



Solar as Dispatchable Intermittent Resource (DIR)

Market Subcommittee

September 12, 2019

Purpose & Key Takeaways

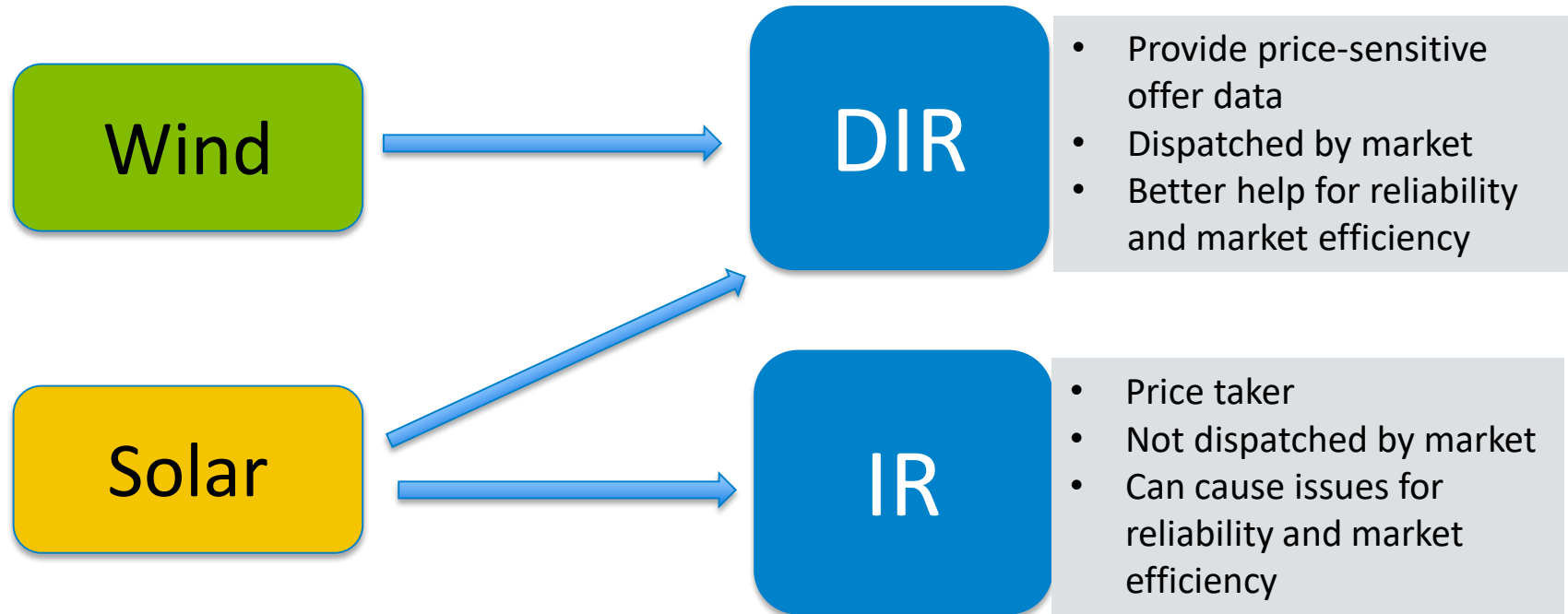


Purpose: Introduce a proposal to require future solar to register as DIR

Key Takeaways:

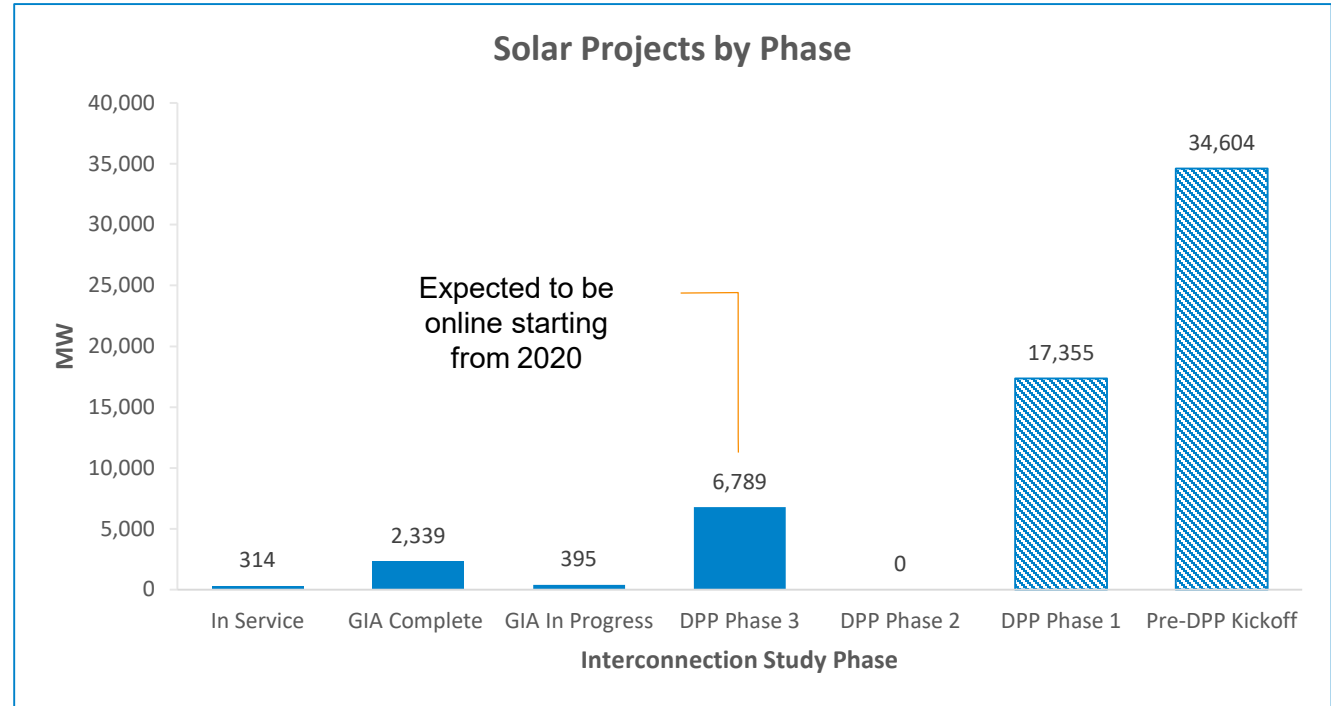
- ❑ MISO data shows significant solar growth in the coming years
- ❑ MISO expects the same operations and market challenges that resulted in wind DIR filing in 2010
- ❑ MISO proposes to require future solar to register as DIR with a similar transition plan as in wind DIR filing
- ❑ MISO is seeking stakeholder feedback

Dispatchable Intermittent Resource (DIR) vs. Intermittent Resource (IR)

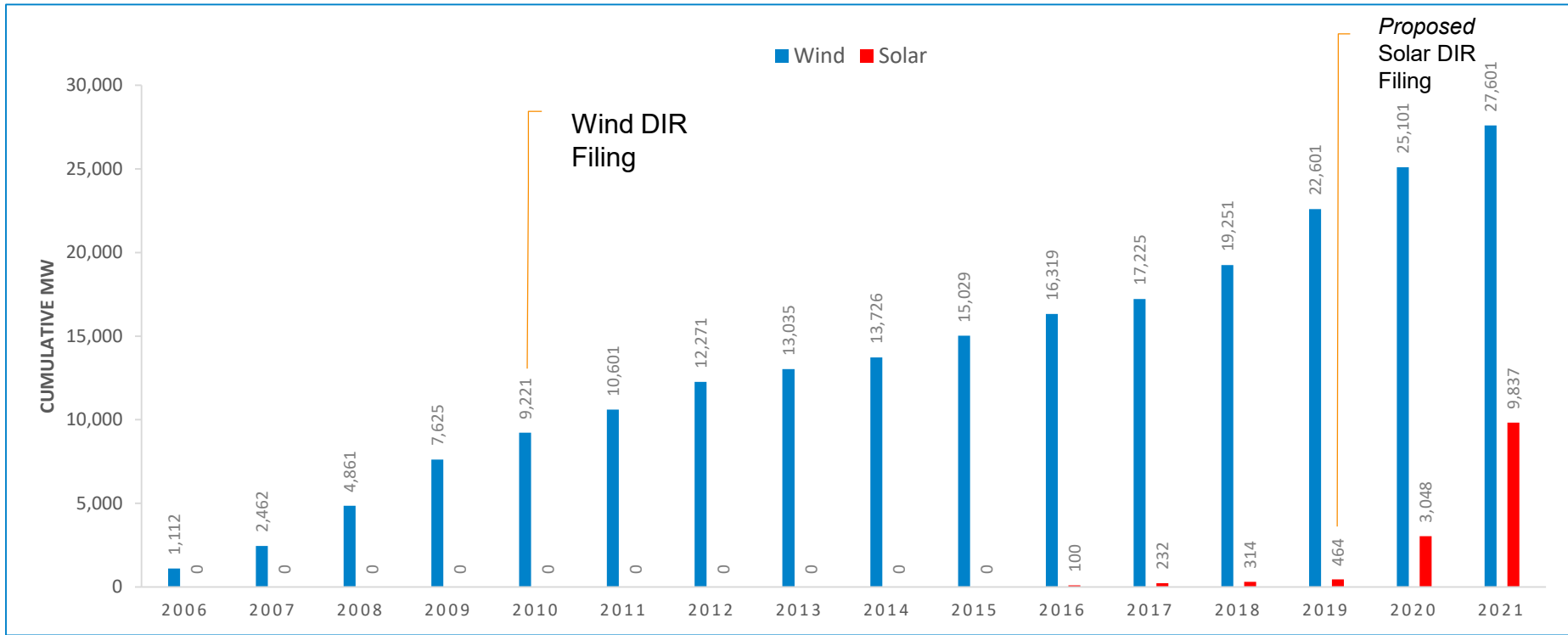


Increased Solar Penetration

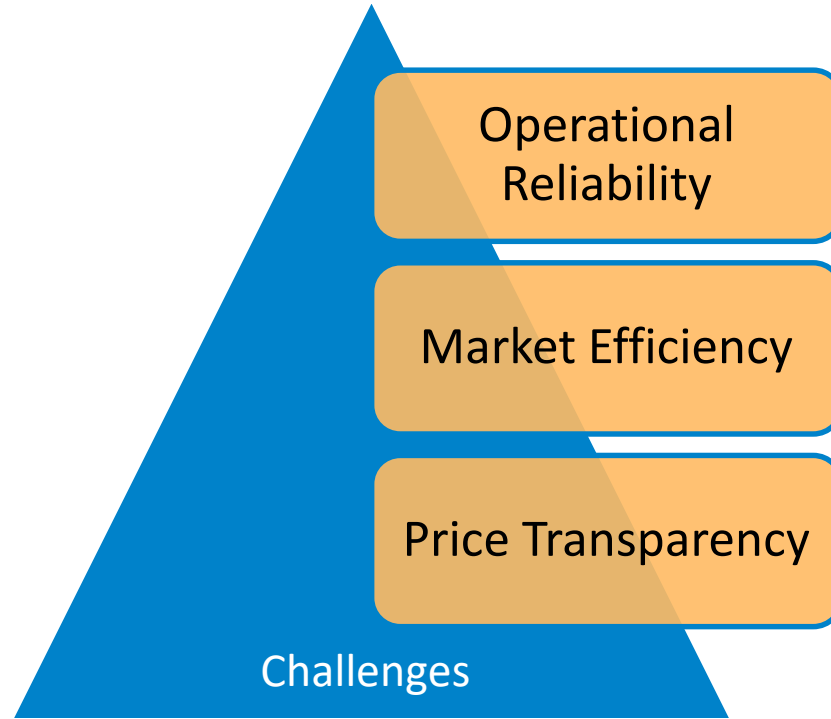
- A few units are in-service. Over 9 GW have or close to have GIA. ~52 GW are in the early stages of the interconnection study process



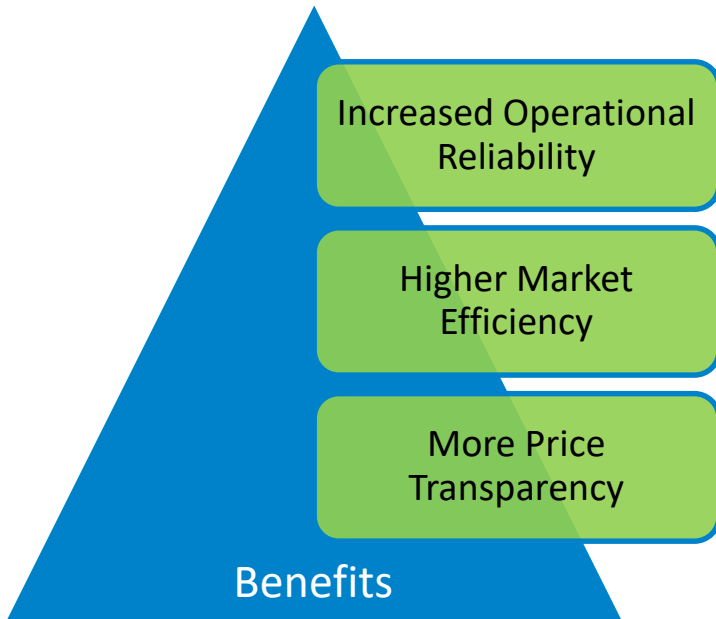
Time to Act



Challenges



Proposal: Require Solar to Become DIR



- Tested successful solution through wind DIR project
- Recent FERC order accepted similar change in SPP

Transition Plan Similar to DIR Filing

Solar Projects commercially operating

- 243 MW of solar is already registered as DIR
- Remaining 71 MW, and any new solar operating before the tariff effective date, has an option to register as DIR, but not mandatory

Oldest

Solar Projects with GIA before Solar DIR filing becomes effective

- Resources subject to the registration requirement have a two-year transition period from the revised Tariff effective date before DIR registration is required

Solar Projects without GIA before Solar DIR filing becomes effective

- Resources have to register as DIR per GIA
- No transition period

Newer



Next Steps

- Stakeholder feedback – 9/26/2019
- Finalize proposal – November 2019
- Tariff filing – December 2019

Stakeholder Feedback Request

- MISO is requesting feedback on the proposal to require solar to register as DIR, draft Tariff redlines, and the transition plan by September 26th 2019.
- Feedback requests and responses are managed through the Feedback Tool on the MISO website:
<https://www.misoenergy.org/stakeholder-engagement/stakeholder-feedback/>

Contact Information

- Kun Zhu (kzhu@misoenergy.org)
- Noel Augustine (naugustine@misoenergy.org)



Appendix

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.*