U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Overview: The Institute for Advanced Composites Manufacturing Innovation (IACMI)

February 17, 2015

Distributed Wind Energy Association

Smart Wind Composites Subgroup Meeting

Kelly Visconti, PE

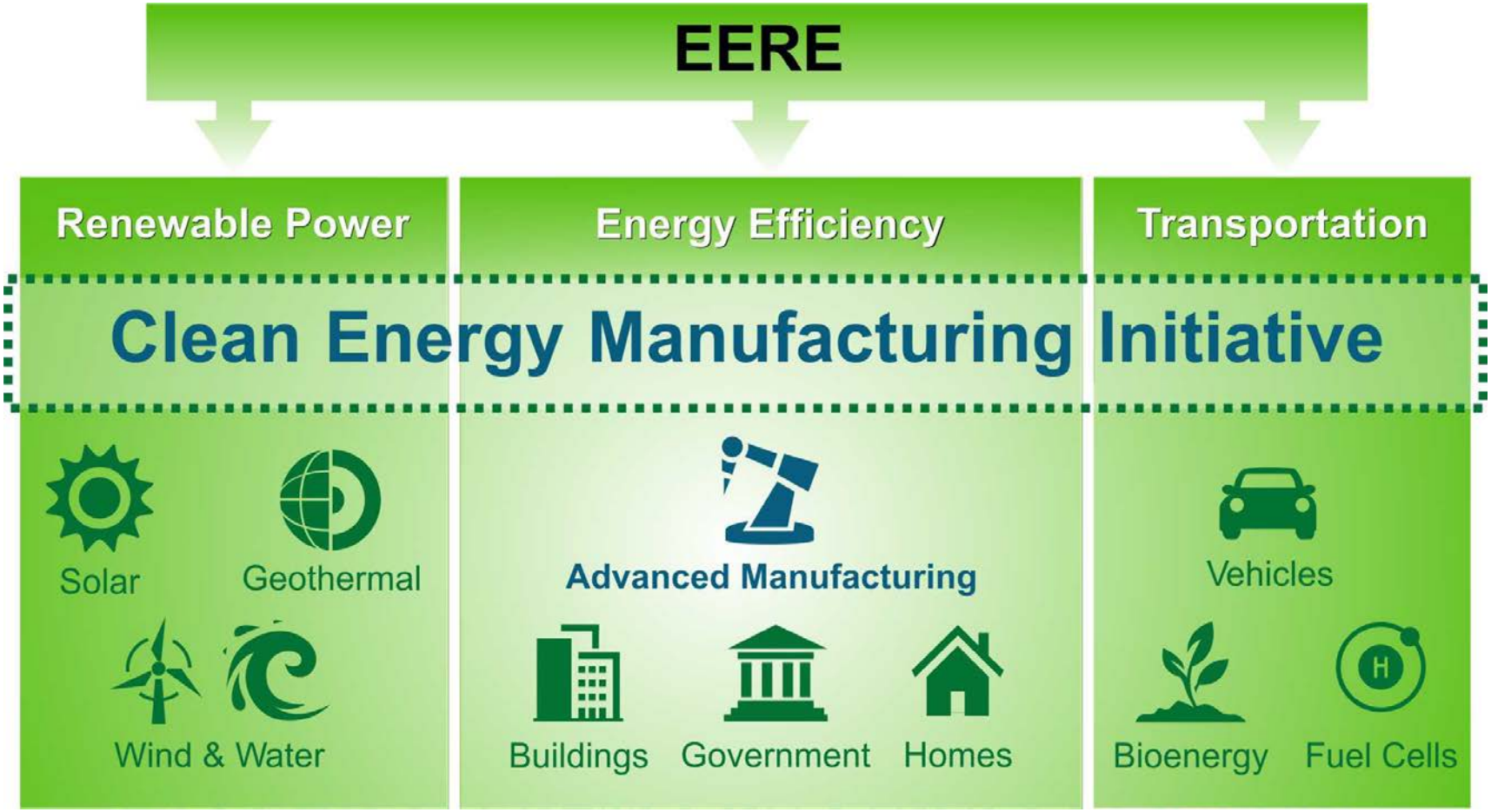
Technology Manager

Advanced Manufacturing Office

U.S. Department of Energy

www.manufacturing.energy.gov

The Office of Energy Efficiency and Renewable Energy (EERE)

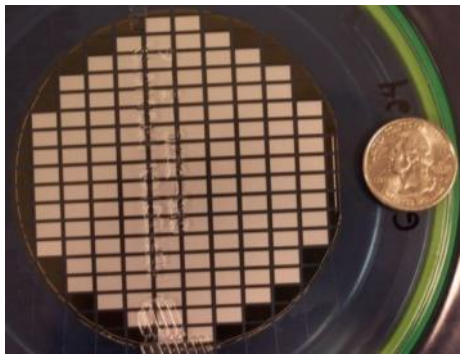


Advanced Manufacturing Office (AMO)

R&D Projects	Broadly Applicable Manufacturing Efficiency	Cross-cutting – for Manufacturing Clean Energy Technologies	Efficiency for Energy-intense Processes
R&D Facilities	Broadly Applicable Manufacturing Efficiency	Cross-cutting – for Manufacturing Clean Energy Technologies	
Technical Assistance	Broadly Applicable Manufacturing Efficiency		

AMO-supported R&D Facilities

1. **Manufacturing Demonstration Facility** at Oak Ridge National Laboratory
2. **America Makes**, an interagency National Additive Manufacturing Innovation Institute
3. **Critical Materials Institute**: *A DOE Energy Innovation Hub* at Ames National Laboratory
4. **PowerAmerica**, the Next Generation Power Electronics Manufacturing Innovation Institute
5. **Institute for Advanced Composites Manufacturing Innovation**



U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

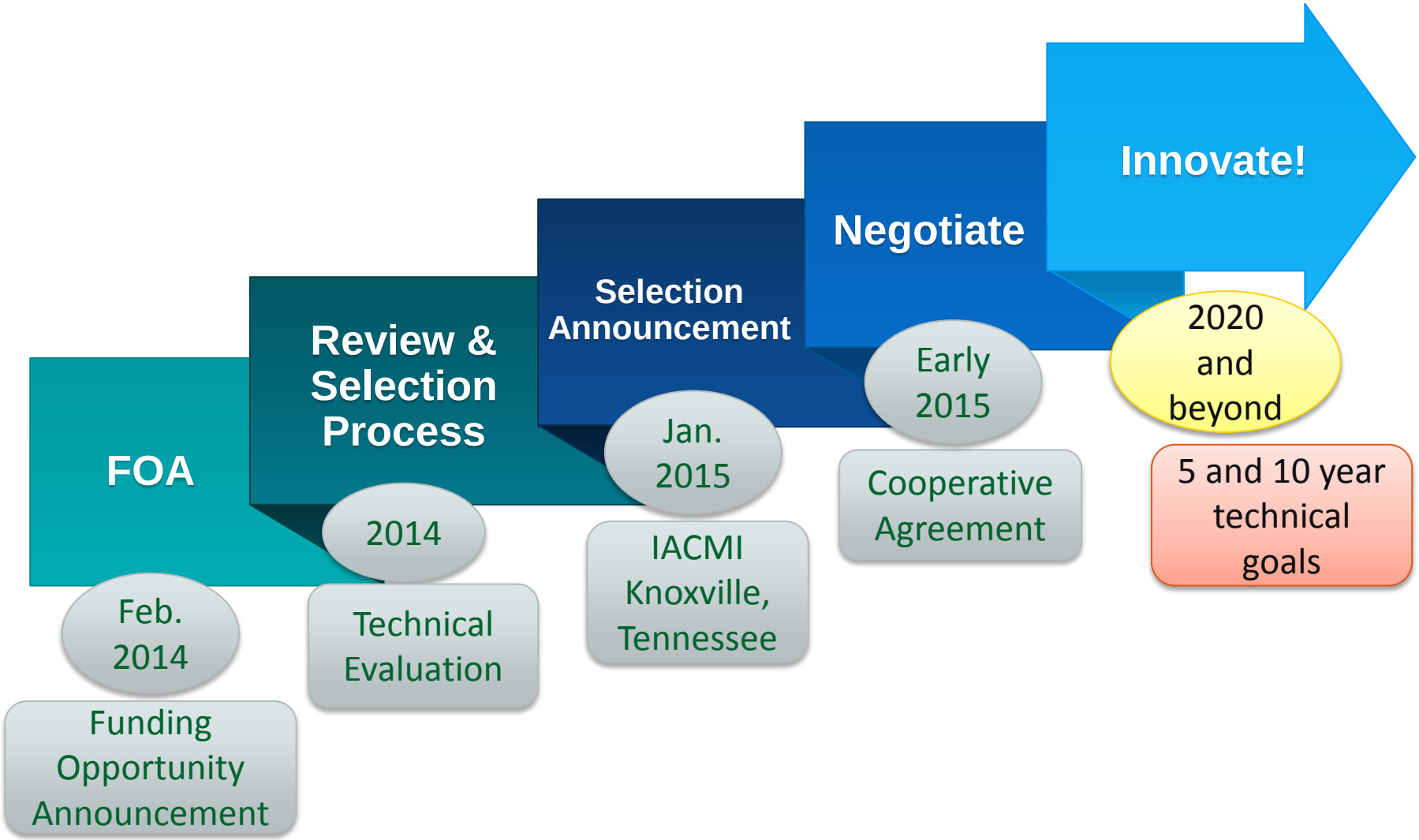
Interagency Manufacturing Coordination

Advanced Manufacturing Partnership (AMP/PCAST)

Advanced Manufacturing National Program Office (housed at DOC - NIST)

NSTC - Advanced Manufacturing Subcommittee

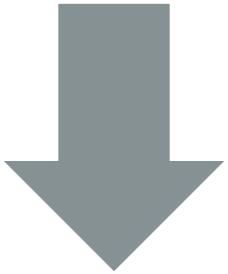
Launching the Institute for Advanced Composites Manufacturing Innovation (IACMI)



Composites Manufacturing Innovation Institute: FOA Objectives

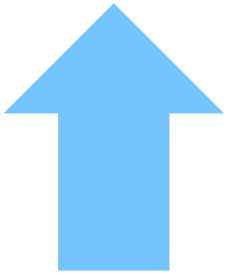
Develop and demonstrate innovative technologies that will within 10 years…

…make advanced fiber reinforced polymer composites at relevant production speed and performance for clean energy products at



50% Lower Cost

Using 75% Less Energy



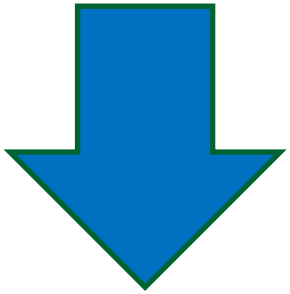
And Reuse or Recycle >95%

…and support U.S. Manufacturing Competitiveness by increasing

Energy Productivity

Regional Economic Development and Jobs

Domestic Production



And Reducing Energy Use

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Advanced Composites for Clean Energy

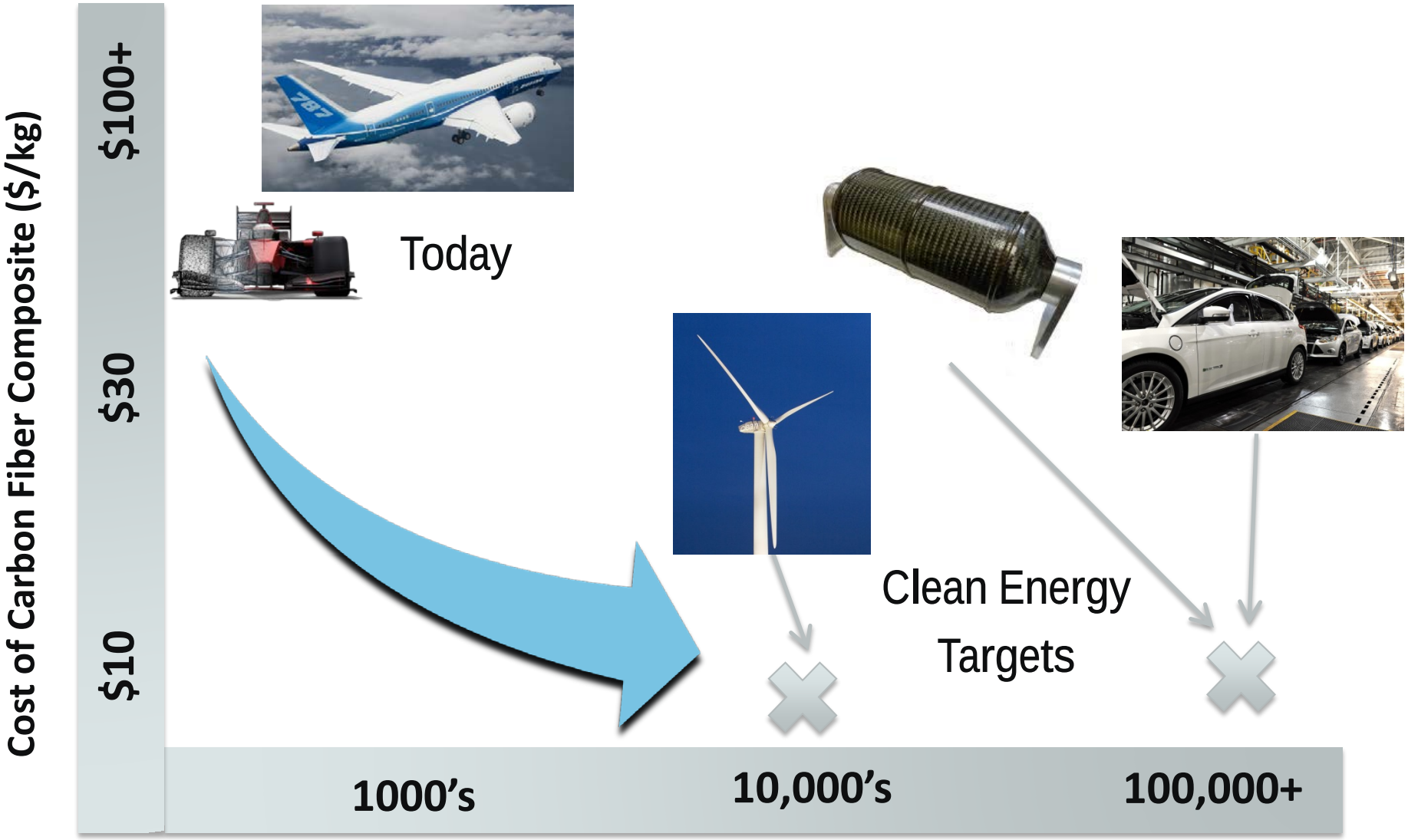
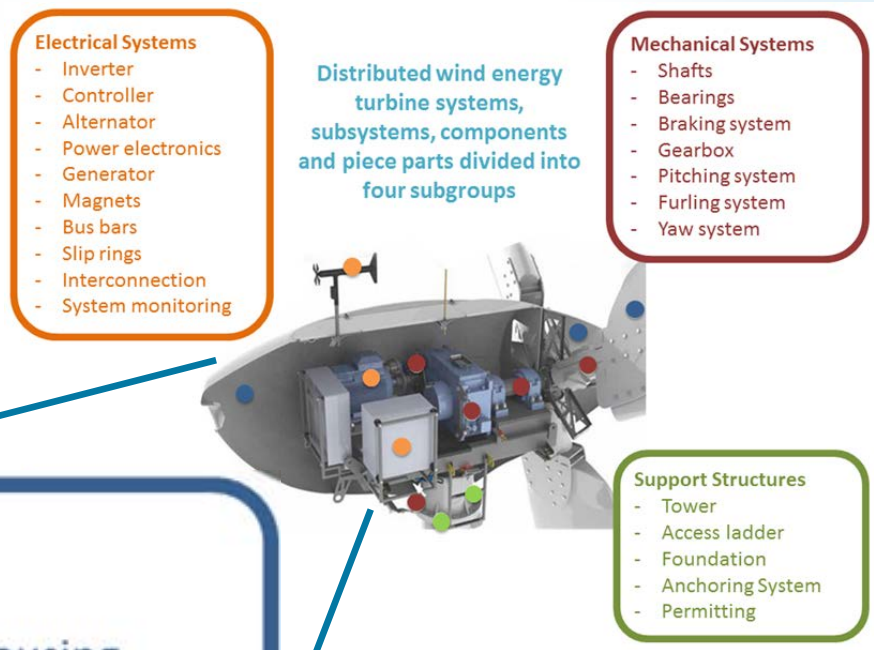


Photo Credits (left to right): Geomagic, Boeing, DOE, A&P Technology, Ford

Shared RD&D facilities will support industry

Partnering Opportunities Between DWEA SMART Wind Consortium and IACMI

Sustainable Manufacturing, Advanced Research and Technology

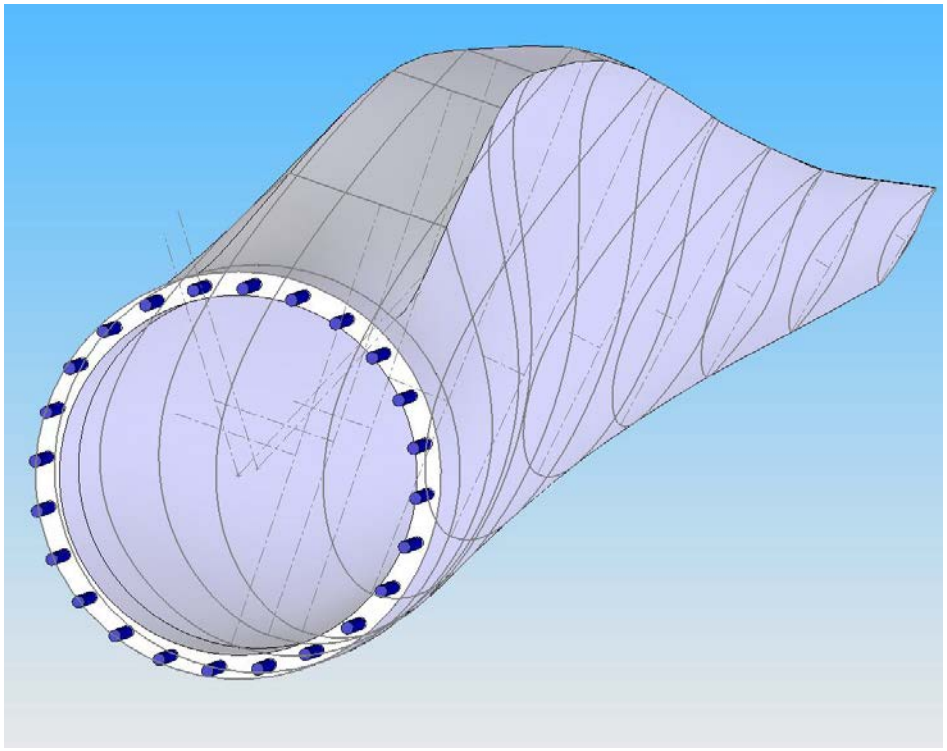


Composites
- Blades
- Nacelle housing
- Nosecone
- Tower

Institute for Advance Composites Manufacturing Innovation

Shared Goals for Turbine Composite Structures

- Improve the manufacturing quality of structural composite components
- Decrease the cost of composite raw materials
- Increase the recyclability of composite wind turbine components at the end-of-life
- Decrease the embodied energy of the manufacturing process for blades, towers, nacelles and nosecones
- Reduce the production cycle time of turbine composite components
- Enhance the lifetime reliability of composite parts



Sandia/TPI BSDS 9m Blade

Potential Project Areas for Distributed Wind Technology Composite Components

- Thermoset / thermoplastic matrix development
- Automated fabric placement during laminate lay-up
- Automated non-destructive evaluation (NDE) during the composite production process
- Pultruded blade and tower sections
- Pultruded structural spar caps
- Additive manufacturing of composite tooling and components
- Possible overlap with the automotive technology area of IACMI in the area of compression molding, resin transfer molding (RTM) and injection molding

TPI/Sandia CX-100 Blade Infusion

Complex automotive structural composite part using injection molding

Energy Products Invented Here…

…And Made Here!

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

For More Information on Selection and FOA

Selection of University of Tennessee led consortia, Institute for Advanced Composite Manufacturing Innovation (IACMI) on January 9, 2015 by President Obama.

www.iacmi.org

Link to the Advanced Manufacturing Office website:
www.energy.gov/eere/amo/institute-advanced-composites-manufacturing-innovation

Link to the Funding Opportunity Announcement:
https://eere-exchange.energy.gov/#FoaId72dc3a64-6537-4d57-b524-e2778bc65e03