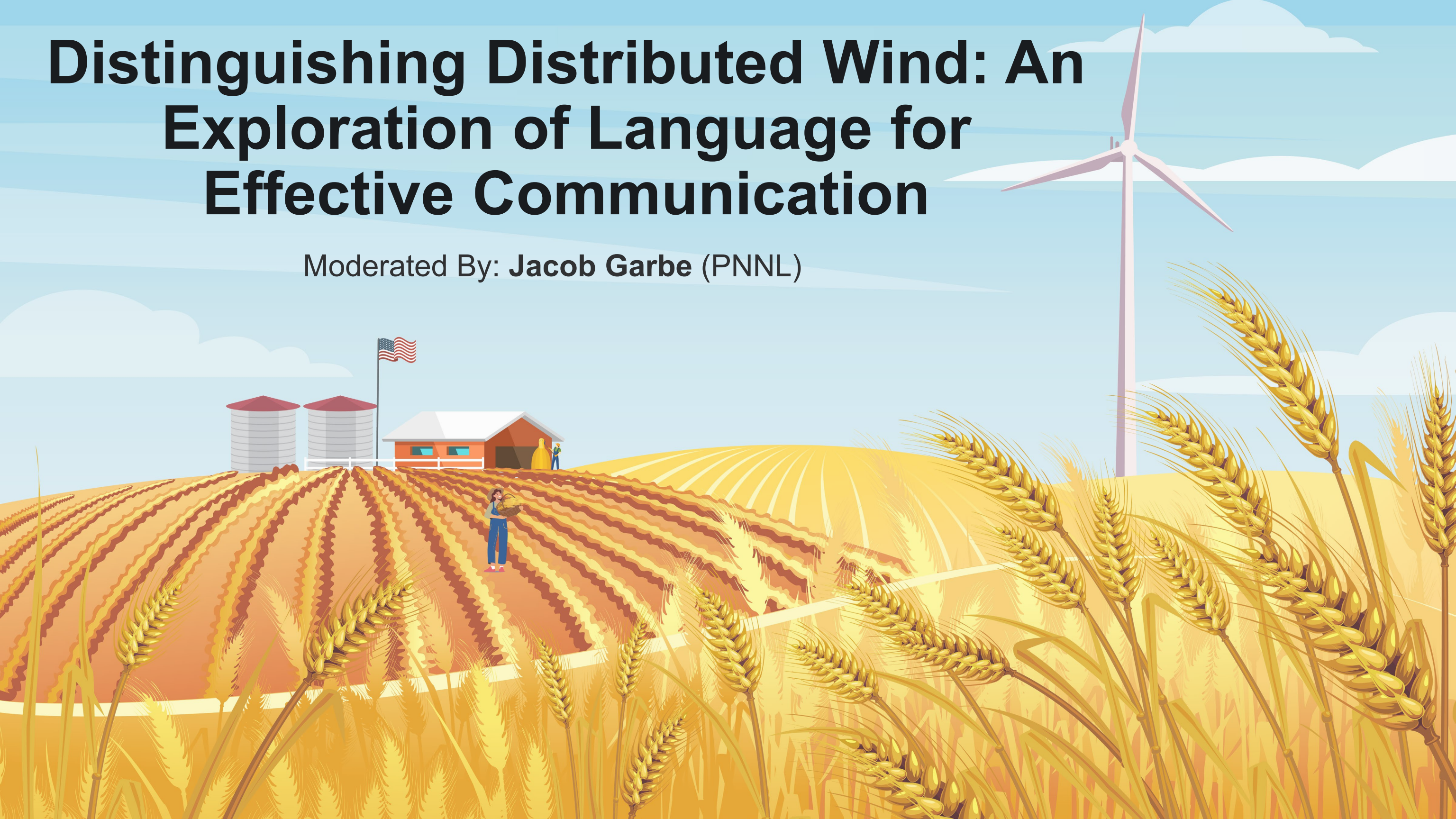


Distinguishing Distributed Wind: An Exploration of Language for Effective Communication

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Distinguishing Distributed Wind

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U.S. DEPARTMENT
of ENERGY

BATTELLE



Pacific Northwest
NATIONAL LABORATORY

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How would you describe distributed wind?

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Which of these photos represents a turbine in a distributed application? Choose all that apply



All of them are turbines deployed in distributed applications! (Except the dog in a hat)



Which of these is a distributed wind turbine?



The one on the left is a distributed wind turbine!



Definitions

Distributed Wind

- Connected at distribution level of the grid or are off-grid
- Serve local loads
- Typically deployed as just one or a handful of turbines

Utility-Scale Wind

- Connected to the transmission system to provide bulk power
- Typically deployed with many turbines as a windfarm

*Although utility-scale wind turbines are, on average, much larger than distributed wind turbines, **size does not dictate** whether a turbine is considered distributed or utility-scale.*

Classifying Turbine Sizes

Capacity

- **Small:** ≤ 100 or < 150 kW
- **Midsized/Medium:**
101-1,000 kW or 150-300 kW
- **Large:** $> 1,000$ kW



Hub Height

- **Residential:** 114.8 ft
- **Commercial:** 147.6 ft
- **Midsized:** 180.4 ft
- **Large:** 262.5 ft



Rotor Swept Area

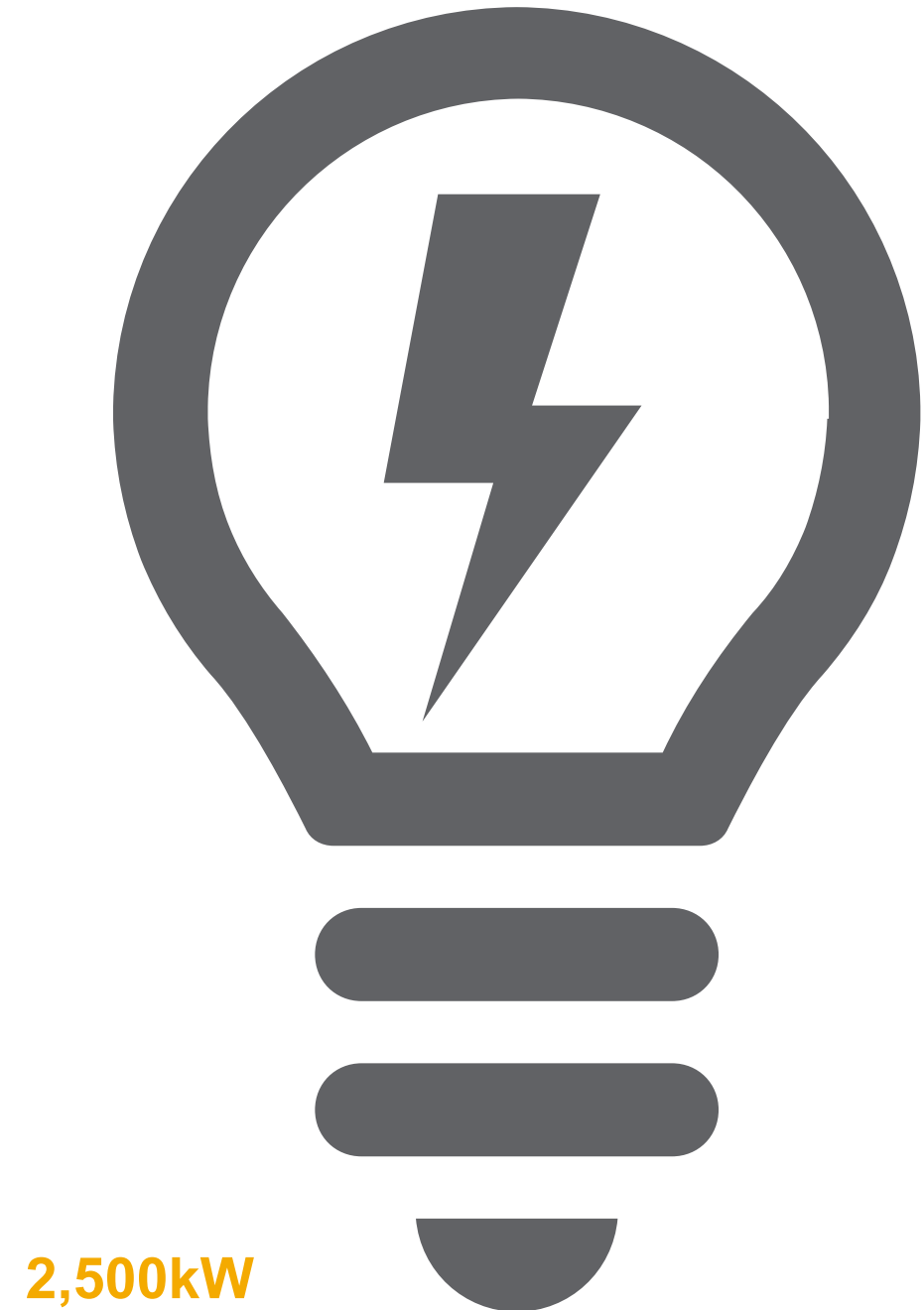
- **Micro** < 53.8 ft²
- **Small:** 53.8 ft² – $2,152.8$ ft²
- **Medium:**
 $2,152.8$ ft² – $12,916.7$ ft²



Capacity Comparison

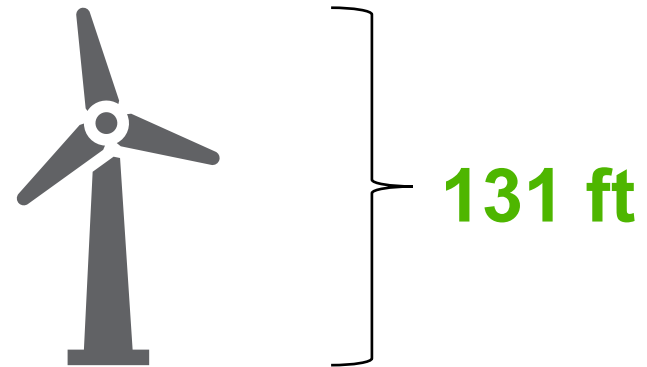
 15 kW

Distributed Wind
10 kW – 40 kW

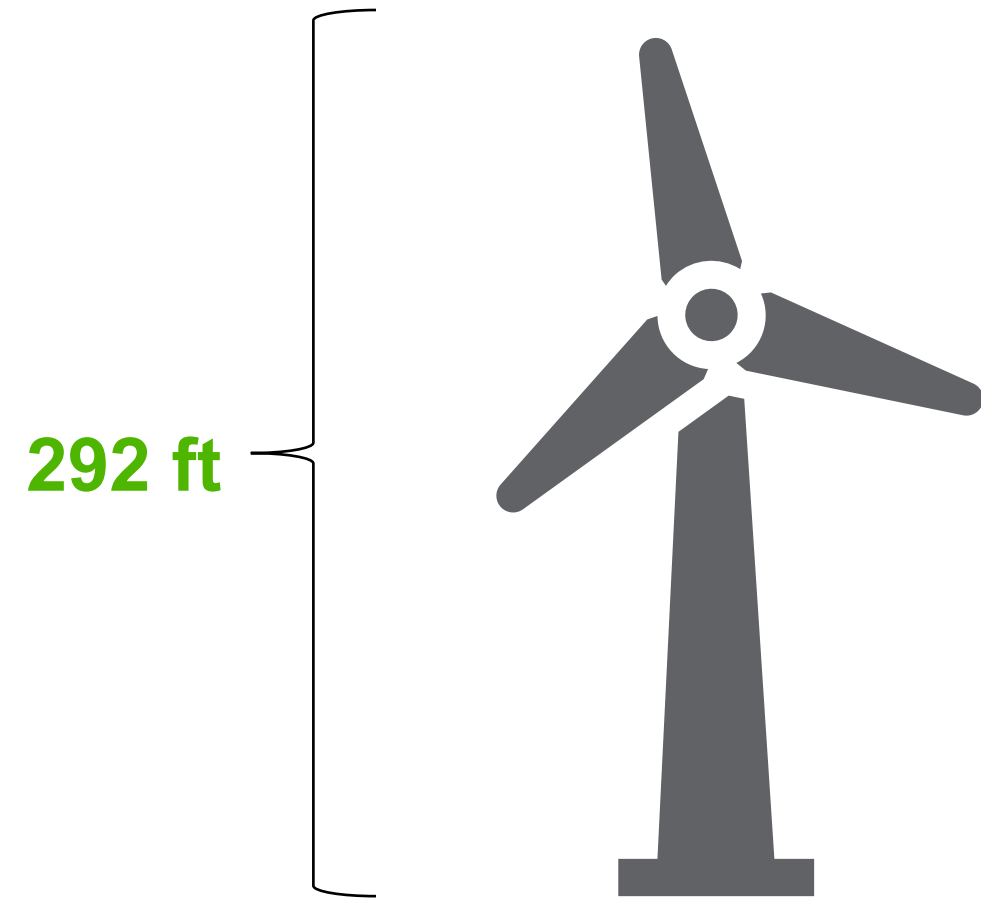


Utility-Scale Wind
2,000 kW – 3,000 kW

Hub Height

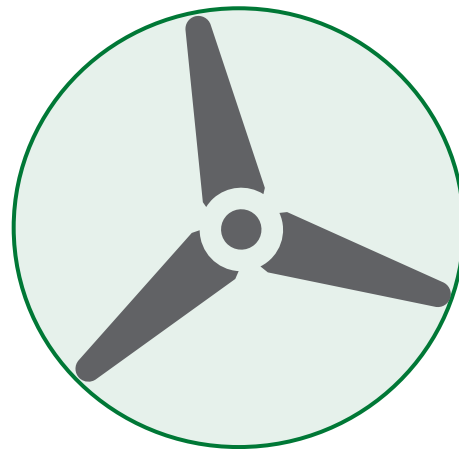


Distributed Wind
98 ft – 141 ft



Utility-Scale Wind
263 ft – 312 ft

Rotor Swept Area

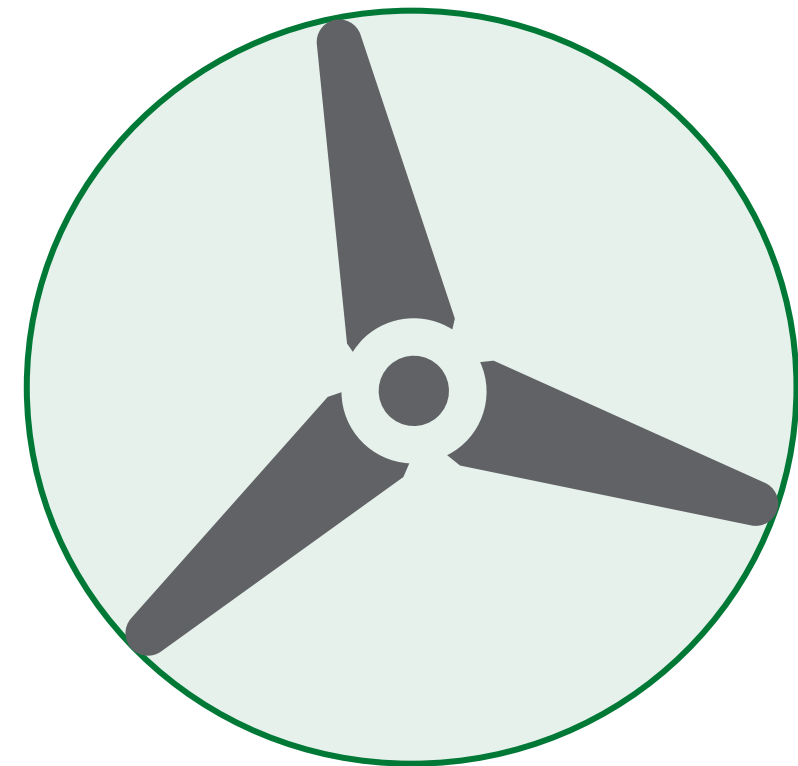


414 ft²

Distributed Wind

414 ft² – 2,110 ft²

113,752 ft²



Utility-Scale Wind

98,607 ft² – 136,354 ft²

The Challenge

It can be difficult to describe distributed wind in simple terms because project applications are so varied.

INSTITUTIONAL

Schools, universities, churches, nonprofits, and local unions

INDUSTRIAL

Food processing plants, appliance manufacturing plants, oil and gas operations, and mines

RESIDENTIAL

Remote cabins, private boats, rural homesteads, suburban homes, and multifamily dwellings

AGRICULTURAL

Farms, ranches, nurseries, and vineyards

COMMERCIAL

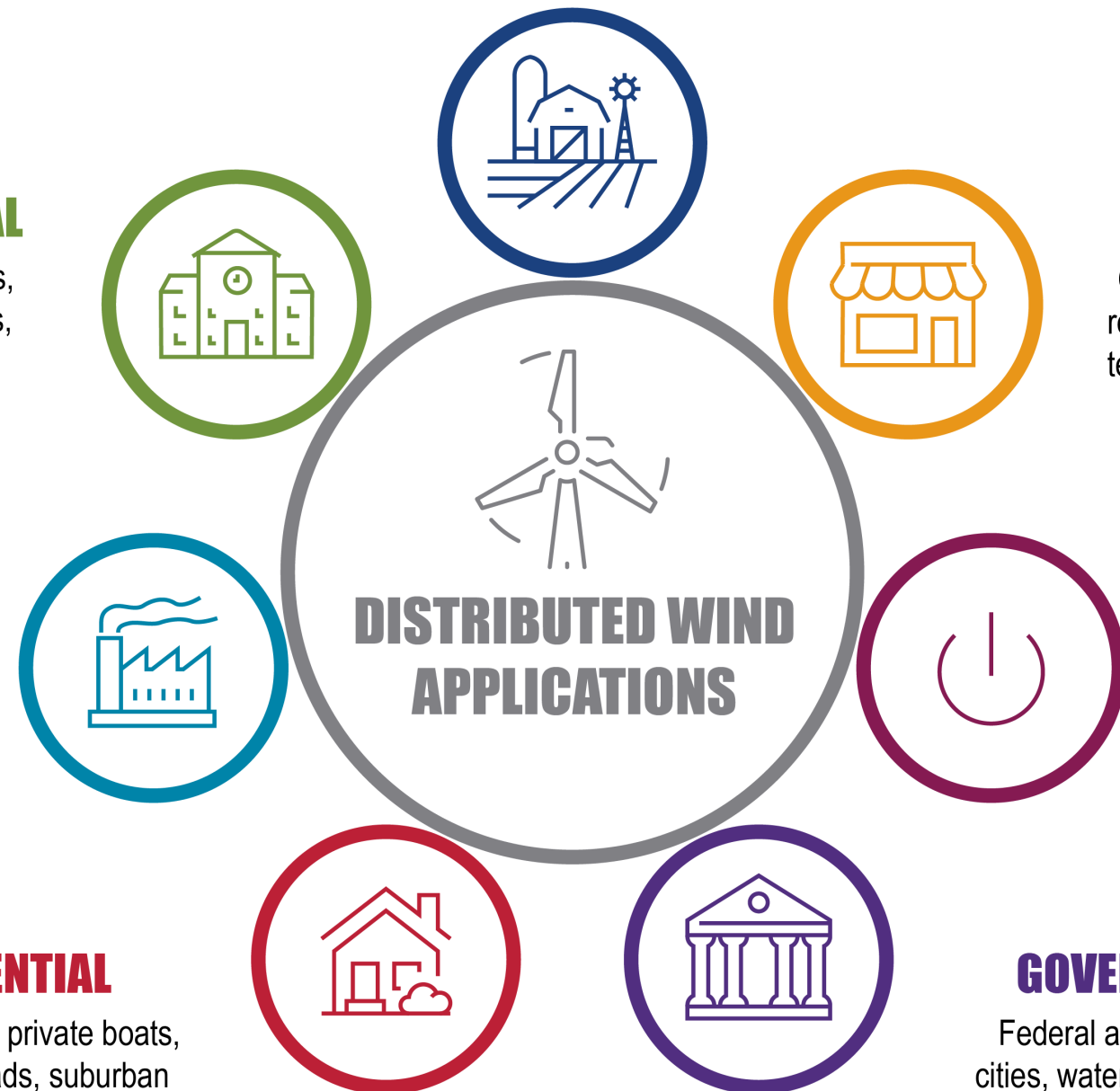
Offices, car dealerships, retail spaces, restaurants, telecommunications sites, and distribution centers

UTILITIES

Investor-owned utilities, publicly-owned utilities, tribal-owned utilities, and rural electric cooperatives

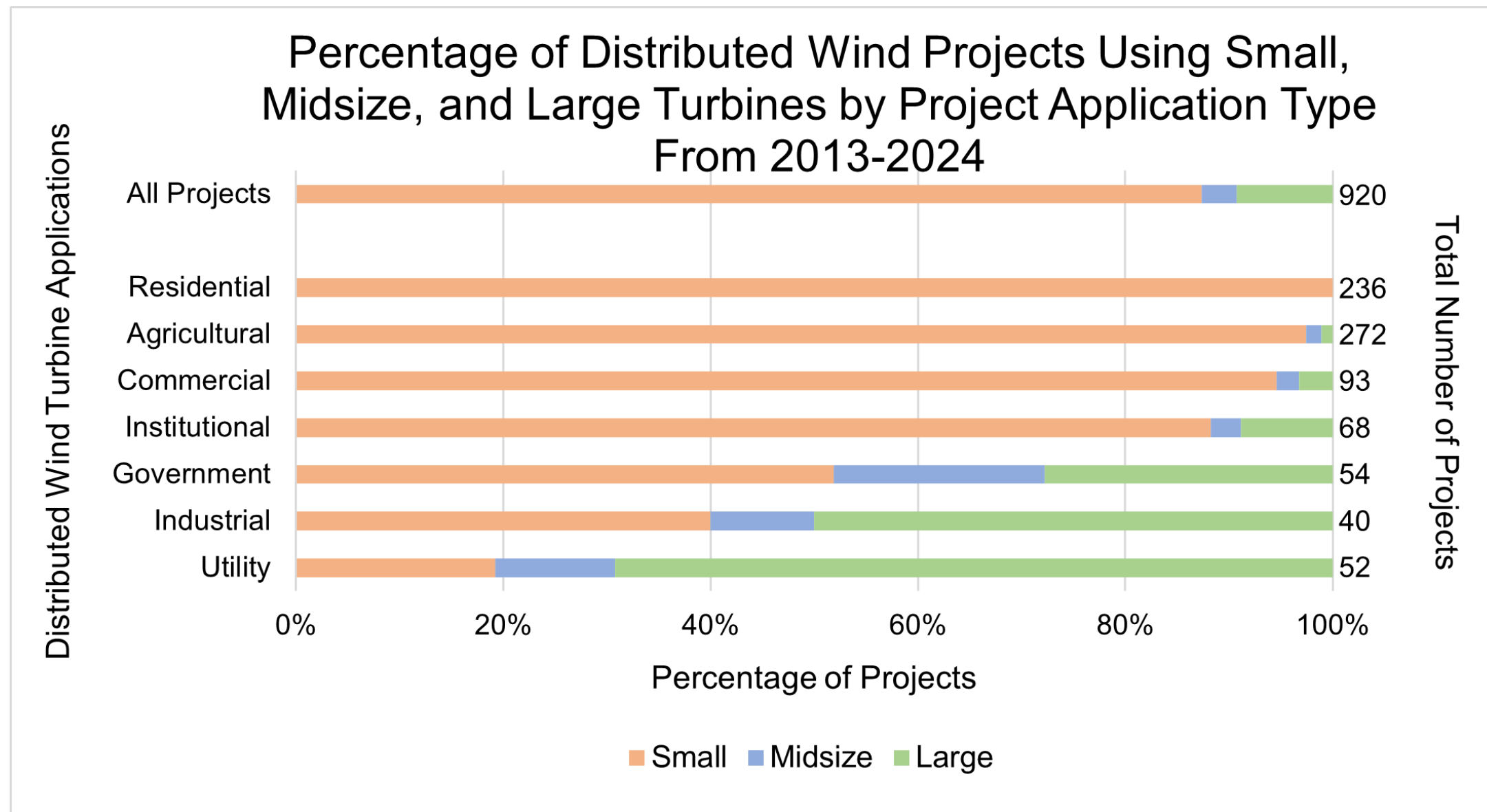
GOVERNMENTS

Federal agencies, states, cities, water-treatment plants, fire departments, military sites, and tribal governments



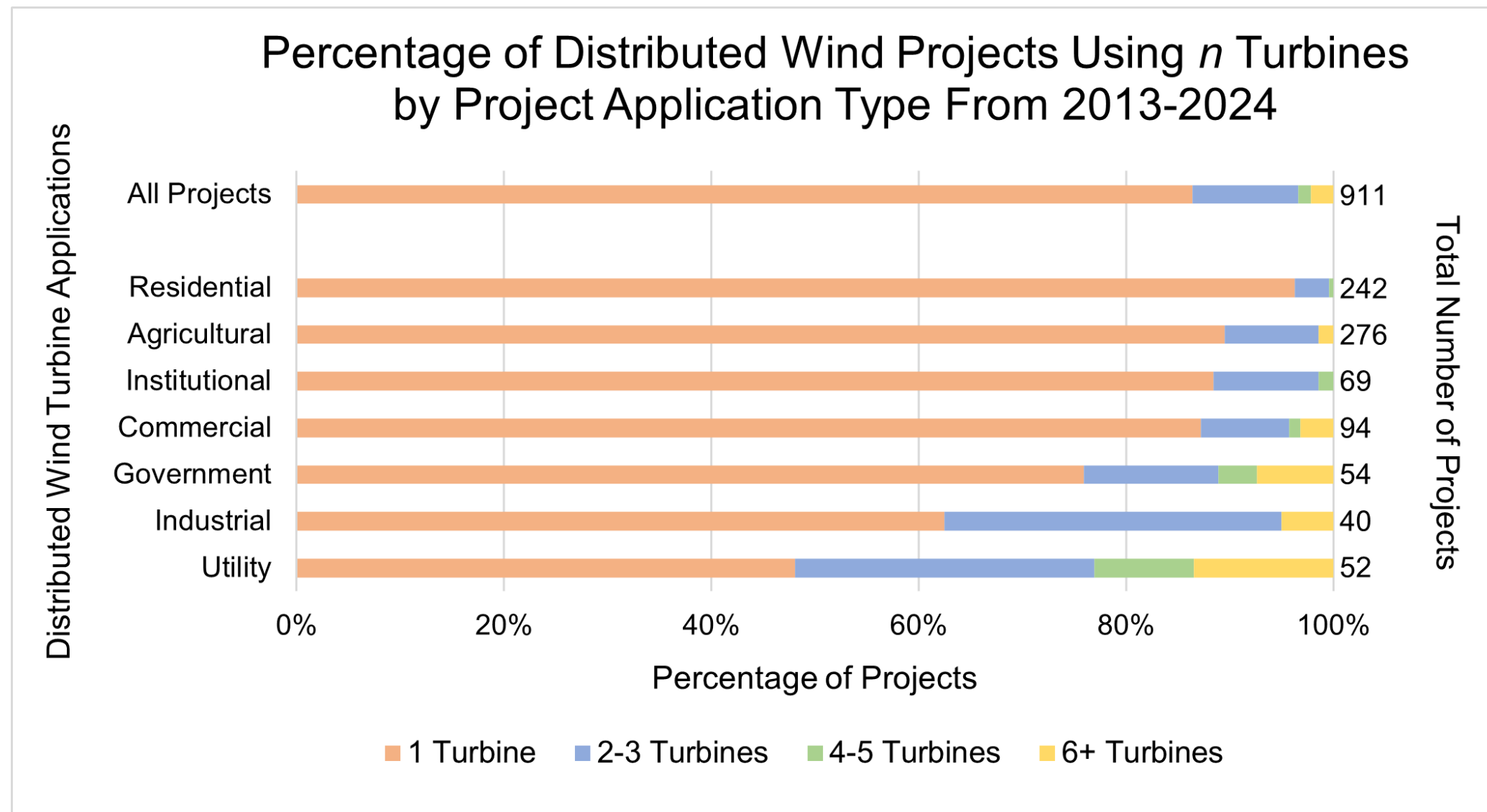
Applications of Distributed Wind

The size of the turbines used in distributed wind projects **varies by application.**



Applications of Distributed Wind

The number of turbines used in a distributed wind project varies by application but **typically remains less than six**.



What helps you understand distributed wind?

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Thank you

