



Solar DIR Project Update

Market Subcommittee

November 7, 2019

Purpose & Key Takeaways



Purpose:

Review stakeholder feedback and provide next steps on Solar DIR project

Key Takeaways:

- At September MSC, MISO proposed to require future solar plants to register as DIR (Dispatchable Intermittent Resource)
- Stakeholder feedback received through MSC and IPWG with 7 substantially supporting, while 2 having some concerns
- MISO plans to proceed with the original proposal after reviewing stakeholder feedback

Proposal Review

- Require future Solar plants to register as Dispatchable Intermittent Resource (DIR), in the same way as Wind.
- Driven by the fast increase of solar installation in MISO footprint.
- Proposal mitigates anticipated reliability and market issues. Proposal is consistent with recent NERC guideline and FERC orders.

Stakeholder Feedback Summary

- Feedback sought through MSC and IPWG.
- 7 entities support the proposal, 2 entities have concerns.

Feedback Review #1 (Concern)

- **Feedback:** MISO should wait until gaining additional experience rather than solve an assumed future problem
 - Assumption of DPP Phase 3 projects being built is overly optimistic
 - MISO forecast shows that solar will not exceed 9,000 MW until 2021 – the wind level when MISO made DIR filing in 2010
 - 243 MW of existing 314 MW solar is already registered as DIR
- **Response:**
 - Wind dispatch issue occurred well before the final DIR filing. Solar is approaching that point quickly even if not all DPP phase 3 will be built. With the needed transition time, we need to act now.
 - Number of existing solar plants is too small to have statistical significance (2 out of 5 MPs chose to use DIR). MISO still anticipates large number of non-dispatchable solar without this filing.

Feedback Review #2.a (Concern)

- **Feedback:** “It would be more appropriate to base Planning Resource Auction calculations on a solar facility’s availability rather than output during the reference period because the facility may have been dispatched down by MISO during that period.”
- **Response:** Upcoming BPM changes will address this concern, as previously addressed at Resource Adequacy Subcommittee.

Feedback Review #2.b (Concern)

- **Feedback on Transition Plan:** “It is extremely important that facilities subject to Purchase Power Agreements (“PPAs”) and Build-Own-Transfer Agreements (“BOTs”) that were based on and in reliance upon the current market registration rules and that are executed and filed for approval with the appropriate regulatory body within one year of FERC approving the proposed Tariff change be exempt from the DIR requirement along with Solar Projects that are currently commercially operating.”
- **Response:** MISO is reviewing the impacts from the current transition plan. As a reminder,
 - It is for reliability needs and is consistent with NERC guideline on inverter-based resources.
 - It is more consistent with MISO Wind DIR filing, as well as other recent FERC orders.

Feedback Review #3 (Question)

- **Question:** After this change, can a solar with MISO GIA (Generator Interconnection Agreement) register as Behind the Meter Generator (BTMG) and thus not be required to be DIR?
- **Response:** After the proposed tariff change, solar with GIA will be required to register as DIR, in the same way as wind today.

Feedback Review #4 (Question)

- **Feedback:** Supports the proposal. Should this (DIR requirement) extend to all new resources, including hybrid and other fuel sources?
- **Response:**
 - Hybrid topic is under a separate effort as assigned by the Steering Committee. This filing only aims to bring solar under the same registration rule as wind.
 - Will not extend this to other fuel sources based on FERC direction from Wind DIR filing and due to limited new projects.

Next Steps

- Tariff filing – December 2019

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Appendix – Tariff Redline and Solar Data

-- Slides From September MSC

Draft Tariff Redlines

- Module C, Section 40.3.4.d.ii

*....or (C) the Generation Resource is not fueled by wind **or solar energy**.*

- Module C, Section 40.3.4.d.v

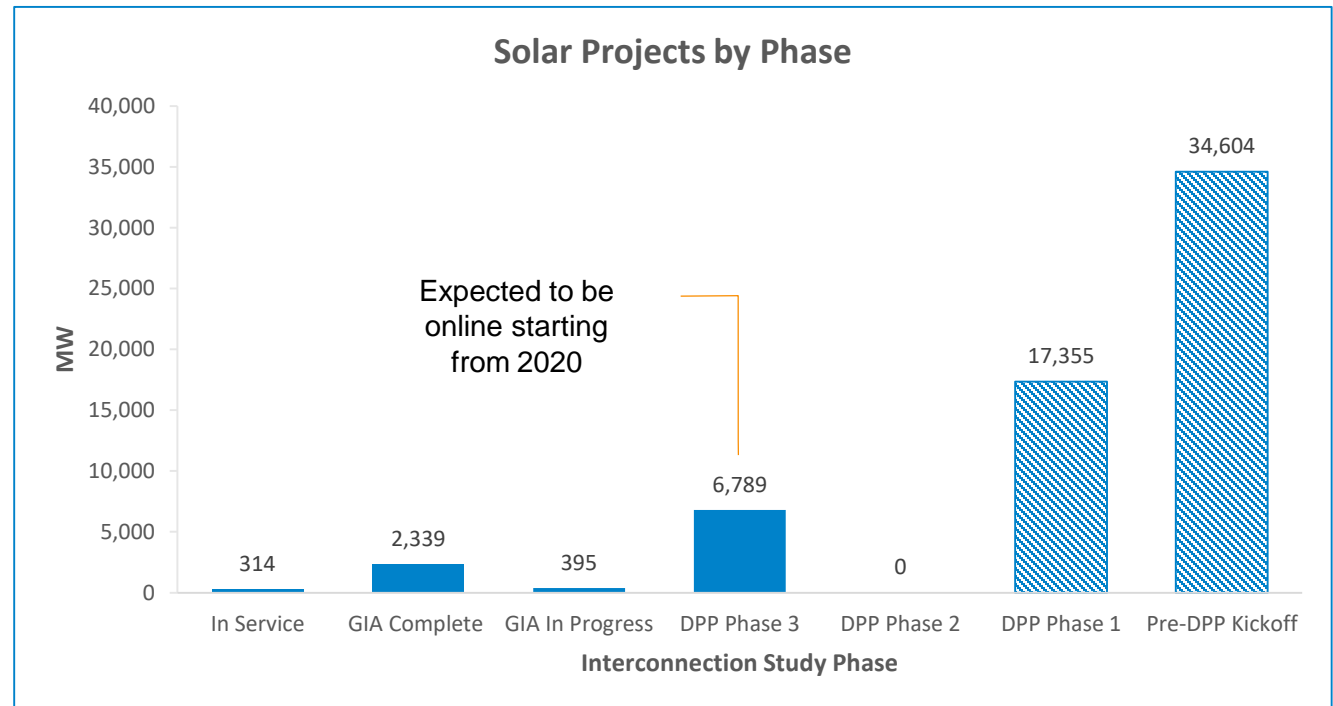
*(6) Extremely high wind or other weather-related conditions materially impacting a Dispatchable Intermittent Resource's ability to provide Energy and resulting in a substantial reduction or cessation of wind **or solar** generation activities.*

- Attachment X, Appendix 6 (GIA) Section 8.1

*Unless the Generating Facility is an Intermittent Resource not relying on wind **or solar** as a fuel source, Interconnection Customer shall install communication and control equipment such that the Generating Facility can receive and respond to the appropriate dispatch signals while operating under the Tariff. Where applicable, the requirements of the communication and control equipment will be enumerated in Appendix C to this GIA.*

Increased Solar Penetration

- A few units are in-service. Over 9 GW have or close to have GIA. ~52 GW are in the early stages of the interconnection study process



GIA: Generator Interconnection Agreement
DPP: Definitive Planning Phase

Time to Act

