CONNECTING

Energy Infrastructure

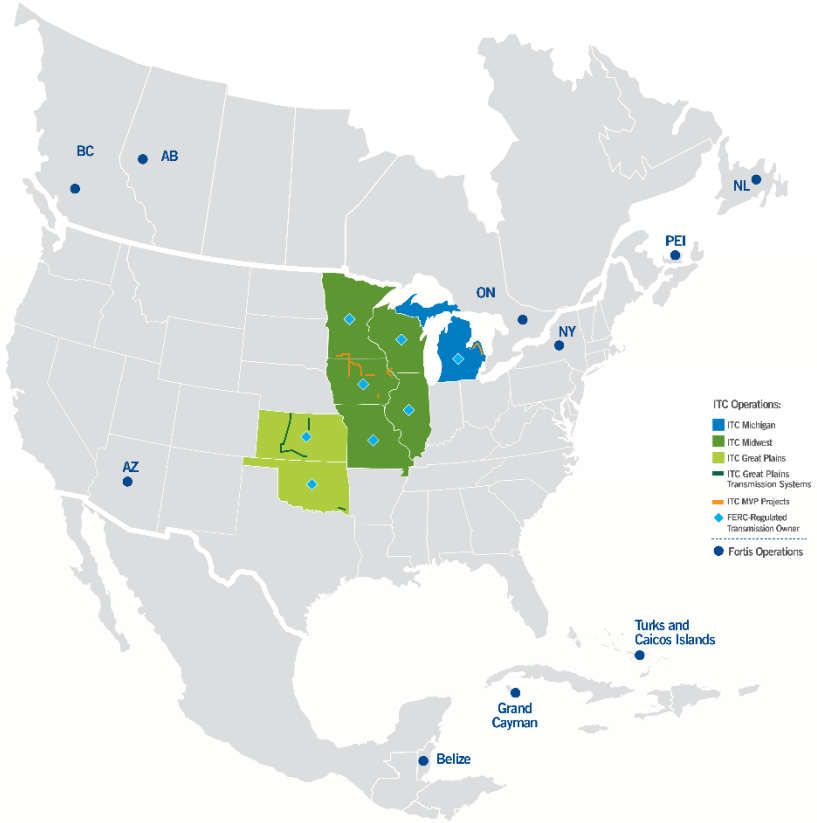
Signposts of Storage

Chris Winland, Director, Strategic Planning

ITC
A FORTIS COMPANY

October 12, 2018

ITC Today



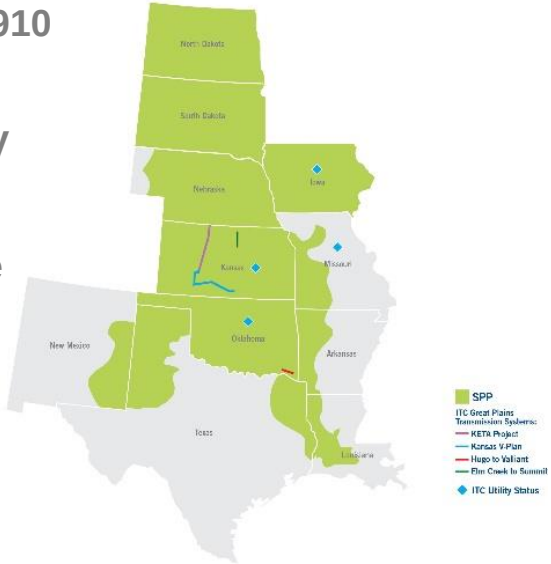
$7.5B Invested In Infrastructure Since 2003

- 4 Subsidiaries in 8 states
- 15,800 Circuit miles
- 90,000 Square mile service territory
- 700 Employees
- Member of 4 RTOs:
  - MISO, SPP, PJM, NYISO
- Geographically flexible business model
- A Fortis company

ITC Great Plains

Established 2006

- Service Territory: Kansas and Oklahoma
- Transmission Lines: ~470 circuit miles
- Transmission Towers and Poles: 1,910
- Substations: 8
- Voltage Levels: 345kV, 230kV, 138kV
- System Peak Load: 1,100MW
- Capital Investments: ~$500M to date
- Regional Locations:
  - Dodge City, Topeka and Wichita KS
  - Oklahoma City, OK



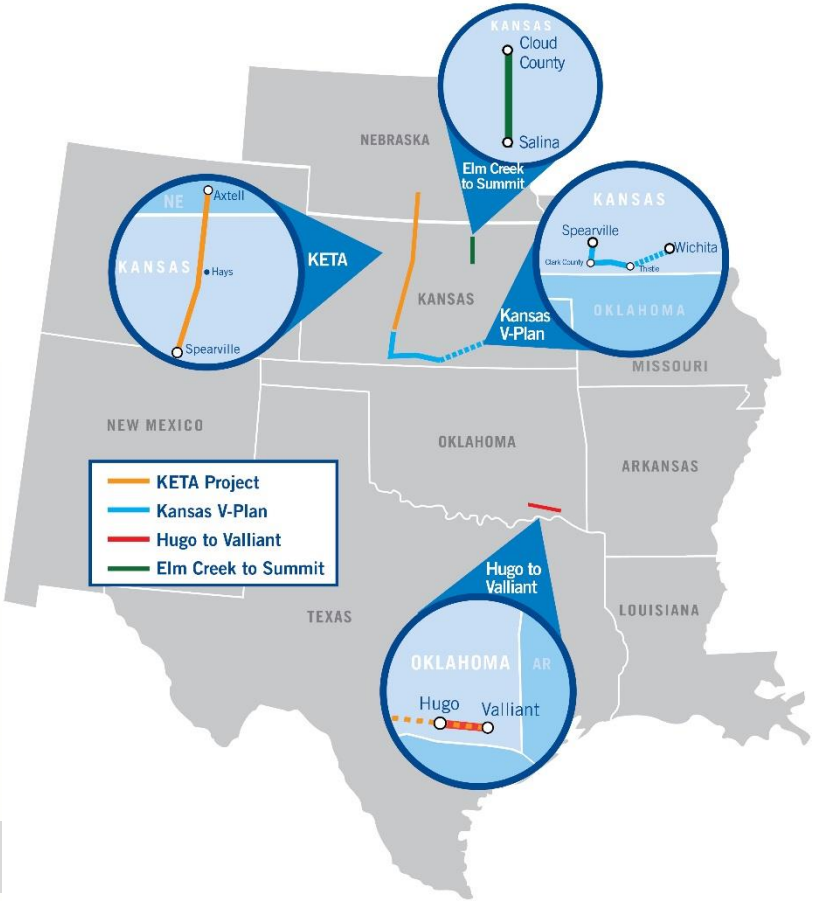
ITC Great Plains Projects

Elm Creek-Summit
- 30 circuit miles, 345 kV
- Completed 2016

Kansas V-Plan
- 244 circuit miles, 345 kV
- Completed 2014

KETA Project
- 174 circuit miles, 345 kV
- Completed 2012

Hugo-Valliant
- 18 circuit miles, 345 kV
- Completed 2012



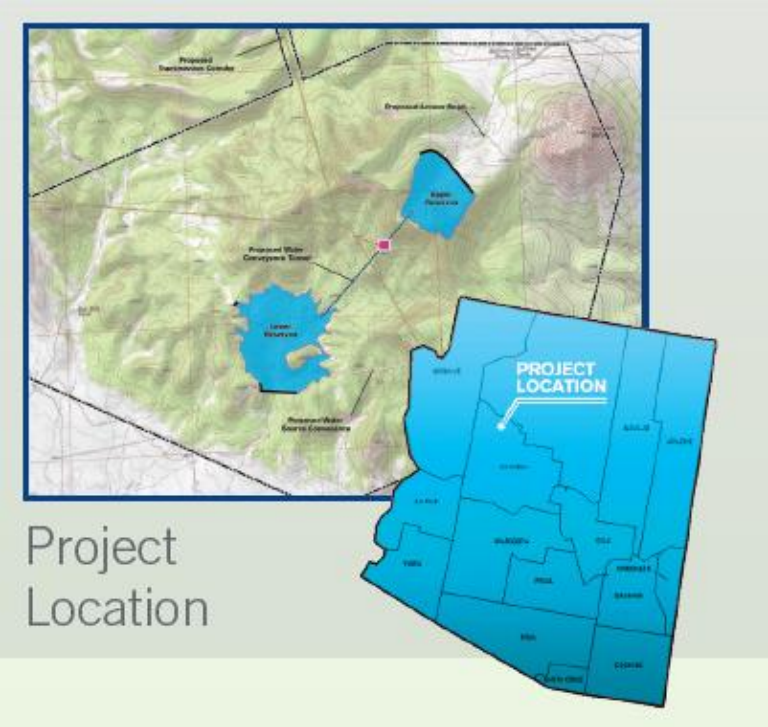
Big Chino Valley Pumped Storage Project

Proposed integrated solution for the Southwest to address evolving energy needs

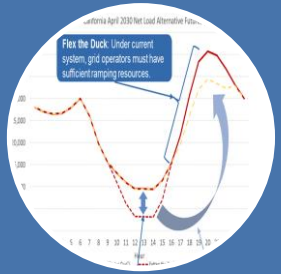
- 2,000 MW closed-loop pumped storage hydro (PSH) facility in Northern Arizona
- Transmission grid interconnections serving Arizona, Nevada and Southern California
- Daily operational schedule of 10 hours generating and 12-14 hours pumping

Advantages of pumped storage:

- Bulk storage of excess renewable energy
- Offers reliability support to electrical grid
- Redeployment of excess renewable energy when and where needed
- Decades of useful life: 50+ years operational plan



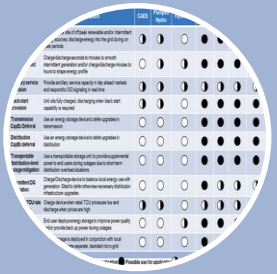
Signposts of Storage



Market Dynamics

Policy and Regulatory Landscape

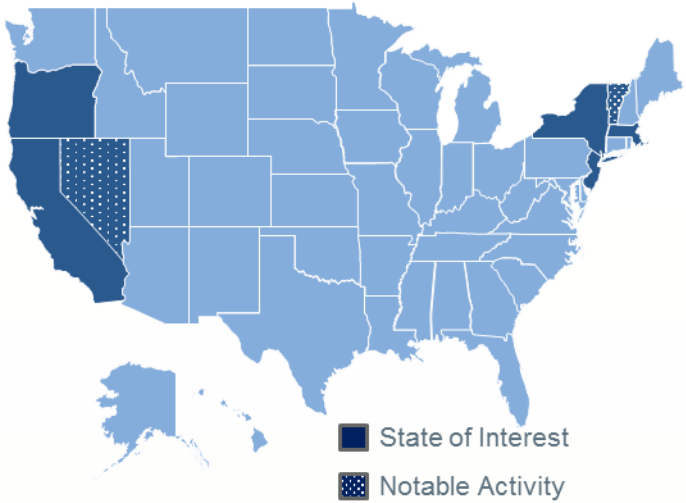
Utility Strategy



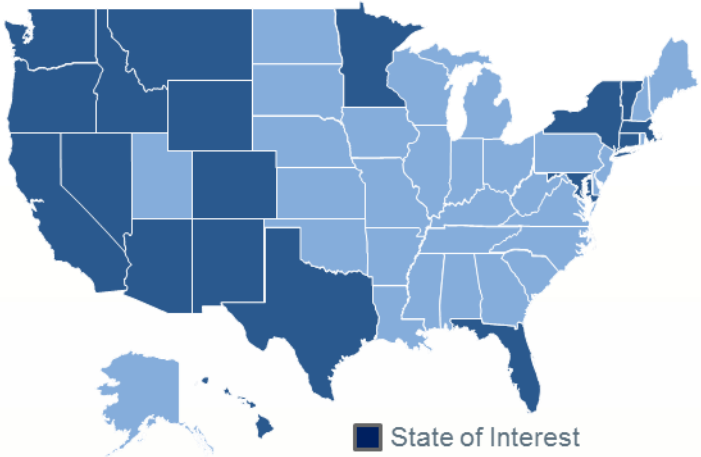
Technology Advancements

Current Storage Activity

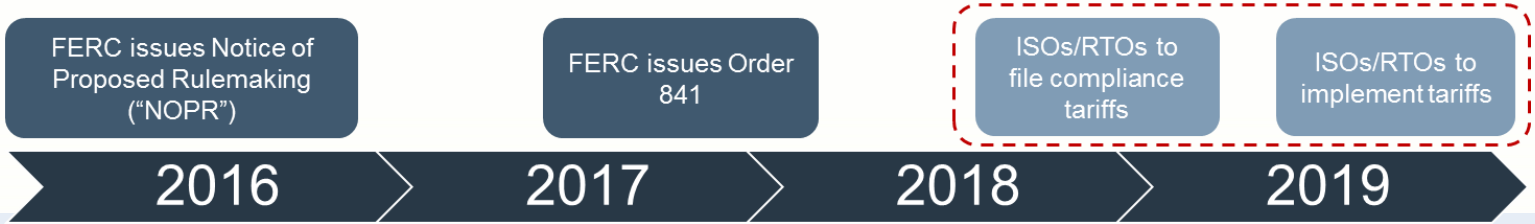
States Moving Forward with Storage Mandates



States Featuring Utilities Considering Storage in Resource Planning

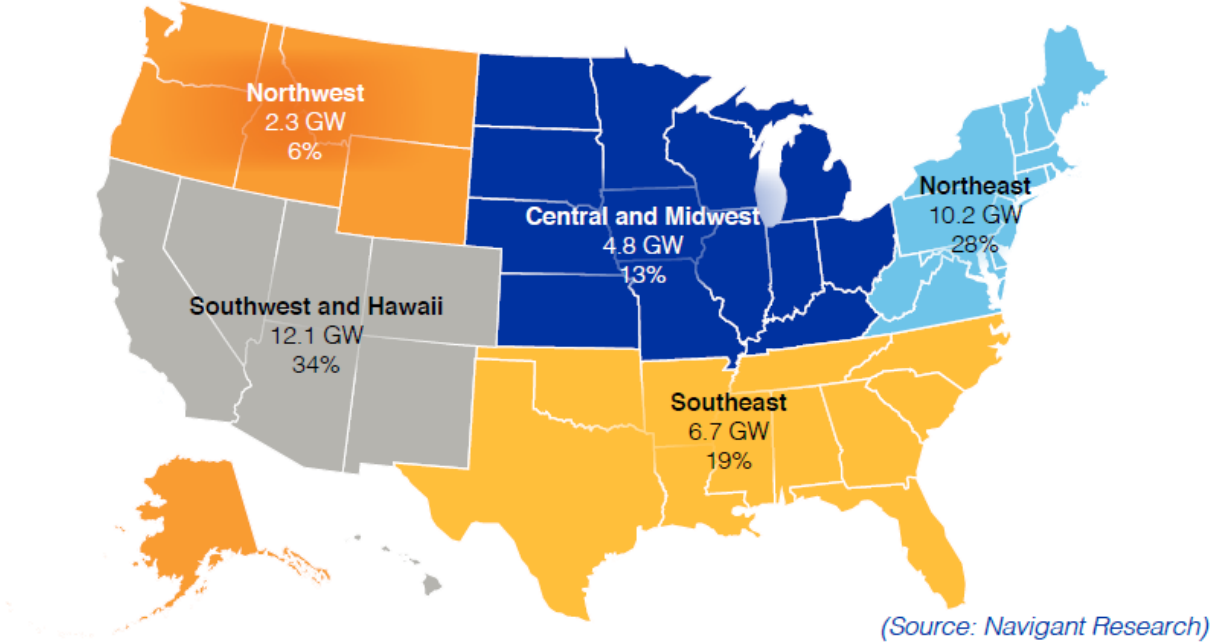


FERC Order 841 Actions Timeline



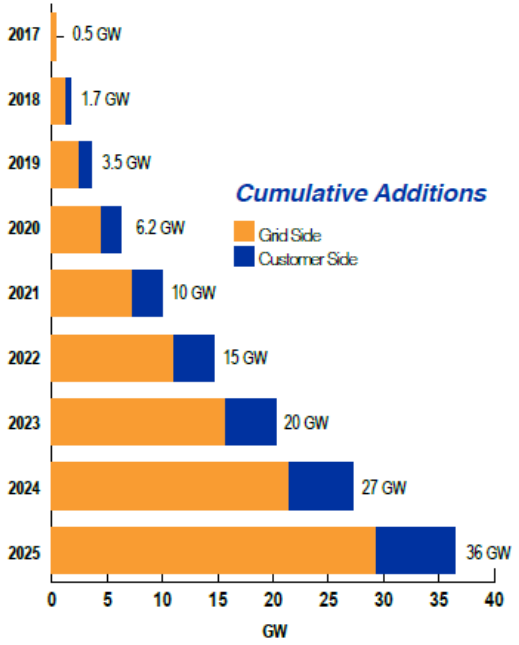
Energy Storage Association 35 x 25 Vision

Figure 4.1 *Cumulative U.S. Energy Storage Energy Capacity Additions by Region, Vision Case, (2017-2025)*



(Source: Navigant Research)

Chart 1.1 Cumulative and Annual U.S. Energy Storage Power Capacity Additions, Vision Case (2017-2025)



Storage Needs Supportive Transmission

- A modern, interconnected transmission grid is needed to support storage and other emerging technologies
- Storage solutions, working in concert with the transmission grid, will facilitate the increasing integration of renewable generation sources
- Transmission infrastructure makes the electric grid safe, reliable and able to accommodate these emerging energy solutions

The Path Forward

Utilities | Regulators | Communities | Planners | Customers | Stakeholders

Common Purpose: Ensuring the connection between consumers and the energy they need is efficient, reliable and cost-effective

Common Issues: Planning the grid of the future to serve the evolving energy landscape

ITC's commitment:

- Good stewards of the grid
- Respect for the environment
- Assess development opportunities from customer perspective

Thank You!

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