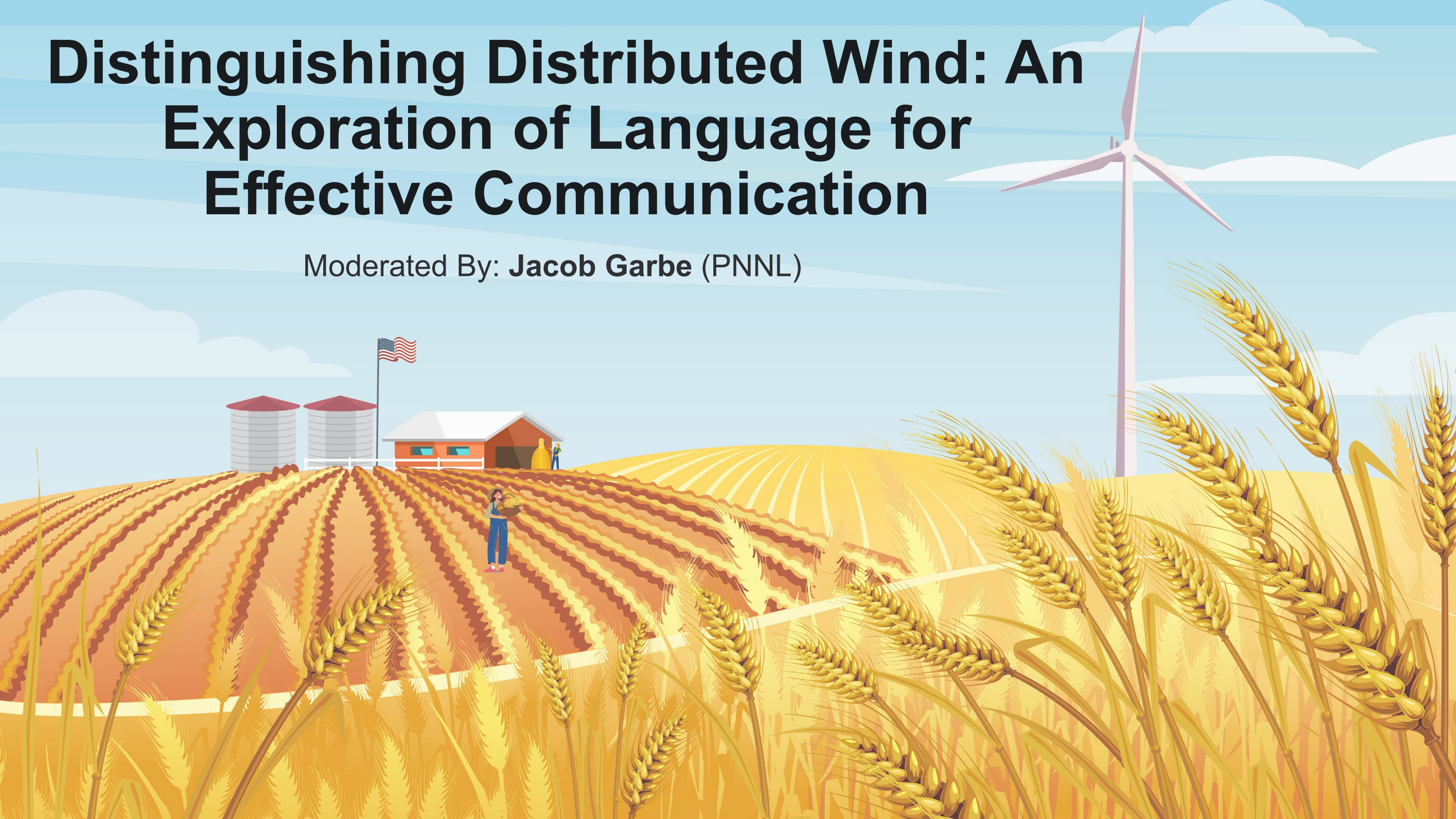
Distinguishing Distributed Wind: An Exploration of Language for Effective Communication

Moderated By: **Jacob Garbe** (PNNL)



Distinguishing Distributed Wind

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Jacob Garbe
Danielle Preziuso

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

1

2

3

4

5

6

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 dictat**e whether a turbine is considered distributed or utility-scale.*

Classifying Turbine Sizes

Capacity

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

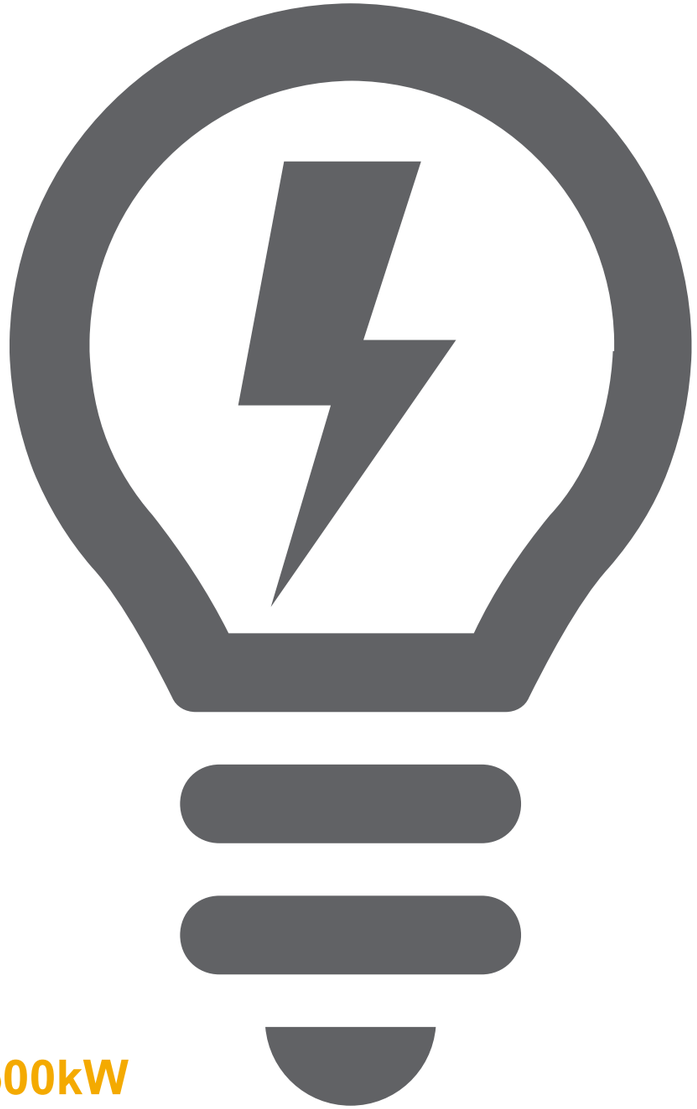
Hub Height

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

Rotor Swept Area

- **Micro** < 53.8 ft^2
- **Small**: 53.8 ft^2 – 2,152.8 ft^2
- **Medium**: 2,152.8 ft^2 – 12,916.7 ft^2

Capacity Comparison



15 kW

2,500kW

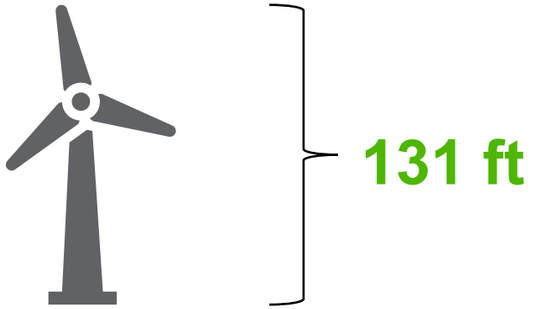
Distributed Wind

10 kW – 40 kW

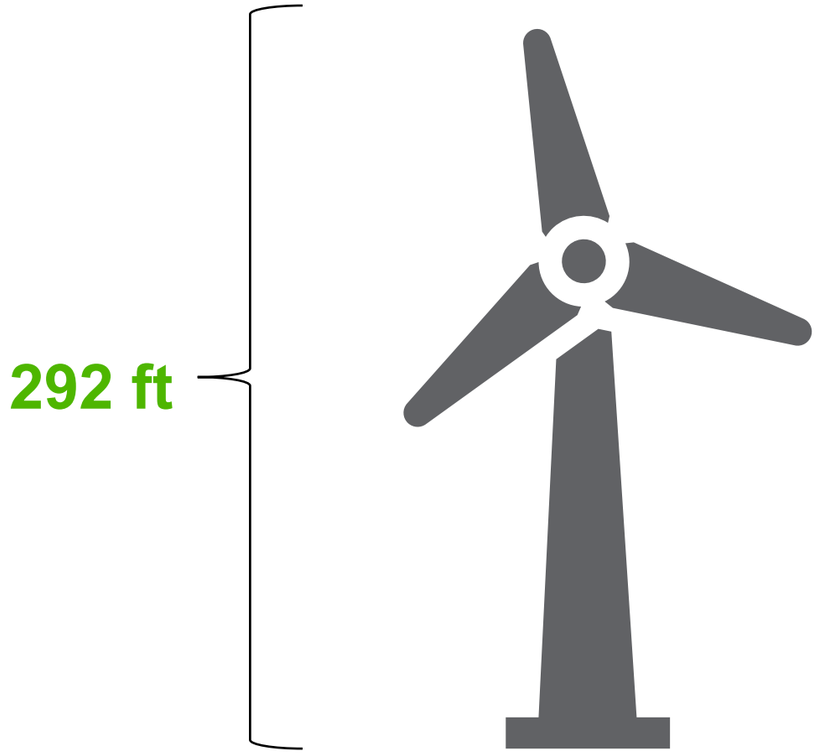
Utility-Scale Wind

2,000 kW – 3,000 kW

Hub Height

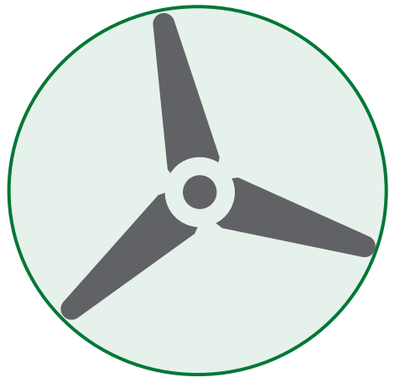


Distributed Wind
98 ft – 141 ft



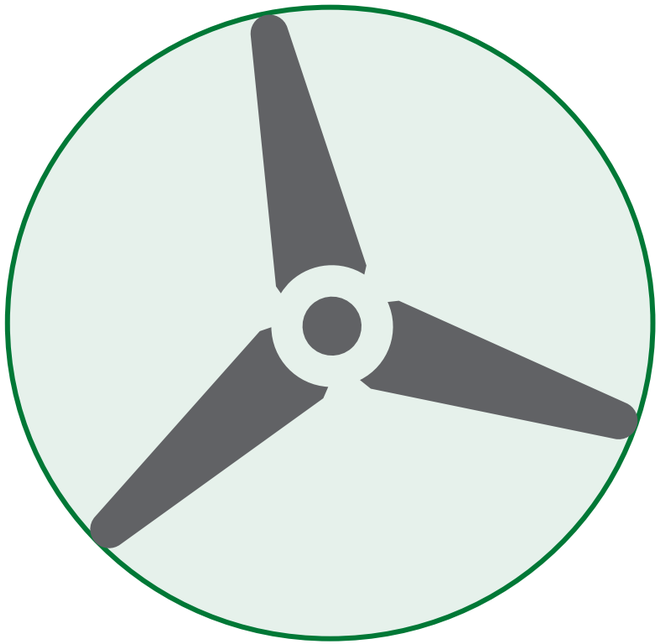
Utility-Scale Wind
263 ft – 312 ft

Rotor Swept Area



414 ft^2

113,752 ft^2



Distributed Wind

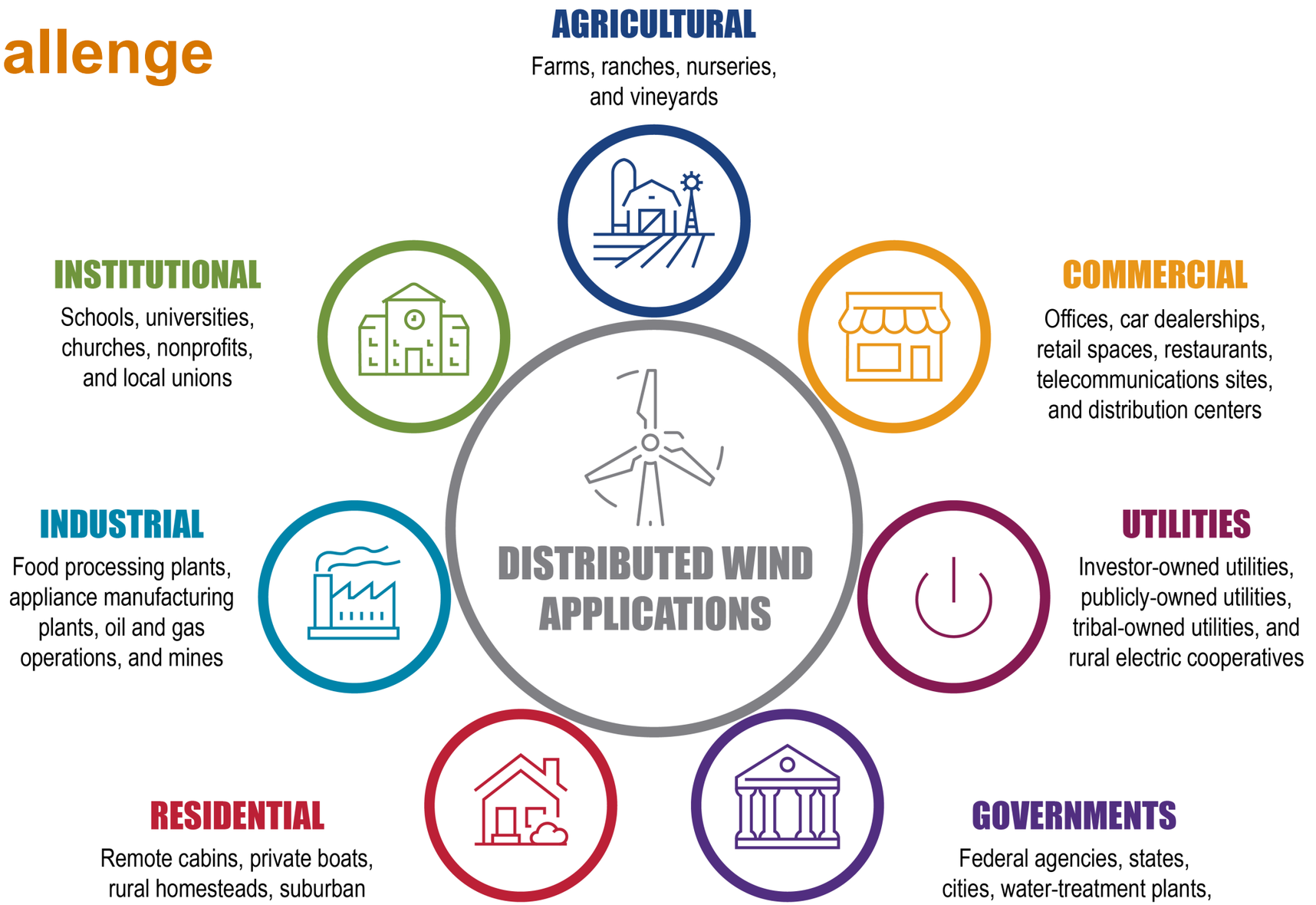
414 ft^2 – 2,110 ft^2

Utility-Scale Wind

98,607 ft^2 – 136,354 ft^2

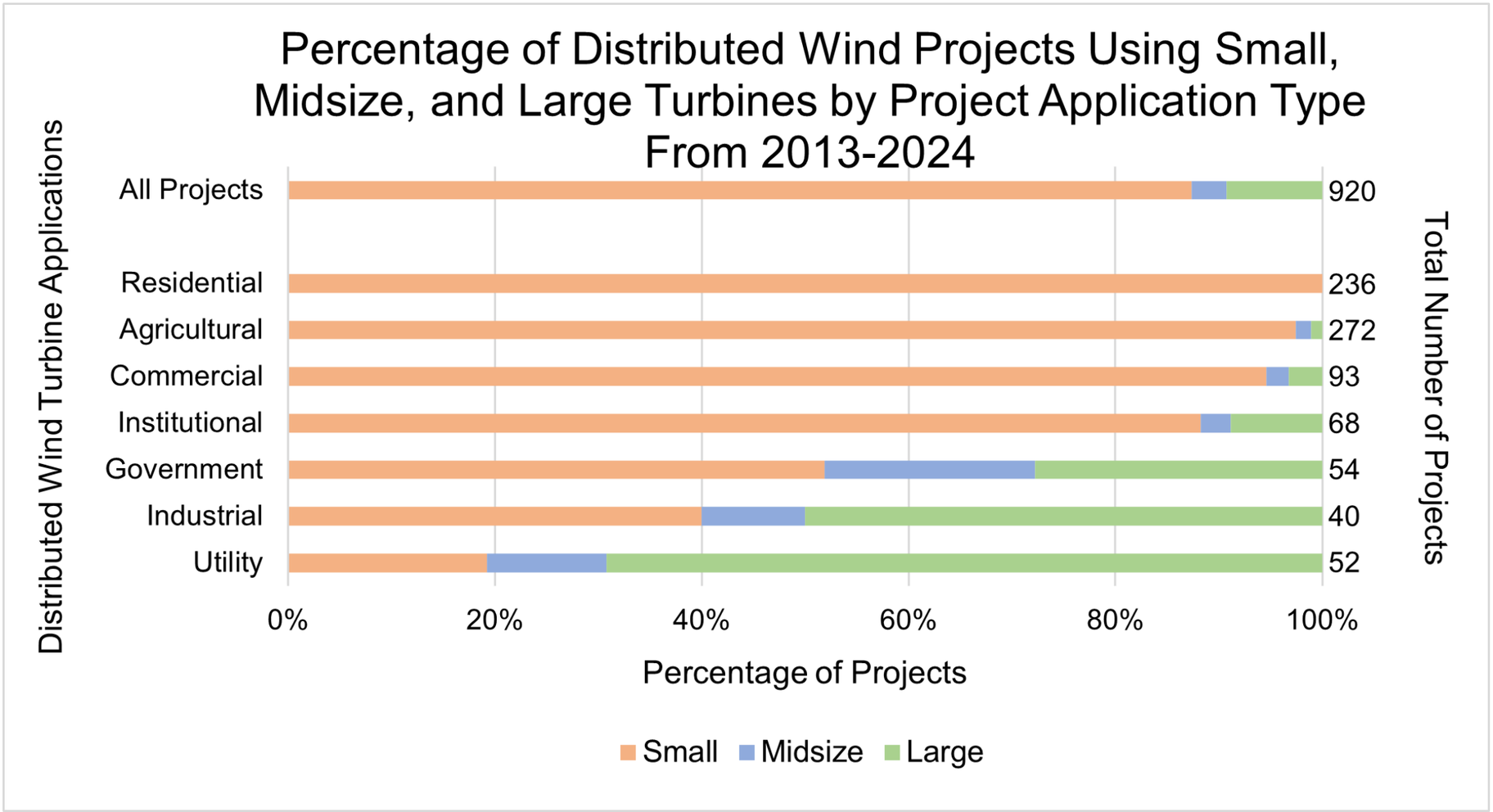
The Challenge

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



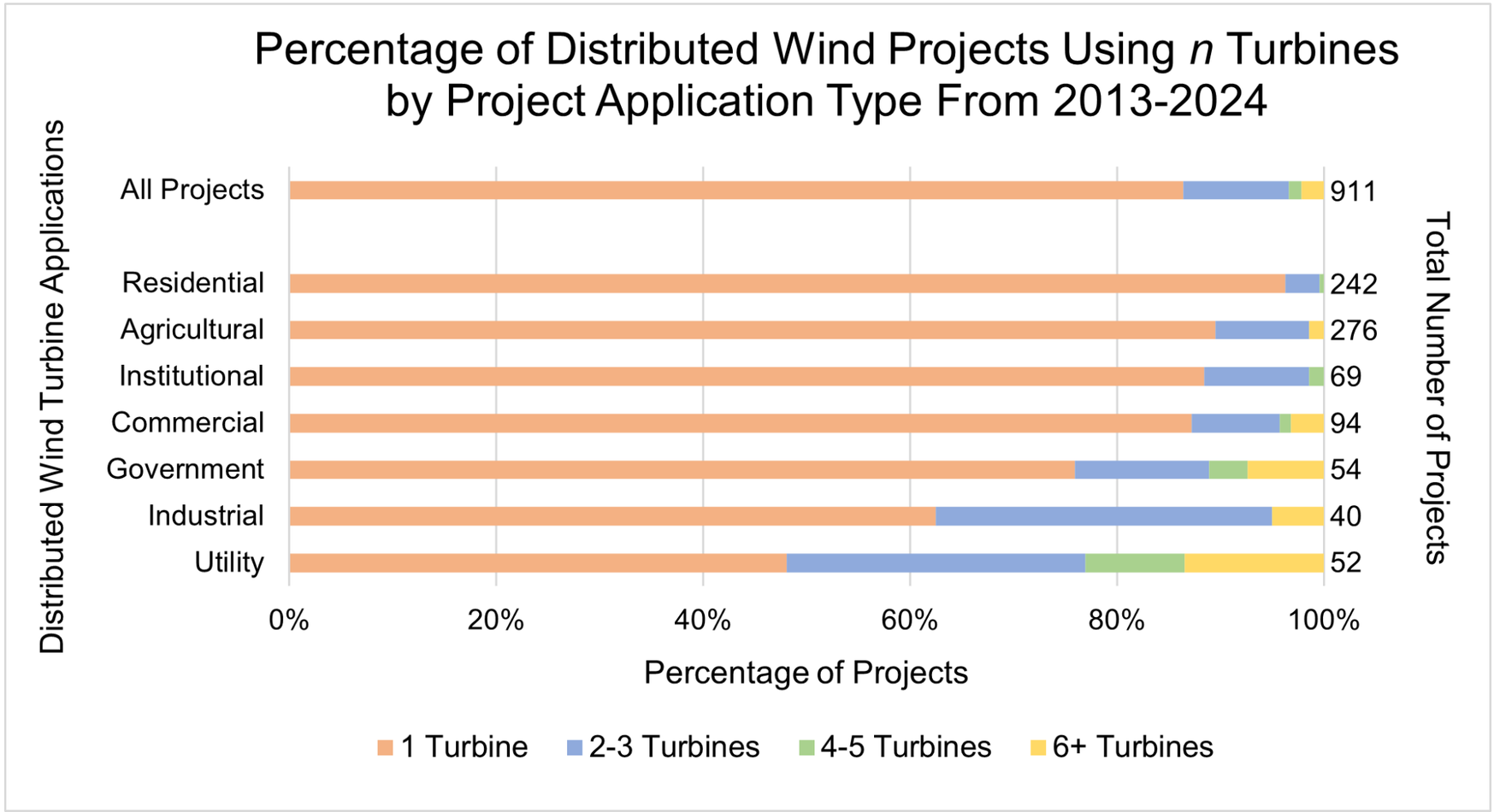
Applications of Distributed Wind

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