U.S. DEPARTMENT OF ENERGY

Office of ENERGY EFFICIENCY & RENEWABLE ENERGY

Distributed Wind Competitiveness Improvement Project

The Competitiveness Improvement Project (CIP) is a periodic solicitation through the U.S. Department of Energy (DOE) and its National Renewable Energy Laboratory (NREL). Manufacturers of small- and medium-sized wind turbines are awarded cost-shared subcontracts via a competitive process to optimize their designs, develop advanced manufacturing processes, and perform turbine testing. The goals of the CIP are to make wind energy cost competitive with other distributed generation technologies and increase the number of wind turbine designs certified to national testing standards. *Photo courtesy of Sonsight*

Increased Performance & Capability

CIP *component innovation* awardee Intergrid, LLC, of Temple, New Hampshire, developed a power inverter for wind turbines under 25kW to meet updated grid integration requirements, while adding grid forming and storage capabilities for resilient back-up power.

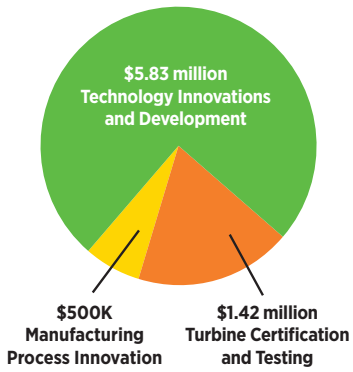
Reduced Hardware Costs

CIP *manufacturing process innovation* awardee Pika Energy of Westbrook, Maine, reduced blade costs by approximately 90% by developing an innovative tooling strategy to produce blades using injection-molded plastic.

Certified Turbine Performance & Safety

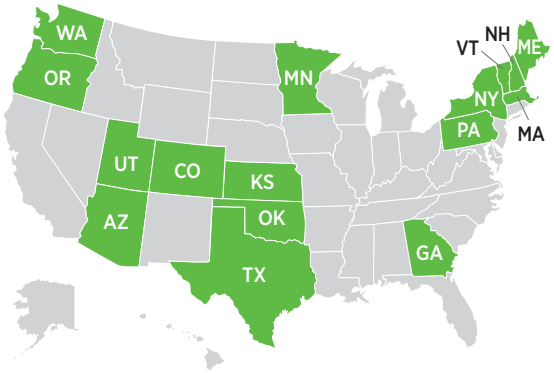
CIP *turbine certification testing* awardee Primus Windpower of Lakewood, Colorado, achieved turbine certification—third-party verified testing for safety, function, performance, and durability—on two of their turbine models. Bergey Windpower of Norman, Oklahoma, also recently received certification of the new Bergey Excel 15 turbine. Additional CIP awardees are currently conducting certification testing.

Through seven funding cycles, DOE and NREL have awarded 36 subcontracts to 20 companies, totaling $7.75 million of investment while leveraging $3.79 million in additional private-sector funding.



Funding breakdown for three CIP research areas

Bergey Windpower (Norman, OK)
Ducted Wind Turbines (Potsdam, NY)
Endurance Wind Power (Seattle, WA)
Intergrid (Temple, NH)
Northern Power Systems (Barre, VT)
Pecos Wind Power (Somerville, MA)
Pika Energy (Westbrook, ME)
Primus Windpower (Lakewood, CO)
QED Wind Power (Tucson, AZ)
Rock Concrete (Augusta, KS)
Sonsight (Lawrenceville, GA)
Star Wind Turbines (East Dorset, VT)
Urban Green Energy (New York City, NY)
Ventera Wind (Duluth, MN)
Westergaard Solutions (Houston, TX)
Wetzel Engineering (Lawrence, KS)
Windurance (Coraopolis, PA)
Windward Engineering (Spanish Fork, UT)
Xflow Energy (Seattle, WA)
Xzeres (Portland, OR)



Small wind generators like this Primus Windpower AIR 40 provide battery charging in remote locations. *Photo from Primus WindPower, NREL 44229*

Why the U.S. Department of Energy Invests in the Competitiveness Improvement Project

Cost reductions, more reliable technologies, and consumer-friendly business models are making distributed generation more accessible to businesses and consumers interested in producing their own electricity. DOE investments in the CIP help support U.S. leadership in distributed wind technologies and advance wind energy as a low-cost distributed generation technology option by 1) reducing technology costs, 2) supporting new product innovation, 3) optimizing wind turbines for distributed applications, and 4) ensuring that distributed energy consumers have wind technology options that are certified for performance and quality.

"The CIP program is helping us and other distributed wind original equipment manufacturers be more competitive and create more manufacturing jobs here in the United States."

—Michael Bergey, President, Bergey Windpower

CIP Highlight: Bergey Windpower Cuts Costs 50%

BERGEY EXCEL 10

- 20-year-old design
- 9.8 kW
- 7-meter rotor diameter
- Pultruded fiberglass blades
- Power control by furling

Levelized cost of energy: 25¢ per kilowatt-hour

BERGEY EXCEL 15

- 2017 design
- 15.6 kW
- 9.6-meter rotor diameter
- Carbon fiber blades
- Power control by blade stall

Levelized cost of energy: 12¢ per kilowatt-hour

Next-generation, low wind speed technology yields near 50% reduction in levelized cost of energy, making this small wind turbine cost-competitive with solar (photovoltaics)

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WIND ENERGY TECHNOLOGIES OFFICE

For more information, visit: energy.gov/eere/wind
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NREL Transforming ENERGY

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