

MISO Uses PLEXOS to Find Wind-Hydro Synergy

Additional Benefits Gained for Manitoba Hydro



MISO Energy provides electricity across 15 of the United States as well as the Canadian province of Manitoba. MISO Energy uses fuel including gas/oil, coal, renewables and nuclear.

Manitoba Hydro provides electricity and natural gas in the province of Manitoba, Canada and in the United States. The company has over 500,000 electric customers and over 250,000 natural gas customers.

MISO Energy used PLEXOS to develop a novel approach to extract the additional benefits of wind-hydro synergy.

Situation

The intermittent and non-peak nature of wind creates integration challenges within MISO Energy. Conversely, Manitoba Hydro has a large and flexible system which has the potential to mitigate challenges with large amounts of wind generation.

MISO Energy conducted a study to determine if the cost of expanding the transmission capacity between Manitoba Hydro and MISO Energy would enable greater wind participation in the MISO Energy market.

Solution

The organizations chose PLEXOS as the simulation platform to evaluate the benefits and costs of expanding the interface between them. They found that PLEXOS met the needs for:

- Intricacies in modeling Manitoba Hydro's resources
- Efficiently responding to wind variability
- Modeling ancillary services
- Computing the complexity of the study
- Generating the required reports

Results

The study found that significant benefits could be realized from the addition of either an eastern 500 kV line between Dorsey, Manitoba and Duluth, Minnesota, or a western 500 kV line between Dorsey, Manitoba and Fargo, North Dakota/Moorhead, Minnesota.

By using PLEXOS, MISO Energy realized benefits that included **production cost savings and modified production cost savings, load cost savings, reserve cost savings and wind curtailment reduction.**

To learn more about PLEXOS applications, visit:
energyexemplar.com or contact us at
info@energyexemplar.com.