



IACMI-Performance Metrics



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IACMI Performance Metrics

Institute for **ADVANCED**
Composites Manufacturing
INNOVATION

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Performance Metrics

- **DOE has defined four broad performance metrics for success of the institute, within which CCS Corp. has proposed specific metrics for each.**
- **Broad Performance Metrics:**
 - Develop advanced composites technology to be adopted by industry for clean energy manufacturing.
 - Achieve substantial financial self-sufficiency after 5 years.
 - Train a prepared and diverse advanced composites workforce.
 - Enrich and stimulate a domestic innovation ecosystem around advanced composites.

1.1 Technology Metrics

Quantitative Technical Objective	IACMI 5-year outcome	IACMI 10-year outcome
Reduce production costs of carbon fiber composites by 25% in 5 years on path to over 50% in 10 years	25% lower carbon fiber production cost < 3 minute cycle for automotive parts 20% decrease wind blade manufacturing time 2x current CGS tank manufacturing rate	50% lower carbon fiber production cost <90 second cycle for automotive parts 33% reduction wind blade manufacturing time 3x current CGS tank manufacturing rate
Production of CFRP composites with cost and embodied energy parity to today's GFRP in 5 years	Produce multiple CFRP components with same or lower (modeled) full scale production cost and embodied energy as the GFRP analogs	
Reduce embodied energy and GHG emissions of CF by 50% on path to 75% in 10 years	LCCF at > 10 kg/day with technologies modeled to full scale reduce CF embodied energy & GHG emission by $\geq 50\%$	LCCF at > 10 kg/day with technologies modeled to full scale reduce CF embodied energy & GHG emission by $\geq 75\%$
Demonstrate >80% recyclability or reuse of FRP composites in 5 years on path to >95% in 10 years	Recover/reuse $\geq 80\%$ of CF & CF intermediates scrap from vehicles scale up facility	Recover & reuse $\geq 95\%$ of CF from intermediates scrap & molded parts

1.2 Energy and Economic Impact Metrics

Overall FOA Goals	IACMI 5-year outcome	IACMI 10-year outcome
Doubling of energy productivity in FRP composite manufacturing	Reduce CFRP manufacturing cost by 25% and energy demand by 50%	Reduce CFRP manufacturing cost by 50% and energy demand by 75%
Reduce life cycle energy use and associated greenhouse gas emissions	Displace 5M bbl petroleum (cumulative)	40 PJ reduction in energy demand, 20M MT lower GHG emissions, and 40MM bbl petroleum displaced (cumulative)
Increase domestic production capacity of composites	>\$500M in cumulative CAPEX investments for new US carbon fiber and CFRP production capacity	>\$3B in cumulative CAPEX investments for new US carbon fiber and CFRP production capacity
Increase domestic private sector employment	5,000 new US FRP-related manufacturing jobs created (cumulative)	30,000 new US FRP-related manufacturing jobs created (cumulative)

1.3 Commercialization Metrics

- **By month 24, first commercialization of IACMI technology occurs from initial RD&D portfolio**
- **Commercialization by or transfer of technology to project value chain members through private investment in target clean energy and adjacent markets from **20 projects** by the end of five years.**

2.1 Self-sufficiency Metrics

- **CCS Corp. will achieve financial self-sufficiency before conclusion of the award period through income from member fees, contract research and fee-for service work.**
- **CCS Corp will continue to generate at least \$28m of revenue in Years 6-8. Sources include:**
 - **IACMI State members will provide \$12M annually**
 - **Charter members will collectively provide \$10M annually**
 - **Industry user projects will be \$5M in Year 6, growing to \$8M in Year 8**
 - **Annual consortium fees of \$1M**

s. 3.1 Workforce Development Metrics

CCS Corp. (IACMI) will develop a comprehensive workforce development and education plan that will:

- Assess and quantify needed critical workforce skills;
 - Establish target number of education/training professionals who will participate in education and training per year, i.e., train the trainers;
 - Establish target number of students by type and education level annually;
 - Coordinate with Advanced Technological Education (ATE) and NIST MEP programs;
 - Offer hands-on education and internships at IACMI technology areas;
 - Explore opportunities to either establish an independent IACMI composites educational consortium or collaborate with or leverage existing community college networks, such as the existing NSF ATE networks; and
 - Inform the public about fiber reinforced polymer composites.
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- **Metric: Within 5 years, 500 persons successfully complete IACMI-affiliated certification or degree programs**

4.1 Industry and SME Participation Metrics

- **CCS Corp. will actively engage the advanced composites supply chain through its membership management and recruitment efforts, and communications and outreach efforts. Through these vehicles, CCS Corp. will stimulate a domestic innovation system around advanced composites.**
- **Specific Metrics:**
 - **Over 50 industry members by the end of Year 1, at least 25 of whom are SMEs**
 - **Over 100 industry members at the end of Year 6, at least 50 of whom are SMEs**
 - **At least four IACMI members from the non-core region participating in RD&D projects in budget period 2.**

Questions?



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