

# FERC Proposed Rule on the Integration of Variable Energy Resources

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# Regional Electric Markets

- No “national electric power market”—more like different regional power markets
- Considerable regional differences among electric power markets in U.S.
  - Bilateral markets in West (except California) and Southeast
  - Centralized day-ahead and spot markets in California, Texas and Northeast
  - Southwest Power Pool with energy imbalance market and bilateral markets otherwise
- FERC rulemakings have to take regional differences in account. A basic pattern is:
  - Set minimum requirements
  - Allow for regional variations if meet or exceed minimum requirements

# FERC Proposed Rule on Variable Generation

- Proposed rule addresses the following:
  - Transmission scheduling practices
  - Variable Energy Resource (“VER”) power production forecasts
  - The recovery of capacity charges associated with generator imbalance service (i.e., generator regulation service)
- Most regional transmission organizations (RTOs) in the U.S. have implemented sub-hourly scheduling and dispatch and also have, or are in the process of, implementing wind forecasting.

# Transmission Scheduling under Order 888

- Hourly scheduling is the default scheduling time period in FERC's *pro forma* open access transmission tariff.
- FERC determined that hourly scheduling could result in the inefficient use of transmission and generation resources.
- Proposed FERC rule would require transmission providers to provide the option for intra-hour transmission scheduling, at 15-minute intervals.
  - Intended to reflect more accurate forecasts of changing grid conditions.
  - Also intended to reduce need for ancillary services
- Most regional transmission organizations in the U.S. (California, New York, New England, Texas, Mid-Atlantic, Midwest) have not only sub-hourly scheduling but also sub-hourly dispatch.

# Proposed New Ancillary Service for Generator Regulation and Frequency Response Service

- Add a generic ancillary service rate schedule (Schedule 10 - Generator Regulation and Frequency Response Service).
- Applies not only to VERs, but to all transmission customers delivering energy from all generators.
- Under this, a public utility transmission provider must, to the extent possible, offer generator regulation service for customers using transmission services for generators in its balancing authority area.
- Can only assess new ancillary service charge after first implementing 15-minute transmission schedules and forecasting of variable energy generation.

# Variable Energy Resource Power Production Forecasts

- FERC stated that forecasts in transmission systems containing VERs increase situational awareness, allow transmission providers to use the existing flexibility of the system for unit commitment and dispatch, and lower the amount of reserves needed for reliability.
- FERC found that in the absence of a VER power production forecast, public utility transmission providers may deploy more regulation reserves than needed.
- FERC noted that not all regions would benefit from VER forecasts, and only requires the forecasts if the transmission providers wish to charge for generation regulation and frequency response service.
- All RTOs in the U.S. have implemented wind forecasting or have plans to do so, and several large utilities or transmission providers (Xcel Energy, Bonneville Power Administration) also have or plan to implement wind forecasting.

# Data Requirements for Variable Energy Resource Power Production Forecasts

- FERC has proposed requiring variable energy generators to supply meteorological and operational data to transmission providers for VER forecasting.
- The data would only be required for the purpose of improved power production forecasting, and would not be required if transmission developers were not developing or utilizing variable energy forecasting.

# Variable Energy Resource Power Production Forecasts

## Specific Data Requirements

- Operational Data:
  - Forced outages that reduce generating capability by 1 MW or more for 15 minutes or more.
- Meteorological Data (*includes, but is not limited to the following*):
  - Wind-based VERs: temperature, wind speed, wind direction, and atmospheric pressure.
  - Solar-based VERs: temperature, atmospheric pressure, and cloud cover.



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