



Renewable Energy Storage – P2G Solution

November 5, 2019

Communities We Serve



COLORADO (HQ)

Customers: 22,000
T&D Main Line: 1,258 miles

ARKANSAS

Customers: 45,600
T&D Main Line: 1,717 miles

MAINE

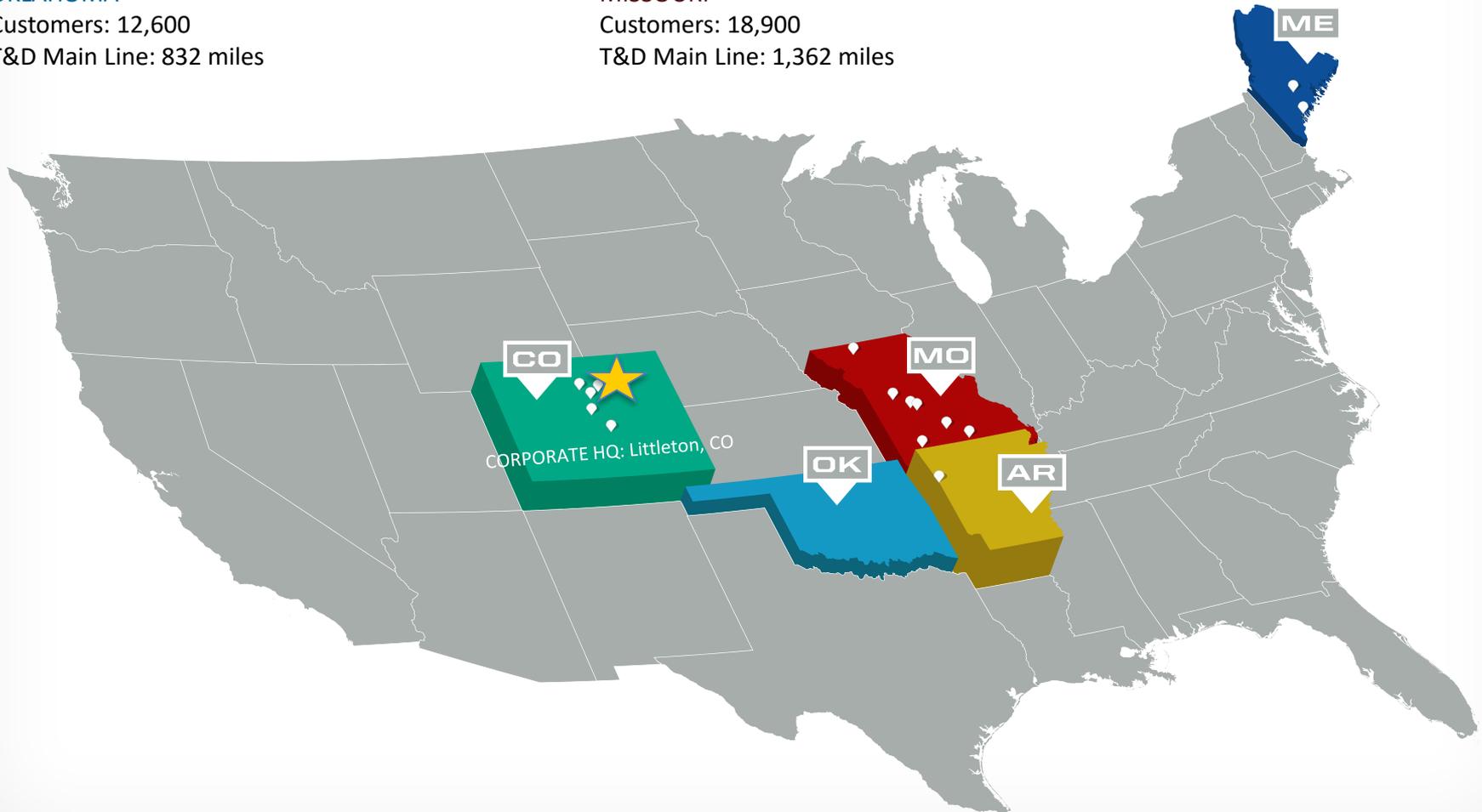
Customers: 3,800
T&D Main Line: 231 miles

OKLAHOMA

Customers: 12,600
T&D Main Line: 832 miles

MISSOURI

Customers: 18,900
T&D Main Line: 1,362 miles



MANAGEMENT



KURT ADAMS
PRESIDENT &
CHIEF EXECUTIVE OFFICER



STEVE BIRCHFIELD
EXECUTIVE VICE PRESIDENT &
CHIEF FINANCIAL OFFICER



LIZZY REINHOLT
DIRECTOR OF SUSTAINABILITY AND
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CHIEF LEGAL OFFICER



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CHIEF DEVELOPMENT OFFICER



JASON WEEKLEY
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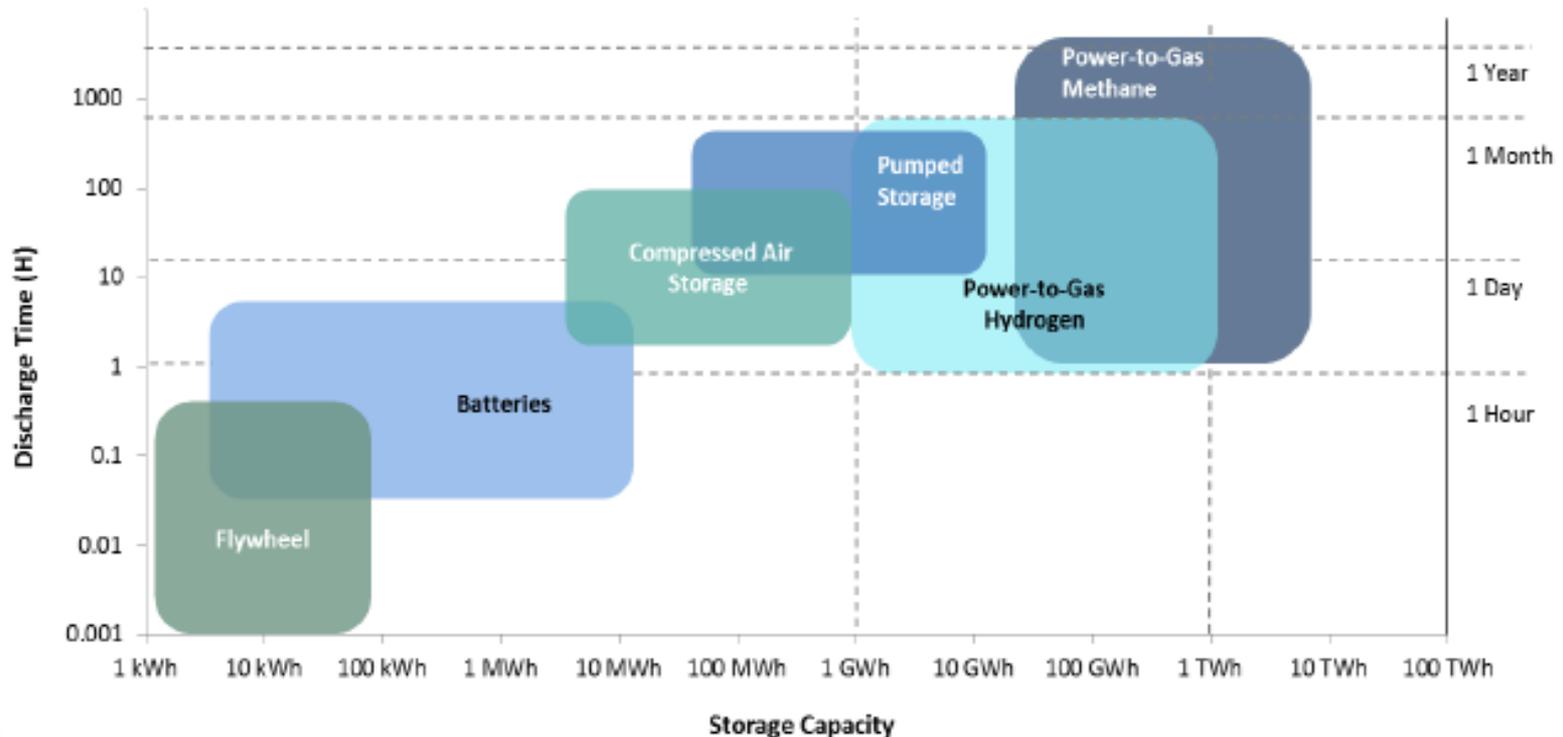


KIM LINAM
CHIEF ADMINISTRATIVE OFFICER

NREL Describes the Natural Gas System as the Largest Energy Storage System in the U.S.



- Most storage technologies are insufficient to support long duration high volume electricity

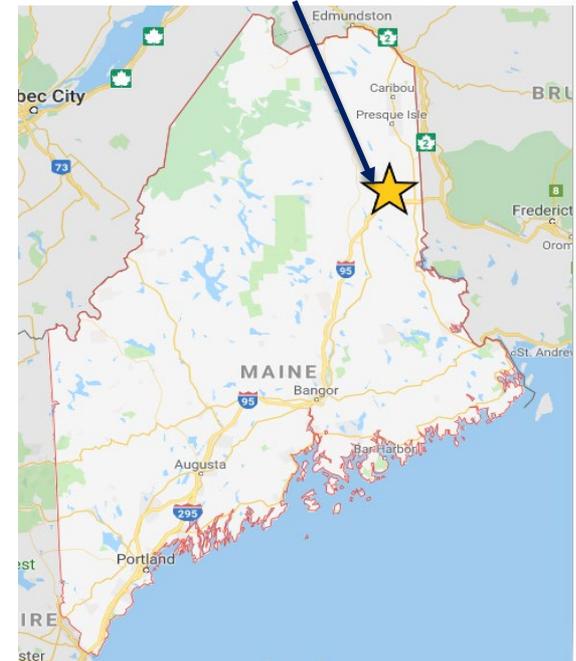




Pilot: The Maine Case Study

- Maine may be the most viable location for a pilot P2G project – 75,000 MWh of curtailed renewables per year at just one location
- Create H₂, Capture CO₂, Methanize, inject and store

75,000 MWh of curtailed renewables per year



| <u>Priced at or below</u> <u>\$/MWh</u> | <u>Percentage of</u> <u>hours</u> |
|--|--------------------------------------|
| \$30 | 65.03% |
| \$20 | 38.99% |
| \$10 | 19.62% |
| \$0 | 12.95% |



National Challenge: Maine Poised to Lead

- Continued growth of renewables is leading to greater curtailment, and expensive transmission solutions
 - CAISO curtailed 630,000 MWh of renewable energy in the first five months of 2019, more than they curtailed in all of 2018
 - New England has a number of locations where congestion will impact renewable growth and/or transmission costs in the relatively near term
 - State of Charge reports 1,766 MW of storage would benefit MA ratepayers, but is not valuable enough to drive development

