



Why it's the perfect time to install a wind turbine to power your biogas plant

American Biogas Council

October 16th, 2024



Quick Notes



You should be able to hear me talking now. If you can't, use the questions module to describe your issue.

Two Audio Options: Phone or Computer
Choose one and connect

Pro tip: Don't call in on our phone if your audio is set to "Mic and Speakers"

Ask questions using the Questions Panel on the right side of your screen at any time.

The recording of the webinar and the slides will be available after the event. We will post them online and send you a link.

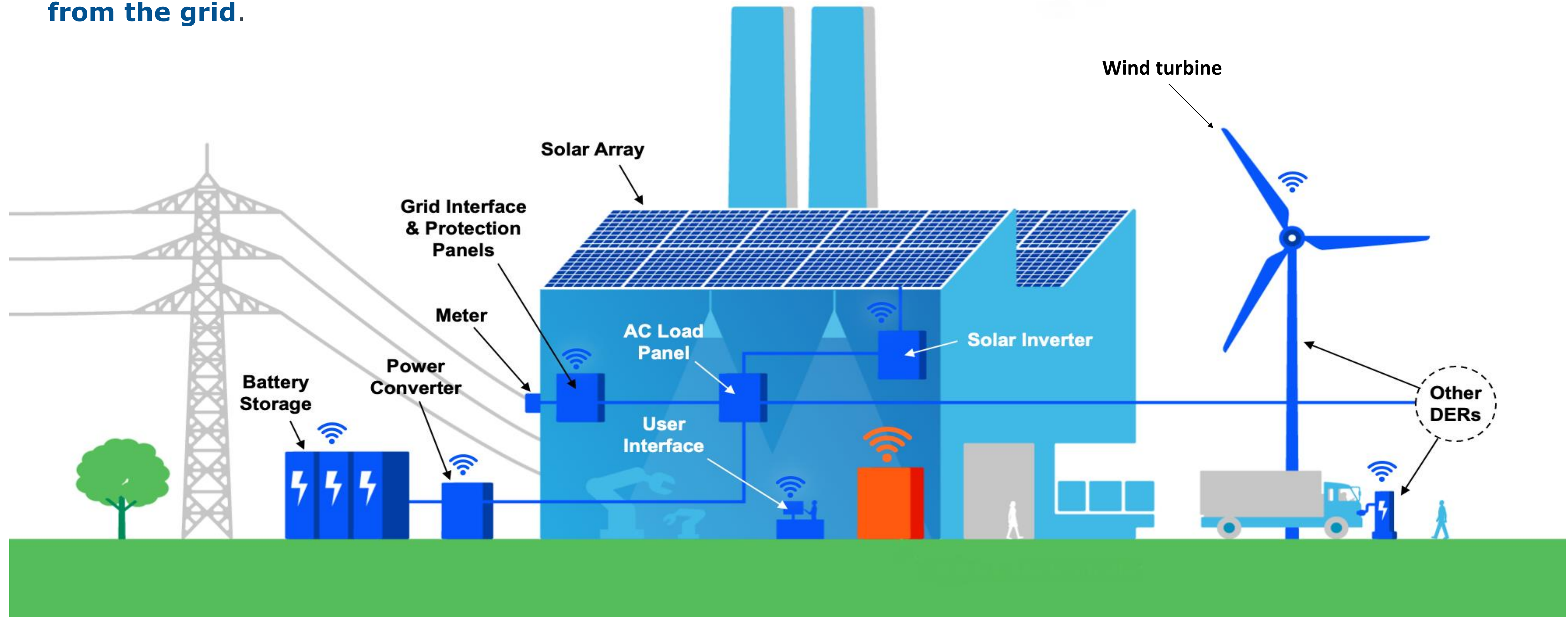
The screenshot shows the GoToWebinar interface. At the top, there's a menu with 'File', 'Options', 'View', and 'Help'. Below that, a yellow banner reads 'Attendees still on hold' with instructions to 'Press *1 to Start the Broadcast for all attendees.' and a checked box for 'Record on start'. A sidebar on the left contains icons for various functions. The main area is divided into two sections. The top section, labeled 'Audio', shows options for 'Computer audio' (unselected) and 'Phone call' (selected). It also displays dialing information: 'Dial: +1 (415) 655-0052', 'Access Code: 147-638-497 #', and 'Audio PIN: 79 #'. Below this is a 'Problem dialing in?' link. The bottom section, labeled 'Questions', shows a table with columns for 'X', 'Question', and 'Asker'. The table is currently empty. At the bottom of the interface, there are options for 'Send Privately' and 'Send to All', and a 'Webinar Now' section with 'Webinar ID: 815-417-091' and the GoToWebinar logo.

Audio

Questions

How do you generate your own power?

- Distributed wind (DW) generates electricity for remote communities with isolated grids or **connected to distribution grids to serve grid-connected customers.**
- If you have a factory or a commercial building with an electric load (consumption) you can connect a wind turbine directly to your load (Behind-the-Meter) and use this electricity onsite to **reduce the electricity you purchase from the grid.**



How you can benefit from distributed wind



Save money on your electric bills



Lock in your electric rate for 20+ years



Energy independence



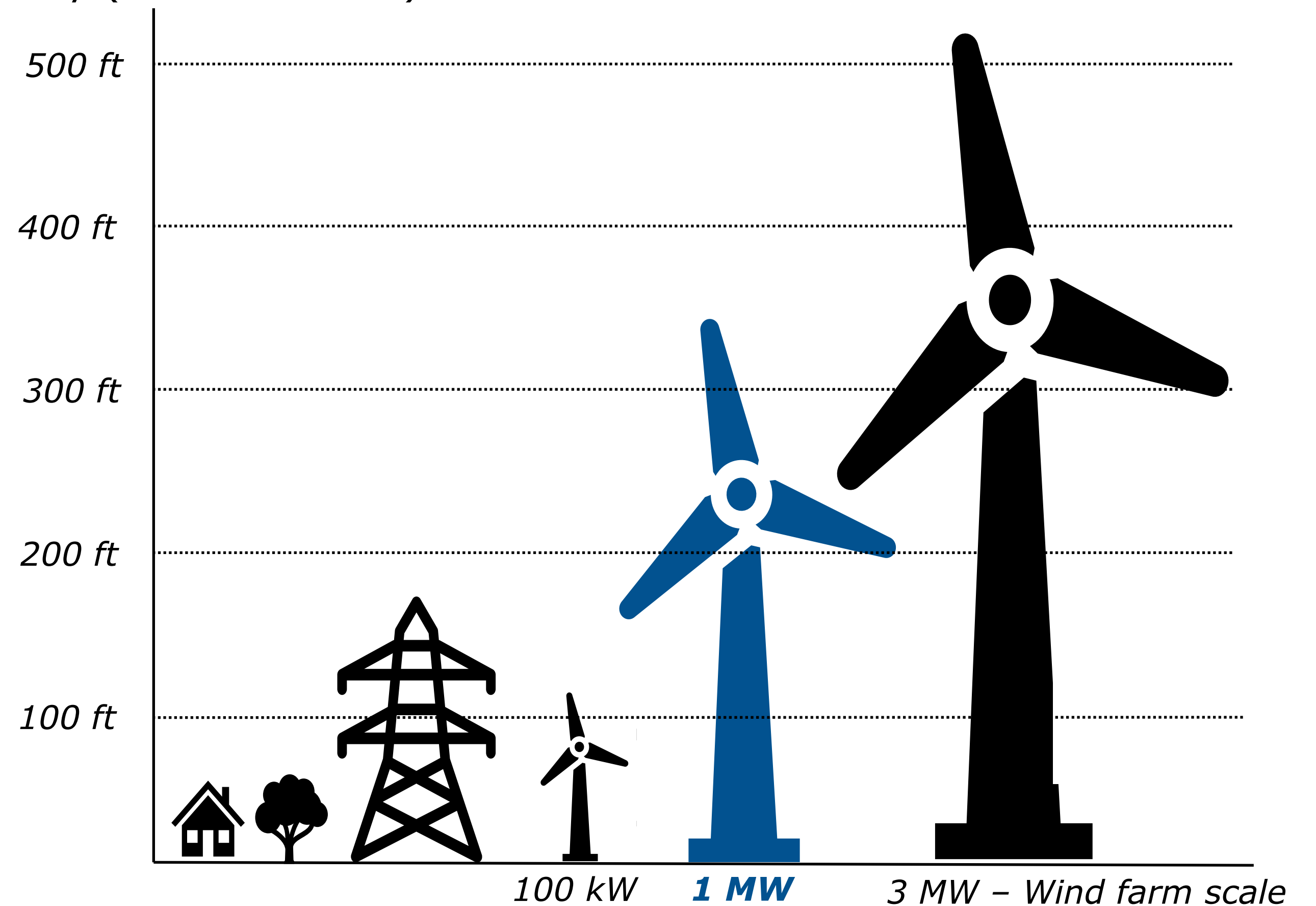
Improve your CO₂ footprint

How big are distributed wind turbines?

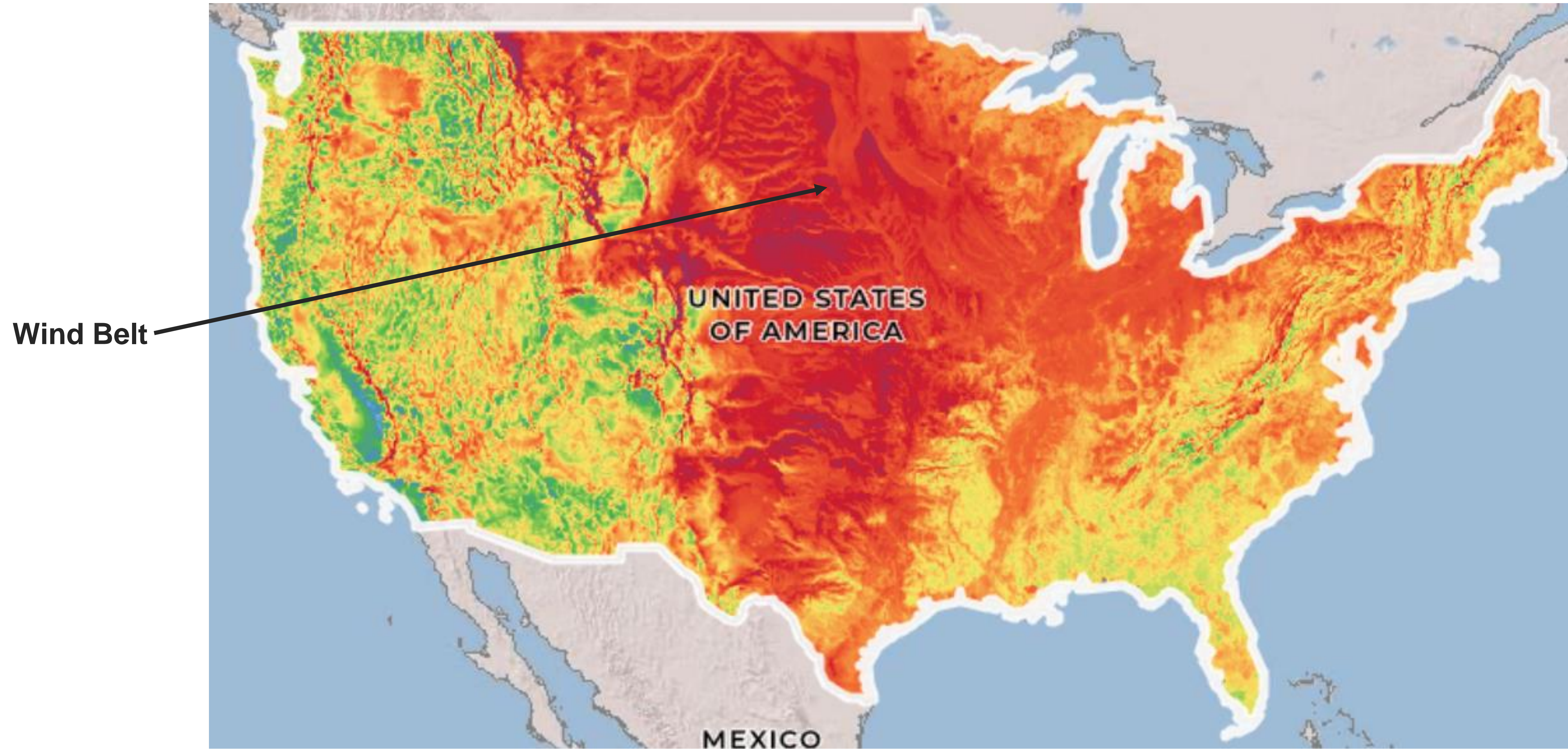


DW turbines are generally smaller than wind-farm scale turbines and are normally only "single-stick" projects.






Tend to **fit well in the landscape and easier to locate** next to the facility (lower setbacks).



The wind resource in the USA



Top 5 Reasons Why Wind and Biogas Generators Go Together

- 1)  Improves the RNG's Carbon Intensity (CI) score, driving up market value in CA
- 2)  RNG projects are frequently located in areas with excellent wind resource
- 3)  RNG projects are frequently located in areas with appropriate siting for a wind turbine
- 4)  Wind energy and biogas are highly synergistic in generation/consumption profiles
- 5)  Saves ~75% on electric costs, resulting in \$\$Millions of additional profits

GAMECHANGER #1: Inflation Reduction Act Tax-Credits

30% Investment Tax Credit (ITC)- "Base" + 10% - 20% "Bonus"

- Federal investment tax credit (ITC) of:
30% of total investment (CAPEX)
- **Direct Pay option** for tax-exempt entities (rural electric cooperatives, governments, schools, hospitals, etc.). Will receive cash payment in lieu of tax credit.
- Tax credits can now be sold ("**transferability**").
- ITC in effect until 2032 (or certain GHG emission targets are met)

- 10% ITC adder if project is located in an "**Energy Community**", defined as brownfield sites or fossil fuel communities
- 10% ITC adder if project is located in a "**Low-Income Communities**" and is <5MW

Incentives can be stacked

Tax credits up to 50% of the project investment

GAMECHANGER #2: USDA REAP grant program

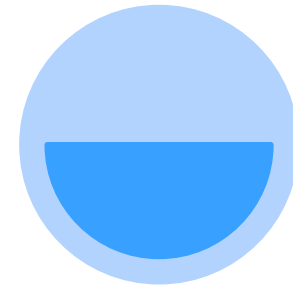


USDA Rural Energy for America Program (REAP)



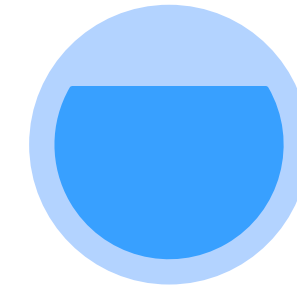
Who?

Agricultural producers and rural small businesses



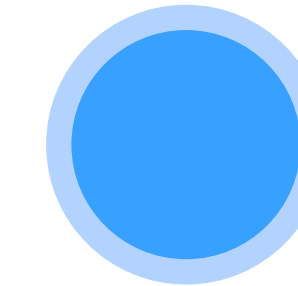
Where?

Rural areas (less than 50,000 inhabitants)



What?

The purchase and installation of renewable energy systems, including wind turbines



How much ?

Grants of up to 50% of total eligible project costs. Capped at \$1M per project.

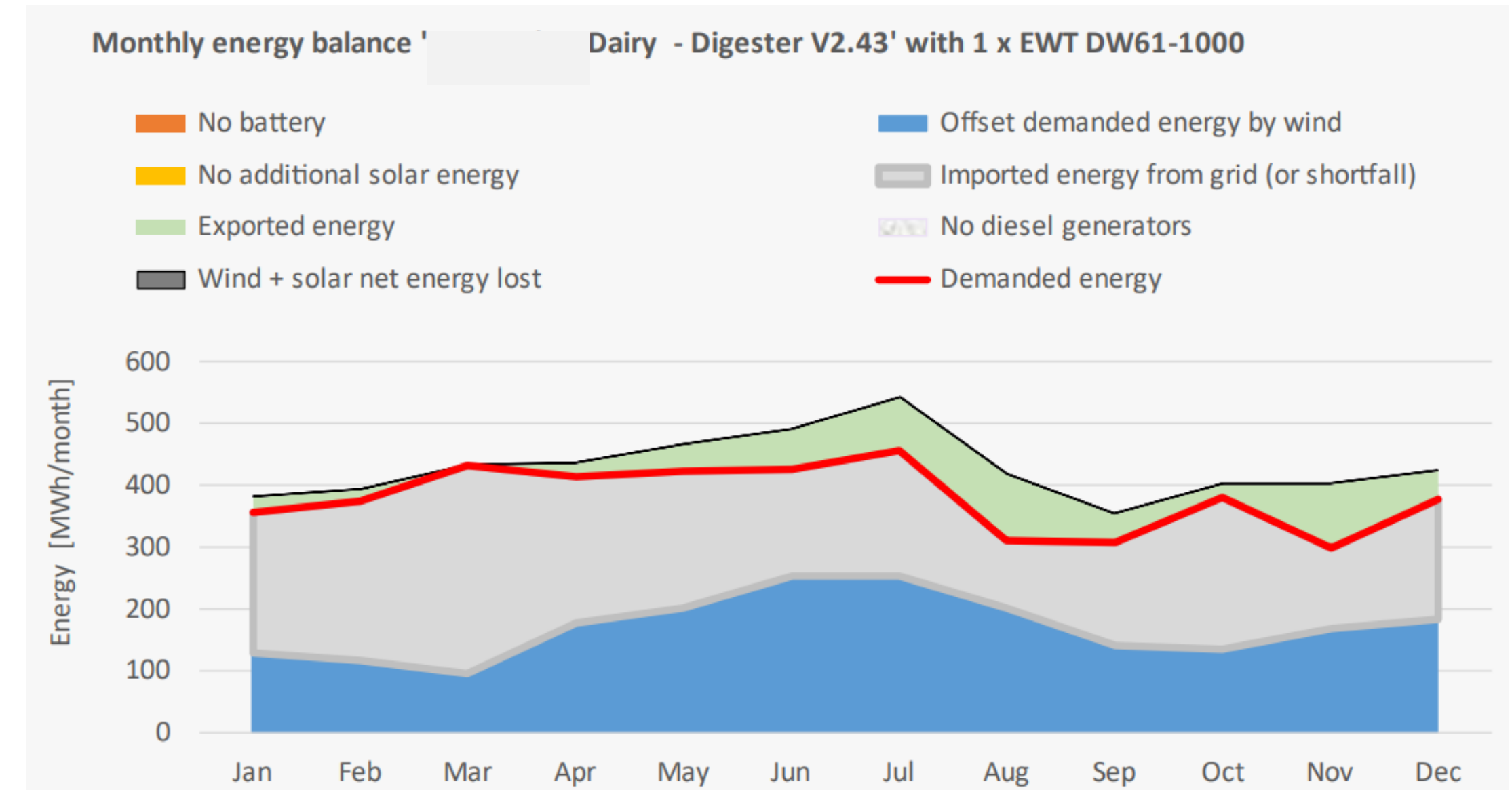
1. REAP is a competitive grant. The program received a massive surge of funding and maximum grant size was temporarily doubled. Funds are diminishing as projects are awarded grants, so best to submit application ASAP.
2. Wind energy projects have access to a special bucket of money making it dramatically easier to get the grant versus a solar project. At this time, all well-planned wind projects will likely get the grant.

REAP = 50% or up to \$1M of the project funded

Case study: RNG production plant in Michigan

- RNG production plant, linked to 2 large dairy farms, generating 200,000 MMBtu annually of RNG.
- Electricity consumption of the biogas plant is 4,564 MWh / year.
- EWT's DW61-1000kW-84m hub height produces 2,650,000 kWh/year, offsetting 45% of the biogas plant's energy needs.
- Project economics:
 - All-in CAPEX: \$3,000,000
 - All-in OPEX: \$40k/year
 - Retail Electric Rate: \$0.10/kWh. Export rate: \$0.04/kWh.
 - Retail Electric Rate inflation: 3.5%/year for 25 years
 - Incentives: ITC 30% base + 10% energy communities + \$1M REAP grant => **73% of project investment**

Energy Balances



	MWh / year	
Customer energy demand	4,564	100%
Demand imported	2,510	55.0%
No solar energy		
Demand offset by wind	2054	45.0%
Wind + solar net energy	2,650	100%
No solar energy		
Wind energy generated used	2650	100.0%
Net energy used (P50 AEP)	2650	100%
Energy used for demand offset	2,054	77.5%
Energy exported	596	22.5%

Financial Results	
Levelized cost of energy	2.2 cents/kWh
Payback	2.9 years
IRR (unlevered)	22.4%
Project lifetime net benefit	\$ 7,270,168

Wind versus Solar PV: different but complementary

Wind can produce at night:

- Generation profile good match for constant or day/night loads
- Good candidates: dairy farms, biogas plants, cold storage, water treatment, manufacturing plants...

Wind outperforms Solar PV:

- Lower \$/kWh (in the wind belt)
- Needs 100 times less land

But... **Wind and Solar PV are complementary !**

Energy density of wind > solar:

1 MW Wind



<1/8 acre

2,800 MWh / year

Day & Night

2 MW Solar PV

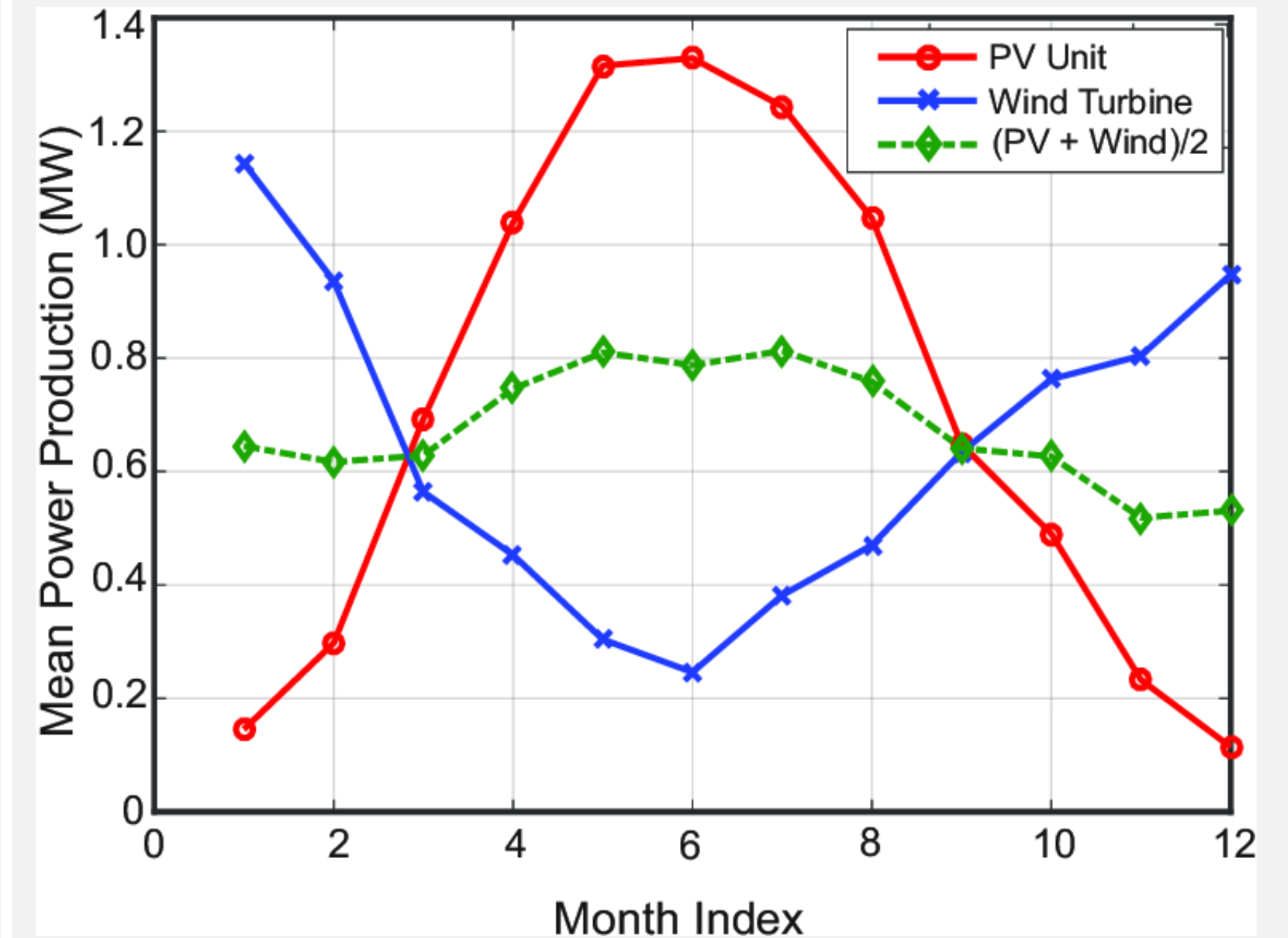


10 acres

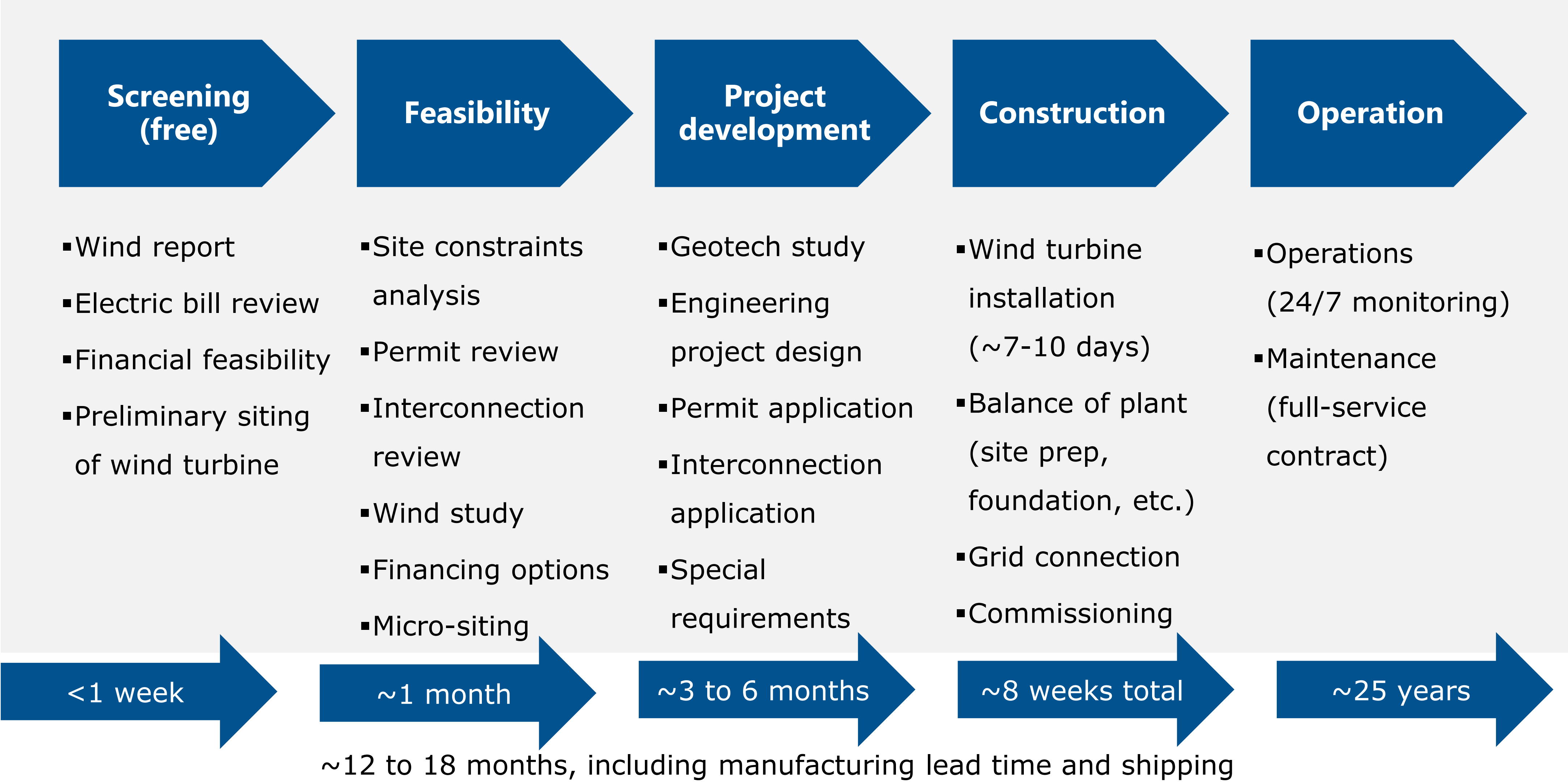
2,600 MWh / year

Day only

Solar and wind are complementary:

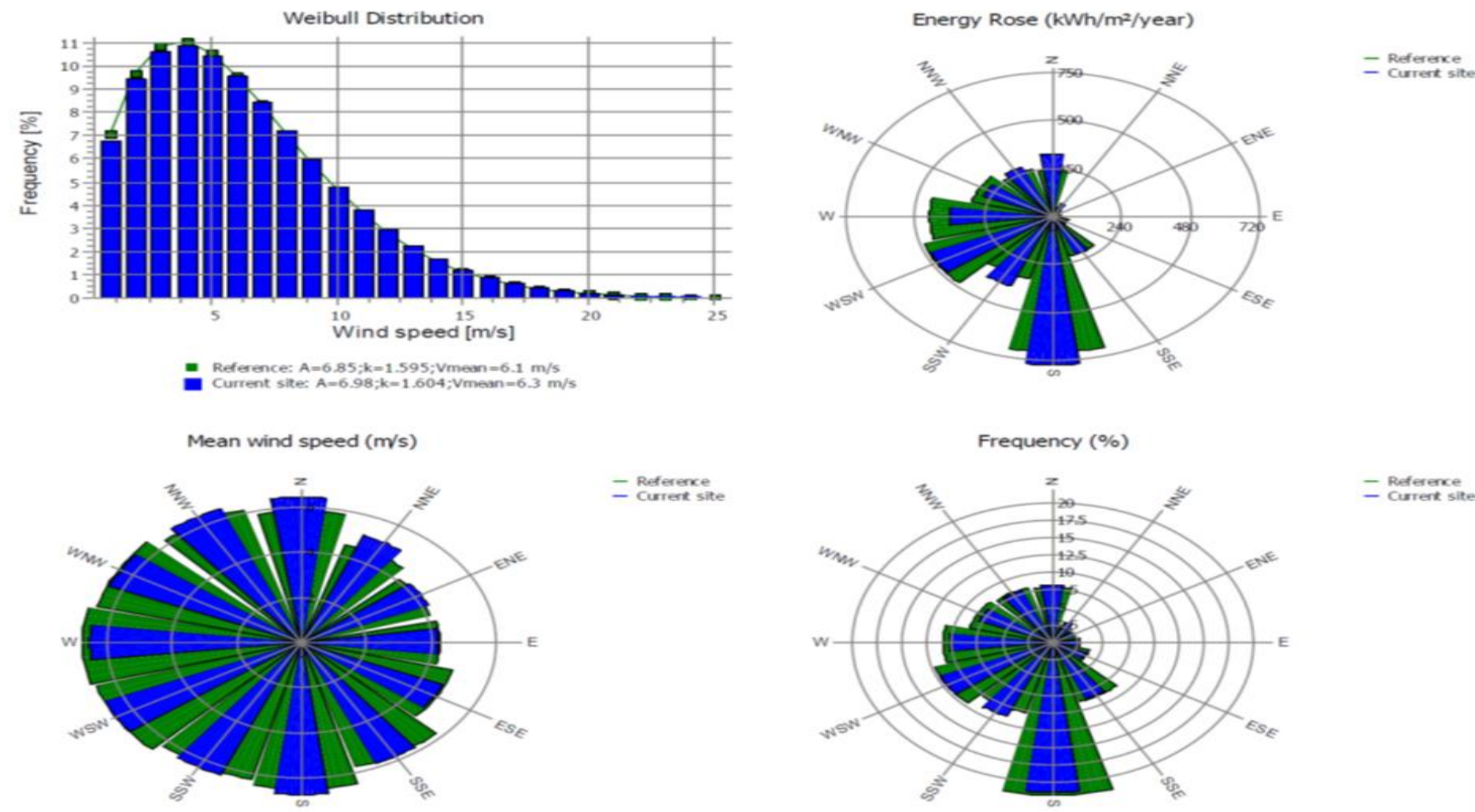


EWT, with authorized partners, can deliver a turnkey project

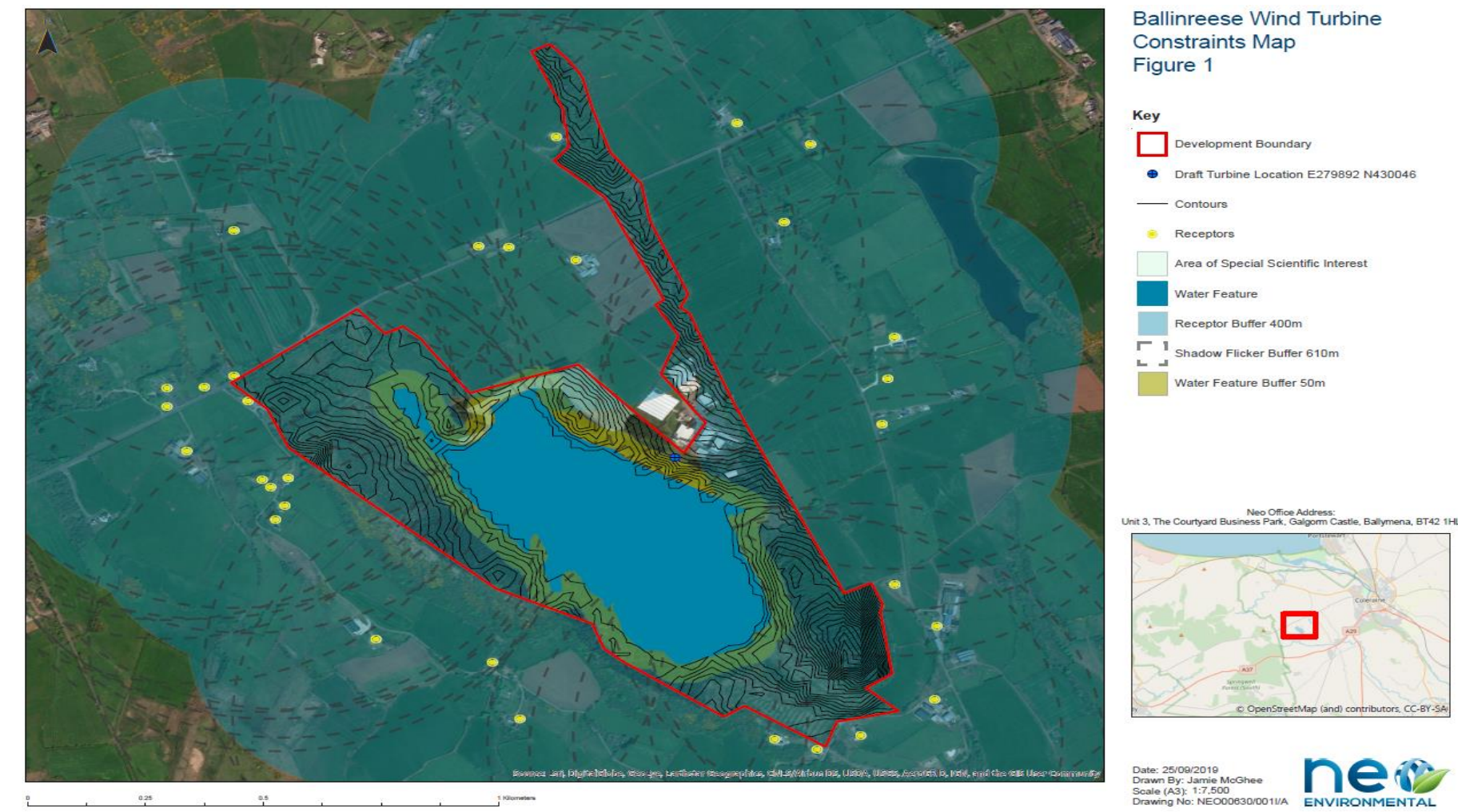


Project assessment (Screening and Feasibility studies)

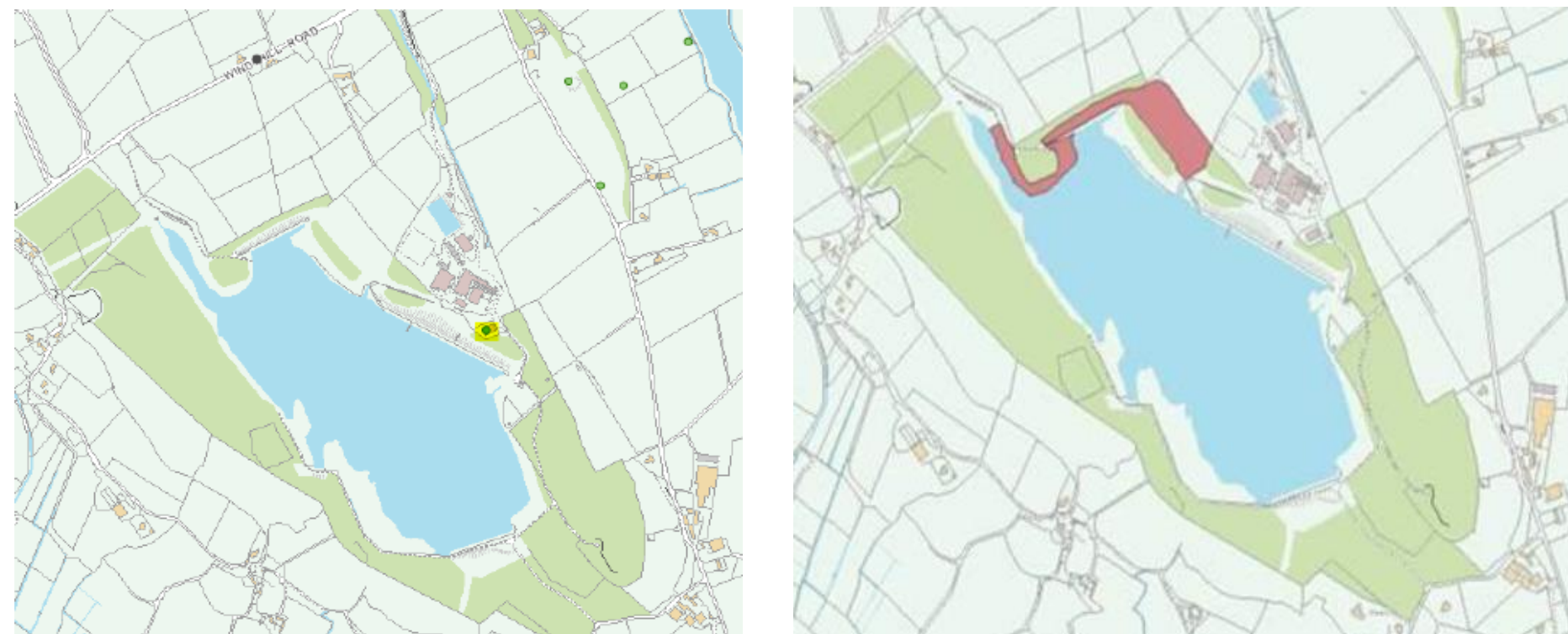
Wind Resource



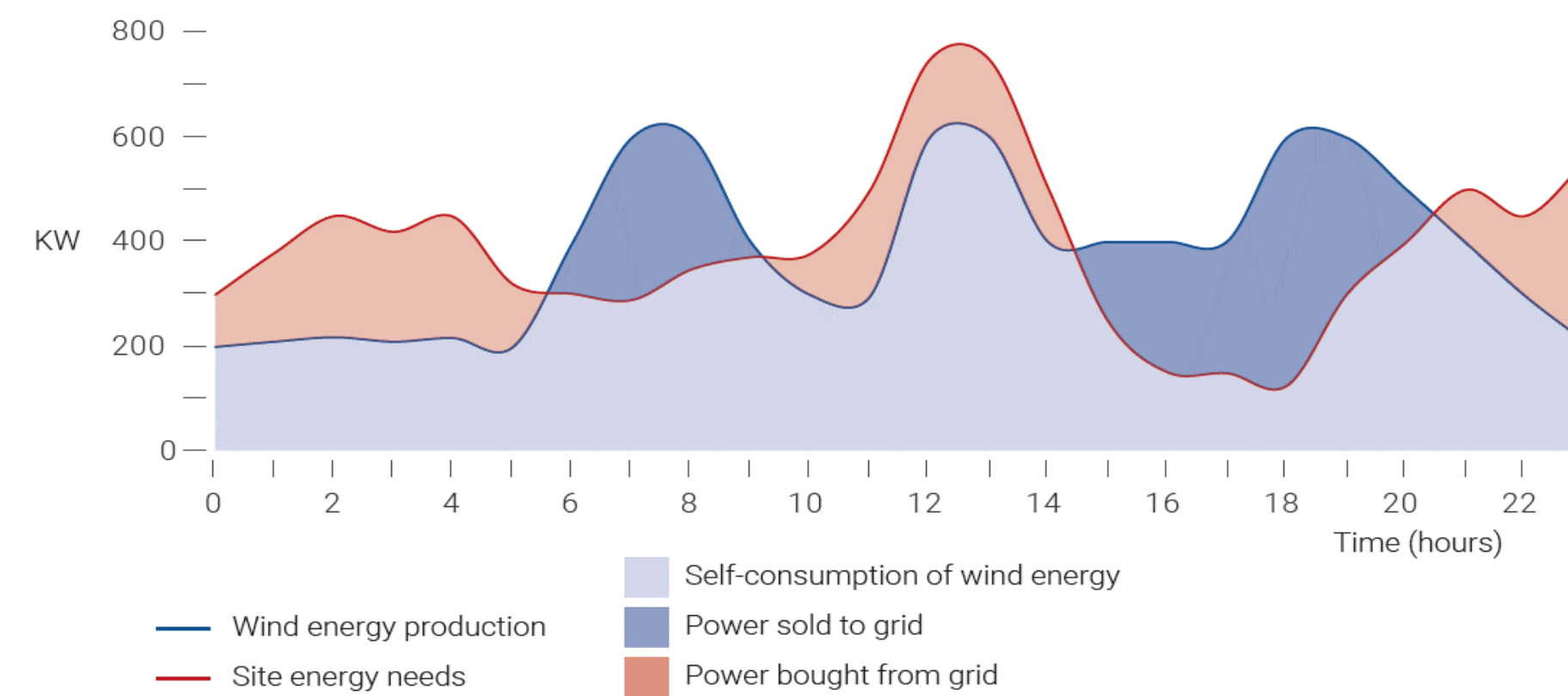
Wind turbine siting



Wetland assessment



Offset analysis



Ownership & financing options

Purchase

Turnkey solutions offered

Easy

Requires cash or loan financing

Lease

Can be attractive for tax purposes

Cost highly linked to interest rates

Option to buy-out the asset

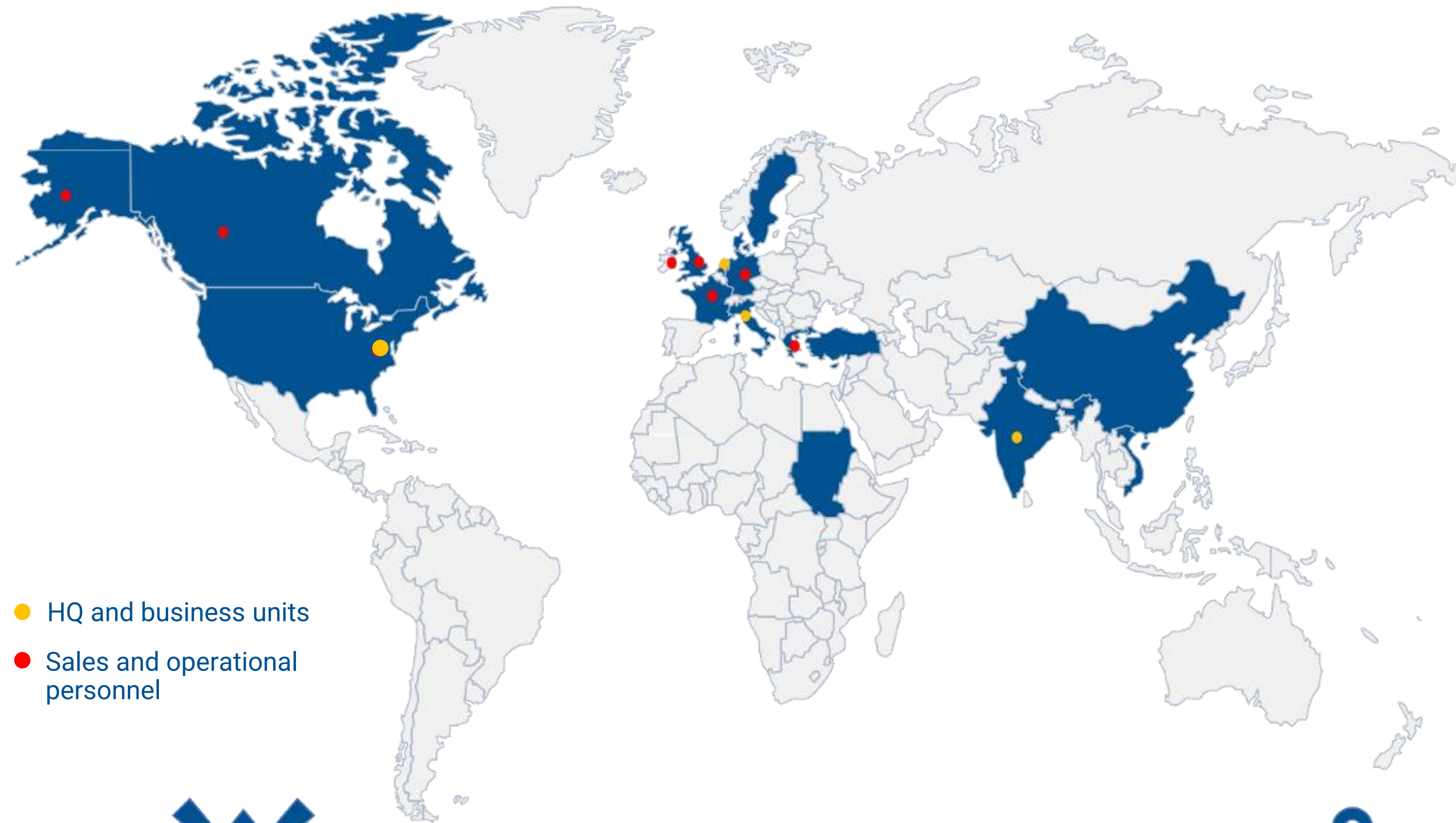
Power Purchase Agreement

\$0 investment solution

Only commit to buy the electricity

Long term commitment (min. 10 years)

EWT, the leader in distributed wind



Headquartered in The Netherlands



180 employees worldwide



Business units in the US, Italy and India



700+ Turbines installed in 10+ countries

Overview of EWT's C&I projects

EWT already realized **over 50 self-consumption projects in the World.**

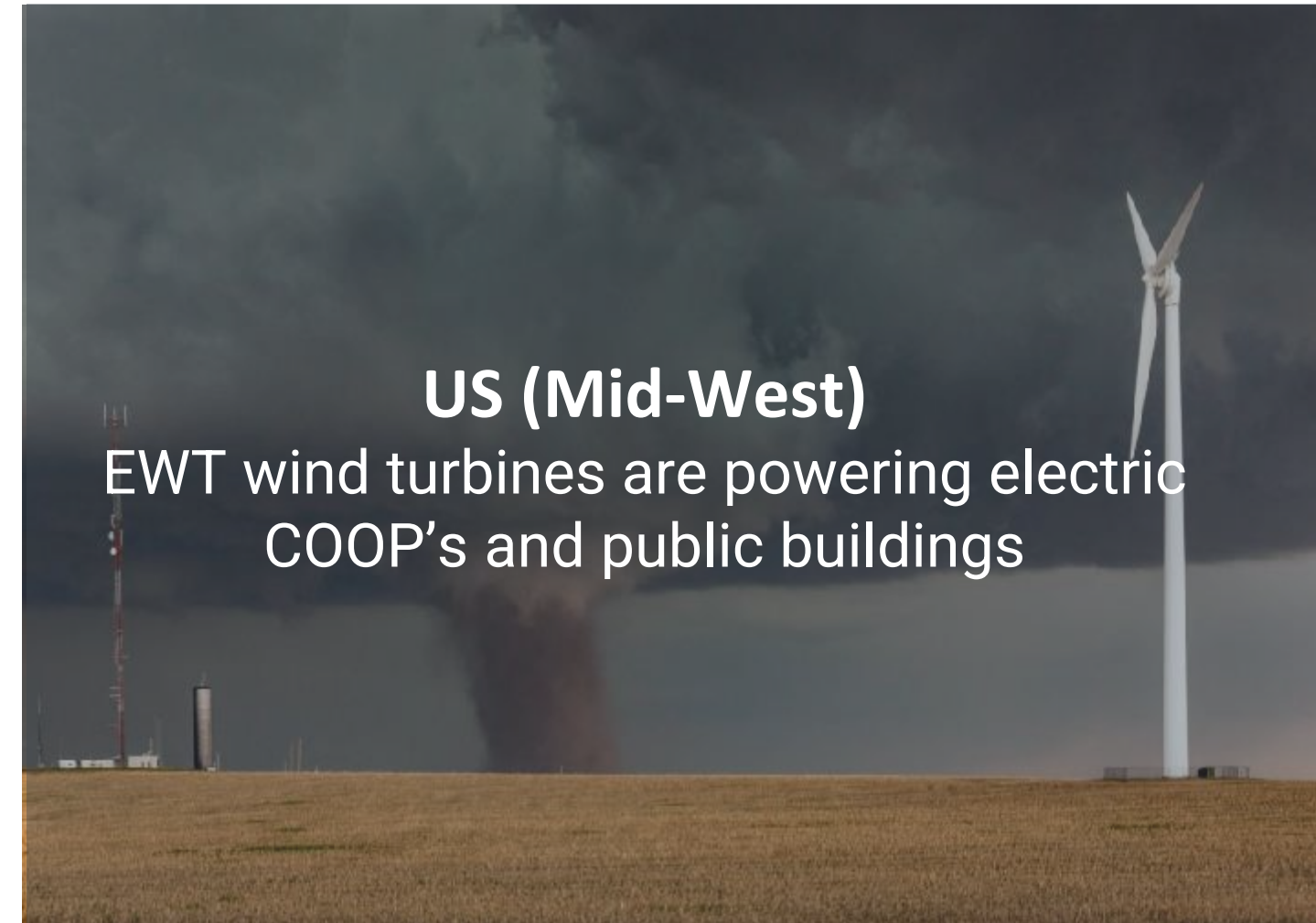
Projects typically avoid 700mt CO₂ / year, with a typical carbon payback of less than 1.5 years.

Customers include:

- Biogas plants
- Dairy farms
- Water treatment plants
- Cold stores
- Food processing industry...



Examples of EWT distributed wind projects



To get started:

Contact EWT to get a free project screening



Thank you !

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Type in your questions under “Questions” in the toolbar.

Make sure to answer the survey at the close of this webinar.

Thank you!

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← Audio

← Questions