 3.5** Status of auxiliary station service circuit breaker(s).
- 3.6** Instantaneous bus voltage(s).
- 3.7** Transfer trip communication and generation site transfer trip communication status.
- 3.8** Changes in energy production of the Generating Facility.
- 3.9** Status indication of automatic voltage regulator equipment.
- 3.10** Other telemetry as required and mutually agreed upon by the Interconnection Customer and Transmission Owner.

4. SPECIFIC OPERATIONAL REQUIREMENTS.

- 4.1 System Protection Facilities (Relays As They Relate To Operations).** Interconnection Customer shall notify Transmission Owner in advance of planned protection system work and immediately following discovery of protection system failures, which may affect Transmission Owner's system. Interconnection Customer shall report all generator protective relay events to the Transmission Owner system control center, immediately following

Interconnection Customer's discovery of the event.

- 4.2 Data Reporting Requirements.** Interconnection Customer shall supply all information regarding events and status of equipment within the Facility upon request for any event that noticeably affects the operation of the Transmission System. Interconnection Customer shall provide outage schedules, daily/hourly load profiles, and other data upon request of Transmission Owner.
- 4.3 Emergency Operations, Including System Restoration and Black Start Arrangements.** Interconnection Customer is not able to operate as a Black Start Unit as of the effective date of this GIA. However, in accordance with Good Utility Practice, Interconnection Customer agrees to participate when called upon by Transmission Provider or Transmission Owner, in Transmission Owner's Black Start Plan for the Generating Facility and Transmission Owner's Transmission System, as well as any verification testing.
- 4.4 Identified Must-Run Conditions.** None noted for this Generating Facility.
- 4.5 Specific Transmission Requirements of Nuclear Units to Abide by All NRC Requirements and Regulations.** Not applicable to this interconnection.
- 4.6 Stability Requirements, Including Output.** Interconnection Customer agrees to comply with the requirements of the reliability coordinator, Transmission Dispatch Center or ("TDC"), Transmission Provider and/or Transmission Owner in the operation of the Generating Facility.
- 4.7 Limitations of Operations in Support of Emergency Response.** Interconnection Customer agrees to comply with the requirements of the reliability coordinator, Transmission Dispatch Center or ("TDC"), Transmission Provider and/or the Transmission Owner in the operation of the Generating Facility.

5. DRAWINGS AND DOCUMENTS

General. Upon request, Transmission Owner shall provide the "as-built" drawings, information, and documents regarding the Transmission Owner's Interconnection Facilities pursuant to Article 5.11 of the GIA.

6. OPERATING LIMITS

General. In accordance with Section 9.4 of the GIA, the operating limits established for the Generating Facility under this GIA shall be as provided by Transmission Provider each quarter, as described in Appendix A. Any operating

guides necessary following Commercial Operation will be established in accordance with Section 9.3.

7. USE OF RAS OR OPERATING GUIDE

General. Implementation of an Operating Guide will constitute an interim solution that will permit Interconnection Customer to obtain conditional Interconnection Service until planned for Network Upgrades are constructed. Any Operating Guide will be subject to the approval of the Transmission Owner and Transmission Provider. Minimum requirements for an Operating Guide are as indicated below.

- o Transmission Owner will control Transmission Owner's breaker(s) protecting the Interconnection Customer Interconnection Facilities located at the Generating Facility and shall be able to trip the Interconnection Customer's Generating Facility.
- o Protection schemes must be tested and operative.
- o Interconnection Customer will operate its Generating Facility as directed by the Transmission Provider and the Transmission Owner.
- o A termination date consistent with completion of Network Upgrades will be mutually agreed to as part of all Operating Guides accepted by the Transmission Owner and the Transmission Provider.

Transmission Owner does not allow the addition of an RAS (Remedial Action Scheme) to the Transmission Owner's system. The Transmission Owner will also not allow the addition of a RAS on a system, including the Generating Facility, where the purpose of that RAS is to mitigate a constraint on the Transmission Owner's system.

8. REQUIREMENTS FOR OPTION TO BUILD

Transmission Owner intends to thoroughly review and approve Interconnection Customer's design, procurement, and construction activities, as provided in section 5.2 of the GIA.

Interconnection Customer will be responsible for funding the cost of all Transmission Owner work associated with evaluating, approving, and supervising Interconnection Customer's design, procurement, and construction of Transmission Owner facilities necessary for the interconnection as outlined in Appendix A of this GIA("Supervisory Work"). Supervisory Work will include time spent by Transmission Owner representatives and contractors for evaluating and approving design, site monitoring and inspection, accounting activities, drawing control, and administrative activities associated with the project work including reconciliation of costs and property transfers. Transmission Owner may invoice

Interconnection Customer monthly for charges incurred for Supervisory Work, and Interconnection Customer will be expected to provide payment within 30 days of invoice. Transmission Owner may alternately provide Interconnection Customer with monthly statement of charges in lieu of monthly invoicing. Exhibit A5 provides a summary of estimated costs for Supervisory Work associated with construction of the Stand-Alone Network Upgrades.

The duration of Interconnection Customer's construction of the Stand-Alone Network Upgrade and TOIF will be impacted by Transmission Owner's Supervisory Work. A precise and accurate estimation of the impact of the Supervisory Work on total project duration is difficult to determine given the necessary coordination between Interconnection Customer's construction activities and Transmission Owner's Supervisory Work. Exhibit A12-2 provides an estimate of the impact of Transmission Owner Supervisory Work for the construction of the Stand-Alone Network Upgrades. Based on the assumptions indicated in the Exhibit, it is expected that a minimum of 10 weeks will be added to the total duration of project work by Transmission Owner's Supervisory work.

The duration for Transmission Owner work for the Non Stand-Alone Network Upgrades to interconnect to the new switching station is provided in Exhibit A12. Outage and Transmission Owner resource availability for the Network Upgrade work may add additional time to the Interconnection Customer's project schedule.

A summary of Transmission Owner requirements associated with Interconnection Customer's election of Option to Build Stand Alone Network Upgrades is provided in the below items. The below list is not all inclusive.

Project Scope: Interconnection Customer will be required to provide a comprehensive initial scope of work and a detailed project schedule for Transmission Owner review. Interconnection Customer schedule needs to coordinate with Transmission Owner's outage window to accommodate Transmission Owner's Non Stand-Alone Network Upgrades to which the Stand-Alone Network Upgrade will be connected. Any changes to either the construction completion or commissioning dates must be submitted in writing to Transmission Owner. Changes to expected schedule for completion or commissioning of facilities may delay the In-Service Date.

Property Rights: Property rights need to meet Transmission Owner requirements. Location, size, and access to the Stand-Alone Network Upgrade and TOIF property is subject to Transmission Owner approval. Required property rights for both the Transmission Owner's station and the connecting transmission lines must be transferred to Transmission Owner prior to the facilities being placed in service. The land for the station location must be transferred in fee. A preliminary site plan with boundary information must be approved by Transmission Owner. Transmission Owner will review the site plan

boundaries and provide approval, comments, or rejection within 10 business days of receipt. Transmission Owner will review property rights (including existing easement encumbrances) and provide approval, comments, or rejection within 15 business days of receipt.

Transfer of Rights: Prior to the property transfer to Transmission Owner, parcel splits should be complete, zoning restrictions resolved, variances approved, easement encumbrances identified, and required studies should be complete.

Permitting and Regulatory Approvals: Interconnection Customer will complete all regulatory permitting requirements for Transmission Owner's facilities. The Interconnection Customer will also be required to determine which permits are appropriate for the project and provide the list to Transmission Owner for approval. The Interconnection Customer will complete the corresponding community engagement activities in pursuit of the regulatory permits. Interconnection Customer will provide a list of regulatory bodies and individual names (if available) that they plan to engage and the timing of such engagement to Transmission Owner for approval. The Interconnection Customer will also provide a draft site plan for Transmission Owner review prior to sharing the site plan with regulatory bodies. Prior to construction start, Transmission Owner will review local ordinances and zoning restrictions within 20 business days of project kick off.

Consultants and Contractors: Interconnection Customer will use only Transmission Owner approved consultants and contractors, such approval not to be unreasonably withheld. There must be at least one senior level engineer and there must be at least 15 years of total experience in working with Transmission Owner's projects on the consultant's project team. Deliverable dates for individual Design Review requirements below will be provided to Transmission Owner. The consultant project team and deliverable dates will need to be approved by ITC, prior to the commencing design.

Site Plan: The site plan needs to show the geographical location for all transmission assets, complete with a coordinate reference. Boundary lines for the property rights conveyed should be included along with access drive paths. Approval of the site plan is required prior to commencement of detailed design.

One Line: The station one line must follow the Transmission Owner's One Line Design Guide. Examples of information that must be included (but not limited to) are nomenclature, relaying protection schemes, power equipment, and conductor information located in the high voltage current path. The one-line drawing will need to be approved by Transmission Owner prior to commencing detailed design.

Standards: Transmission Owner approved standards, templates, and guides as provided in advance by Transmission Owner must be utilized. This includes

ordering major equipment from proposed vendors subject to approval of Transmission Owner. Material Requests and drawings used in the design shall reference Transmission Owner stock numbers as provided by Transmission Owner during initial project meetings.

Coordination: Transmission Owner will have a design engineer assigned to the project for coordinating design specific details on the project. The Interconnection Customer and/or its consultant will host a design engineering kick-off call and site visit, after requirements have been reviewed to allow Interconnection Customer and/or consultant to fully understand Transmission Owner's expectations and design requirements. Throughout the design regular status calls will be required to provide ongoing updates on the design progress and allow for any design questions to be answered. Transmission Owner's designated design engineer(s) should be included all on correspondence related to design decisions. Technical design of the facilities that interface with the substation (such as the generator tie-line) must be coordinated with Transmission Owner.

Design Review: Transmission Owner design review will be required as indicated in the below items:

- 10% Design; otherwise referred to as pre-design scope review, includes scope of work, preliminary site plan and one line. Prior to commencing further design, Transmission Owner's response can be expected within 10 business days of receipt.
- Line Design Coordination; A finalized substation layout and grading design must be supplied by the Interconnection Customer. The Transmission Owner will review within 10 business days. Once these documents are reviewed by the Transmission Owner design will commence on the line cut in work. Once line design commences a schedule and duration of time until construction can start will be communicated by the Transmission Owner. A minimum of nine months is expected due to structure design and material lead-times. Station Layout, Relaying and Protection Design;
 - o Prior to detailed design activities, Transmission owner will provide the detailed protection, SCADA, and security scope (e.g. Relay Design Report and One Line). Transmission Owner can be expected to provide these within fifteen (15) Business Days of request
 - o Points List Development - Transmission Owner will develop and provide SCADA Points List within 15 business days of receiving request.
 - o Fiber Assignments Development - Transmission Owner will develop and provide Fiber Assignments within 15 business days of receiving request.

- o Security Scope Development - Transmission Owner will develop and provide Security Scope for the station and provide to Interconnection Customer.
 - o Review of Security Plans - Transmission Owner will review the Interconnection Customer's proposed security plans, and provide approval, comments, or rejection. Transmission Owner response can be expected within 10 business days of receipt.
 - o Schematics Review - Transmission Owner will review the proposed relay protection schematics, and provide approval, comments, or rejection. Transmission Owner response can be expected within 10 business days of receipt.
 - o Relay Settings – A minimum of 20 business days will be required for Transmission Owner to develop relay settings.
- 30% Design; otherwise referred to as long lead material request (LLMR) package, includes material list for items that have a long lead time and corresponding drawings or calculations that support them. This allows for long lead items to be ordered early in the design. Prior to material procurement, Transmission Owner will review the long lead material order and provide approval, comments, or rejection. Transmission Owner response can be expected within 10 business days of receipt. Relevant design drawings and calculations are required.
- 90% Design; otherwise referred to as Issue for Review package, includes entire design package, complete with material lists, drawings, and any other project related documentation. Prior to design issued for construction, Transmission Owner will review the entire design package and provide approval, comments, or rejection. Transmission Owner response can be expected within 40 business days of receipt.
- 100% Design; otherwise referred to as Issue for Construction package, includes final design package as it is intended to be issued for construction with any Transmission Owner comments addressed from the 90% review. Prior to design issued for construction, Transmission Owner will review to ensure final comments were adequately included in the entire design package and provide approval, comments, or rejection. Transmission Owner response can be expected within 5 business days of receipt.
- Transmission Owner requires review of proposed design modifications by the Interconnection Customer. Transmission Owner will require 10 business days to approve individual design modifications upon receipt.
- Final Design; All final design documentation needs to be certified by a professional engineer and supplied to Transmission Owner when the design is issued for construction. All final studies, calculations and surveys need to be turned over to Transmission Owner at design completion, this includes source files and .pdfs. Changes that were made to any initial scope documents (such as the relay design report) must be red lined and submitted to Transmission Owner with the final design package, to accurately reflect changes that took place during the design. Files will be filed according to the

- Transmission Owner's folder taxonomy when submitted to the Transmission Owner.
- Proposed design modifications require approval of Interconnection Customer and Transmission Owner.
 - As Built Drawings; Within 60 days of the completion of substation construction, Interconnection Customer will provide the following information: PE sealed As Built Mark Ups, final drafted As Guilts, calculations and survey files, design related emails, vendor drawings and final bill of material. A final set of accurate as built substation drawings must be stored on site within the control enclosure. Drawings must be charged out from the Transmission Owner prior to drafting and the revision increased for any drawings requiring as built changes. When final drafted as built drawings submitted to the Transmission Owner, they will be filed according to the Transmission Owner's folder taxonomy.
 - As Built Review; Within approximately 20 business days of receiving As Built documents, Transmission Owner will provide approval, comments, or rejection of the documents.

Construction Testing: Interconnection Customer will follow Transmission Owner construction specifications, procedures, and testing requirements. Transmission Owner requires construction testing on site during construction. Testing consultant will be identified by Transmission Owner. Testing includes (but is not limited to) site compaction and concrete strength (cylinder breaks). Results of testing must meet Transmission Owner specifications. A minimum of 5 business days notice is required to procure testing consultant on site.

Site Acceptance: Transmission Owner will review site testing records and completed checklists. Transmission Owner will participate in a site walkdown to review completed facilities prior to acceptance of facilities for the purposes of Transmission Owner testing and commissioning.

Check-out and Commissioning: Transmission Owner will perform all final commissioning and testing of Stand-Alone Network Upgrades and TOIF, and Interconnection Customer may be invoiced for the cost of testing and commissioning.

Facilities and Equipment Warranties and Documentation: Interconnection Customer shall obtain and assign to Transmission Owner transferable warranties, guarantees and test reports from all suppliers and/or manufacturers, contractors and/or sub-contractors comparable to those a contractor or Transmission Owner ordinarily obtains for the construction of Stand-Alone

Network Upgrades. A non-exhaustive list of equipment that will require the aforementioned documentation includes:

- Circuit Breakers
- Instrument Transformers
- Station Service transformers
- Auto-throw-over switches
- Arresters
- Disconnect Switches
- Motor-operated gates
- Control Buildings
- Protective Relays

Additionally, Interconnection Customer Represents and Warrants to Transmission Owner:

- a. That the materials and equipment furnished by Interconnection Customer under the GIA for the Stand-Alone Network Upgrades to be constructed by the Interconnection Customer will be new, of excellent quality and shall conform to the requirements of the GIA as well as to the highest standards applicable to such construction services for Interconnection Facilities in the business or industry in which Transmission Owner is engaged and comparable to those a contractor or Transmission Owner will use in constructing Stand-Alone Network Upgrades
- b. That, all construction services, and the Stand-Alone Network Upgrades to be constructed by the Interconnection Customer shall strictly comply with Applicable Laws, Standards and Regulations, Environmental Laws and all applicable safety requirements as may be defined or required in the GIA.
- c. That, the Stand-Alone Network Upgrades constructed by the Interconnection Customer, and each portion thereof, shall be free from any Defects during the term of this GIA. For purposes of this GIA, "**Defects**" shall mean, in respect to the Stand-Alone Network Upgrades, or any portion or component thereof, one or more of the following: (i) is not provided in a workmanlike manner; (ii) contains an error or omission in design, engineering or manufacture due to a failure to meet any applicable engineering standards; (iii) contains an error or omission in equipment, materials or construction; (iv) is not new when first installed; (v) does not conform to the GIA and/or all other applicable contract documents; (vi) is not installed in accordance with all instructions of the applicable equipment manufacturers or material providers; and (vii) prevents the safe operation of the Stand-Alone Network Upgrades or a portion thereof.
- d. That, Interconnection Customer shall be responsible or will indemnify ITC for Defects corrections and the enforcement of all contractors' and/or subcontractors' warranties for the Stand-Alone Network Upgrades

- constructed by the Interconnection customer during the term of this GIA. Interconnection Customer shall render reasonable and timely assistance to Transmission Owner when requested to enforce such warranties and guaranties at Interconnection Customer's cost and expense.
- e. The Stand-Alone Network Upgrades constructed by the Interconnection customer shall not infringe upon the intellectual property of any third-party.
 - f. That, if the use of the Stand-Alone Network Upgrades constructed by the Interconnection Customer requires the use of computer software, Interconnection Customer shall obtain and Transmission Owner shall have the unrestricted, irrevocable, royalty-free right and license to use of such computer software during the term of this GIA.
 - g. That, Interconnection Customer shall be responsible for the protection, safety, and risk of loss for the Stand-Alone Network Upgrades constructed by the Interconnection Customer (and any materials and equipment used therein) until completion, final testing, and acceptance of the the Stand-Alone Network Upgrades by Transmission Owner.
 - h. That, prior to the start of the construction of the Stand-Alone Network Upgrades, Interconnection Customer will obtain certificate of insurance as required under the GIA for the constructing entity for Transmission Owner's Interconnection Facilities and provide such certificate to the Transmission Owner.
 - i. Interconnection Customer represents and warrants that it shall prevent all construction liens, claims or encumbrance of any kind from being established upon the Stand-Alone Network Upgrades and that if Interconnection Customer fails to remove or protect against any construction liens, claims, or encumbrance upon the Stand-Alone Network Upgrades, Transmission Owner shall have the right to remove such lien at the expense of Interconnection Customer and Interconnection Customer shall promptly reimburse Transmission Owner for any sums expended by Transmission Owner for this purpose. Upon completion of Stand-Alone Network Upgrades, as a condition to Transmission Owner making a final payment or reimbursement under the Tariff to Interconnection Customer, Interconnection Customer shall furnish to Transmission Owner a final Sworn Statement executed by Interconnection Customer showing full payment to, and zero_balances due, all contractors and subcontractors.
 - j. Transmission Owner's oversight in any form, including without limitation design approval for, inspections, commissioning, or acceptance of the Stand-Alone Network Upgrades constructed by the Interconnection Customer shall not constitute an assumption, transfer, or acceptance of future liability for Interconnection Customer's performance or failure to perform. Interconnection Customer expressly agrees to indemnify and hold harmless Transmission Owner for any losses, claims, liabilities, or damages asserted against Transmission Owner arising out of Interconnection Customer's performance in constructing the stand-Alone Network Upgrades.

GIA APPENDIX C TRANSMISSION INTERCONNECTION REQ MISO

REVISION HISTORY

Date Published	Revision Number	Individual Making Edits	Reason / Comments
08/11/25	000	M Hamlin	• New document.
08/18/25	001	M Hamlin	• Annual Review including minor clean up • 1.13 Power Quality Requirements added • 1.14 Inverter Based Resources Requirements updated to reflect minimum technical requirements changes based on IEEE-2800-2022. • Section 3.3 update with removal of Table C-8 and added reference to IEEE-2800-2022 Section 11.