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Filer:	Misa Milliron
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A P O W E R F U L P A R T N E R



SEPTEMBER 1, 2016

Renewable Energy Transmission Initiative 2.0

Western Outreach Project

Las Vegas Workshop

Zephyr Power Transmission Project

Topics

- About Duke-American Transmission Company
- Zephyr Power Transmission Project Overview
- Pathfinder's Delta, Utah 1200 MW CAES Storage Project

About Duke-American Transmission Co.

- Transmission developer equally owned by Duke Energy and ATC
- Formed April 2011 to pursue transmission development on a national scale
- Founded on a vision of transmission as enabler of efficient generation markets

TOGETHER, DATC PARTNERS:

- **Operate 10% of the grid** – more than 41,000 miles of transmission lines
- **Operate 59% more efficiently** than the industry, with an O&M vs. gross plant efficiency rate of 2.0% vs. the 4.9% industry average
- **Built more transmission** in the last 10 years than anyone in the industry
- **Own \$13.6 billion** in transmission assets

Based on 2013 FERC Form 1 filing data



- Nation's largest electric power holding company, serving more than 7.5 million customers in six states
- Approximately \$114 billion in assets
- Owns and operates 32,300 miles of transmission lines
- Interest in DATC is held by Duke Energy's Commercial Businesses
- Identified \$8 billion of transmission infrastructure projects, including one approved MISO Multi-Value Project
- Transmission-owning member of the MISO and PJM regional transmission organizations
- Founded in 1904 and headquartered in North Carolina with more than 29,000 employees
- Fortune 250 company listed on the New York Stock Exchange under the symbol DUK



- Formed in 2001 as the nation's first multi-state transmission-only utility
- \$3.8 billion in transmission assets
- Ownership group includes 22 municipalities and cooperatives
- Invested \$3.5 billion in building more than 2,400 miles of transmission lines over the past 14 years in four Midwestern states: Wisconsin, Michigan, Minnesota and Illinois
- Projecting \$3.3 billion to \$3.9 billion in transmission infrastructure projects over the next decade in current service area, including three MISO Multi-Value Projects
- Owns and operates more than 9,500 miles of transmission lines and 530 substations
- Headquartered in Wisconsin with more than 650 employees
- Transmission-owning member of MISO

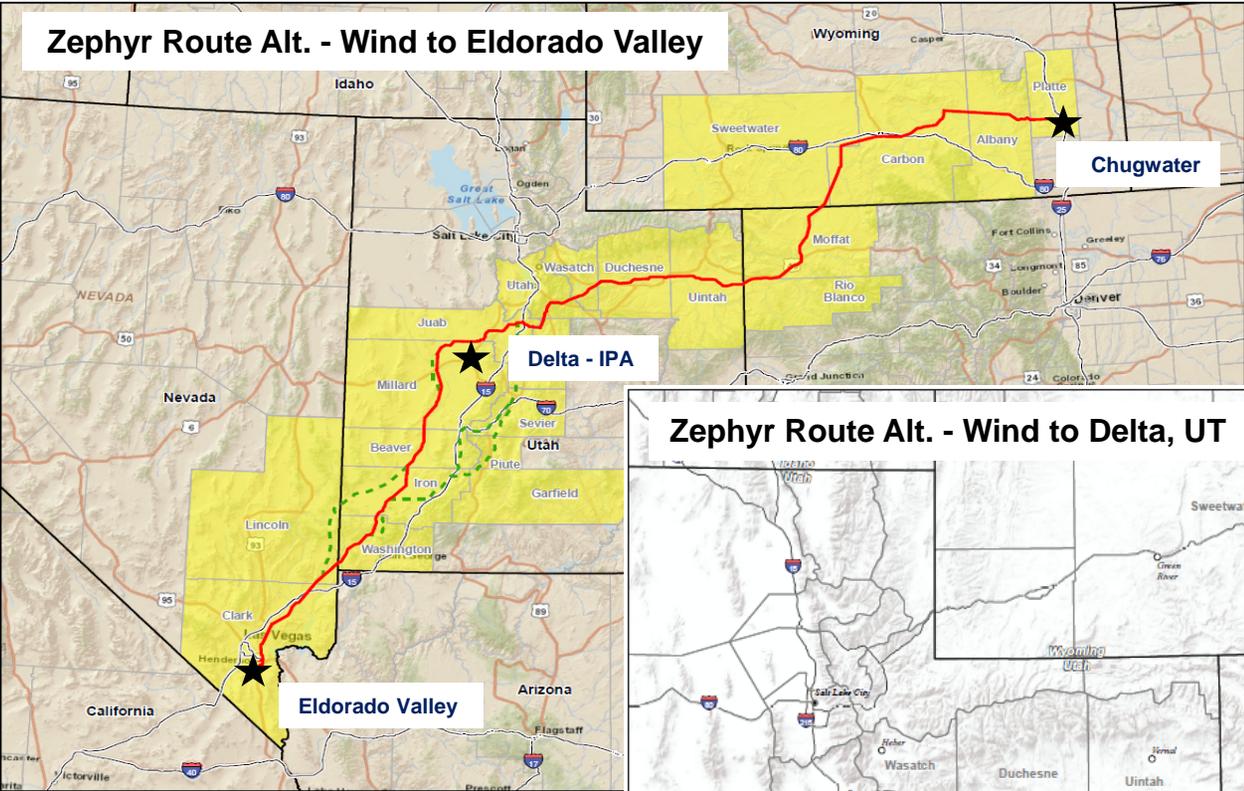
Zephyr Project Overview

- Zephyr Project is an HVDC transmission line project that interconnects very rich wind resources in eastern Wyoming to the large renewable energy market in California
 - 2,100 to 3,000 MW capacity, 525 to 850 miles
 - \$2 to 3.5 billion in capital
 - Target commercial operation in mid-2020s
- 2011 Development Agreement with Pathfinder Renewable Wind Energy
 - Pathfinder is the anchor shipper on Zephyr
 - Pathfinder offtake agreements are a primary condition precedent to proceeding with Zephyr
 - Parties cooperate on development and marketing activities to CA utilities
- In addition to the Wind Project, Pathfinder is developing a Compressed Air Energy Storage (CAES) project to store wind energy and surplus California solar energy
 - CAES site is on the current proposed route for Zephyr, and adjacent to the Intermountain Power Authority (IPA) coal plant (IPP) near Delta, Utah
 - IPA owns the 2400 MW STS HVDC line from the IPP to Adelanto, CA
 - The 1900 MW Intermountain coal fired plant is planned for retirement after 2024

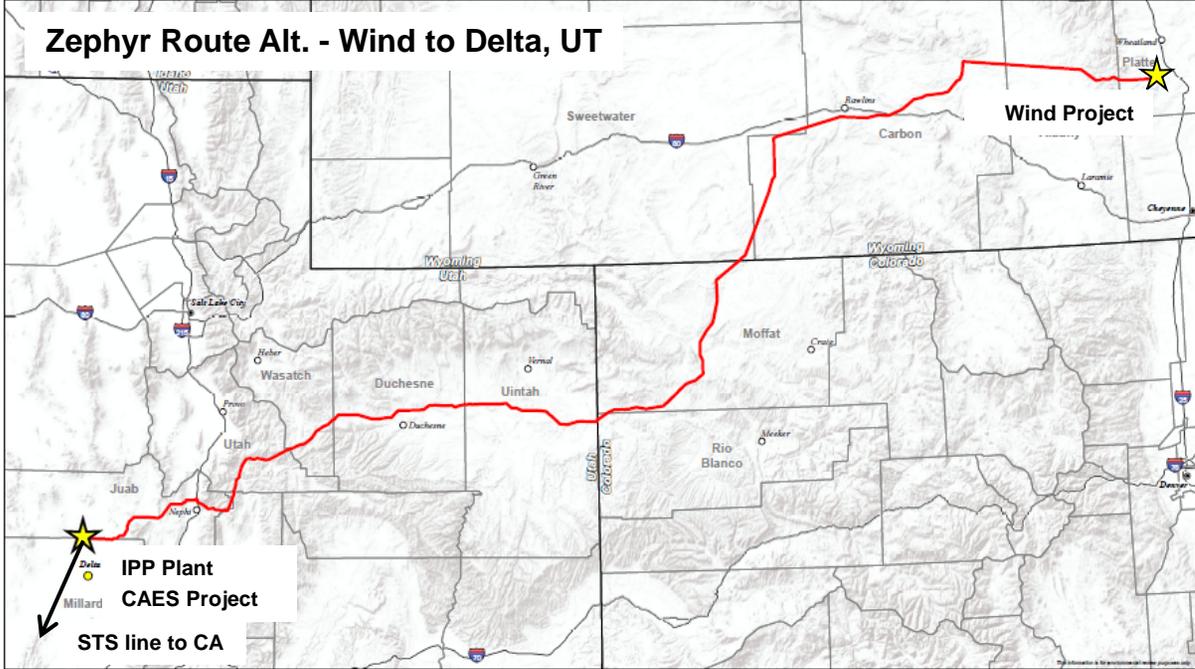
Background on Pathfinder

- Pathfinder is a Wyoming-based development company
- Anchor shipper on the Zephyr project
- Pathfinder is currently developing
 - Up to 3,000 MW Pathfinder Wind Project near Chugwater in eastern WY
 - A 1,200 MW Compressed Air Energy Storage Project near Delta, UT
- Pathfinder Operates
 - 700,000 acre Sweetwater River Conservancy in central WY
 - Wetland and stream banks
 - Sage Grouse habitat conservation bank
 - Proposed raptor conservation bank
- Financial backers include Sammons Enterprises and Guggenheim
- GE is the equipment supplier for Wind Project
- Dresser-Rand is equipment supplier for CAES Project

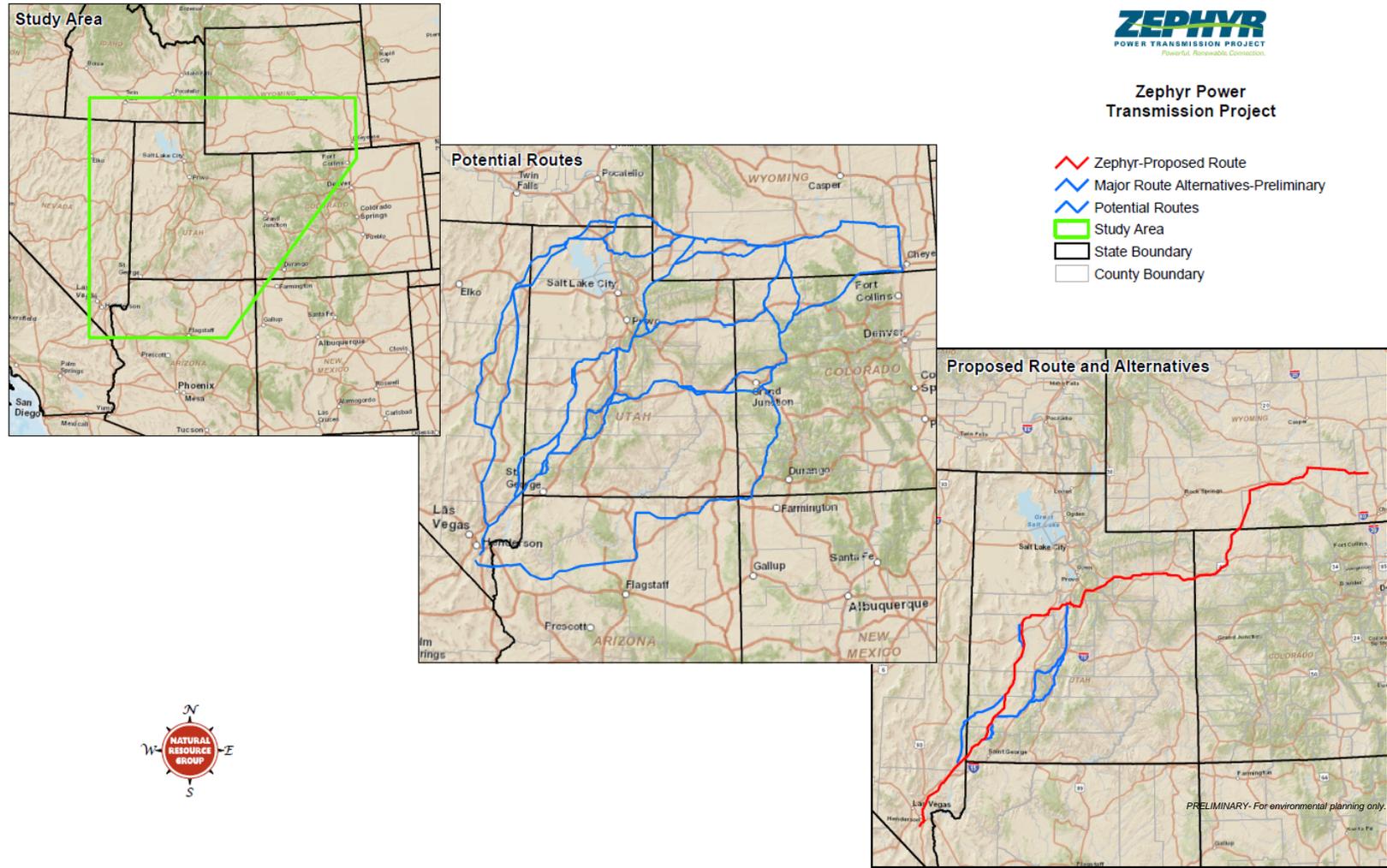
Zephyr Project Overview



- 500 kV HVDC transmission line
- 2,100-3,000 MW capacity
- Anchor Shipper – Wind
- Route alternatives: Chugwater, WY to terminus at Eldorado Valley, and/or interconnection at Delta, UT (IPP)



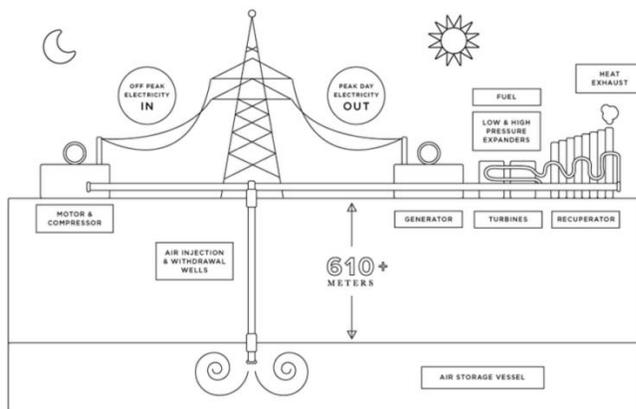
Zephyr - Route Development Evolution



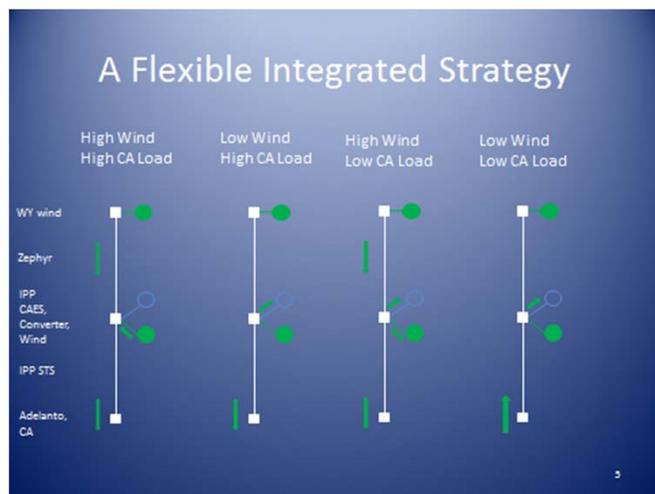
Advantages of HVDC

- Lowest cost and environmental impact option for high energy transfer over long distances
- Renewables directly delivered to California
- Highly responsive dispatch and operational flexibility
 - Power flow changed or reversed very quickly
- Highly reliable

CAES at Delta Utah



Courtesy of Pathfinder www.pathfinderwindenergy.com



- 1200 MW with two day storage
- Re-purpose the 2400 MW IPP STS HVDC line after decommissioning IPP
- CA peak shaving and valley filling
 - Facilitates CA's need to export renewables – helps mitigate the duck curve
 - Return stored energy when needed
- Provides CA operating and planning reserve
- Respond to future WECC wide operational challenges – fast ramping
- Builds on Duke's experience with a 40 MW battery in Texas

Current Focus

- Marketing
 - Support Anchor Shipper efforts to seek offtake contracts
 - Targeting the post-2020 period, where demand for renewable resources will increase to meet increasing RPS and GHG goals
- Regulatory and Permitting
 - Participation in regional/inter-regional transmission planning processes
 - Refining federal, state and local right-of-way permit applications
 - Executing ongoing outreach
- Pathfinder, Dresser-Rand have completed FEED for their CAES project and are developing proposals to submit to potential utility off takers in CA and WECC

A Powerful Partner



FOR MORE INFORMATION VISIT

datcinc.com