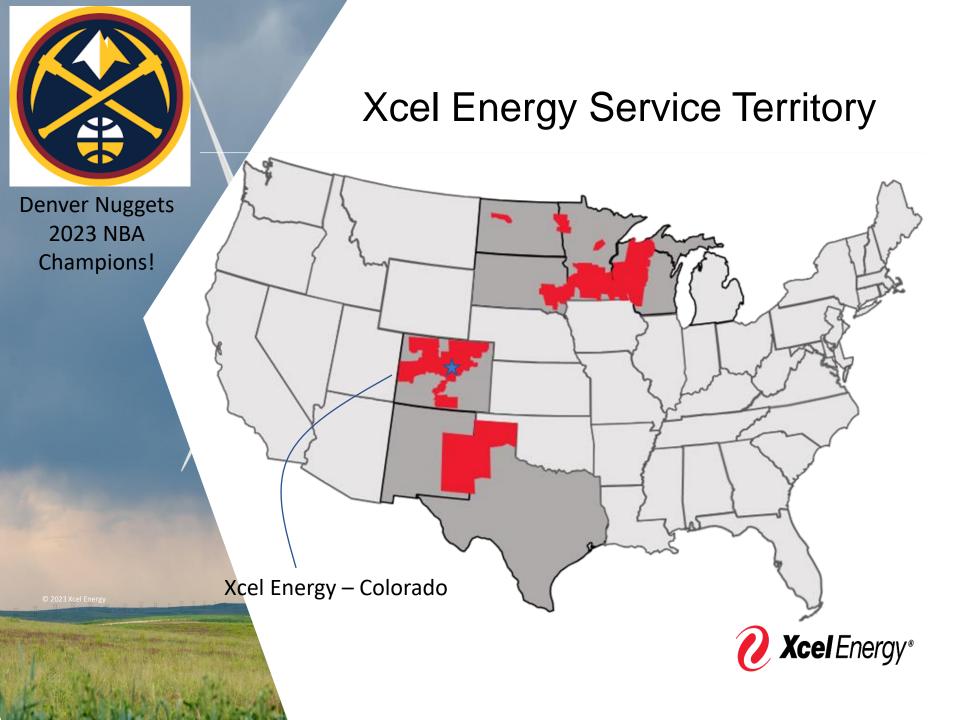


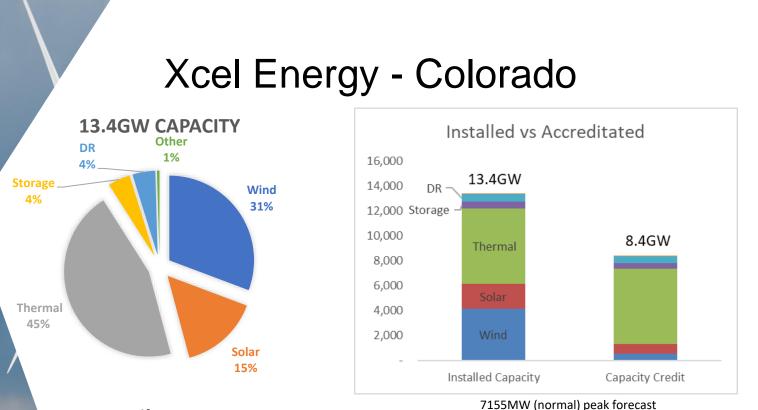
Ancillary Services Markets and Ramping Products for Renewable Energy

Flexibility and Ramping in a Vertically Integrated Market Structure Keith Parks – Senior Data Scientist, Xcel Energy

• June 13, 2023

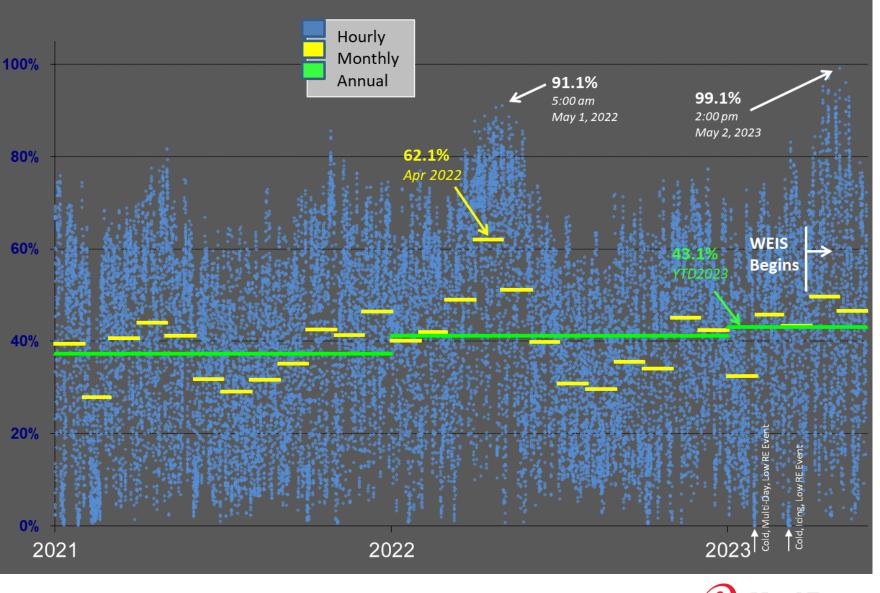
© 2023 Xcel Energy





## milestones

2023 transition to a majority energy-limited resource system Major expansion of solar (65% increase yoy; +750MW) First battery energy storage systems (225MW) Joined SPP WEIS





## Xcel Energy – Colorado, Reserves

