

Brent Ridge, President and CEO of Dairyland Power Cooperative



Dairyland Power Cooperative Update: Where Renewables and Reliability Meet

Brent Ridge, President & CEO

Presented To:

Barron Electric Cooperative Members & Staff
2022 Barron Electric Cooperative Annual Meeting
March 26, 2022



THANKS & GRATITUDE

MEMBERS

TEAMMATES

DAIRYLAND MANAGERS
ASSOCIATION

DAIRYLAND BOARD



CEO Goal: Sustainability



Safe, reliable & predictable delivery of electricity
The importance of asset reliability



Cost competitive: lower costs, increase load &
grow outside revenue



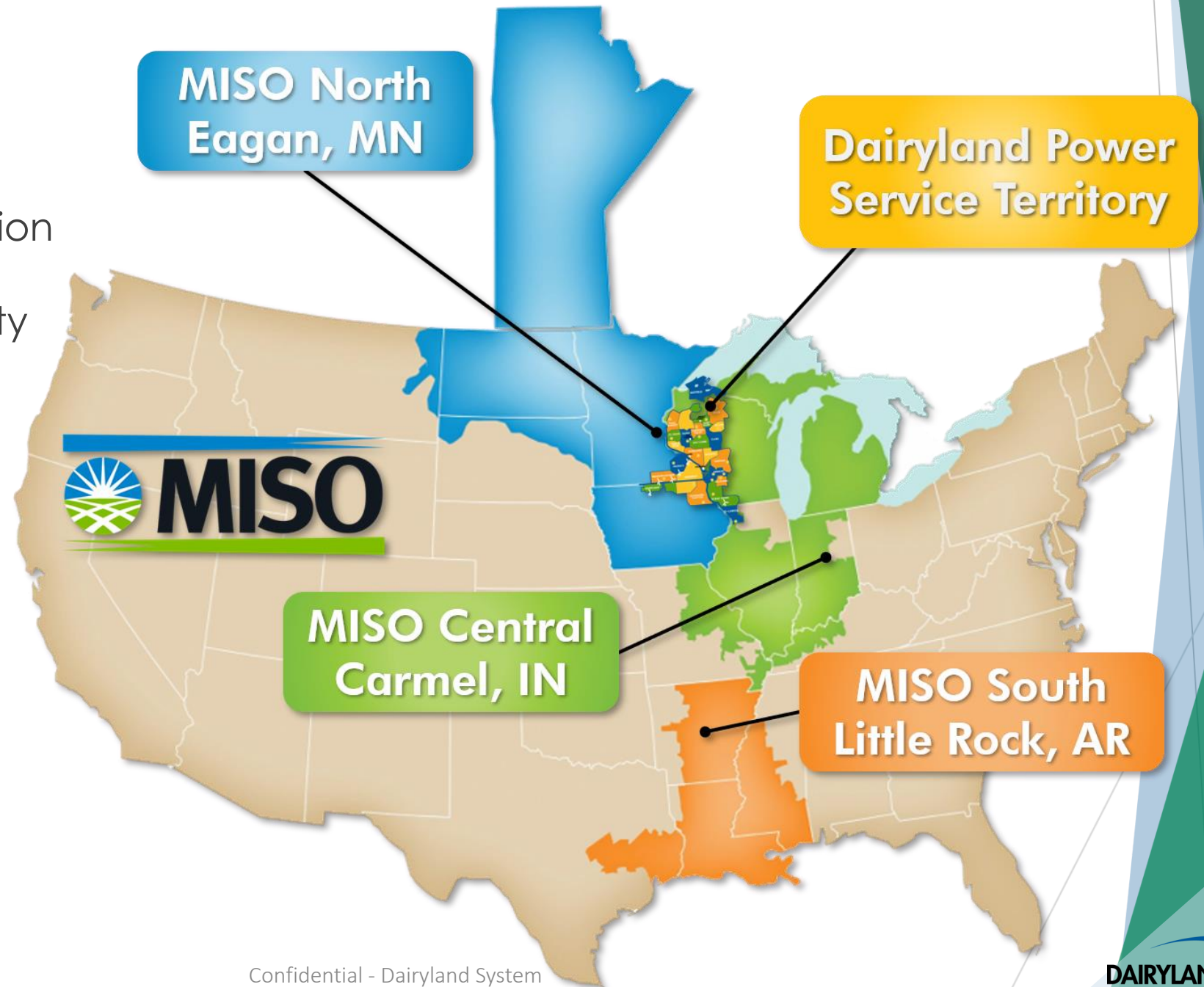
Methodically lower our carbon output without sacrificing
safety & reliability



We are in the people business

Industry Trends & Headwinds

- ▶ Midcontinent Independent System Operator (MISO) is an independent, not-for-profit organization that delivers safe, cost-effective electricity across 15 states and Manitoba, Canada
- ▶ 900,000 sq. miles
- ▶ 6,500+ generating units
- ▶ 66,000 miles of transmission lines



MISO Perspective on Reliability Challenges

- ▶ Power plant retirements, lower overall reserve margins and increasing outage levels of “baseload” generation impact capacity availability.
- ▶ Wind and solar resources are not always available or need to be curtailed due to transmission constraints.
- ▶ Natural gas resources may not be able to procure the fuel they need at key times

“

The aggregate impact of these and other challenges has altered the region's historical summer centric risk profile, making it more prone to grid emergencies in winter and shoulder-seasons that rarely posed risks in the past. - MISO

”



MISO - Planning for the Future

Gas

Wind

Solar

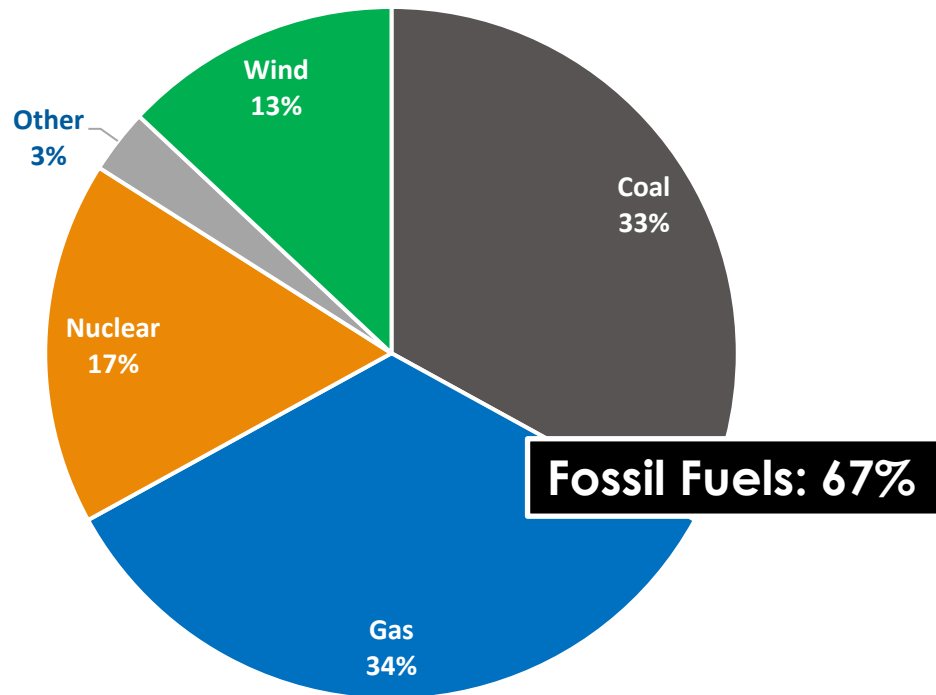
Coal

Nuclear

Other

Battery

MISO Generator Energy Mix 2020



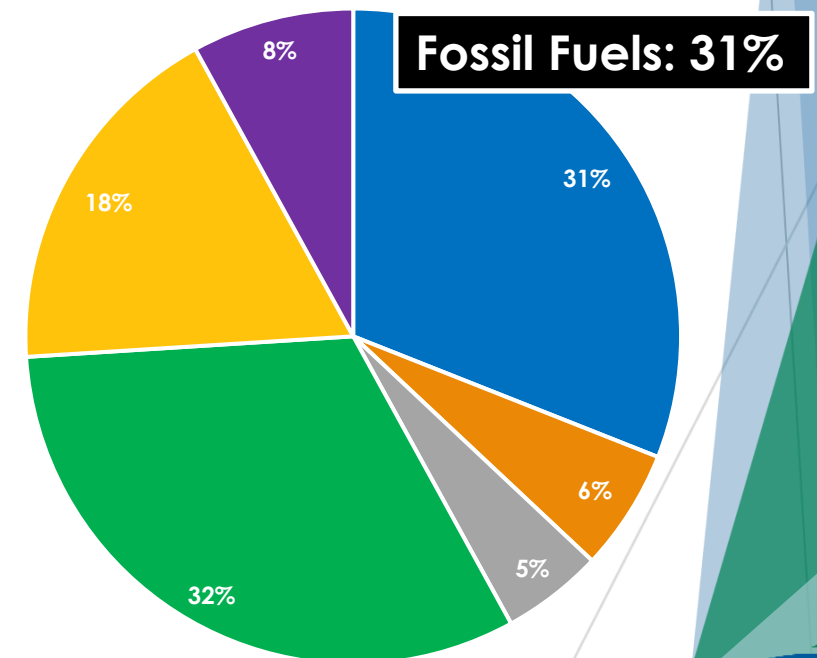
Source: MISO Futures, April 2021

What is the Future (by 2040)?

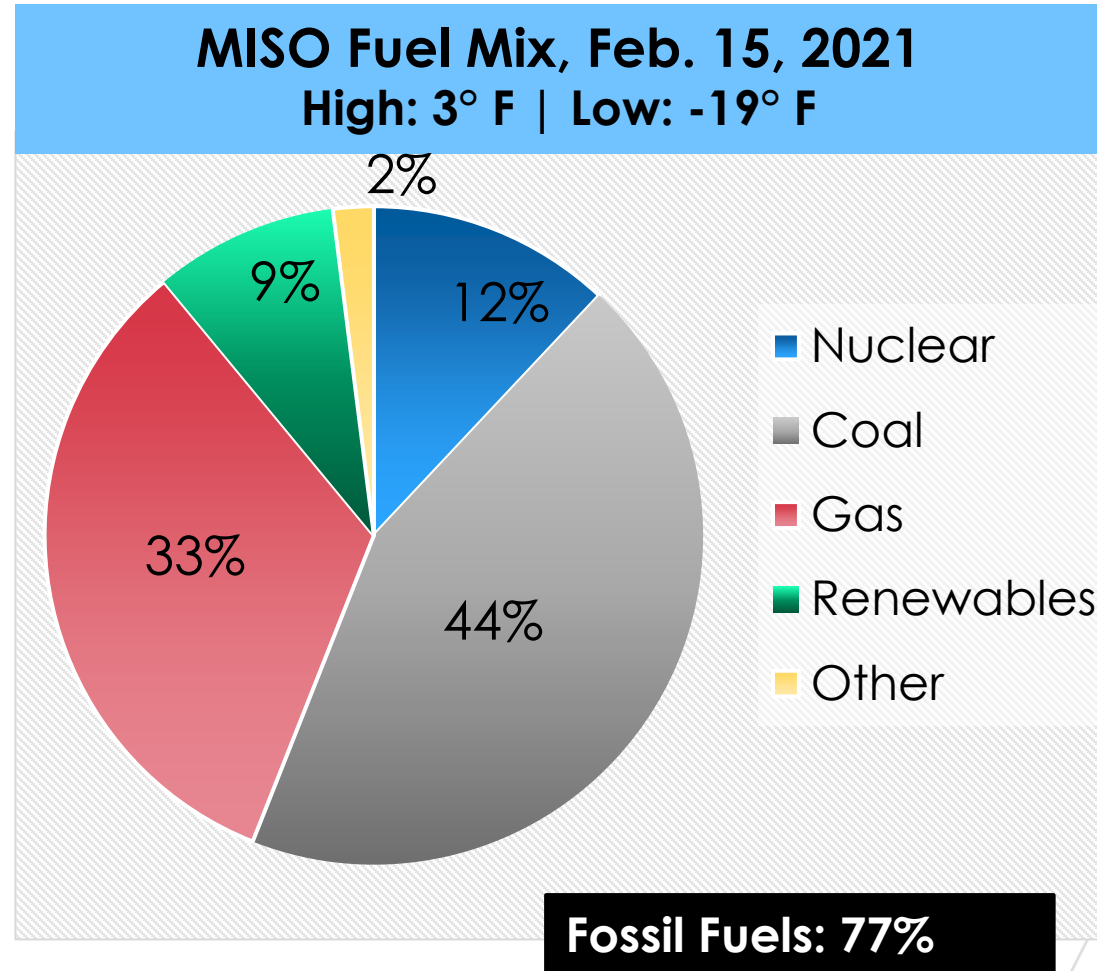
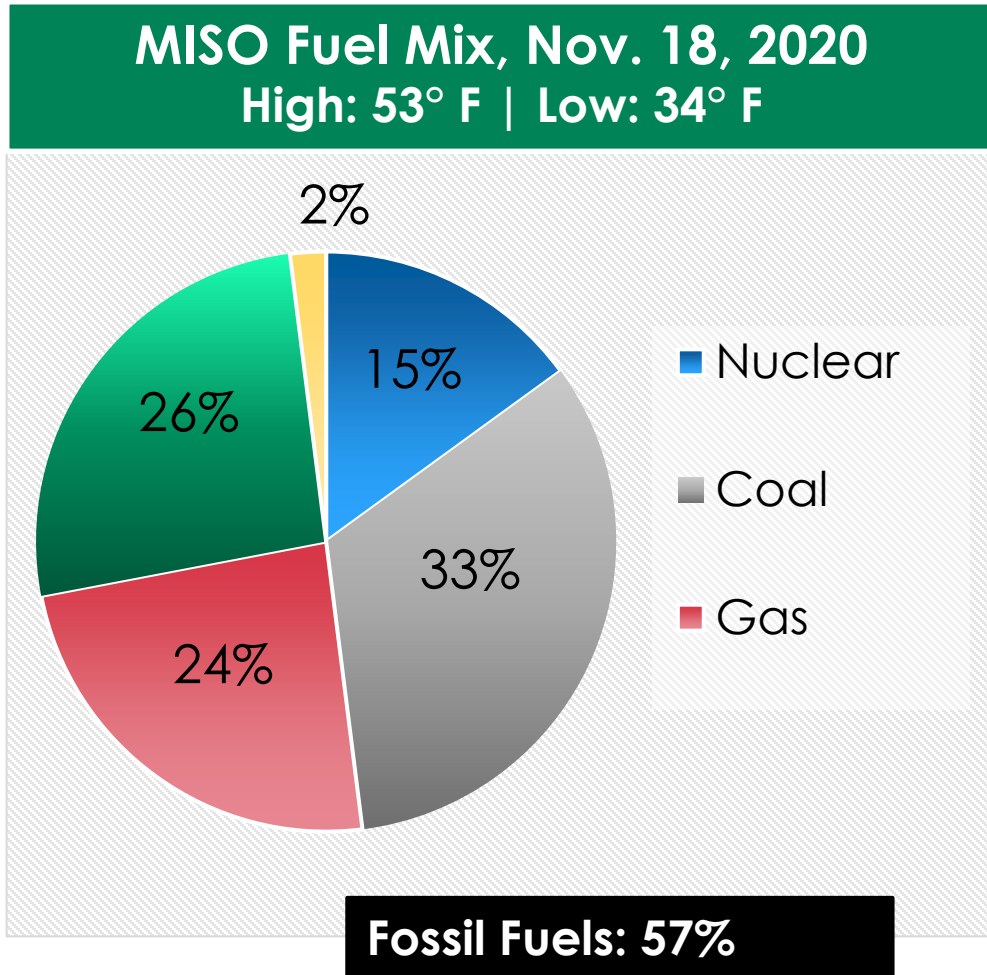
Depends on:

- Economics
- Political Environment
- Technological Advancements
- Reliability

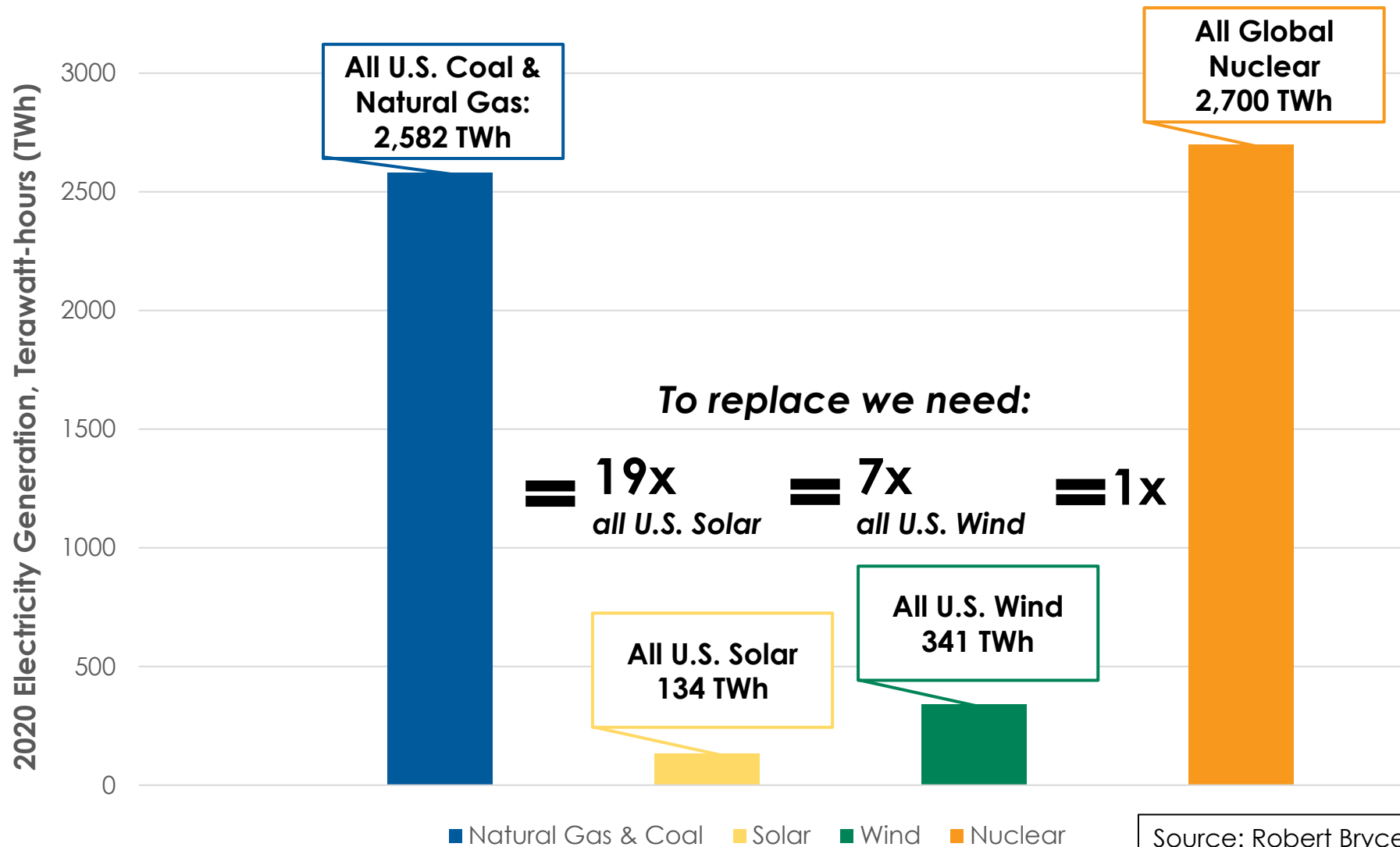
Deep Decarbonization



Keeping the Lights On – A Real Example



“Zero Carbon Grid by 2035” – What it means?

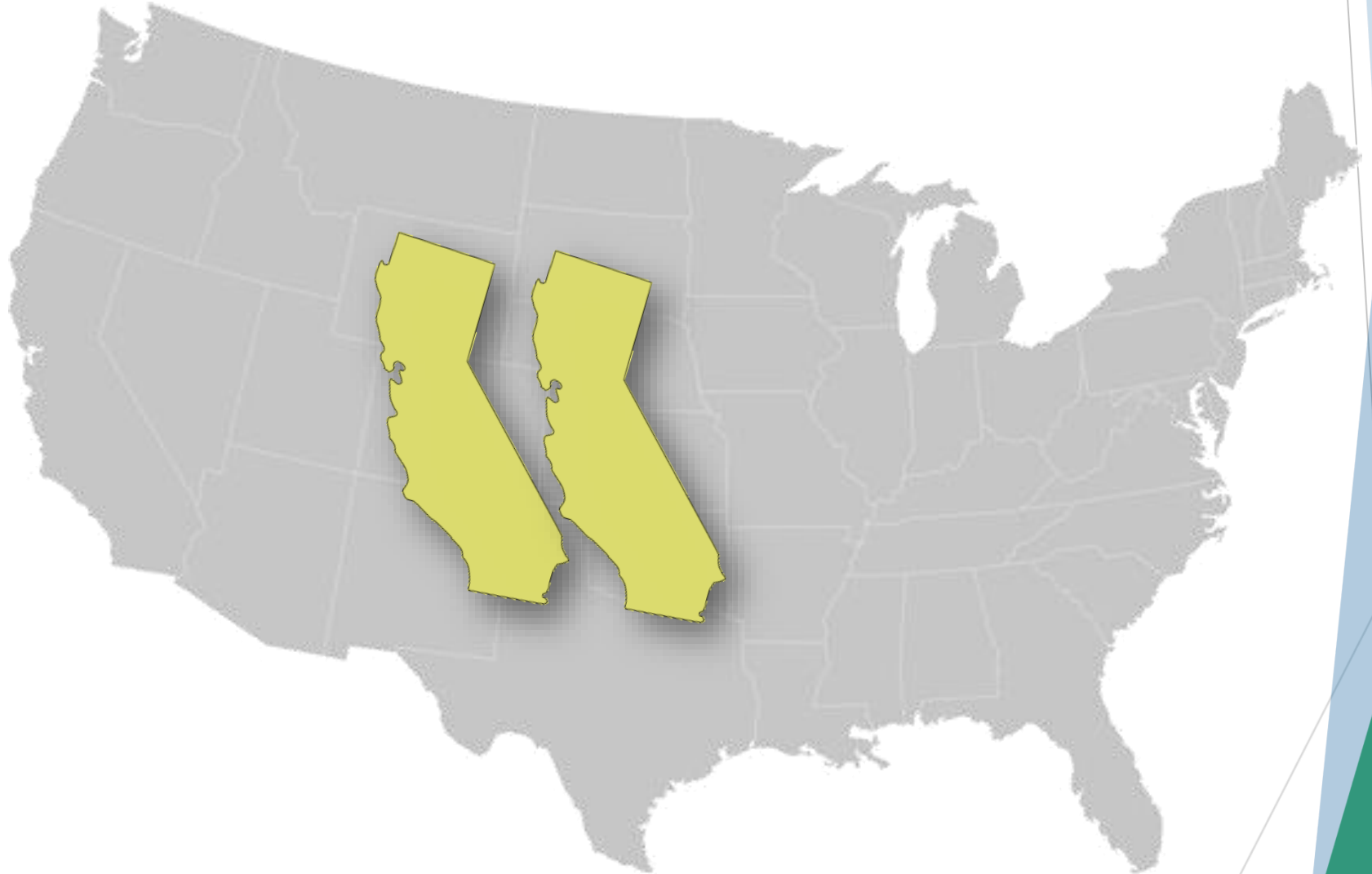


Source: Robert Bryce – NRECA Annual Meeting 2022

And Cartoonish Amounts of Land

- ▶ Meeting existing U.S. electricity demand with wind energy would require 900,000 km²
- ▶ That's two Californias!
- ▶ Vaclav Smil, Energy Myths and Realities, 2010
- ▶ Lee Miller & David Keith, Environmental Research Letters, 2018

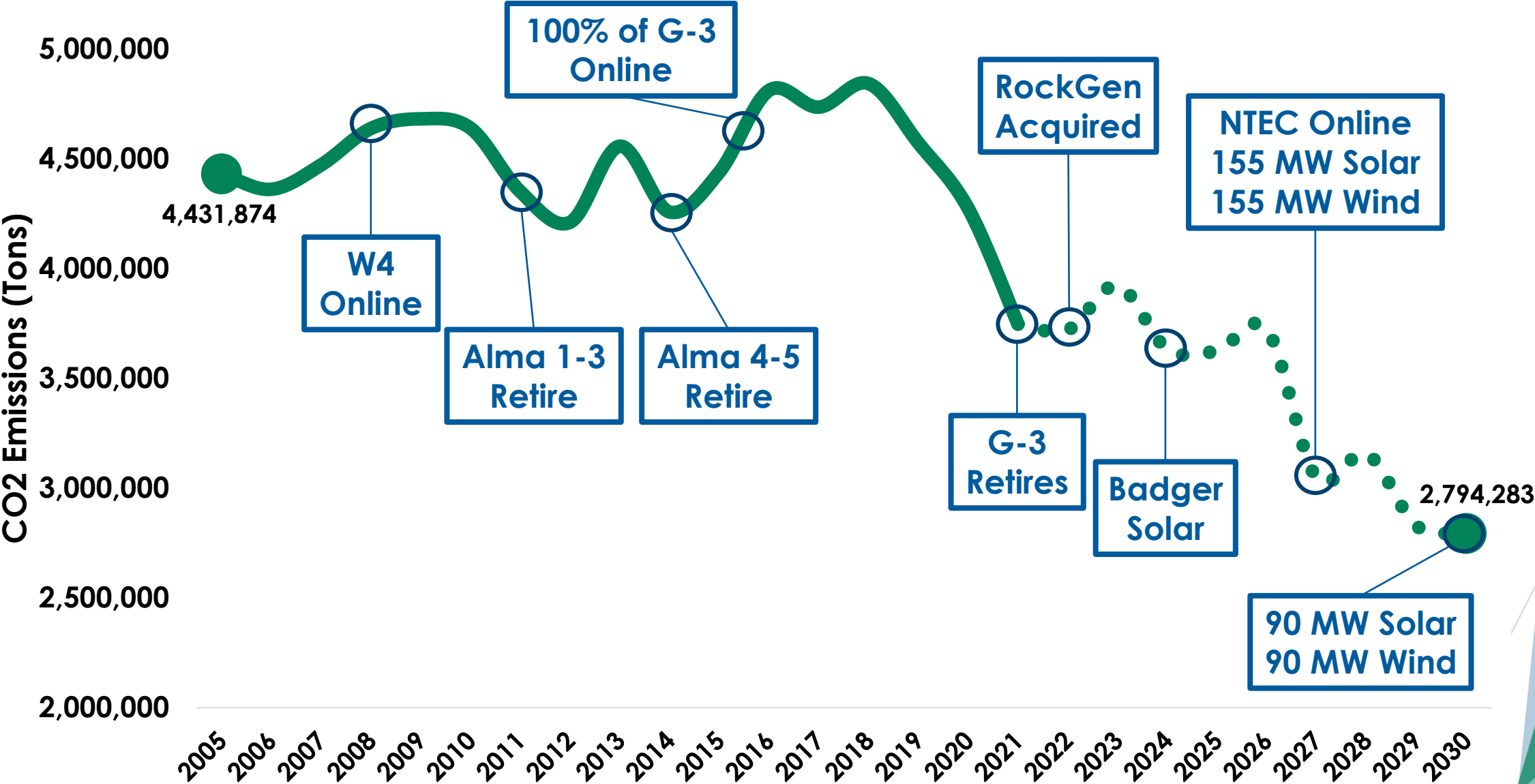
Source: Robert Bryce – NRECA Annual Meeting 2022



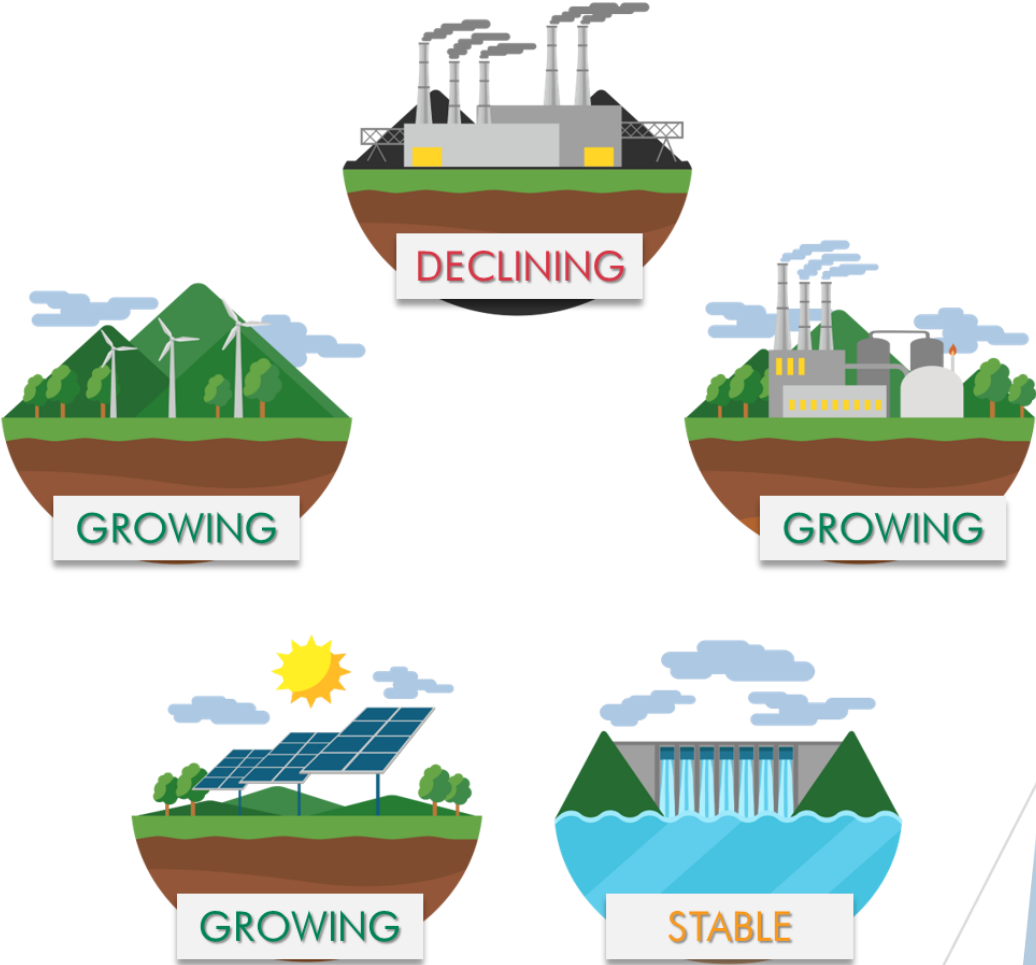
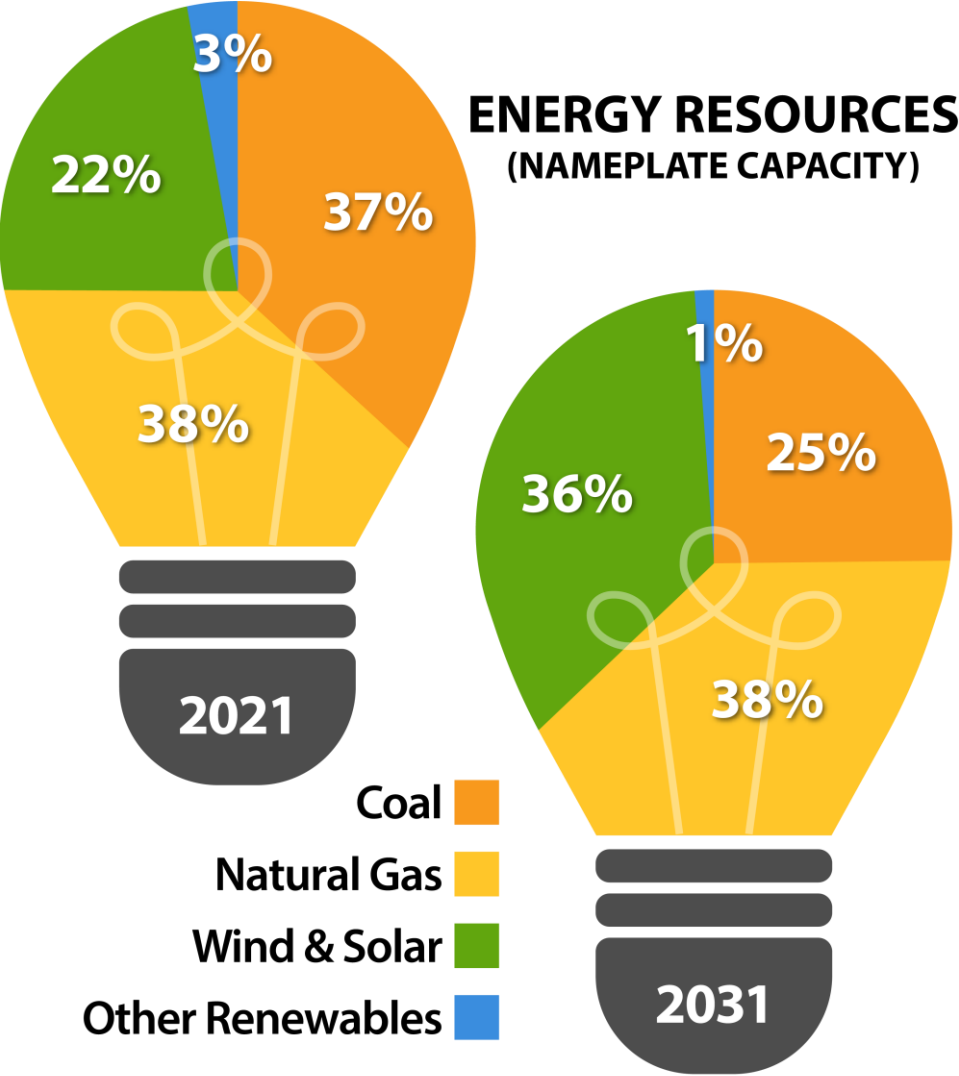
What is Dairyland doing to reduce carbon and maintain reliability?

Our Purpose: Safe, reliable and cost-effective

Dairyland Carbon Reduction Over Time



Dairyland's Current Energy Mix



Renewable Generation Resources



Utility Scale Solar = Best Value

- ▶ 25 MW from 18 arrays (2016-18)
- ▶ 149 MW Badger State Solar
- ▶ Planned operation 2023



Wind

- ▶ Quilt Block (98 MW)
- ▶ Barton (80 MW)
- ▶ Tatanka Ridge (52 MW)
- ▶ Winnebago (20 MW)
- ▶ Adams (18 MW)
- ▶ "Other" (18 MW)
 - ▶ Across multiple facilities

Landfill Gas

- ▶ Central Disposal Landfill Generating Station (5 MW)
- ▶ Timberline Trail Landfill Generation Station (5 MW)

RockGen Energy Center

- ▶ 503 MW combustion turbine
 - ▶ Three dispatchable units
- ▶ Located in Cambridge, WI
 - ▶ Near Madison in Dane County
- ▶ Commercial operation date
 - ▶ October 2001
- ▶ Acquisition included contracts that supply capacity to other utilities in the region



Nemadji Trail Energy Center (NTEC) Power Plant Development

- ▶ Reformation of project in 2021
 - ▶ Dairyland 50%
 - ▶ Basin Electric 30%
 - ▶ Allette/MN Power 20%
- ▶ Minnesota Power still the operator
- ▶ Legal challenges remain
- ▶ Finalizing regulatory permitting



NuScale

- ▶ Memorandum of Understanding (MOU) entered with NuScale
- ▶ Long-term review of nuclear as non-carbon emitting 24/7 option through small modular reactor (SMR) technology
- ▶ Coal and gas needed for transition and integration of renewable energy



Safe, Reliable and Cost-Effective Energy for the Future

- ▶ We will take a balanced and measured approach to carbon reduction
- ▶ Investment is trending toward renewable energy
- ▶ We must ensure a reliable and affordable flow of electricity
 - ▶ Innovation will drive the transition.
 - ▶ Traditional resources will keep the light on
- ▶ “All of the above” approach
 - ▶ Retiring coal plants within MISO
 - ▶ Natural gas = lower CO₂ emissions + renewable-enabling (Can ramp up/down quickly)
 - ▶ Add renewable
 - ▶ Consider advanced nuclear





Comments and Questions



A Touchstone Energy® Cooperative 

Manager's Report – Pages 8 and 9



Aaron Torud

Energy Efficiency Tools for Members

- Available at barronelectric.com
 - Resources – Residential
 - Home Energy Adventure
 - Quiz and questions about energy efficiency
- Save Energy To Save Money
 - Tips, articles, and videos on efficiency, technology, and safety
- Our Energy Video
 - Touchstone Energy videos on saving energy



Home Energy Adventure

Take the Home Energy Adventure Tour to learn about how you can save energy and money at home.

Let the Adventure Begin!

Energy Efficiency Tools for Members

- Use Energy Wisely Brochure
 - 12 pages of energy information, down to almost everything you plug in at home
- Rebates for Energy Star Rated Appliances at barronelectric.com
- Load Control Status
 - Water heaters, electric heat, EVs

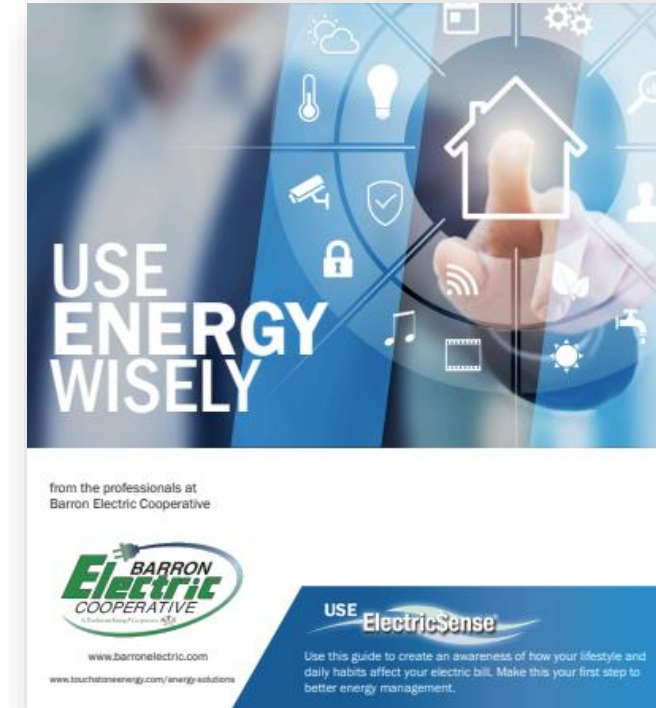


Dairyland Power Cooperative
Load Control Status:
Residential

Advisory Message (03/15/2022): *** No Full Load Control, No Evening Economic Control 3:15 ***		
Load Class	Status	Typical Load
1A (Water Heater 4hr)	Uncontrolled	Small capacity residential water heaters
1B (Water Heater 6hr)	Uncontrolled	Large capacity residential water heaters
2 (Interruptible Heat)	Uncontrolled	Winter dual-fuel heat with 12hr backup
2W (Interruptible Heat Only)	Uncontrolled	Winter only dual-fuel heat with auto backup
3-DLY (Off Peak Storage 7-day)	Controlled ends 10:30PM	Thermal storage systems peak avoidance 7 days/week
3-MF (Off Peak Storage M-F)	Controlled ends 10:30PM	Thermal storage systems peak avoidance Mon-Fri
3-A1 (Off Peak Large Storage)	Controlled ends 11:30PM	High capacity thermal storage systems peak avoidance Mon-Fri
3-WP (Off Peak Winter PM Storage)	Controlled ends 10:30PM	Thermal storage systems winter only, evening only peak avoidance Mon-Fri
3-EV (Off Peak EV)	Controlled ends 09:30PM	Electric vehicles peak avoidance Mon-Fri
4B (Interruptible Heat)	Uncontrolled	Winter dual-fuel heat with 4hr backup

last updated at 04:17PM 03/15/2022

NOTE: Some Load Class options may not be available in your area



Electric Vehicle Information

- Trego Level 2 and 3 chargers
 - Average of 964 miles put on cars per month (Last 5 months)
- We are purchasing a F-150 Lightning to add to our fleet (2023)
 - Put it to work and see how it stacks up against our other half-ton pick-ups
 - Report the progress, failures, and successes of it



Electric Vehicle Information

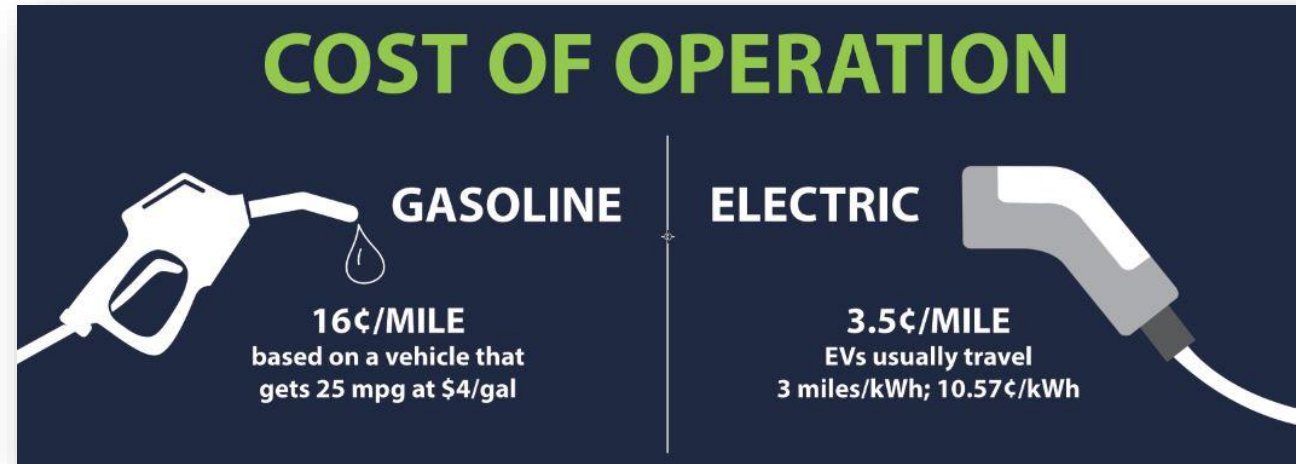
- Charge EV LLC, Created 2020
 - 31 electric cooperatives then, now 72
 - Created to help EV adoption by creating a charging network in rural America

CHARGE
POWERED BY CO-OPS



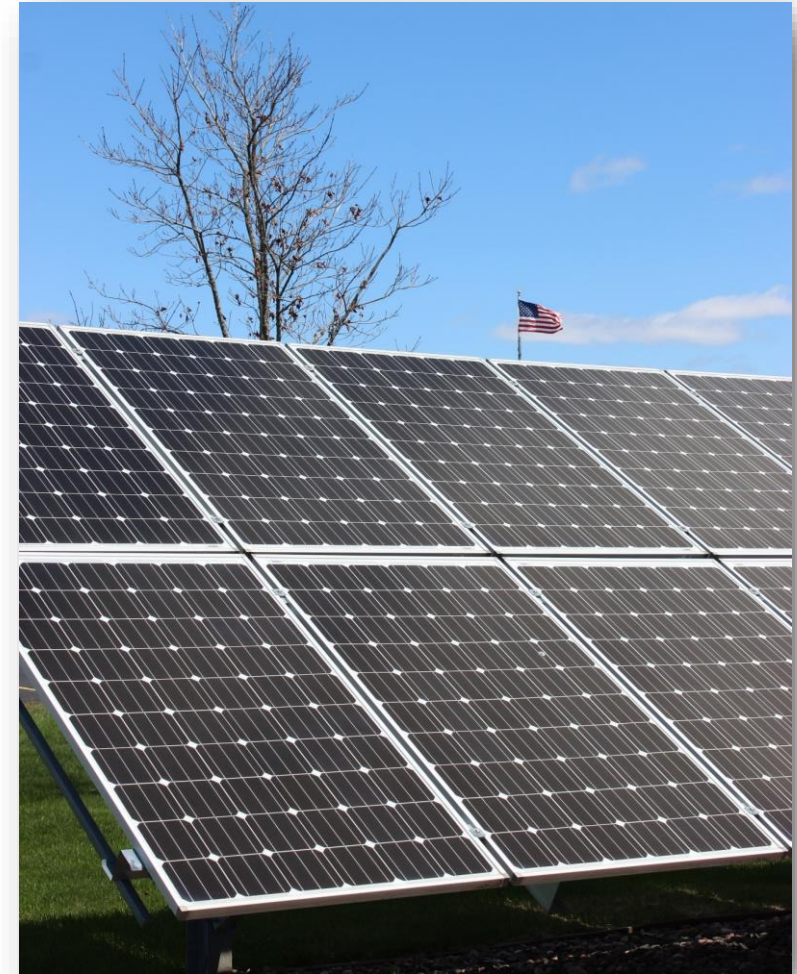
Electric Vehicle Information

- Gas Car (25 MPG), \$4.00 per Gallon
 - 16 cents per mile to drive
- Electric car (3M/KWH)
 - 10.57 cents per KWH (Home Charging)
 - 3.5 cents per mile to drive
- 25 Cents per KWH (Public Charging)
 - Trego Chargers
 - 8.3 cents per mile to drive



Renewable Energy at the Cooperative Level

- Community Rays – Installed in 2014
- 10 Homes for 1 Year
- 100 KW System, 1/2-acre Site
- 19,000 Members/Homes
- Approximately 1,000 Acres of Solar Panels to Produce Enough KWHs for all Barron Electric Homes
- System is Producing Electricity 15% of the Time (Capacity Factor)
- Would Need a Storage System to Keep the KWHs Until You Need Them at Night or During a Cloudy Day



Concern for Community

- Drive-thru Clinics for the COVID Vaccine Held at Cooperative
- Hosted Blood Drives
- Committed 720 hours of Community Service
- Cooperative Matched Employee Donations - \$8,000
- Over \$30,000 in Federated Youth Foundation Donations from Unclaimed Capital Credits
 - \$18,300 to Never Forgotten Honor Flight, Donations Matched by CoBank and FYF



Thank You!

