

LOCAL BENEFITS OF DISTRIBUTED WIND

Distributed wind turbines are generally smaller than transmission-connected wind farms. Distributed wind turbines are connected to the distribution system of the electric grid or, in some cases, used in off-grid applications. These turbines usually provide electricity for on-site use at a specific location or to support local distribution networks. Distributed wind offers many local benefits to communities, including reduced energy bills, local jobs and economic benefits, reliability and resilience, and environmental and public health benefits.

Local energy source

Unlike utility-scale wind farms, which often provide electricity to distant cities or towns, the electricity generated by distributed wind turbines is generally used on-site or to serve local loads on the same distribution system. These turbines can provide clean, affordable electricity to farms, local businesses, schools, or customers from rural electric cooperatives or other local utilities. In some cases, distributed wind turbines are also owned directly by community members, small businesses, or other local entities.



Credit: Jordan Nelson / Nelson Aerial Productions

Place-based solution to the energy transition

Different communities have different energy needs, and there is no one-size-fits-all approach to the energy transition. Since distributed wind power is generated and consumed locally, these systems offer individuals and communities greater decision-making power over their energy and provide place-based solutions. Distributed wind's flexibility includes the ability to select turbines that match the amount of energy consumed nearby and to site the turbines in accordance with local zoning ordinances and preferences. For example, projects can be built with turbines in a range of sizes and include either a single turbine or multiple turbines. This gives communities the opportunity to minimize impacts on local viewsheds or conflicts with other land uses as they see fit.

Affordable energy option

Distributed wind can be an affordable source of electricity, saving businesses and individuals money on their electricity bills by providing a local alternative to costly imported fuel. Distributed

wind turbines can be cheaper and cleaner alternatives to diesel-powered generators for an off-grid home or remote community.

In areas that offer policy incentives like net metering, locally generated wind power can provide even greater utility bill savings. These affordability benefits can make a significant difference in rural communities, where residents often face disproportionately high energy burdens and spend a relatively higher percentage of their household income on energy bills.

Job creation and economic benefits

Distributed wind energy installations can create good-paying local jobs in the construction, operation, and maintenance of turbines. These installations can also provide opportunities for people to stay in their communities and inject new revenue into the local economy.

Building distributed wind energy projects can also strengthen the broader domestic economy. Many small wind turbine manufacturers are headquartered in the United States, and larger wind turbines are often, at least in part, manufactured within the country. In addition to supporting U.S. companies, local communities have a material opportunity to own distributed wind projects, in contrast to large-scale wind farms that are often owned by utilities. Community-owned distributed wind projects offer additional long-term economic benefits to those areas.

Support for a reliable and resilient grid

When distributed wind systems are incorporated into a local microgrid, they can provide backup sources of power during grid outages, such as during natural disasters. Rural communities served by aging grid infrastructure are more vulnerable to power outages. Distributed wind turbines can help keep the lights on. These benefits can be even greater when distributed wind turbines are paired with solar panels or battery storage in what is commonly known as a hybrid system.

Clean electricity with minimal impacts on land and water

Wind turbines generally have a smaller direct land use footprint than solar panels, and distributed wind installations occupy much less land than larger utility-scale wind farms. Turbines can easily be built alongside existing land uses, such as crop or grazing land, making distributed wind an efficient use of space, especially in rural or farming communities. Wind energy is a clean, pollution-free source of electricity that can help give a community cleaner air while contributing to climate and electrification goals.



Installing and operating distributed wind turbines uses minimal amounts of water, which can be conserved for homes, farms, and businesses. In contrast, thermal generators like coal, oil, or natural gas use large amounts of water. Building distributed wind projects on brownfields can provide additional sustainability and economic benefits by redeveloping contaminated or abandoned land.

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