



Ancillary Services Markets and Ramping Products for Renewable Energy

Flexibility and Ramping in a Vertically Integrated Market Structure

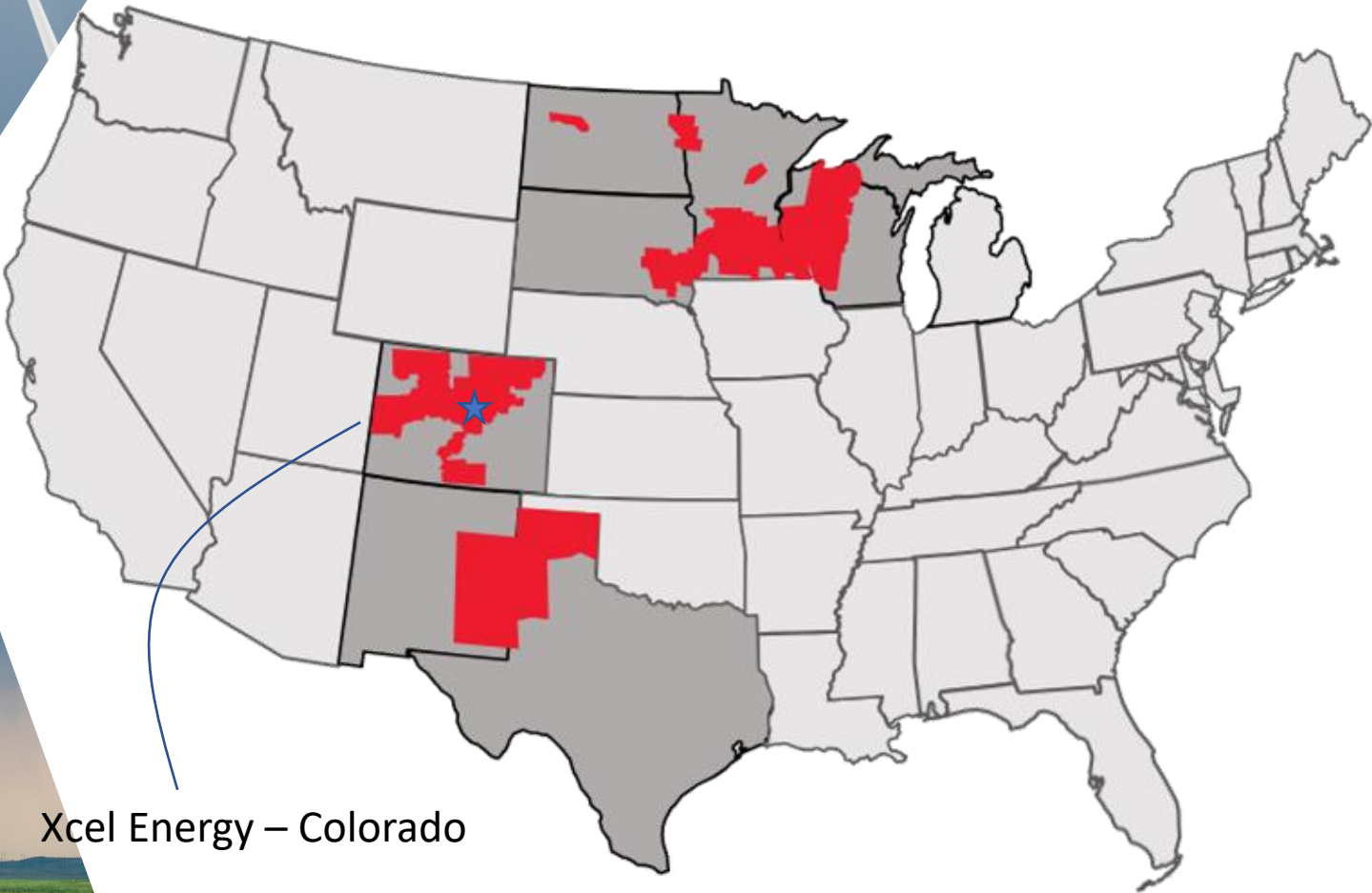
Keith Parks – Senior Data Scientist, Xcel Energy

• June 13, 2023



Denver Nuggets
2023 NBA
Champions!

Xcel Energy Service Territory

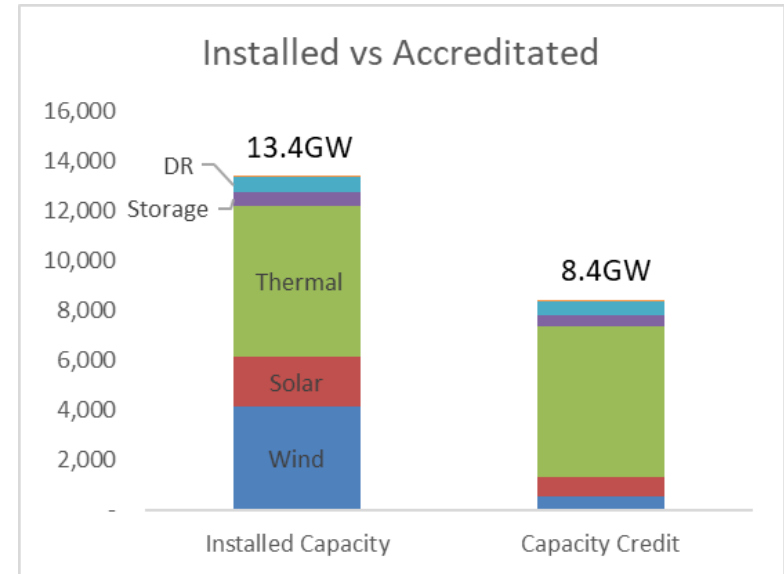
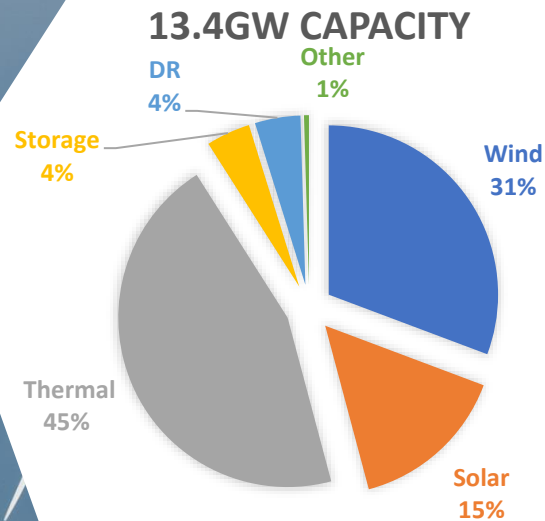


Xcel Energy – Colorado

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7155MW (normal) peak forecast

milestones

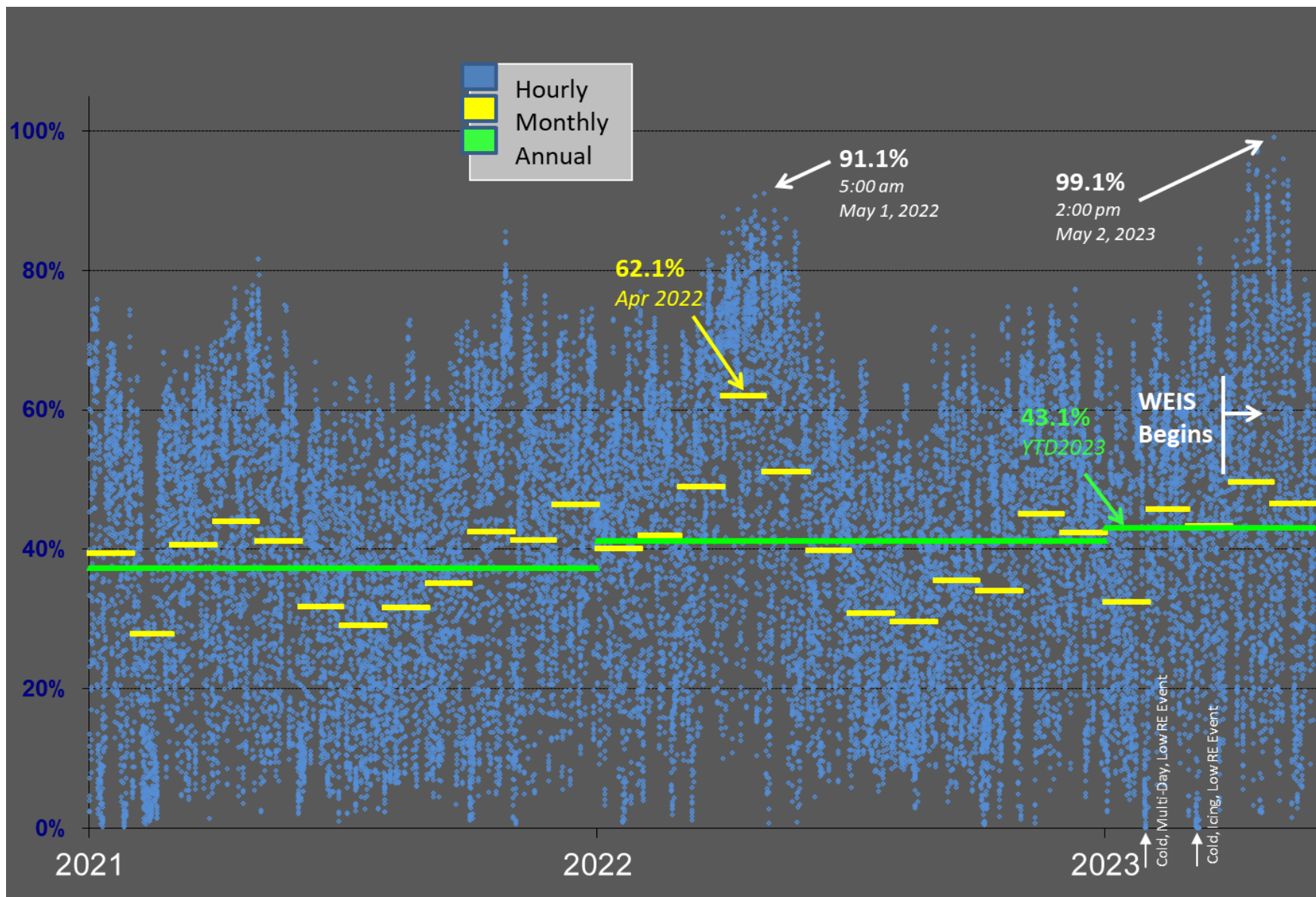
2023 transition to a majority energy-limited resource system

Major expansion of solar (65% increase yoy; +750MW)

First battery energy storage systems (225MW)

Joined SPP WEIS





Xcel Energy – Colorado, Reserves

