CLEAN GRID ALLIANCE

FACT SHEET

# Clean Energy is Efficient

## Wind Energy

**46 minutes** of **1 wind turbine spinning** can **power** the **average electricity use** of a **home** for **1 month**

### Energy Production

One average utility-scale wind turbine produces about **6,000 megawatt hours** (MWh) of electricity per year- **enough to power about 1,500 homes.**

Typical Project Size: The average US utility-scale wind project is about **150 MW,** with roughly **43 turbines,** and can **power over 45,000 homes annually. ***

A single revolution of a wind turbine generates about 1-4 kWh of electricity, **enough to power an average home for a few hours.**

### Energy Payback

A Vestas 4.2 MW wind turbine pays for itself and is energy neutral **within 5-8 months**

A wind farm will return **50x more energy** back to society than it consumed

*Equation: 1 MW x 8,760 hours/year x 38% capacity factor= 3,329MWh/year / 10.6MWh per home/year = 300 homes.

**Clean energy projects provide stable income to willing landowners, diversifying and strengthening farm revenue while preserving working farms and rural landscapes**


Sources:

1. United States Geological Survey. https://www.usgs.gov/faqs/how-many-homes-can-average-wind-turbine-power
2. Vestas. Energy Payback & Return on Energy. https://www.vestas.com/en/sustainability/environment/energy-payback
3. National Renewable Energy Laboratory. Energy and Carbon Payback Times for Modern U.S. Utility Photovoltaic Systems. https://docs.nrel.gov/docs/fy24osti/88653.pdf

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## Solar Energy

**1 acre** of **solar panels** can produce enough **power** in **1 day** to **power** the **average daily electricity use** of **50 homes**

### Energy Production

One average utility-scale solar panel produces about 700 kWh of electricity per year. **13-21 panels can power an average home for a year.**

Typical Project Size: The average US utility-scale solar project is **150 MW,** with over **405,000 panels**, and can **power over 26,000 homes annually. ***

One day of sunlight on one solar panel generates 2.5kWh of electricity, **enough to power an average home for 1-2 hours.**

### Energy Payback

Utility-scale photovoltaic systems will pay back the energy used to manufacture and dispose of them **within 2.5 years**

A solar array will return up to **30x more energy** back to society than it consumed

*Equation: 1 MW x 8,760 hours/year x 25% capacity factor= 2,190 MWh/year / 10.6MWh per home/year = 200 homes.

Sources:
1. United States Geological Survey. https://www.usgs.gov/faqs/how-many-homes-can-average-wind-turbine-power
2. Vestas. Energy Payback & Return on Energy. https://www.vestas.com/en/sustainability/environment/energy-payback
3. National Renewable Energy Laboratory. Energy and Carbon Payback Times for Modern U.S. Utility Photovoltaic Systems. https://docs.nrel.gov/docs/fy24osti/88653.pdf