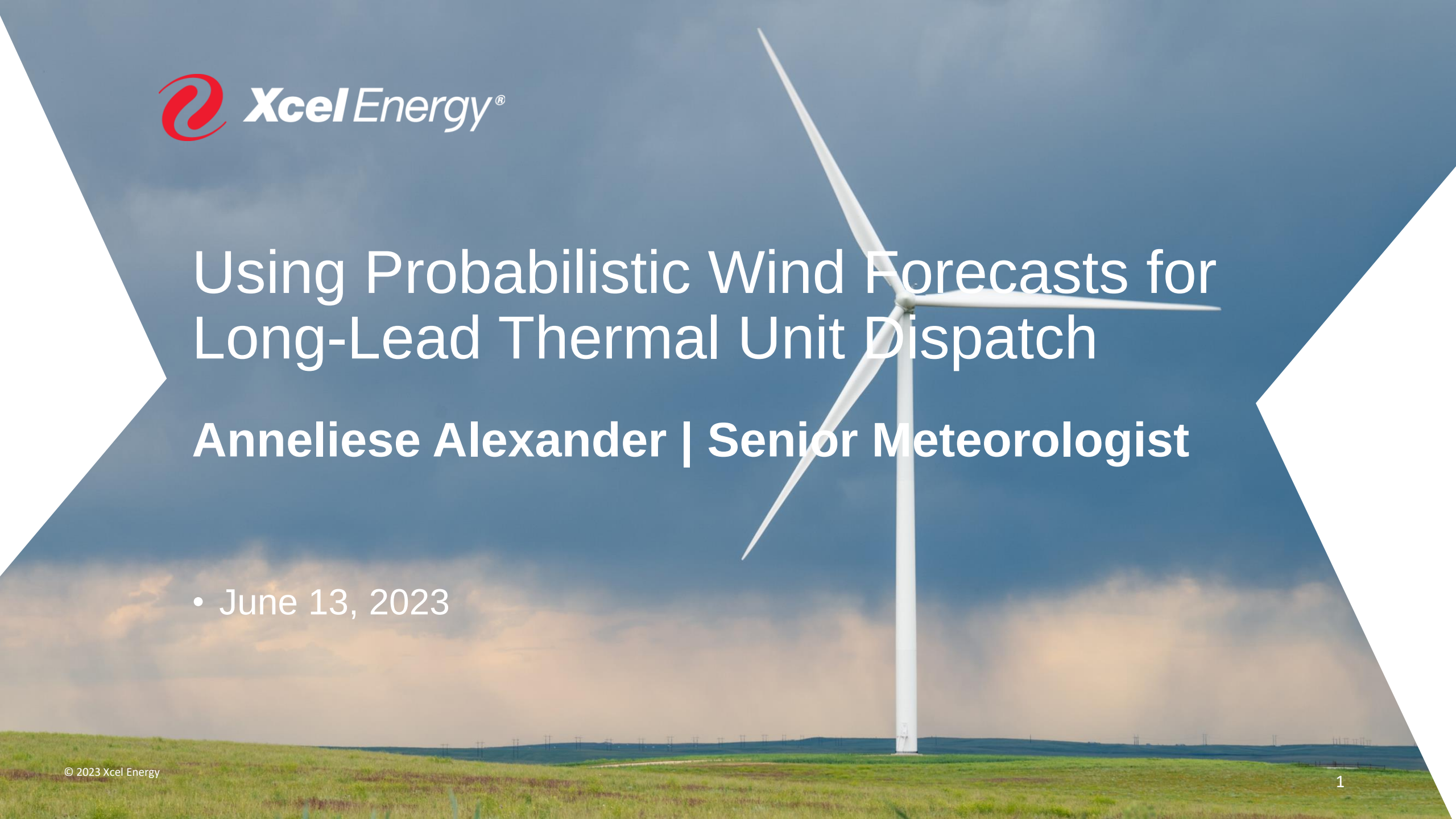

Using Probabilistic Wind Forecasts for Long-Lead Thermal Unit Dispatch

Anneliese Alexander | Senior Meteorologist

- June 13, 2023

Public Service Company of Colorado (PSCo)

- 7,000 MW max load system
  - 4,100 MW of wind nameplate capacity, 700 MW of solar
    - Typical wind MAPE for day-ahead forecasts is 9-15% vs load errors 2-4.5%. Wind MAPE grows to 14-19% by today+3.
  - 6,700 MW of thermal capacity
    - 1,600 MW of coal → decisions longer than 24 hrs
- Responsible for solving our own unit commitments
- Limited transmission in and out of Colorado
- Use P90 wind forecasts when looking out beyond 24 hours to make unit commit and/or decommit decisions for these longer-lead-time plants

Normal Process

Deterministic wind, solar, load forecasts

Unit characteristics, fuel prices, etc.

→ Gen Trader Optimize best dispatch solution of all thermal units next 6 days

Probabilistic Process

Deterministic solar load forecasts, replace wind with the lower P90 forecast

Unit characteristics, fuel prices, etc.

→ Gen Trader Optimize best dispatch solution of all thermal units next 6 days

Can we REALLY turn off X unit, knowing we can't get it back for Y days?

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