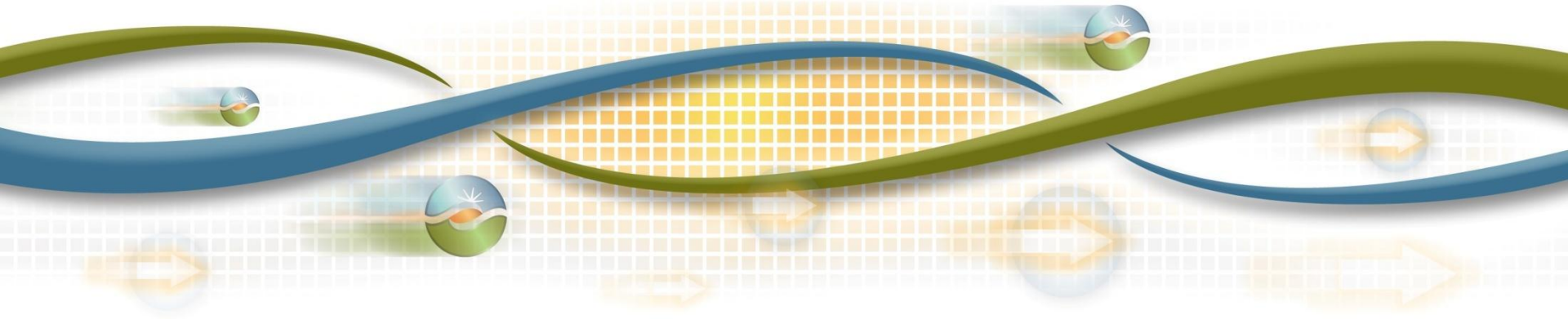


# T-D Interface Coordination – What's needed for the high-DER future grid?

More Than Smart T-D Interface Subgroup  
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In 2016 the ISO worked with distribution utilities and this MTS subgroup to begin identifying operational coordination needs at the T-D interface for a high-DER future.

- Resulted in preliminary observations and recommendations including:
  - Specific 2017 enhancements to ensure the efficient and reliable integration of new DER aggregations in the ISO market
  - Potential topics for further work in 2017

The working groups derived recommendations based on well-defined objectives of the three principal parties.

- The DER provider wants its resources to be able to participate in all markets for which they have required performance capabilities, and to be able to manage curtailment risk
- The distribution operator needs to understand current and predicted behavior of DERs on its system and the ability to modify DER behavior via operating instructions if needed to maintain reliable operation
- The ISO needs predictability of DER responses to dispatch instructions and impacts of DER operation at each T-D interface

## Today's information exchanges between the ISO, the distribution utilities, and DER providers are insufficient.

- ISO market software models DER as if located at the T-D interfaces (p-nodes), with no visibility to distribution system topology or conditions
- Distribution utility is not informed of DER bids submitted to the ISO or ISO schedules and dispatches issued to DERs
- DER providers and ISO generally have no knowledge of distribution conditions that may limit DER operation

As a result:

- DERs may submit bids and ISO may issue dispatches that are infeasible on the distribution system
- DER responses to ISO dispatches may cause operational problems on distribution

## Recommended 2017 enhancements to ensure efficient and reliable integration of new DER aggregations in the ISO market.

- Distribution operators should provide advisory information to DER providers about system conditions that will affect operation of their resources
- The ISO should provide day-ahead DER schedules to the distribution operator, to allow opportunity for the distribution operator to check feasibility
- The DER provider should communicate constraints on its resources' performance to the ISO
- DER aggregator should work with the distribution utility early in the implementation process to identify and address any concerns about operational impacts of a DER aggregation
- Distribution utilities should pursue a pro forma “aggregation agreement” with DER providers

## Potential topics identified for further work in 2017.

1. Suggest methods for short-term operational forecasting of DER activity and impacts at the T-D interface. This effort would emphasize the activities of DER that are serving customer needs or providing services to the distribution operator, and may or may not be in the ISO market.
2. Identify options for feasibility assessment by the distribution operator of ISO day-ahead schedules and real-time dispatches, to identify instances of infeasible schedules and dispatches and communicate the results to the DER and, for real-time dispatches, to the ISO.

## Potential topics identified for further work in 2017. (continued)

3. Specify real-time coordination procedures to manage potential conflicts between distribution operational needs and ISO dispatches. This concern is particularly relevant in the context of “multiple-use” applications that involve a DER providing services to the distribution operator while participating in the ISO market.
4. Refine approaches for operational curtailments by the distribution operator of DERs affected by distribution constraints.

## Potential topics identified for further work in 2017. (continued)

5. Explore how different future distribution operator constructs (DSO models) would affect the structure of coordination between the distribution operator, DER and the ISO.
6. Refine communication descriptions, including timing and high-level requirements for the data exchanges needed to achieve the optimal coordination framework.



## Other Topics and Next Steps

- Topics for next meeting and ... any assignments?
- Who else should be here?
- Meeting frequency
- Date of next meeting

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