Welcome to

The 2024 Distributed Wind Energy Summit!

Thank you for joining us. We will begin momentarily!

Pacific Northwest NATIONAL LABORATORY

NREL Transforming ENERGY

2024 Distributed Wind Energy Summit

High Growth of Small Commercial Wind Turbines in Rural Areas

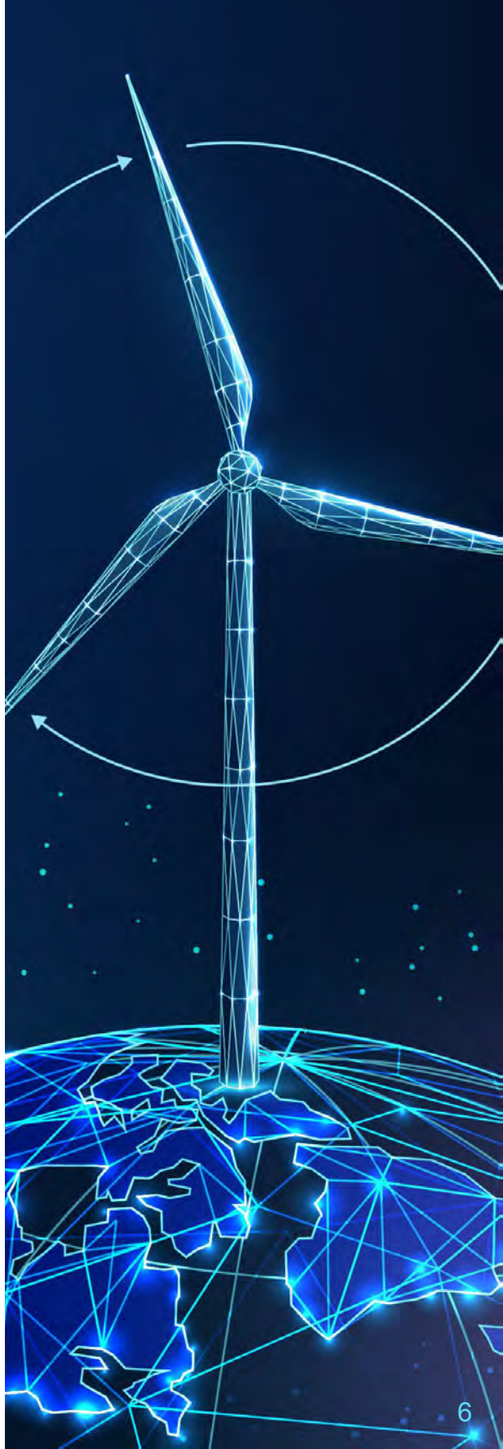
September 19, 2024

Mike Bergey
President & CEO, Bergey Windpower

Bergey Windpower Co.

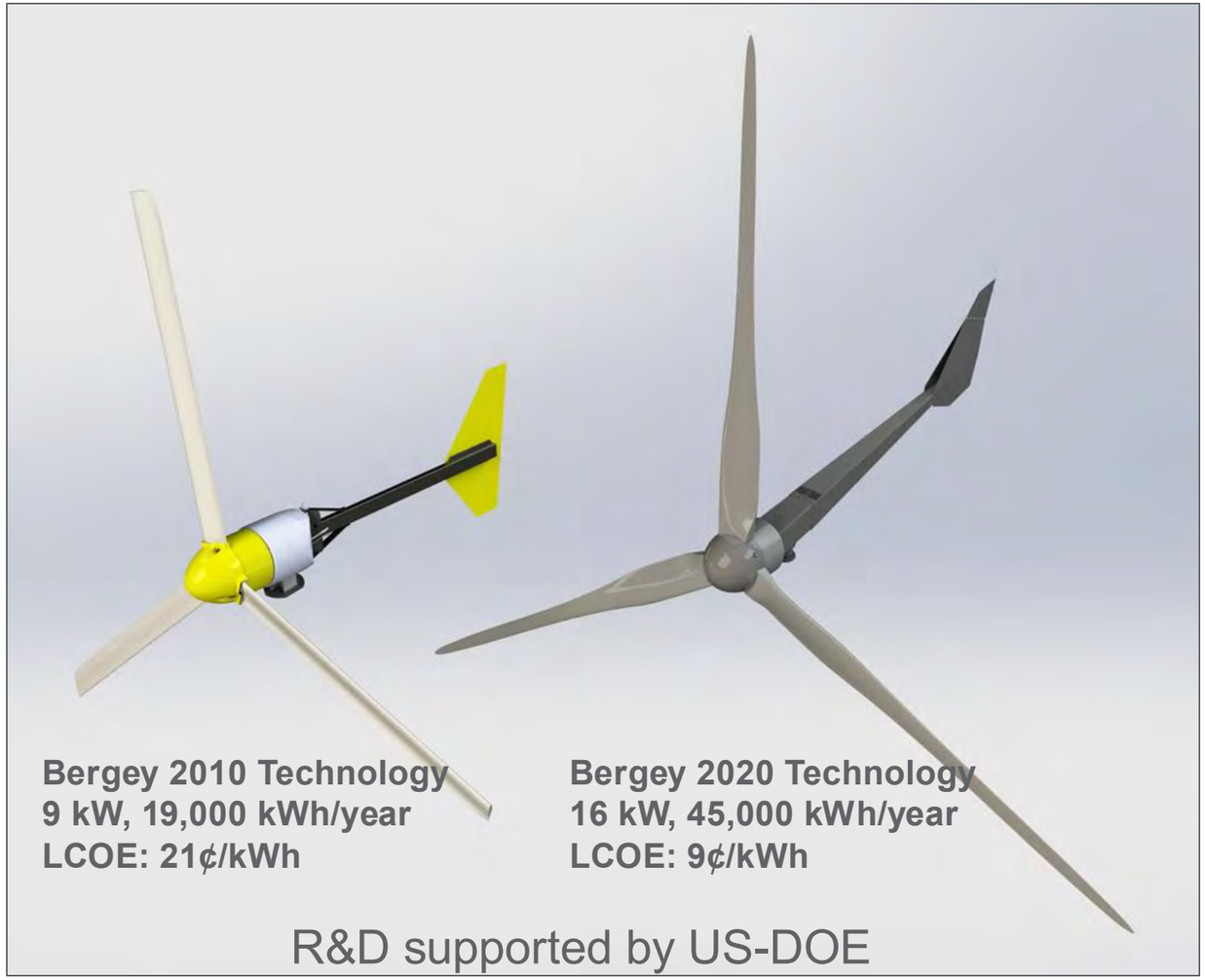
The World Leader in Small Wind

- Established in 1977
- Technology leader for 45 years
- Turbines have only 2 moving parts, and require no scheduled maintenance
- Over 10,000 installations, covering all 50 States and over 100 countries



Lower-Cost Small Wind

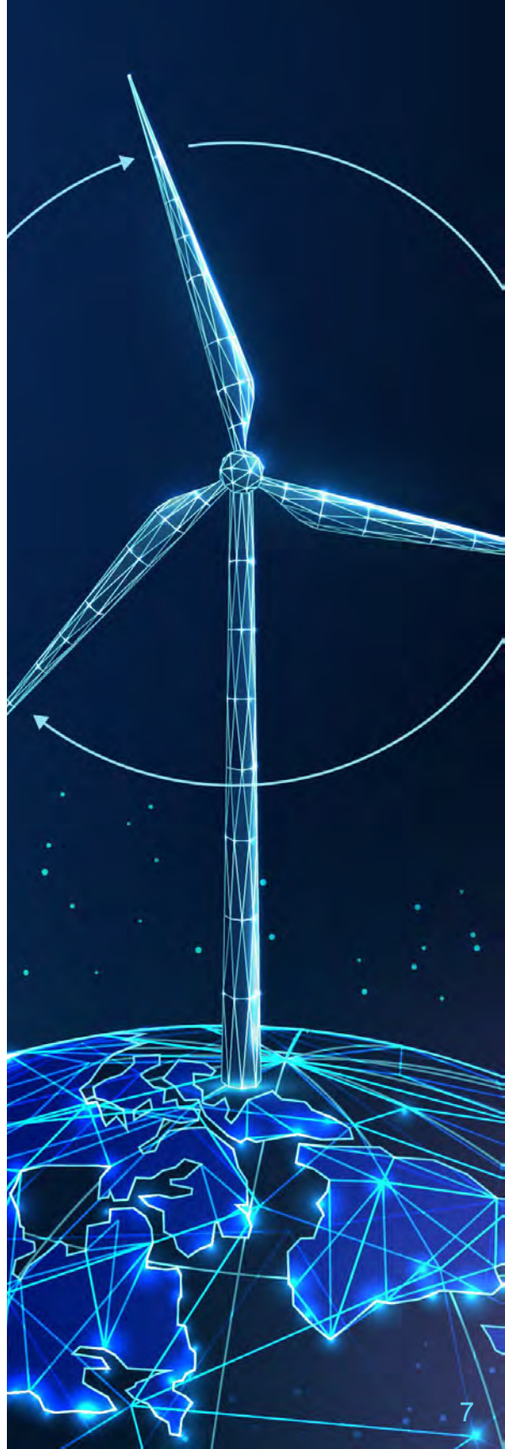
(New technology to compete with imported solar)



Bergey 2010 Technology
9 kW, 19,000 kWh/year
LCOE: 21¢/kWh

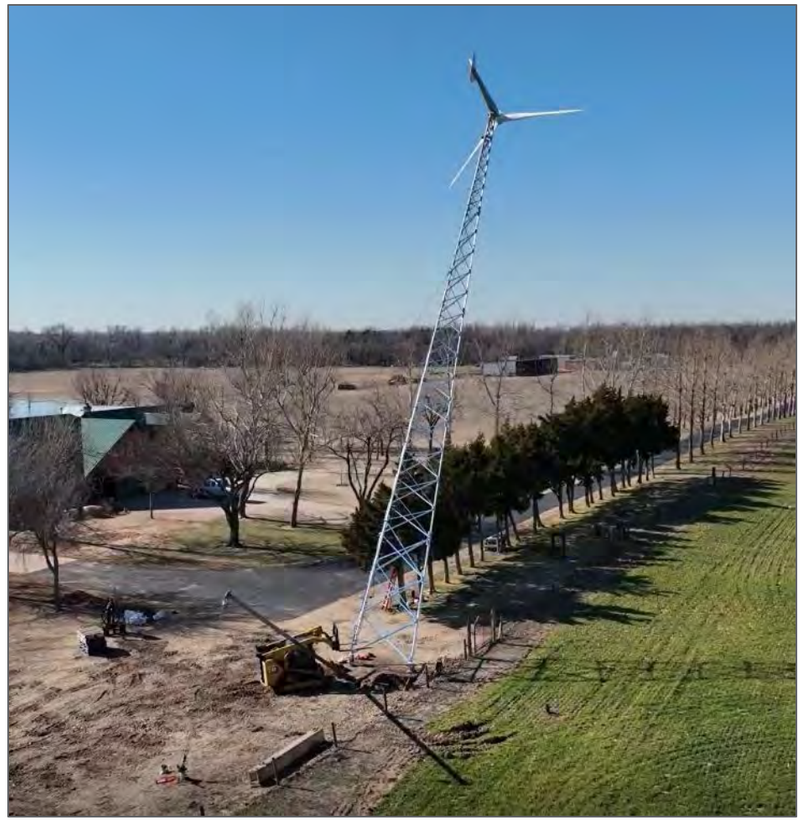
Bergey 2020 Technology
16 kW, 45,000 kWh/year
LCOE: 9¢/kWh

R&D supported by US-DOE



Helical Anchors & Tilt-up 100’ SSL Tower – 2 Day Install

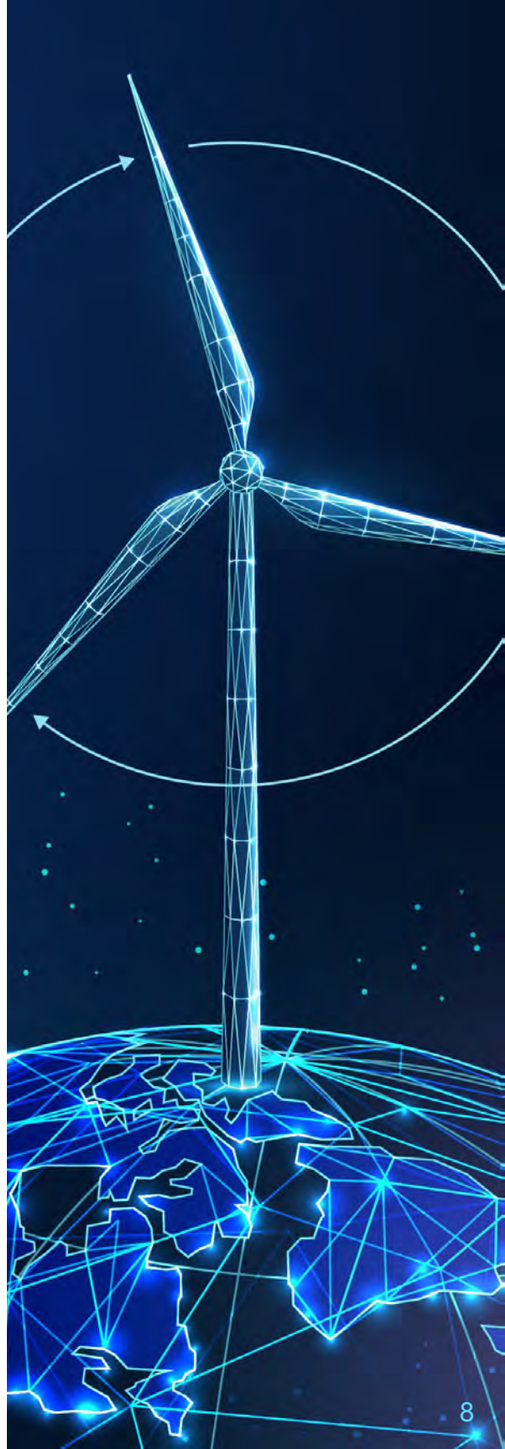
Helical Anchors



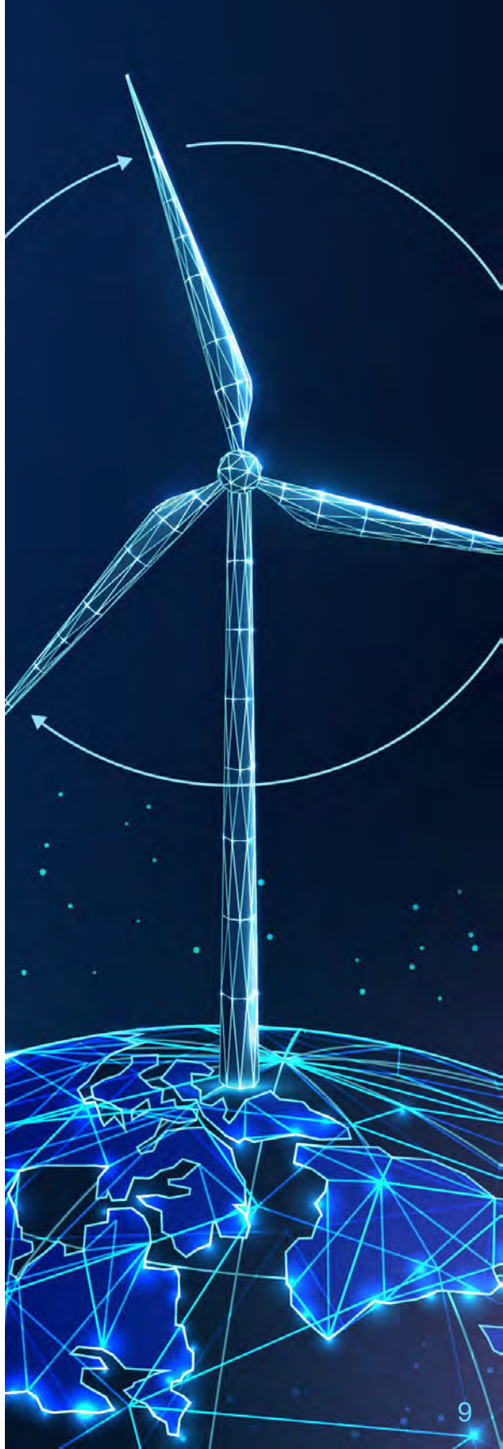
Tilt-up Tower on Helical Anchors

Skid-Steer with Helical Anchor Rig

R&D supported by US-DOE

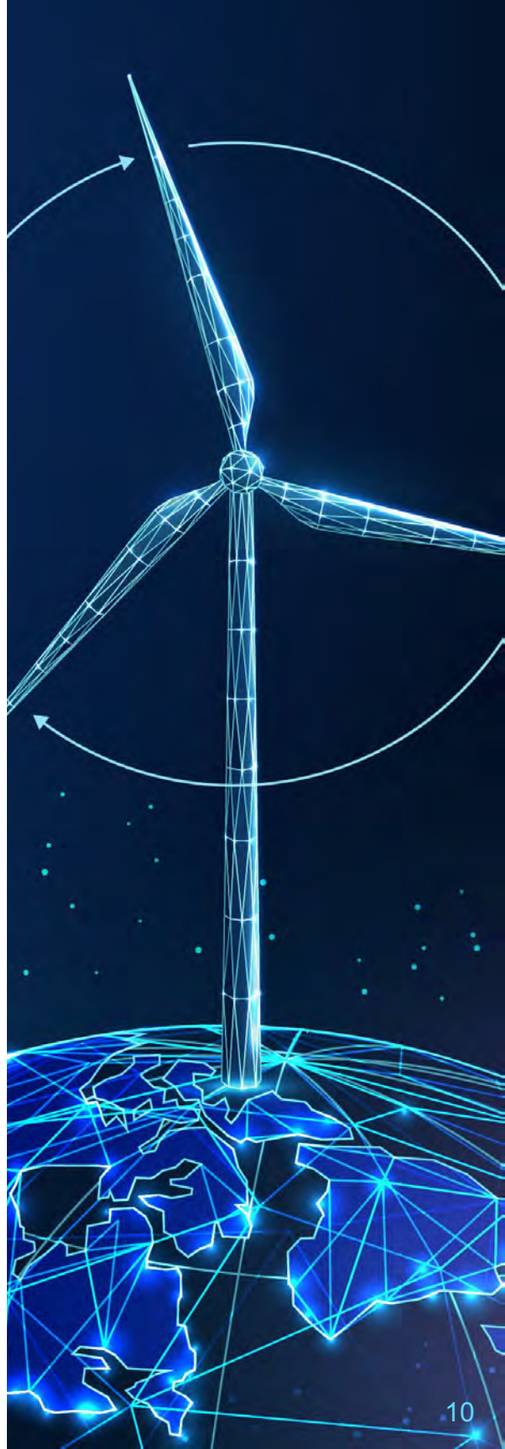


MADE IN USA



USDA REAP Grants Fueling the Agricultural Market

Federal Incentive	Ag Business	Rural Home
Installed Cost	**$125,000**	**$125,000**
30% Basic ITC	-$37,500	-$37,500
10% Domestic Content Bonus	-$12,500	$0
10% Energy Community Bonus	$0	$0
5-Year Depreciation or Sec. 179D	-$14,063	$0
After Tax Incentives	**$60,938**	**$87,500**
USDA REAP Grant (up to 50%)	$55,000	$0
Federal Tax on REAP Grant	-$8,250	$0
Final Cost	**$14,188**	**$87,500**

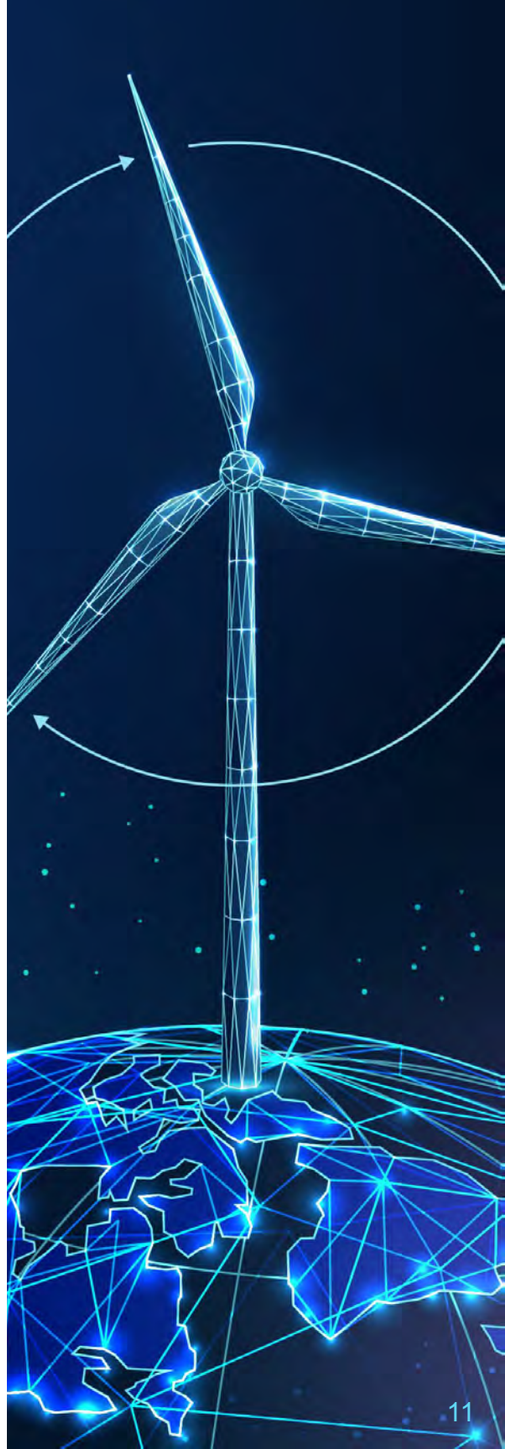


Active Market in Retrofits of Older Turbines

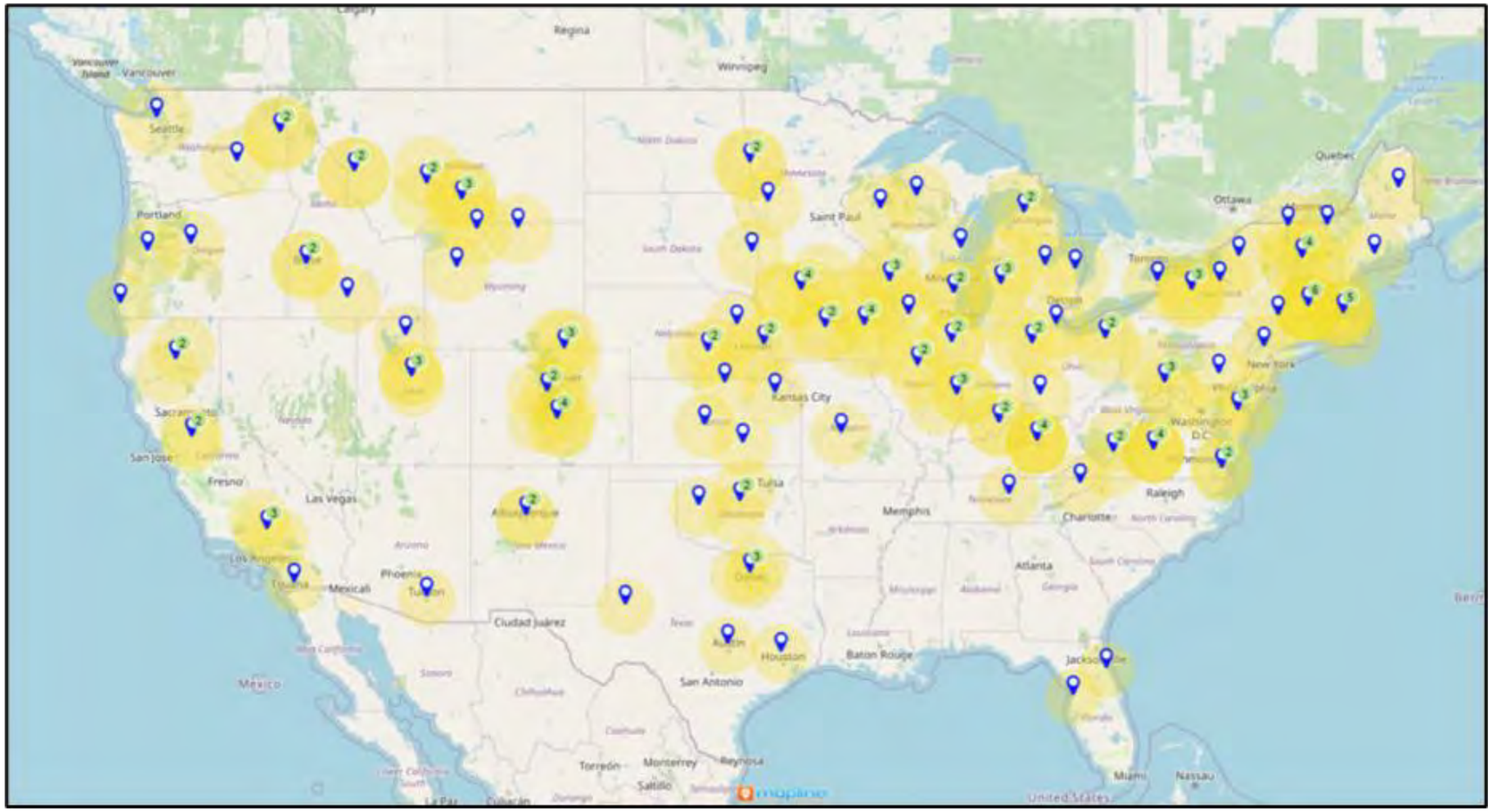
Using existing tower & Foundations

Replacing:

- Bergey 10 kW
- Jacobs 10, 17 & 20 kW
- Proven 15
- Gaia 11
- Endurance 60 kW
- Evoco/Osiris 10 kW
- ReDriven 10 & 20 kW
- Enertech 40 kW
- Numerous Chinese Models
- Xzeres 10 kW
  (special case – reduced rotor speed)

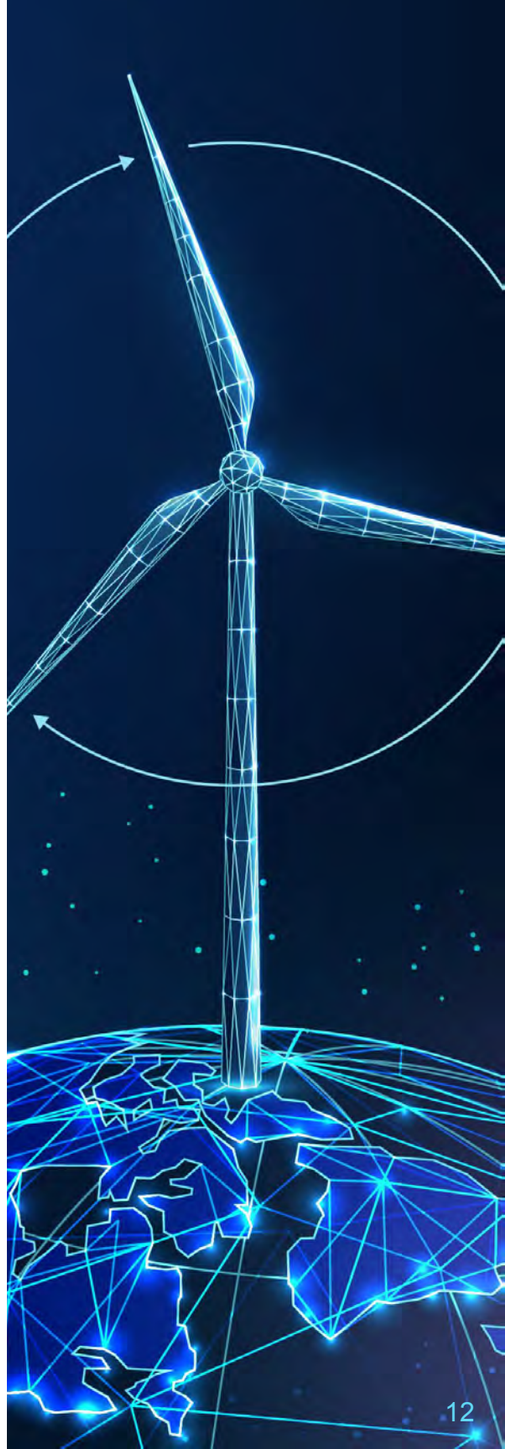


Sold, Installed & Supported by > 150 Dealers



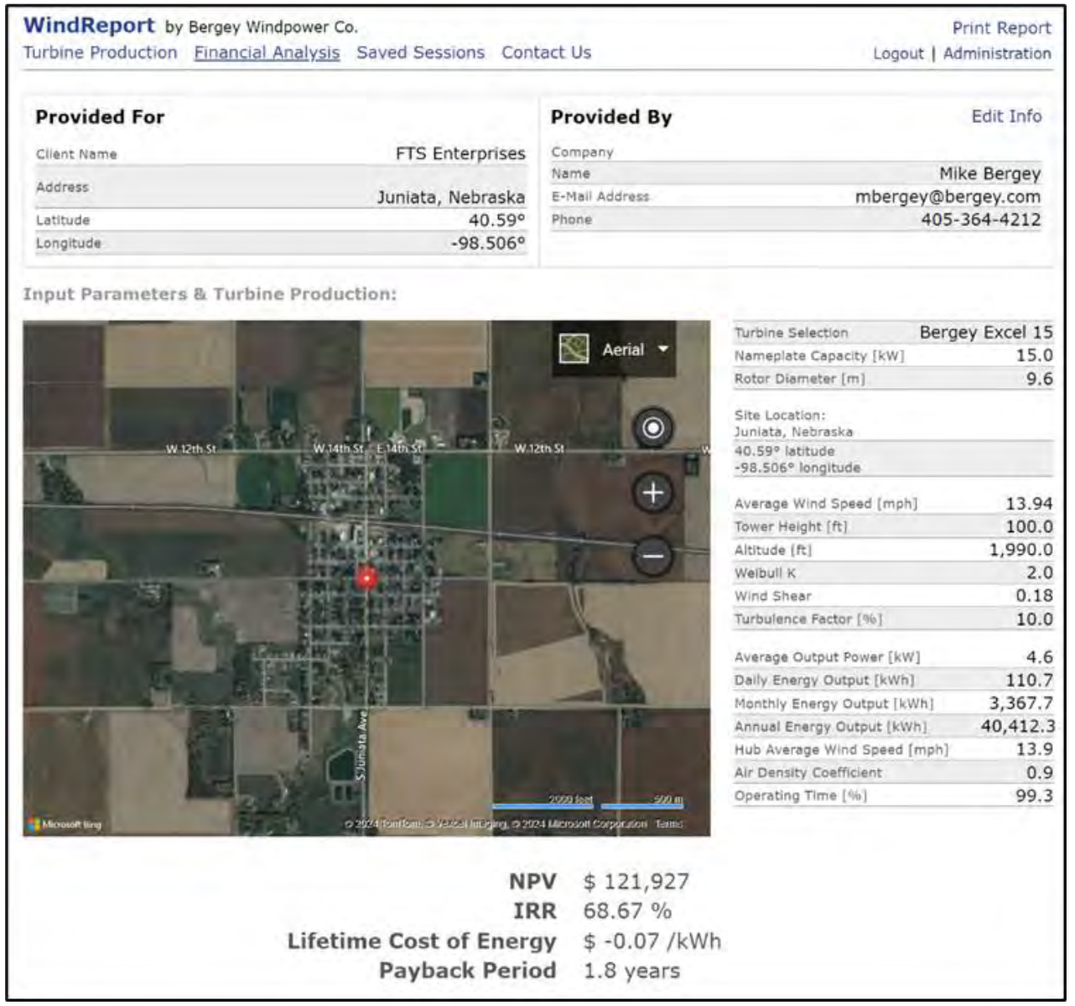
BWC U.S. Dealer Network, 2024

www.bergey.com



Bergey Wind Report

Performance and Economics Evaluation Tool



WindReport by Bergey Windpower Co.

Print Report

Turbine Production | Financial Analysis | Saved Sessions | Contact Us

Logout | Administration

Provided For

Client Name	FTS Enterprises
Address	Juniata, Nebraska
Latitude	40.59°
Longitude	-98.506°

Provided By Edit Info

Company	
Name	Mike Bergey
E-Mail Address	mbergey@bergey.com
Phone	405-364-4212

Input Parameters & Turbine Production:

Turbine Selection	Bergey Excel 15
Nameplate Capacity [kW]	15.0
Rotor Diameter [m]	9.6
Site Location: Juniata, Nebraska 40.59° latitude -98.506° longitude	
Average Wind Speed [mph]	13.94
Tower Height [ft]	100.0
Altitude [ft]	1,990.0
Weibull K	2.0
Wind Shear	0.18
Turbulence Factor [%]	10.0
Average Output Power [kW]	4.6
Daily Energy Output [kWh]	110.7
Monthly Energy Output [kWh]	3,367.7
Annual Energy Output [kWh]	40,412.3
Hub Average Wind Speed [mph]	13.9
Air Density Coefficient	0.9
Operating Time [%]	99.3

NPV	$ 121,927
IRR	68.67 %
Lifetime Cost of Energy	$ -0.07 /kWh
Payback Period	1.8 years

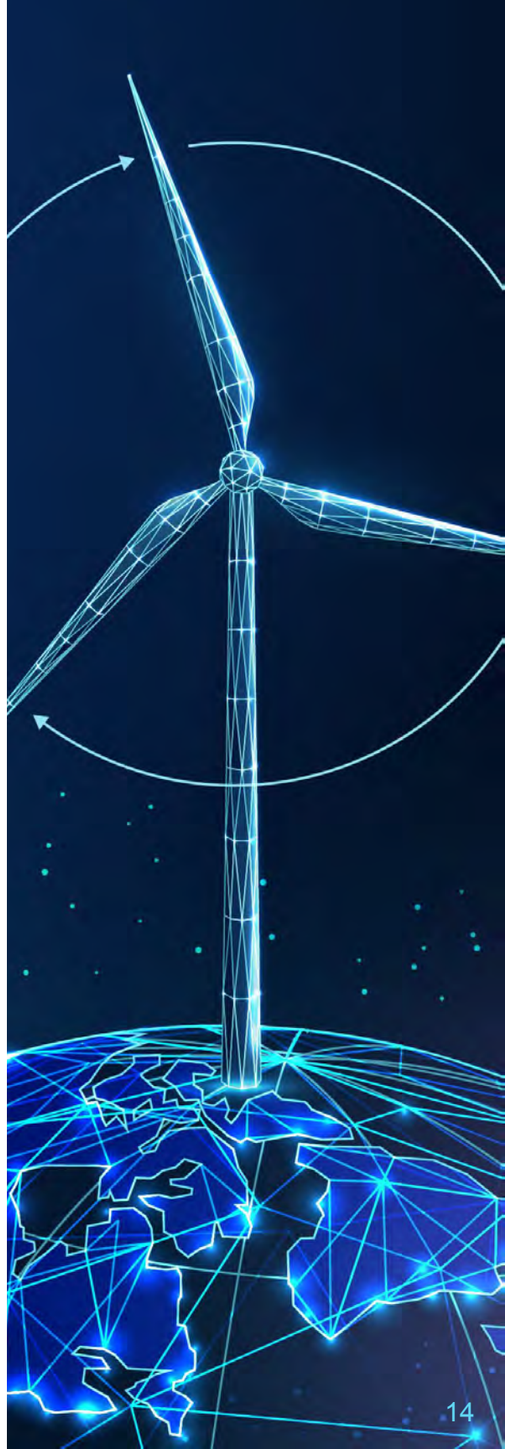
Case Study

FTS Enterprises
Juniata, NE

Installed by:

AMERICAN Windpower

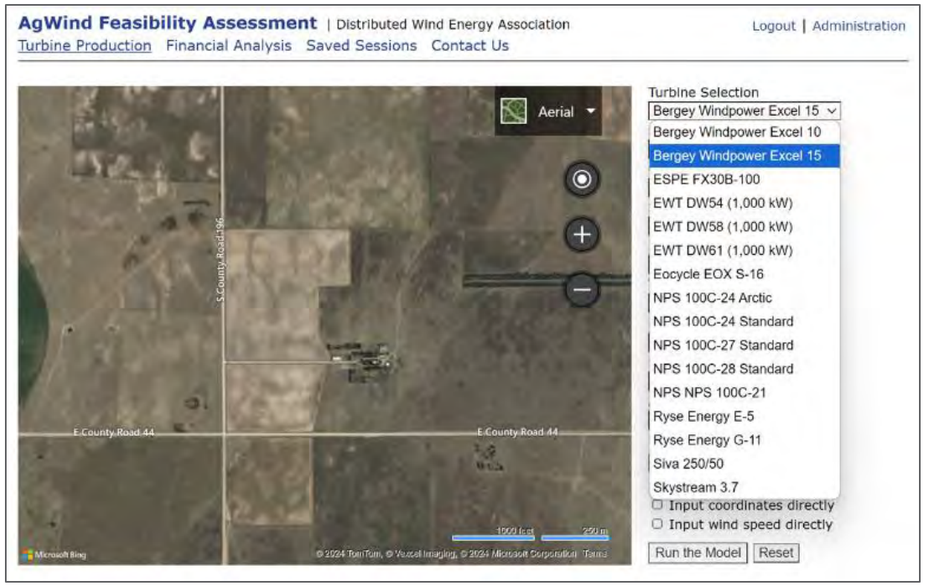
- 15 kW turbine on 100’ tower
- Installed March 2022
- Produces ~ 35,000 kWh per year
- 99.4% Availability
- $100,000 installed; USDA grant + Tax Credit + Bonus Depreciation = 2.5 year payback

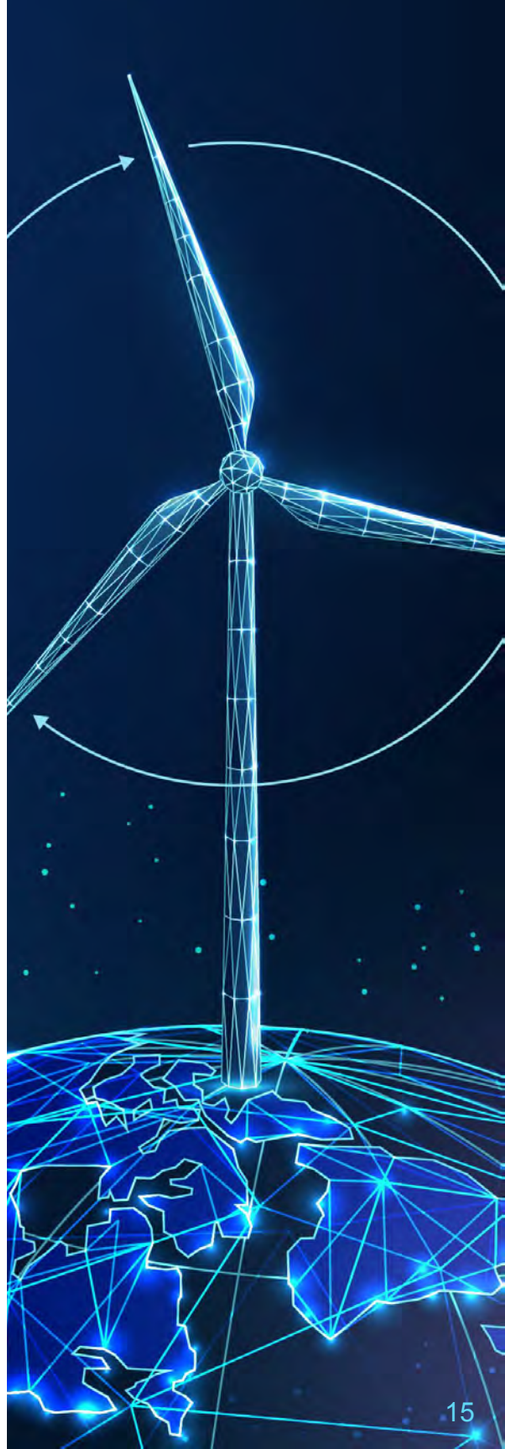


DWEA
DISTRIBUTED WIND ENERGY ASSOCIATION

OUR WIND OUR POWER OUR FUTURE

AgwindEnergy.org





Thank you

Mike Bergey

PRESIDENT & CEO, BERGEY WINDPOWER

MBERGEY@BERGEY.COM

BUFFALO
RENEWABLES INC.

DW Deployments

PHONE:(716) 513-0114
EMAIL:PADMA@BUFFALORENEWABLES.GREEN

DW Deployments IRL

Residential/ Small Farms

Residential

Town Governments

Rural Small Businesses

Large Farms and Rural Small Businesses

`

Why DW?

Small Footprint

Complements well with Solar PV for year round generation

Very Visible

Big Fun!

30-100% federal funding

Challenges

Interconnection

Permitting

Very Visible

Public Perception

Siting

Challenging

How To

TIPS

Find a local expert

Find the right technology

Engage with permitting authorities

Engage with utility

RESOURCES

WINDExchange: Distributed Wind Energy Resource

AgWind (agwindenergy.org)Distributed Wind Energy 101 | Distributed Wind Energy Association

Distributed Wind Energy Association | Our Wind, Our Power, Our Future

Rural Energy for America Program Renewable Energy Systems & Energy Efficiency Improvement Guaranteed Loans & Grants | Rural Development (usda.gov)

2024 Distributed Wind Energy Summit

Adams Electric Cooperative Wind Turbines

September 17, 2024

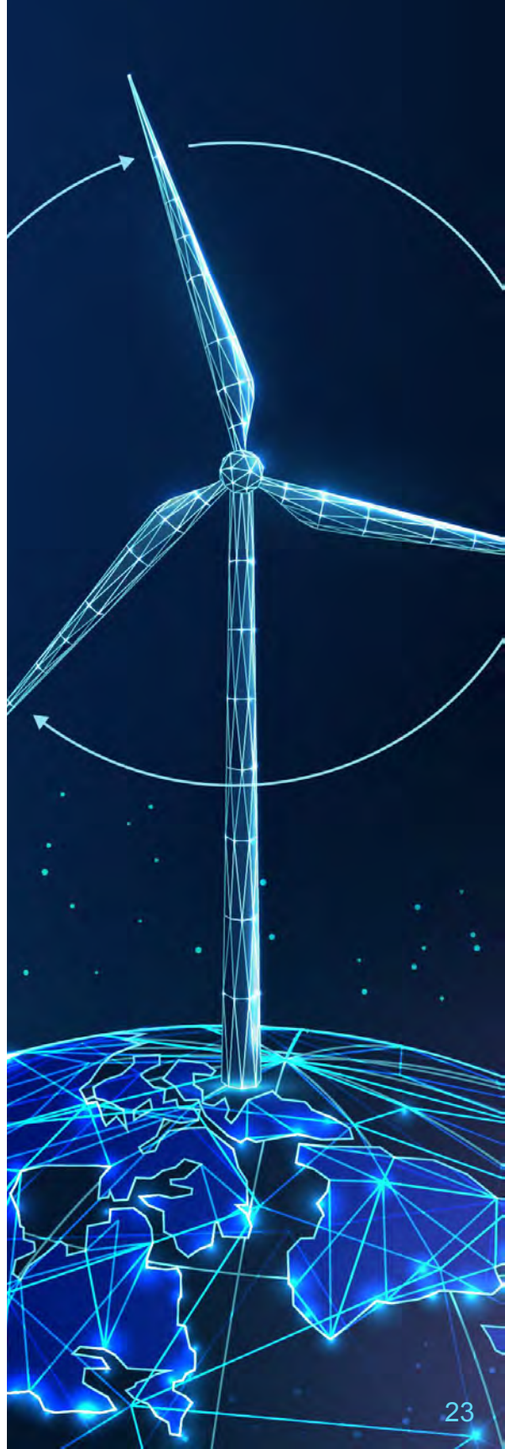
Mike Ohnemus
Manager of Information Systems

Pacific Northwest NATIONAL LABORATORY

NREL Transforming ENERGY

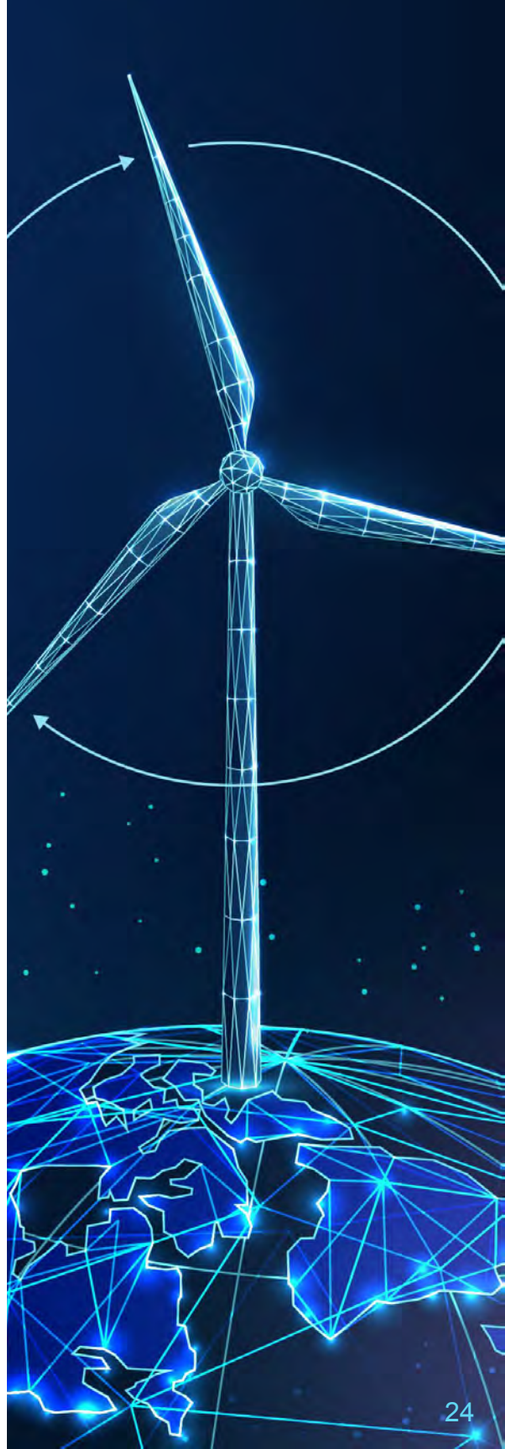
About Adams Electric Cooperative

- Located in West Central Illinois
- Serving 9,102 members in Adams, Brown, Schuyler, Hancock, McDonough, & Fulton counties.
- 2,269 miles of line.
- 31 full-time employees



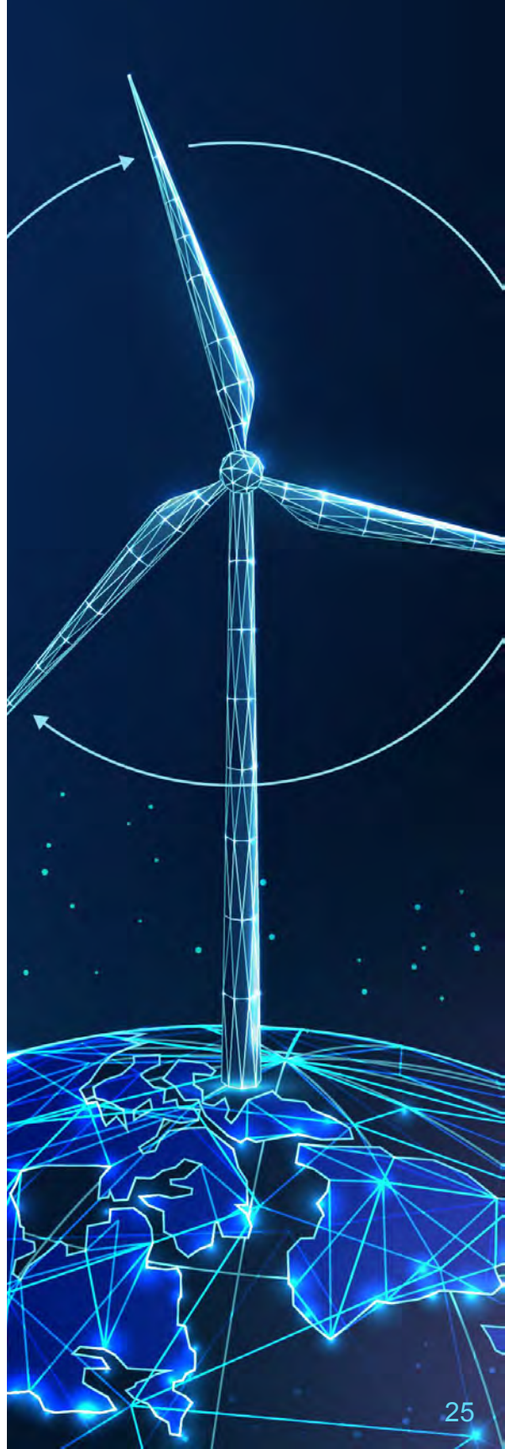
Green Energy Portfolio

- 900 kWh EWT Direct-Drive Wind Turbine
- 1.5 MW Vensys Direct-Drive Wind Turbine
- 1 MW EWT Direct-Drive Wind Turbine (2025)
- 1 MW Solar Farm (2025)
- 3.4 MW of wind energy
- 4.4 MW total of green energy
- Powering about 9% of our services



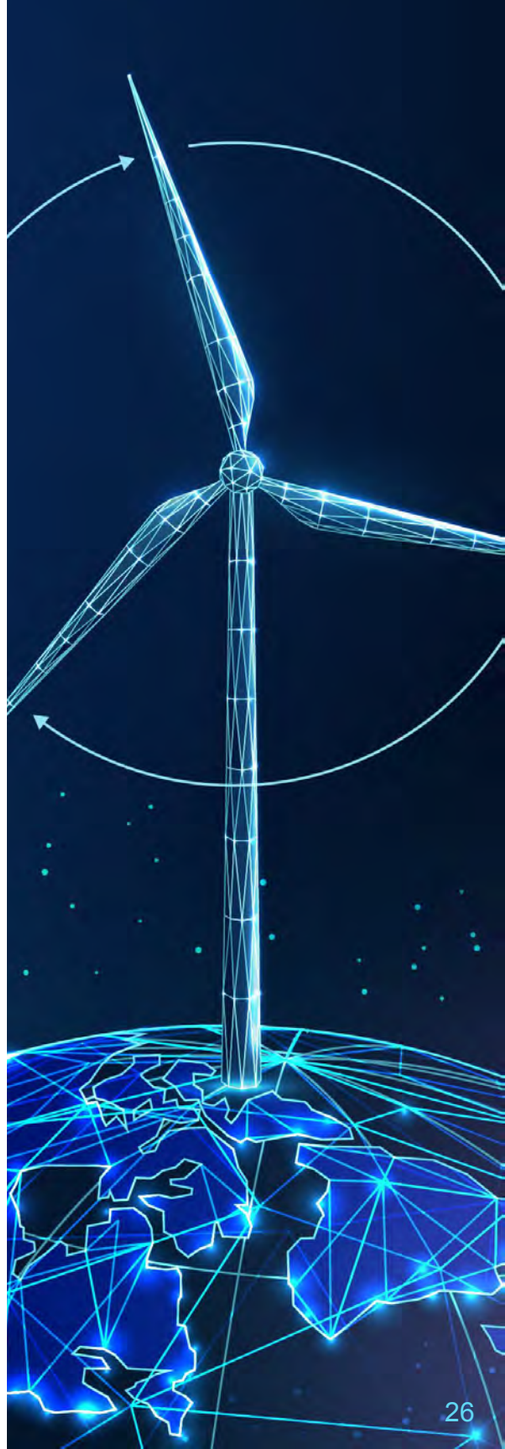
Where, Wind, & Why

- In 2009 we installed our first turbine in Adams County.
  - Political environment at the time was pushing for Renewable Portfolio Standards (RPS).
  - Received two grants and a low interest loan.
  - With incentives, wind generation was $0.05/kWh compared to coal at $0.055/kWh.
- In 2011 we installed our second turbine in Brown County.
  - Low-cost financing and a USDA grant put costs at $0.06/kWh.
- 2025 slated for a turbine in Schuyler County.
  - Inflation Reduction Act
    - Justice 40 Initiative targeting disadvantaged areas.
    - Majority of Schuyler County is considered disadvantaged.
  - ERA grant puts energy costs at $0.03/kWh.



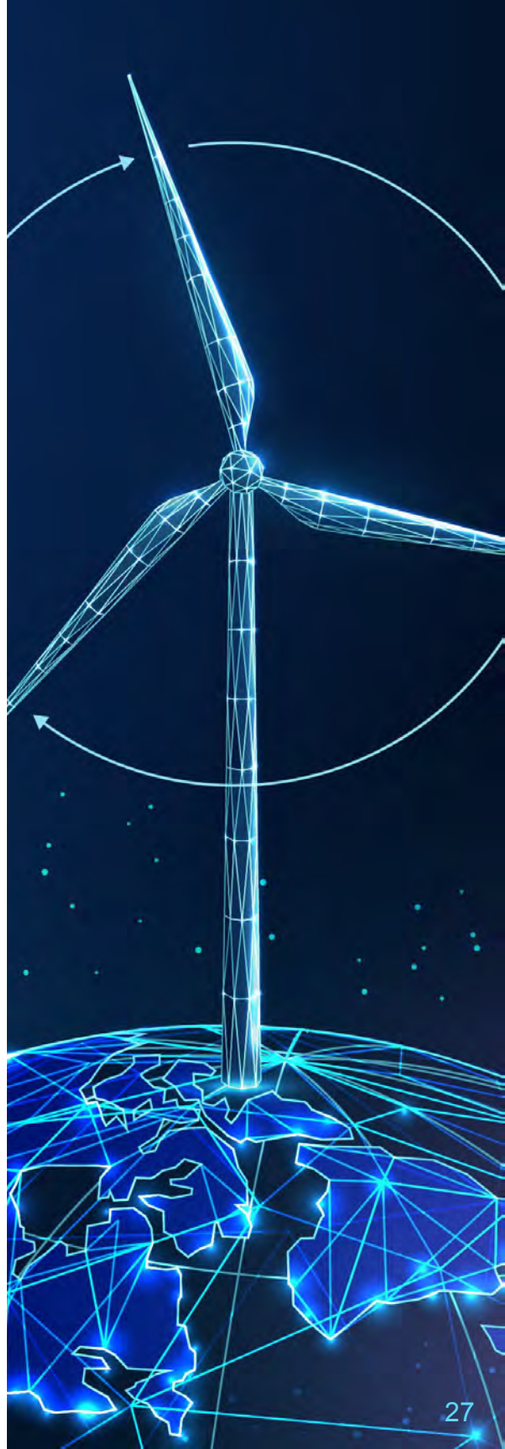
How We Began

- Hired a consultant to analyze potential locations.
- Chose locations within .75 miles of existing 3-phase and within 2-3 miles of a substation.
- Average wind speed at 50 meters height (~164 feet) – 15.3 mph.
- Had computer modeling of wind performed to verify wind speeds.
- For turbine to be built in 2025, we used our own elevation maps knowing we wanted the turbine in a specific area.
  - Had a wind study done to verify the location was suitable.
- There are other environmental and site studies that will need to be completed.



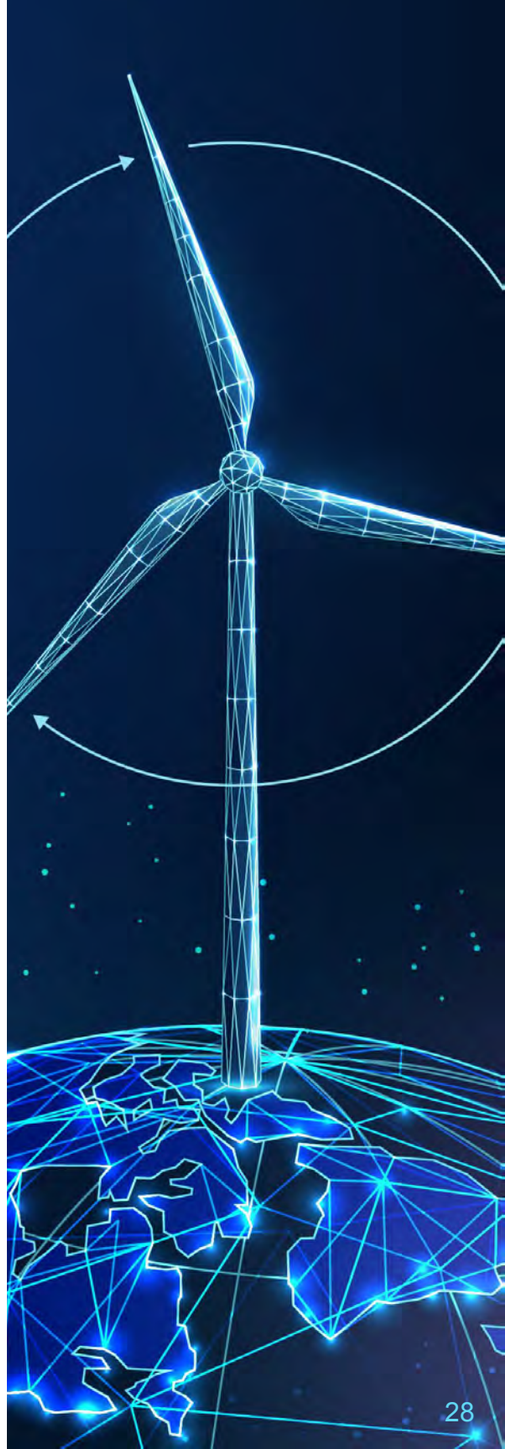
Advantages to Building

- Cooperative members own the generation assets.
- Reduced wholesale purchased power cost.
- kWh output over the 25-year life of the turbine is a known fixed price which helps stabilize rates.
- Diversified power portfolio.
- Shows we will take reasonable steps to lower our carbon footprint.
- Helps politically as coops are scrutinized over the use of fossil fuels.
- Members have reacted positively, if not encouragingly, to Adams Electric embracing renewable energy.



Experience & Advice

- Wind turbines have been a net positive.
  - Stabilized rates.
  - Opportunity to get communities involved in energy discussion.
- Turbine builds can be managed using contractors.
- Choosing direct-drive turbines verses a gear box turbine has kept maintenance issues to a minimum.
  - Meter technicians can handle minor issues.
  - Major repairs are done by the manufacturer.
- EWT has been our best experience with turbine manufactures.
  - Have contractual obligations that the turbine must be available 95% annually.



Thank you

Mike Ohnemus

MANAGER OF INFORMATION SYSTEMS

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