Journey to DSO

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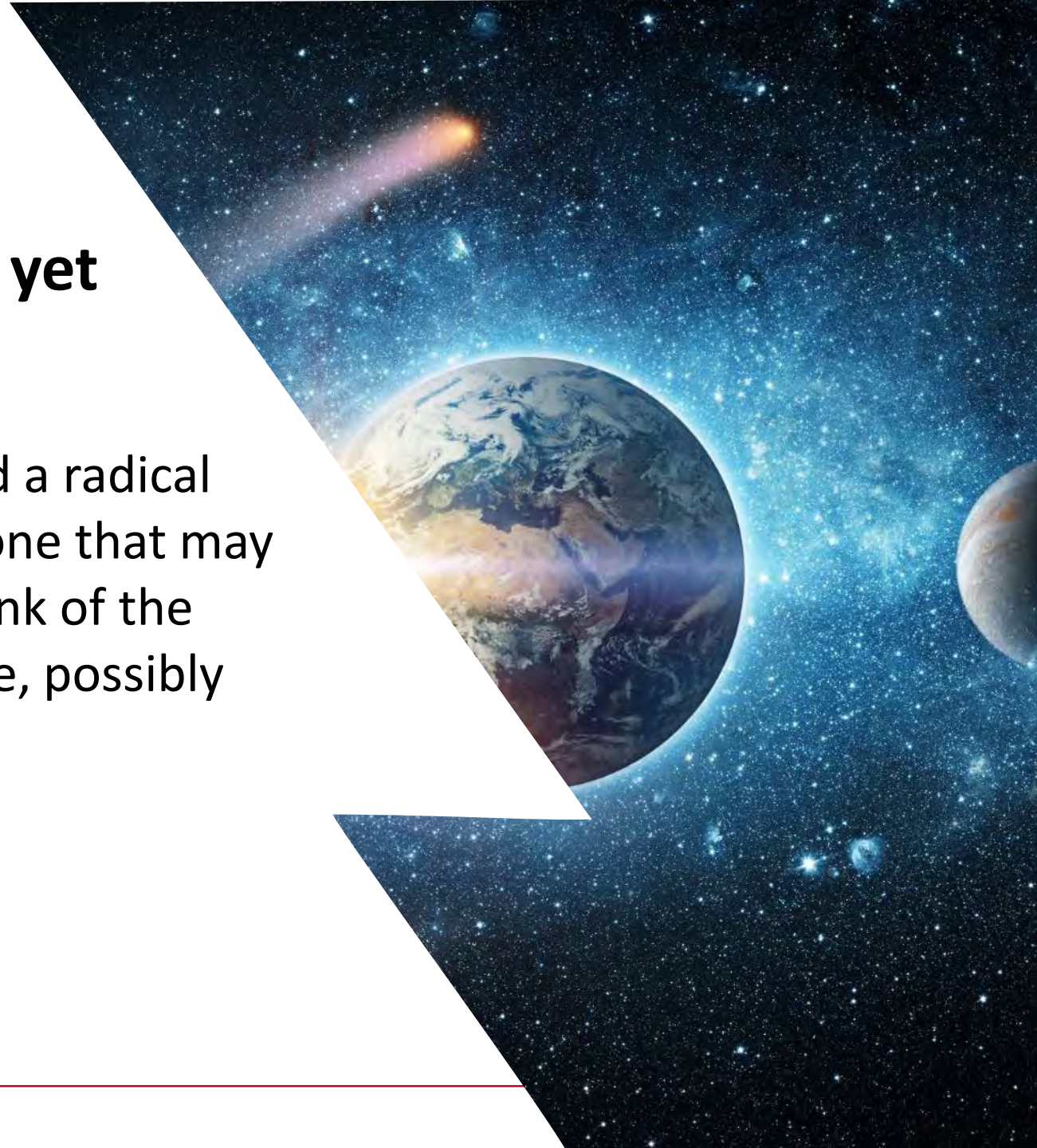
President & CEO

Survalent Global Users Conference
Oct. 6, 2025

UNITED POWER
Your Touchstone Energy® Cooperative

The future is already here…
it's just not widely distributed yet



"We may be at a point where we need a radical departure from the standard model, one that may even require us to change how we think of the elemental components of the universe, possibly even the nature of space and time."

-Adam Frank, Professor of Astrophysics, Dartmouth

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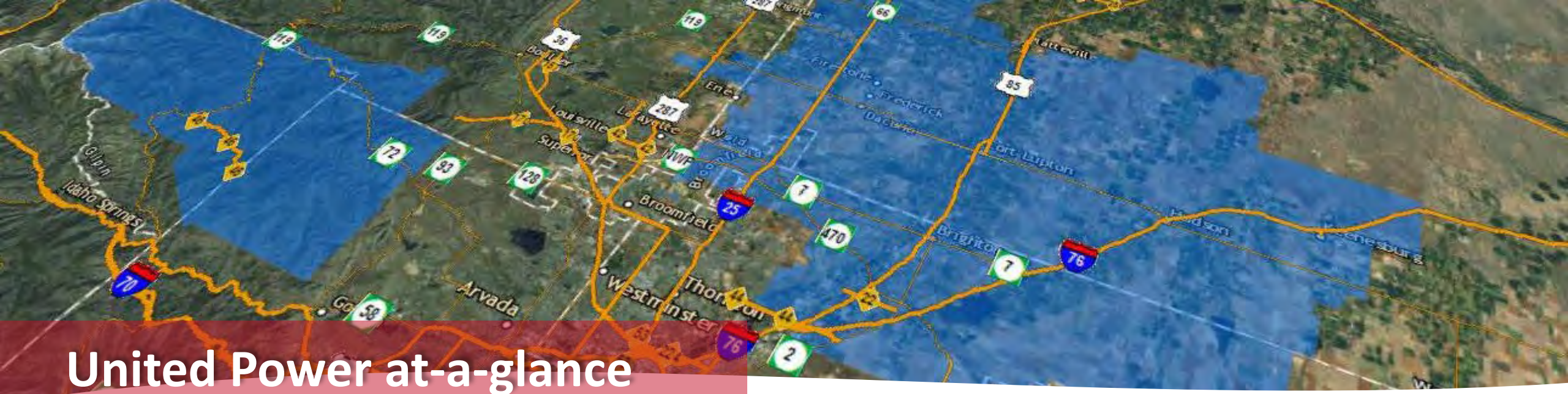
Fundamental challenge

The challenge for the utility of today and tomorrow is not only what is real but what is perceived as real.



United Power at-a-glance

Electric cooperative **founded in 1938**

One of the **fastest growing** co-ops in the nation

Serving **17 Denver area communities**

Smallest service area in CO (900 sq. miles)

Largest co-op in CO by load

2nd largest co-op in CO by meters (116k+ meters)

3rd largest utility in CO by load

8,990+
registered EVs and plug-in hybrids*

13,000+
members have solar rooftops*

340+
battery walls in member homes*

680 MW
system peak July 2025

**As of Aug. 31, 2025*

Challenges in the energy frontier

- Infrastructure
- Power plant closures
- Intermittent resources
- Varying hydropower production
- More customer-side resource choices
- Changing markets
- Inability to build transmission
- Security
- State requirements

What does the future hold across the West?

- Dramatic reduction in centralized generation
- Inability to construct transmission
- Market (2026-27)
- Flood of electro-technologies
- Strategic electrification
- Data centers/Artificial Intelligence

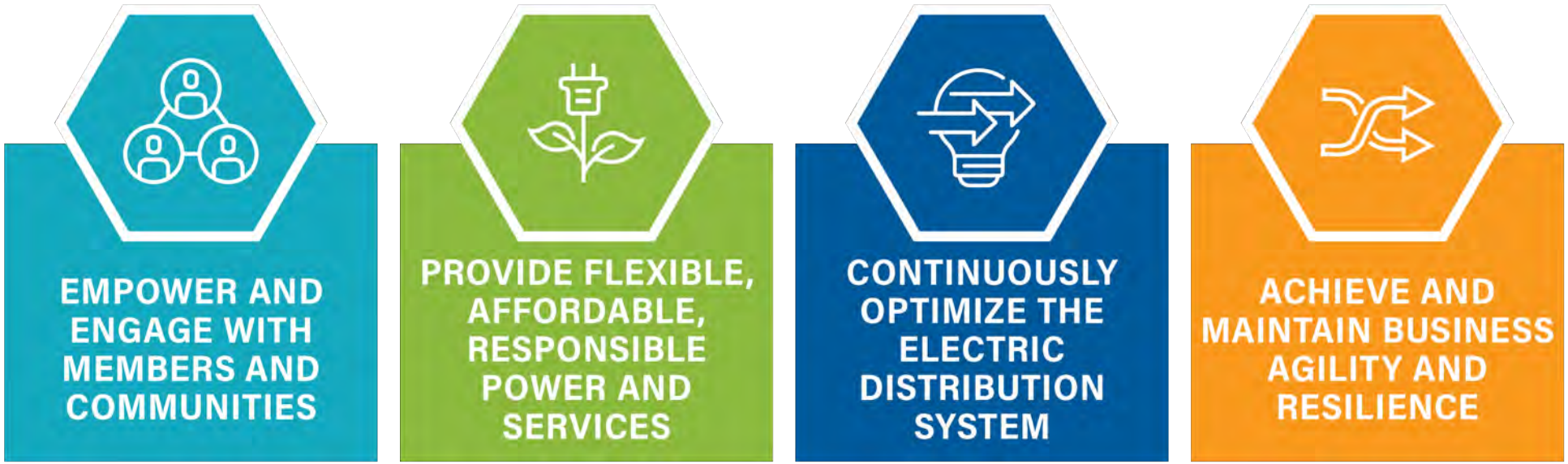
What does the future hold for United Power?

- Being a network provider capturing and providing value to members
- Increasing local generation
- Multiple power suppliers and transmission providers
- Market participant in the Southwest Power Pool (SPP) Western Energy Imbalance Service (WEIS)
- Entering SPP RTO (regional transmission organization) Expansion
- Implementing SPP Markets+
- Direct market interactions (FERC 2222)

OUR COOPERATIVE ROADMAP

Transforming the Future

SAFETY | RELIABILITY | AFFORDABILITY | FLEXIBILITY | RESPONSIBILITY



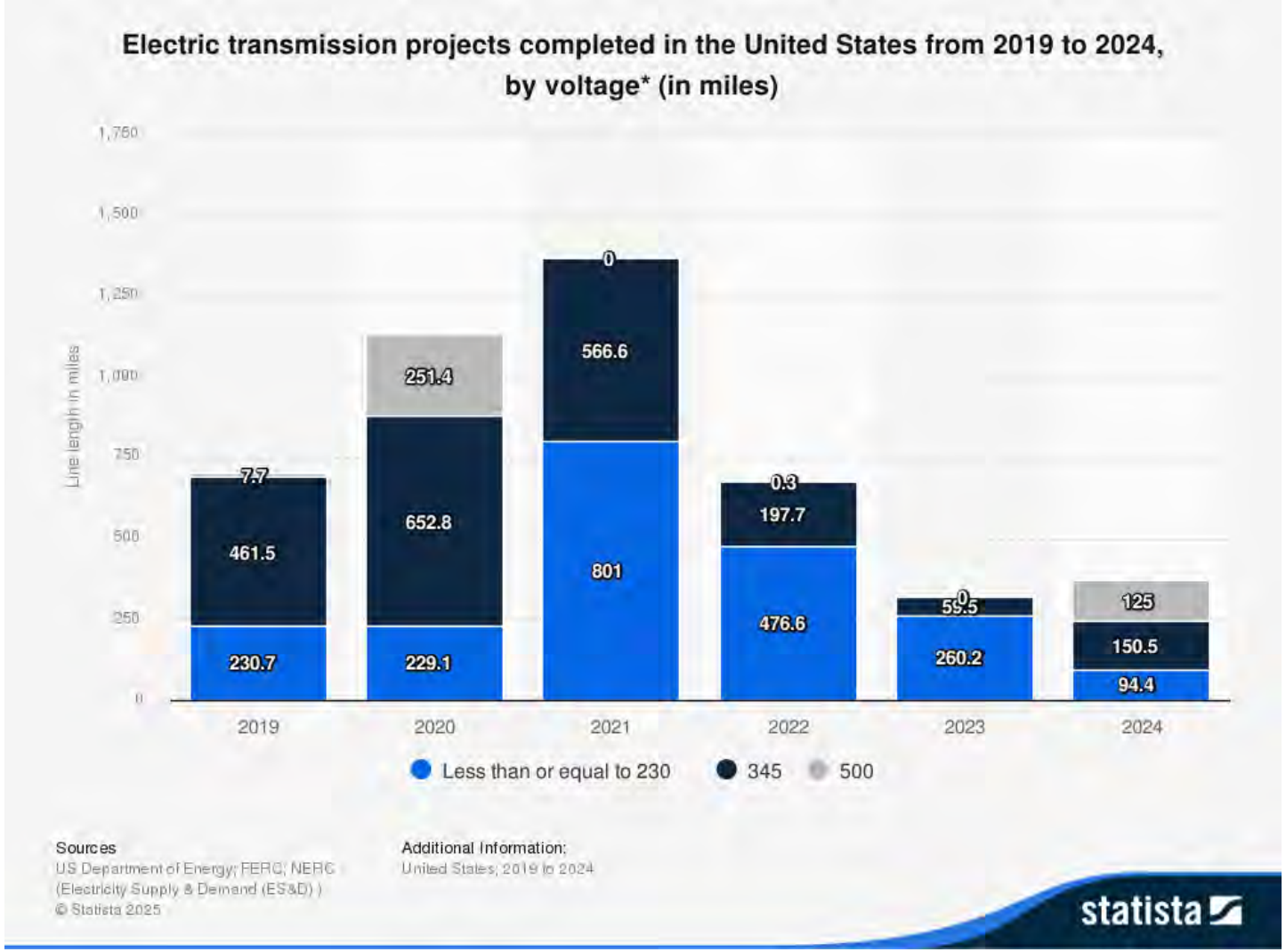
Which is more likely to be built?

+

OR

+

Electric transmission projects completed in the U.S., 2019-24



The Transwest Express project was proposed in 2007, approved in 2015, and will not be completed until 2028.

That means there may be people living on Mars before many of these projects are completed!

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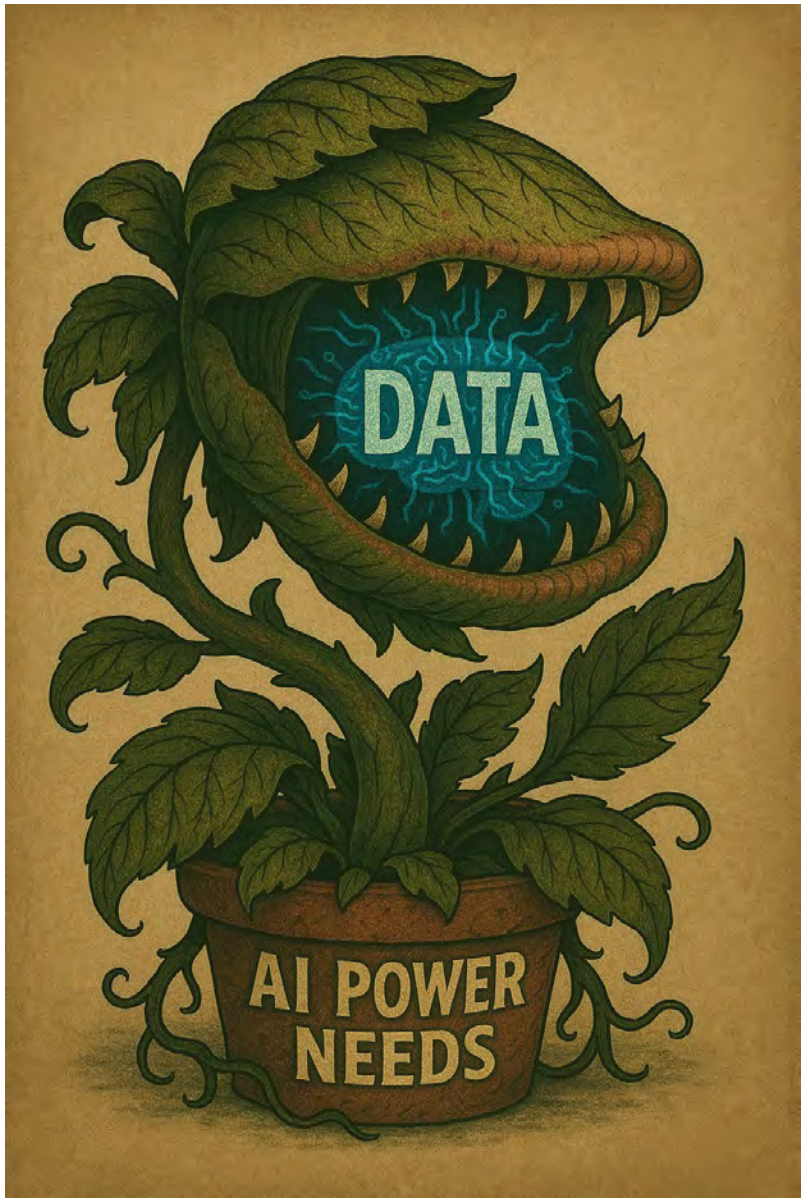
AI boom: blessing or curse?

- Projected hyperscaler “boom” 38 GW
- U.S. households rely on average of 21 connected devices
- Between 2017 and 2023, the data center industry’s total contribution to the GDP was $3.5 trillion
- In 2023, the U.S. data center industry directly employed more than 600,000
- Challenge is one of timing and location
- Great opportunity for better utility operations



United Power service territory: active and permitted wells

LEGEND

OGCC Wells

Active wells

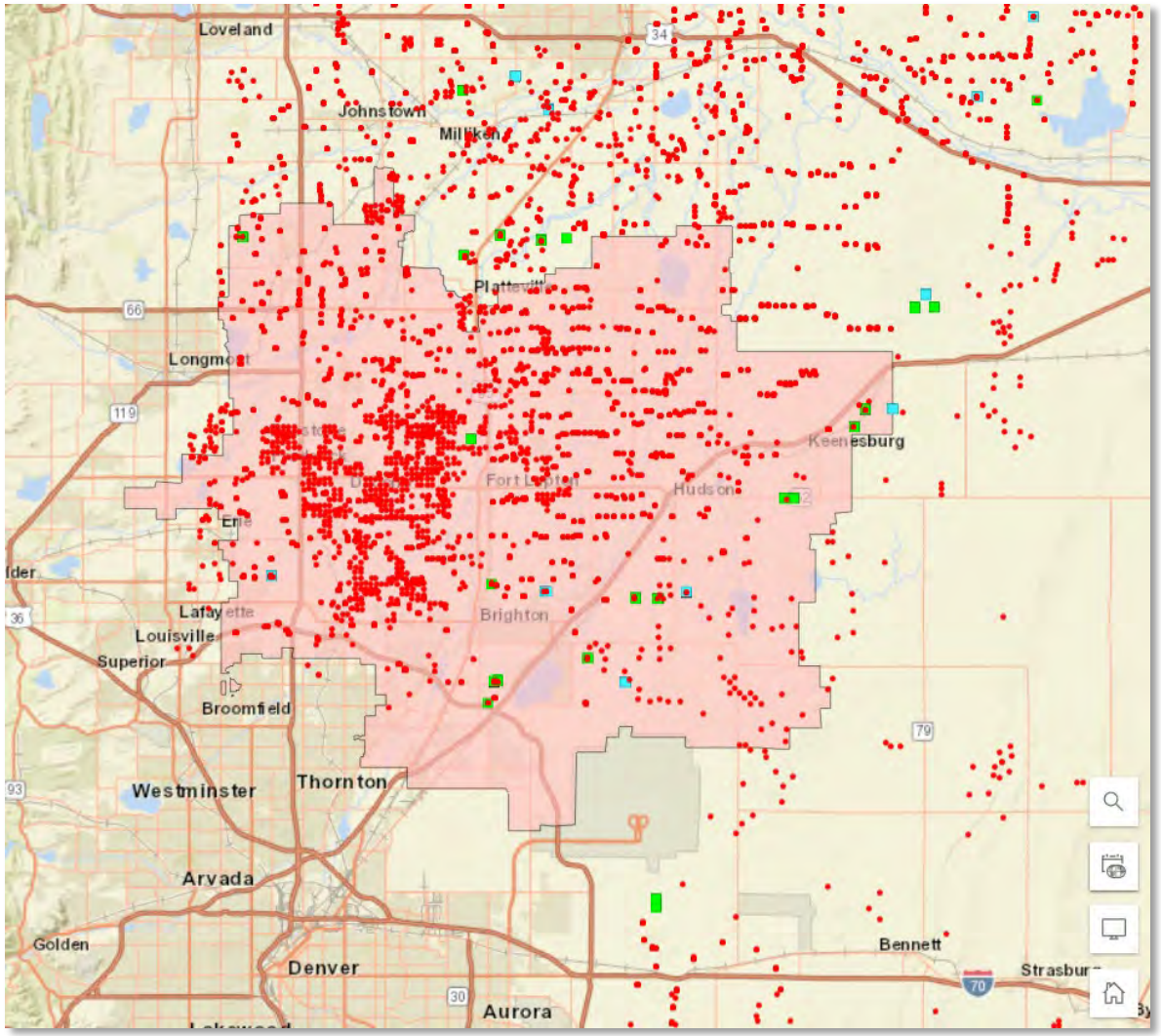
- 4,742

OGCC permits pending

- 60

OGCC permits

- 98



Source: ecmc.colorado.gov
Sept. 16, 2025

“Predicting rain doesn't count, building the ark does.”

- Warren Buffet

- The transmission calvary is not coming over the hill to save us
- Large scale generation builds are a decade away
- The solution must be local to meet demand

Dealing with reality

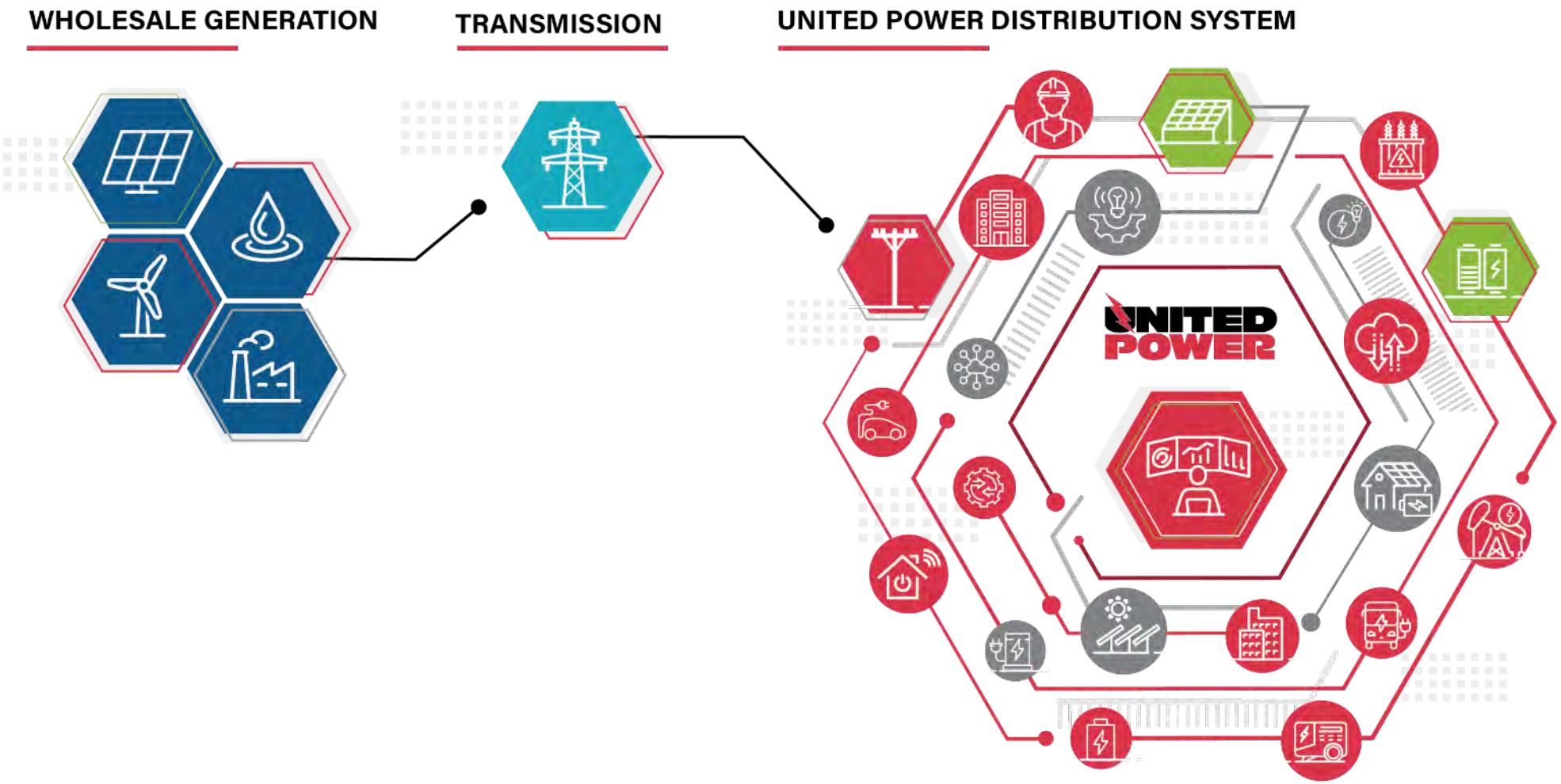
- Flexible, affordable, and sustainable
- Meeting member needs
- Greenhouse gas reduction
- Distributed energy resources
- RTO Expansion participation
- Hyper-localization

- AC load control
- Electric vehicle programs
- Coincidental rate programs
- Oil & gas electrification
- Behind the meter battery storage
- Expanded green power programs

Systems will be hyper-localized

- Distributed connected resources predominate
- Net zero buildings
- Seamless integration through technology
- Demand curves flattened to non-existent
- Markets will be air traffic control for limited large-scale generation
- Third parties will manage the finances like pork bellies are today

DSO model


WHOLESALE GENERATION
TRANSMISSION
UNITED POWER DISTRIBUTION SYSTEM
UNITED POWER

Managing what is available

Handling any and all inputs

SkyWind Micro Wind Turbines

Energy. Where you need it!

SkyWind NG micro wind turbines are easily installed wherever power is needed. Power your AC-appliances or charge your batteries with clean energy from rooftops, radio masts, lighting poles or even treetops. No fuel or maintenance required.

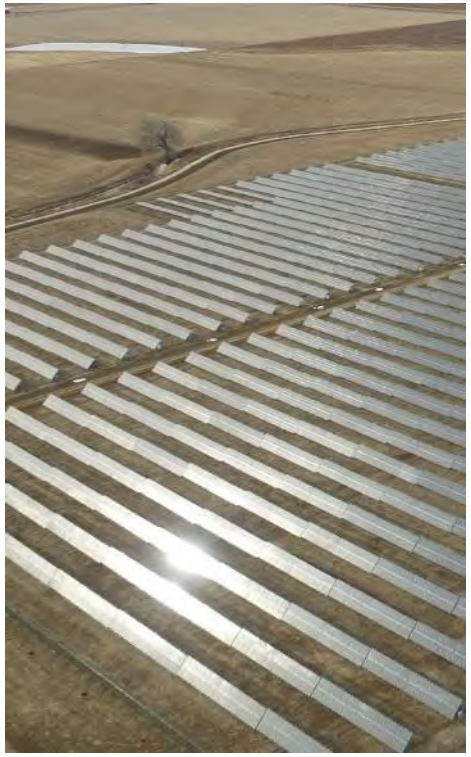
Designed and tested for both high performance and maximum durability, our SkyWind turbines have proven their performance on all continents. Patented technology: 2012/0177502 A1

made in Germany

Winning Solutions 2016

SIEMENS | Stiftung

Solving demand locally

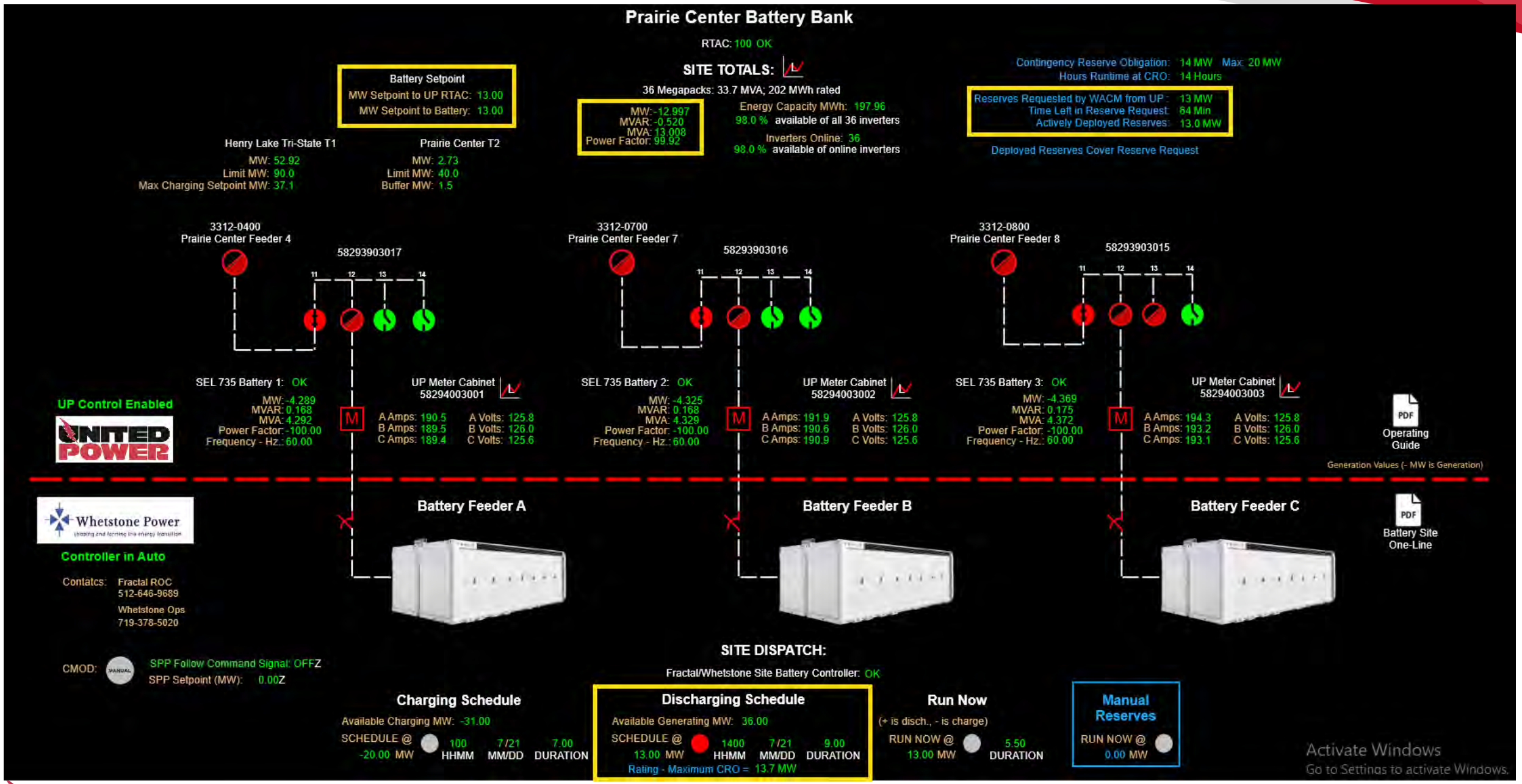


United Power batteries

- 119 MW of Tesla Megapack Battery Energy Storage System (BESS)
  - Four 11.75 MW
  - Four 7.8 MW
  - One 33.7 MW
- Arbitrage schedule set by The Energy Authority (TEA)
  - Charge when power is cheap
  - Discharge when power is expensive
- System operators enter schedules into SCADA
  - Internal code deploys battery at given time
- Monitoring: schedules, communication, availability

WACM reserves

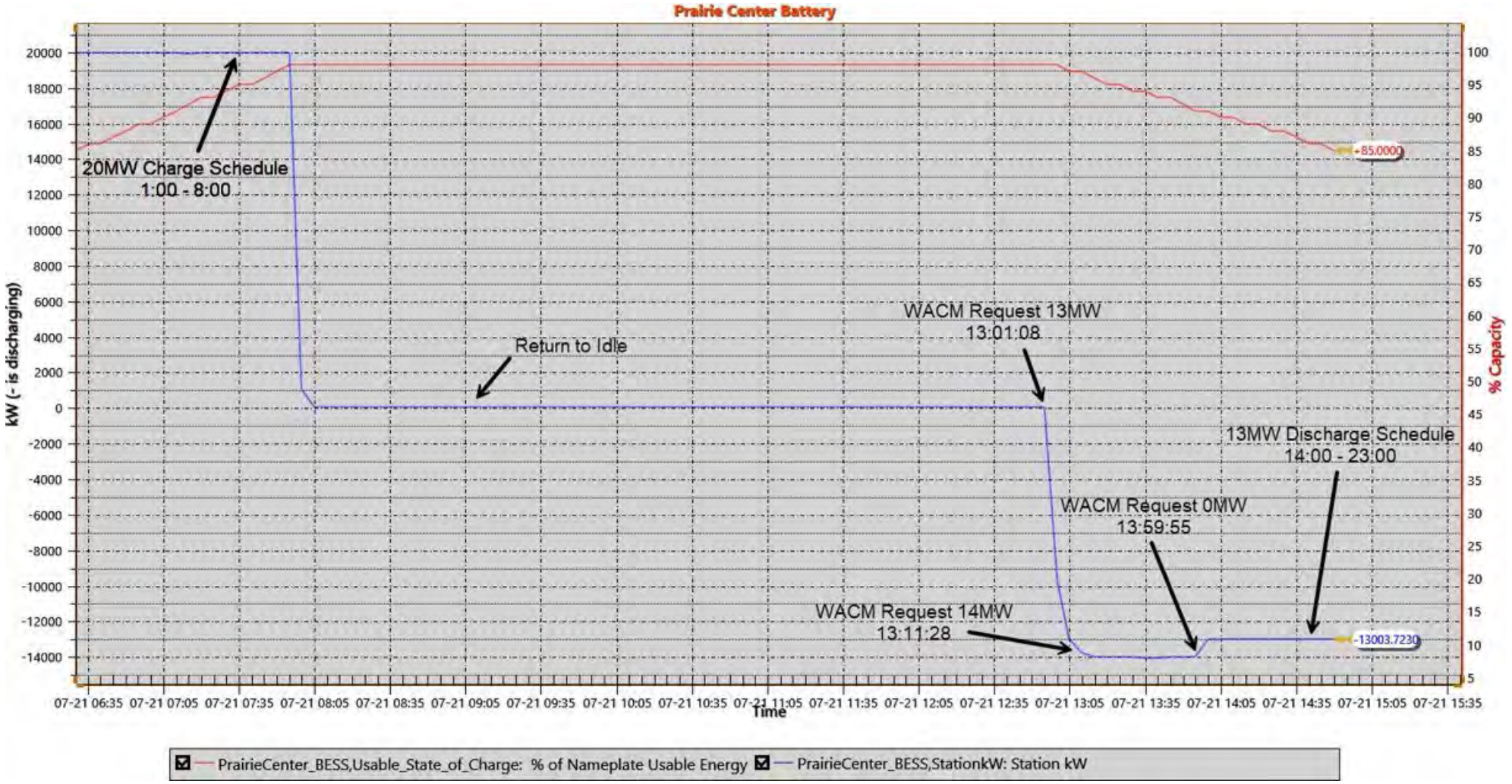
- 12 SCADA codes
- Any BESS in Western Area Colorado Missouri (WACM) balancing authority (BA)
- Reserves + Arbitrage
  - Charging
  - Discharging
  - Idle
- Event count
  - April: 4HR, 25.1 MW, 101.2 MWh
  - May: 3.5HR, 13 MW, 45.7 MWh
  - June: 5.2HR, 36.6 MW, 202.4 MWh
  - July: 5.8HR, 43.4 MW, 253.3 MWh
- ~ $300,000 saved/month


Prairie Center Battery Bank
RTAC: 100 OK
SITE TOTALS:
36 Megapacks: 33.7 MVA; 202 MWh rated
Energy Capacity MWh: 197.96
98.0 % available of all 36 inverters
Inverters Online: 36
98.0 % available of online inverters
MW: -12.997
MVAR: -0.520
MVA: 13.008
Power Factor: 99.92
Battery Setpoint
MW Setpoint to UP RTAC: 13.00
MW Setpoint to Battery: 13.00
Contingency Reserve Obligation: 14 MW Max: 20 MW
Hours Runtime at CRO: 14 Hours
Reserves Requested by WACM from UP: 13 MW
Time Left in Reserve Request: 64 Min
Actively Deployed Reserves: 13.0 MW
Deployed Reserves Cover Reserve Request
Henry Lake Tri-State T1
MW: 52.92
Limit MW: 90.0
Max Charging Setpoint MW: 37.1
Prairie Center T2
MW: 2.73
Limit MW: 40.0
Buffer MW: 1.5
3312-0400
Prairie Center Feeder 4
58293903017
3312-0700
Prairie Center Feeder 7
58293903016
3312-0800
Prairie Center Feeder 8
58293903015
SEL 735 Battery 1: OK
MW: -4.289
MVAR: 0.168
MVA: 4.292
Power Factor: -100.00
Frequency - Hz.: 60.00
UP Meter Cabinet
58294003001
A Amps: 190.5
B Amps: 189.5
C Amps: 189.4
A Volts: 125.8
B Volts: 126.0
C Volts: 125.6
SEL 735 Battery 2: OK
MW: -4.325
MVAR: 0.168
MVA: 4.329
Power Factor: -100.00
Frequency - Hz.: 60.00
UP Meter Cabinet
58294003002
A Amps: 191.9
B Amps: 190.6
C Amps: 190.9
A Volts: 125.8
B Volts: 126.0
C Volts: 125.6
SEL 735 Battery 3: OK
MW: -4.369
MVAR: 0.175
MVA: 4.372
Power Factor: -100.00
Frequency - Hz.: 60.00
UP Meter Cabinet
58294003003
A Amps: 194.3
B Amps: 193.2
C Amps: 193.1
A Volts: 125.8
B Volts: 126.0
C Volts: 125.6
UP Control Enabled
UNITED POWER
PDF
Operating Guide
Generation Values (- MW is Generation)
Battery Feeder A
Battery Feeder B
Battery Feeder C
PDF
Battery Site One-Line
Whetstone Power
Controller in Auto
Contatcs: Fractal ROC
512-646-9689
Whetstone Ops
719-378-5020
CMOD:
SPP Follow Command Signal: OFFZ
SPP Setpoint (MW): 0.00Z
SITE DISPATCH:
Fractal/Whetstone Site Battery Controller: OK
Charging Schedule
Available Charging MW: -31.00
SCHEDULE @ -20.00 MW
100 HHMM
7/21 MM/DD
7.00 DURATION
Discharging Schedule
Available Generating MW: 36.00
SCHEDULE @ 13.00 MW
1400 HHMM
7/21 MM/DD
9.00 DURATION
Rating - Maximum CRO = 13.7 MW
Run Now
(+ is disch., - is charge)
RUN NOW @ 13.00 MW
5.50 DURATION
Manual Reserves
RUN NOW @ 0.00 MW
Activate Windows
Go to Settings to activate Windows.

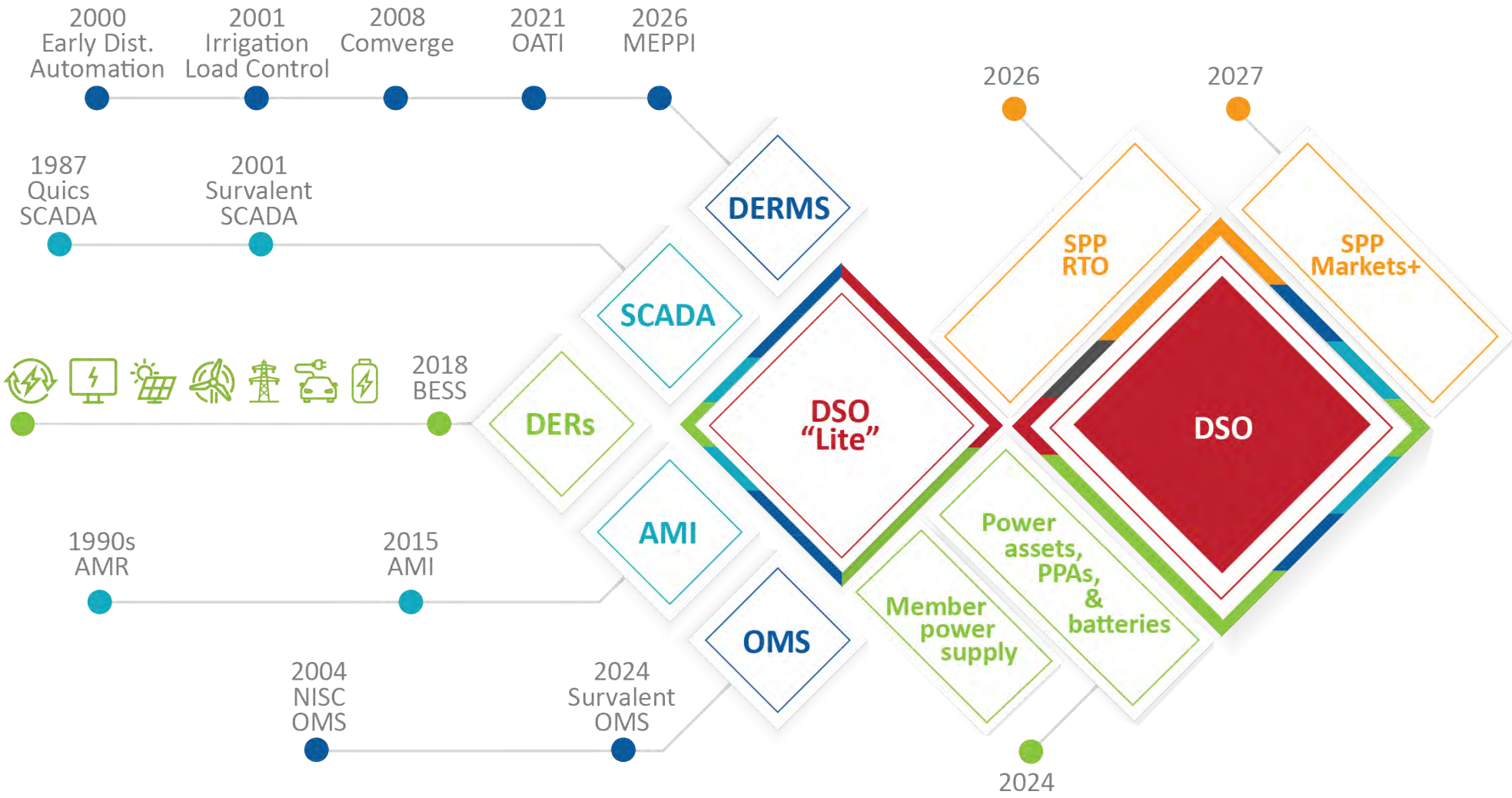
WAPA reserves

- Southwest Power Pool
- Transmission and generation loss
- Contingency reserve obligation (CRO)
  - 3% Load + 3% Generation
- Any BESS in WACM BA
- Reserve request
  - 10-minute response timeframe
  - 1 MW – CRO
  - Dynamic request
  - United Power unique w/batteries
- 12 SCADA codes

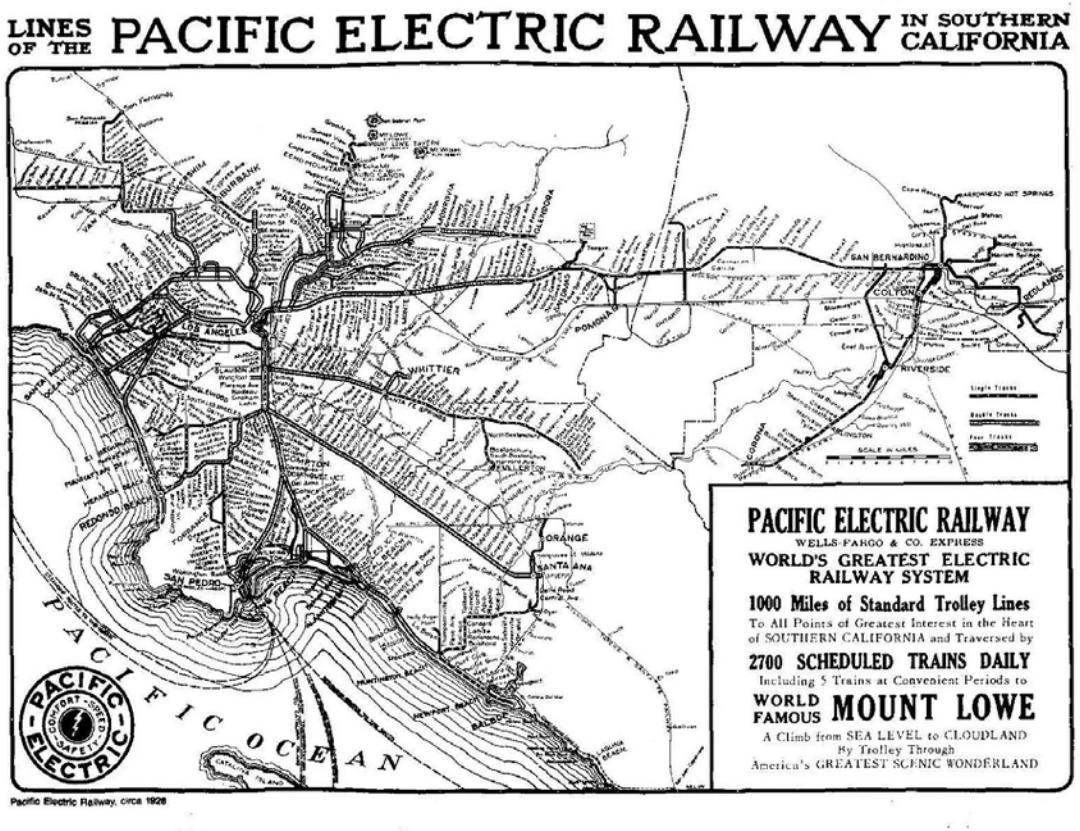
WAPA reserves example

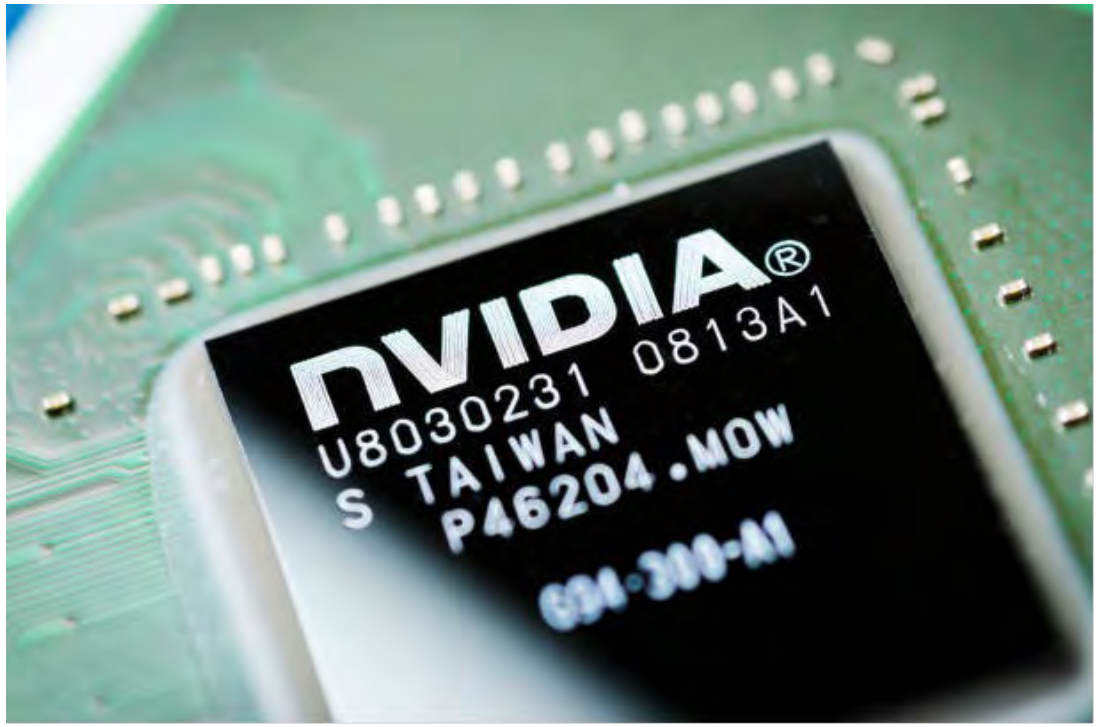


Moving to a DSO with a no regrets strategy



Not the first time technology has changed the utility space





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- Mark A. Gabriel, President & CEO United Power

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