



Using Probabilistic Wind Forecasts for Long-Lead Thermal Unit Dispatch

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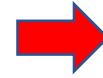
Public Service Company of Colorado (PSCo)

- 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

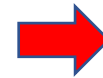


Normal Process

Deterministic wind,
solar, load forecasts



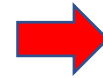
Unit characteristics,
fuel prices, etc.



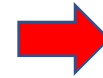
Gen Trader
Optimize best
dispatch solution
of all thermal
units next 6 days

Probabilistic Process

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



Unit characteristics,
fuel prices, etc.



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