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)

- **DIR**
  - Provide price-sensitive offer data
  - Dispatched by market
  - Better help for reliability and market efficiency

- **IR**
  - Price taker
  - Not dispatched by market
  - Can cause issues for reliability and market efficiency

- **Wind**
- **Solar**
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. Expected to be online starting from 2020.
Time to Act

Wind DIR Filing

CUMULATIVE MW

Wind | Solar

2006: 1,112 | 0
2007: 0 | 0
2008: 4,861 | 0
2009: 7,685 | 0
2010: 9,221 | 0
2011: 10,601 | 0
2012: 12,271 | 0
2013: 13,035 | 0
2014: 13,726 | 0
2015: 15,029 | 0
2016: 16,319 | 0
2017: 17,225 | 0
2018: 19,251 | 0
2019: 22,601 | 0
2020: 25,101 | 0
2021: 27,601 | 0

Proposed Solar DIR Filing

0 | 100 | 232 | 314 | 464 | 3,048 | 9,837
Challenges

- Operational Reliability
- Market Efficiency
- Price Transparency
Proposal: Require Solar to Become DIR

Increased Operational Reliability
Higher Market Efficiency
More Price Transparency

- 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

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
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/
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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.