

IACMI Introduction

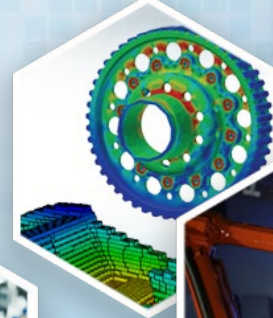
Presented by:

Jennifer Woods

Industry Initiatives Manager

jwoods@iacmi.org

(865) 293-1996



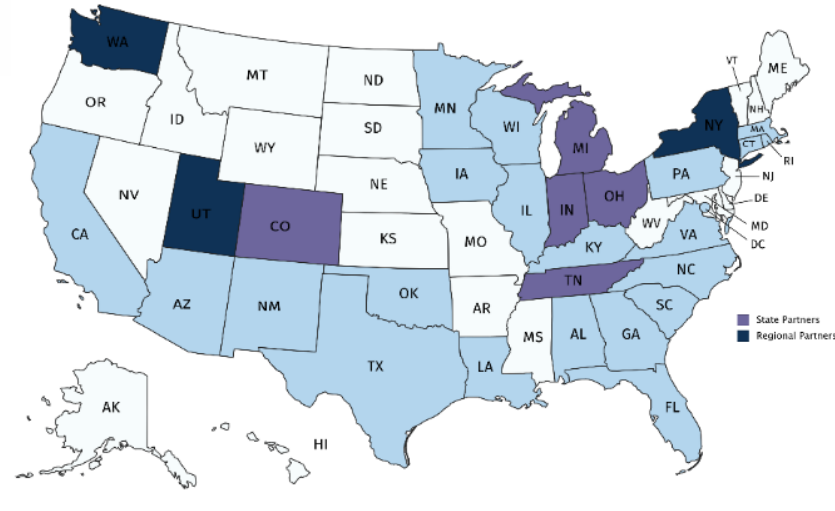
Convene. Connect. Catalyze.

IACMI-The Composites Institute



IACMI - Institute for Advanced Composites Manufacturing Innovation

- One of 18 Manufacturing USA Institutes - a national network designed to address U.S. competitive needs in advanced manufacturing jobs and technologies that this country needs for its own competitiveness and security
- Established 2015 by the Department of Energy



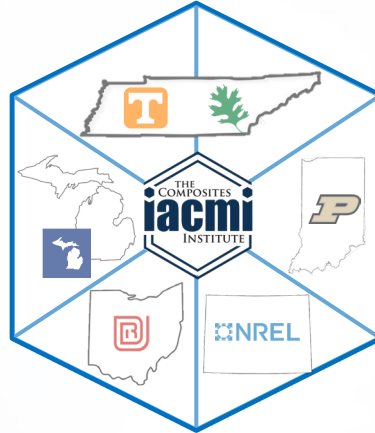
- 180+ member consortium of industries, universities, national laboratories, and federal, state, and local government agencies in 35 states
- [View IACMI's Member Directory](#)

Products and People



Technology R&D

Workforce Development



60

Projects

25+

Commercial
Products



21k

Trained

>3k

Jobs
Announced



Technology Innovation + Workforce Development
= Economic Growth

ANETWORK OF INNOVATION

As a consortium of nearly 200 manufacturers, universities, national labs, trade organizations, and government agencies, IACMI harnesses the power of public-private partnerships to drive America as a global leader in advanced manufacturing.



70% INDUSTRIAL MEMBERS ARE SMEs



Technology Innovation

World-class Facilities and Innovative R&D

World Class Facilities

IACMI has catalyzed the creation of \$400M of state-of-the-art facilities



Unparalleled Capabilities Worldwide



**Solution
spinning
line**

KY



**Carbon Fiber
Technology
Facility**

TN

**Pre-preg
production
pilot/full
scale**

OH

MI

**Pilot-scale
PCM
750 ton
press**

TN



**Full Scale
PCM
4,000 ton
press**

MI



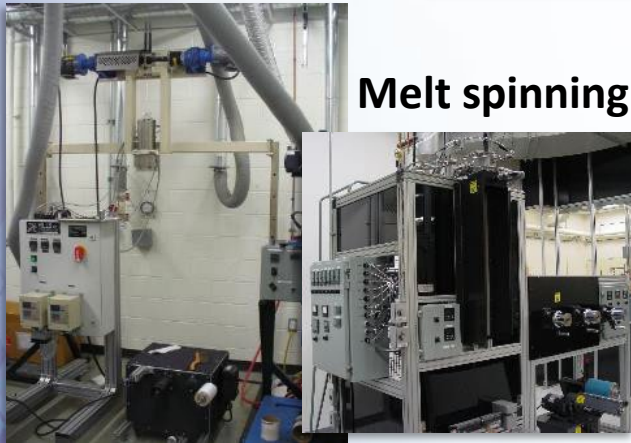
IN

Unique open-access carbon fiber processing capabilities

TN



**Bench and pilot
scale heat
treatment
equipment**



Melt spinning



World's most flexible carbon fiber semi-production facility

Big Area Additive Manufacturing - ORNL



Recent enhancements in physical scale, speed of production, and work in high temperature polymer composites, e.g. PPS/CF

Compression press – SURF



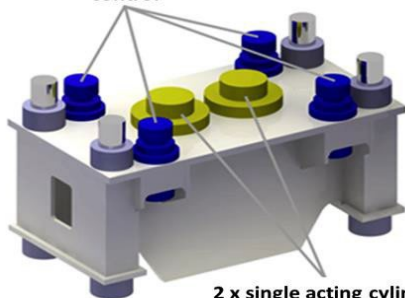
SCHULER 
FORMING THE FUTURE

Specifications

36,000kN (4,000T)

Platen: 3.6m x 2.4m
(~12ft x 8ft)

4 x double acting
cylinder for parallelism
control



2 x single acting cylinder



Injection molding presses

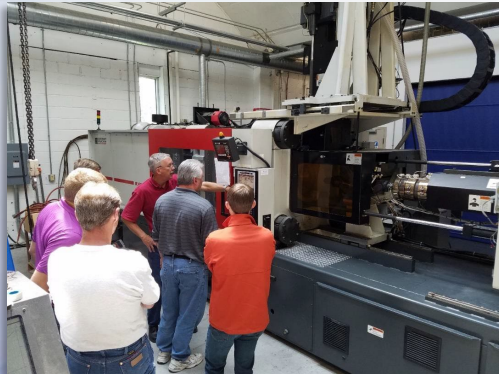


Specifications

3,300 Tons

Platen: 3m x 2.5m
(~10ft x 8ft)

413 oz. max shot size



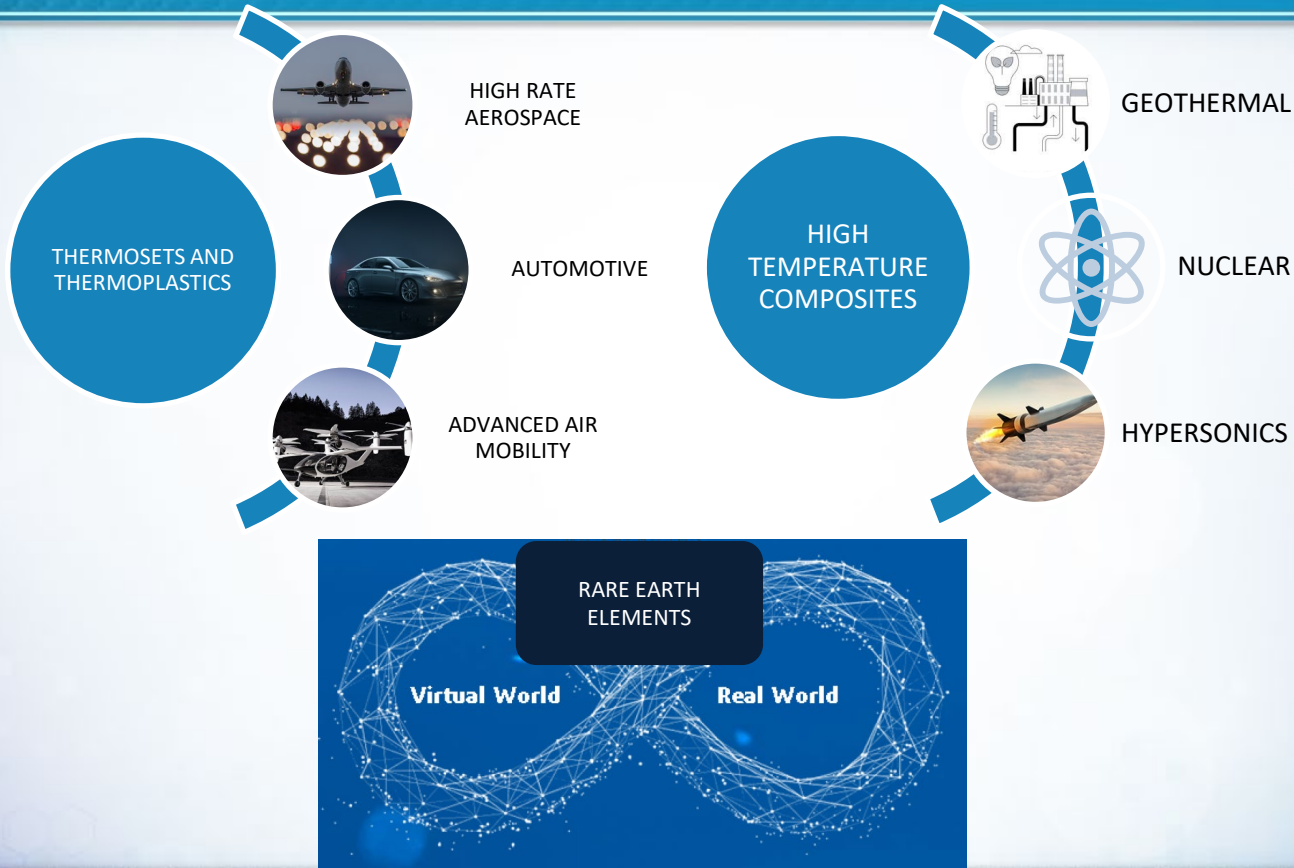
440 Tons



KRAUSSMAFFEI 330 Tons



TECHNOLOGY FOCUS AREAS

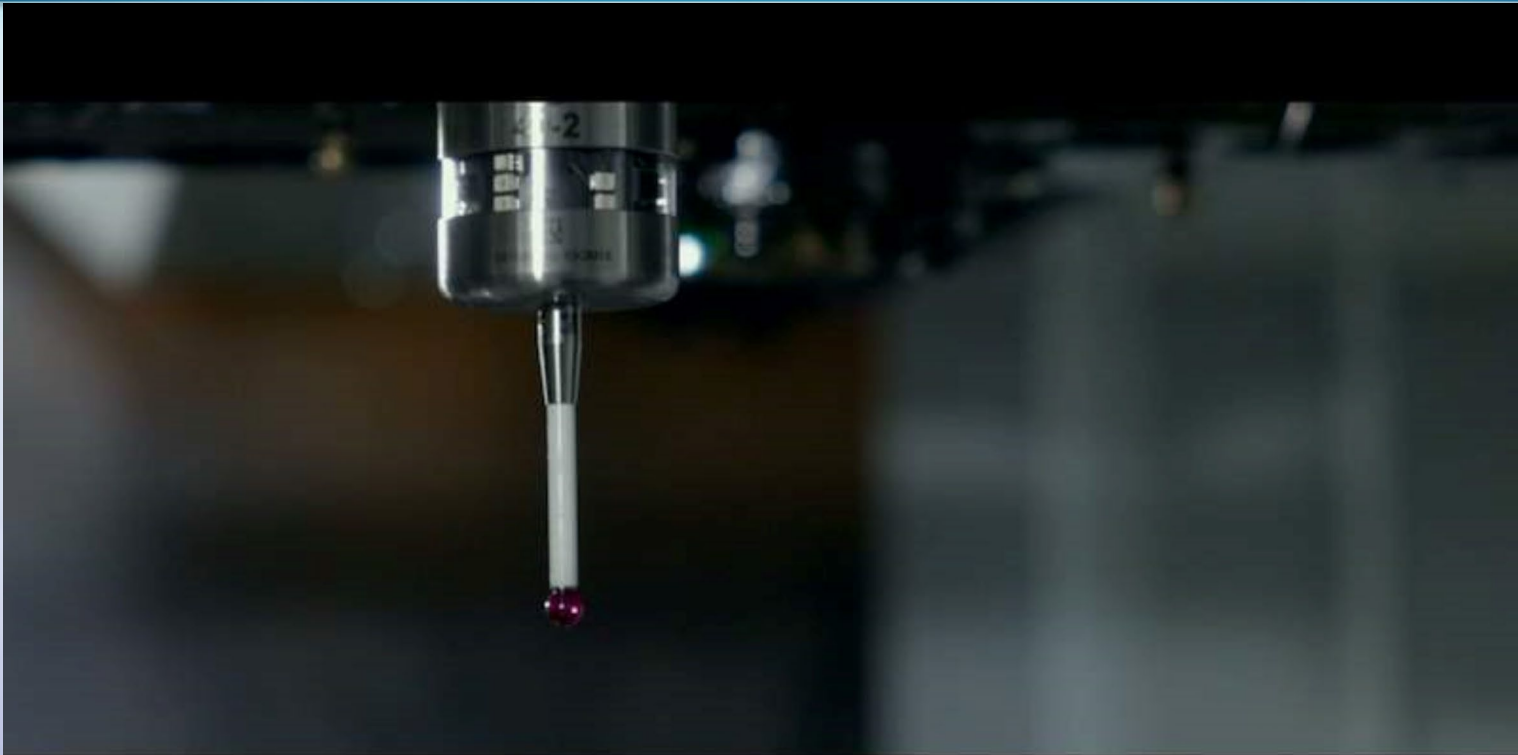




Workforce Development

ACE, Metal, ACEMetal Foundations

Workforce Program Overview

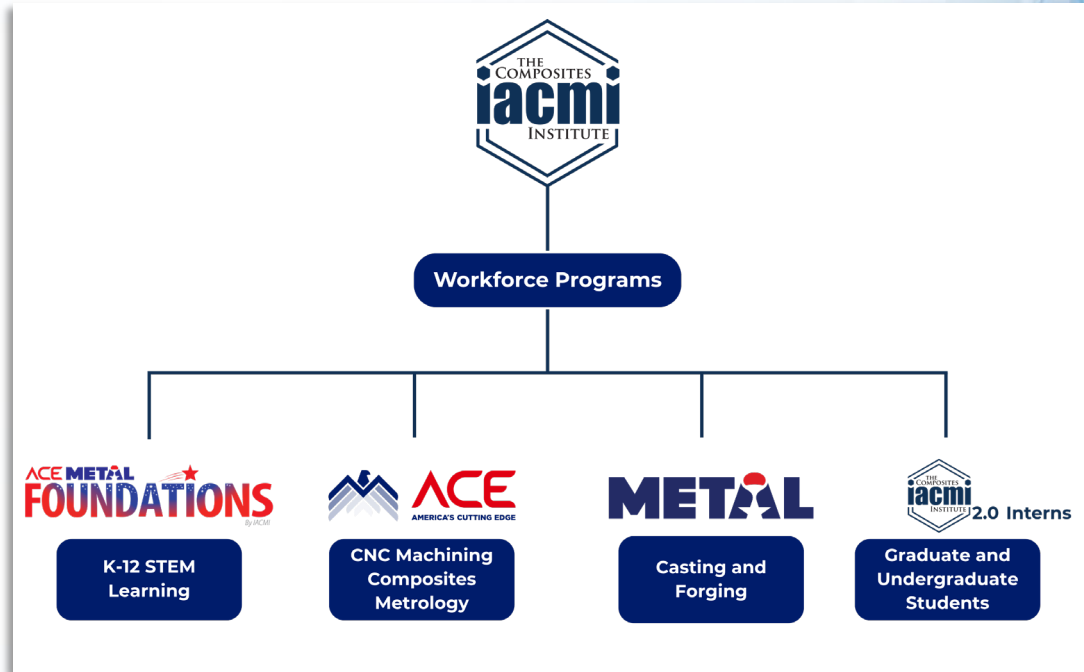


IACMI Workforce Efforts



Goals

- Strengthen America's manufacturing workforce through foundational and advanced training (e.g., ACE, METAL).
- Inspire K–12 students with hands-on STEM kits that spark interest in manufacturing and trades careers.
- Develop future industry leaders through internships that drive innovation and workforce readiness.





METAL – Metallurgical Engineering Trades Apprenticeship and Learning



*Revitalizing
U.S.
Manufacturing*



IBAS
Industrial Base Analysis and Sustainment Program



OAK RIDGE
National Laboratory

T THE UNIVERSITY OF
TENNESSEE
KNOXVILLE

- **METAL** is an industry led national initiative to rebuild U.S. capabilities in the Casting, Forging, and Plate Production industries, including training to build a skilled workforce, enhanced focus on automation, and K-12 outreach.
- **METAL** is supported by the Department of War (DoW) Industrial Base Analysis and Sustainment (IBAS) Program from the of the Office of Industrial Policy



Founding Partners

- IACMI-The Composites Institute
- Pennsylvania State University
- The University of Tennessee



METAL

METAL Program Vision



METAL

How can METAL help?



Workforce Shortage

Apprenticeships
Internships
K-12 Outreach



METAL



Training/Talent

Online Curriculum
In-Person Bootcamps



Connection

METAL Advisory Network (MAN)
Partner Site Job Fairs
METAL on Social Media





METAL Impact





ACE: America's Cutting Edge



America's Cutting Edge (ACE) is a national initiative to restore the prominence of the U.S. machine tools sector

- ACE is supported by the Department of War (DoW) Industrial Base Analysis and Sustainment (IBAS) Program from the Office of Industrial Policy

Founding Partners

- IACMI-The Composites Institute
- IBAS
- Oak Ridge National Laboratory
- The University of Tennessee
- Pellissippi State Community College



Through ACE, participants can receive **free online training** and qualify for **hands-on, in-person training** that is meant to put participants on a path to the machine tool industry



Novel Training Approach to Machining



ACE CNC Machining Training leverages online and in-person experience at no cost



PART 1 (Online)



PART 2 (In-person)

Online training qualifies you for a potential spot in our hands-on, in-person training — all designed to prepare you for a successful career in the machine tool industry.



ACE
AMERICA'S CUTTING EDGE

CNC Machining In-Person Bootcamp



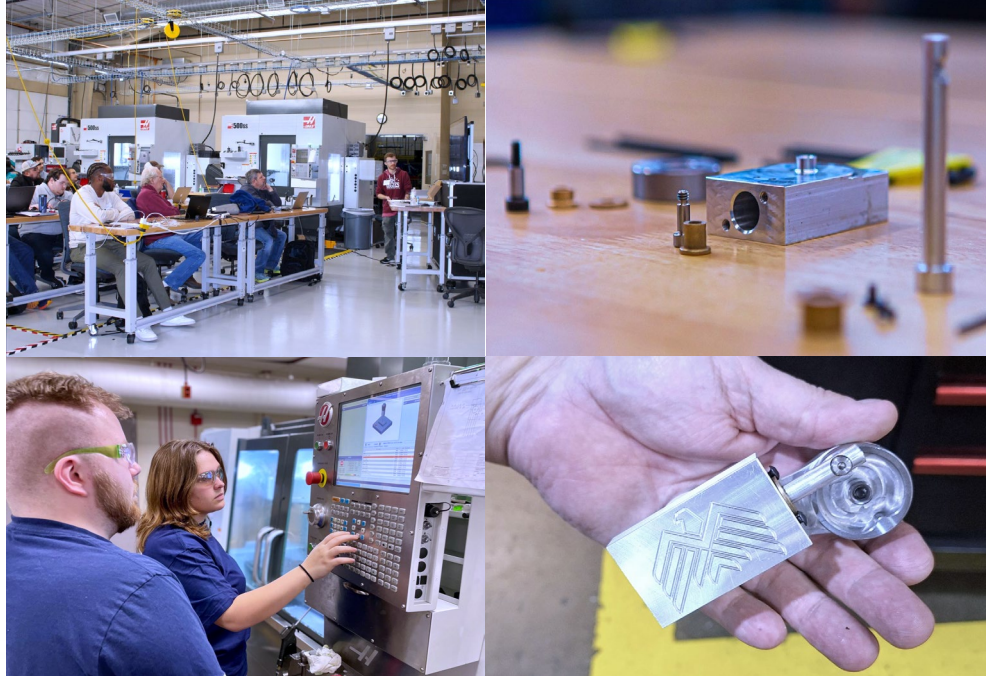
Bootcamp Curriculum

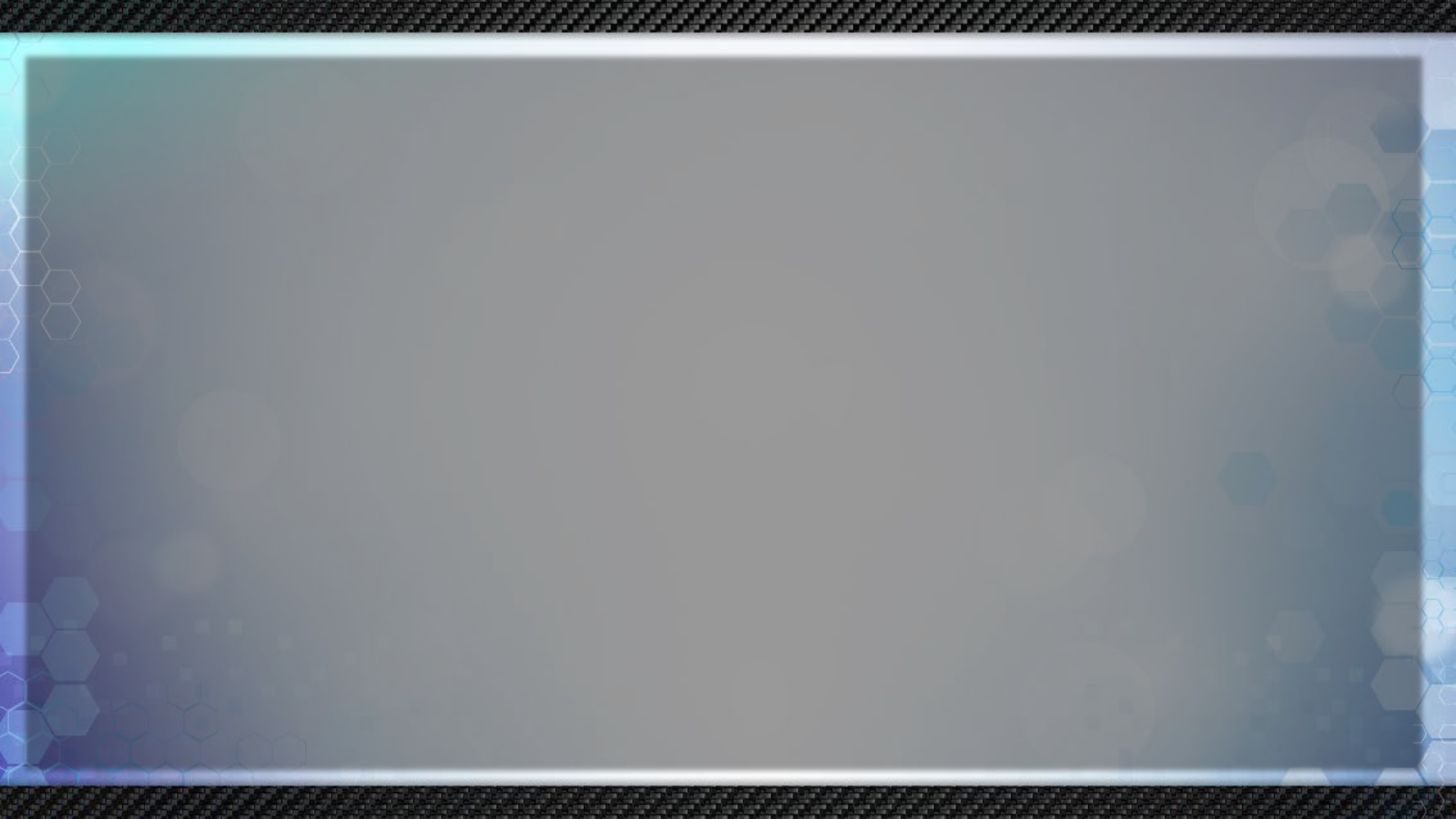
- Instruction for CAM
- Parameter selection
- Part setup
- Part probing
- Controller use
- Machine components for oscillating piston air engine and assemble
- 32 hours of In-Person Instruction



All who finish the in-person bootcamp will receive the ACE CNC Machining Bootcamp Credential from Credly

Be A Maker





ACE Impact



Key Industries Relevant to ACE & METAL



This presentation focuses on the U.S. manufacturing workforce specifically relevant to ACE and METAL programs.

Key ACE (CNC machining) industries include:

- Motor vehicle and parts manufacturing
- Ship and boat building
- Aerospace
- Machine manufacturing
- Casting and forging
- Microelectronics and related devices
- Battery manufacturing
- Chemical manufacturing



Key METAL industries include:

- Casting
- Forging
- Plate Rolling



Note: Industries listed were identified by IACMI and/or IBAS as relevant.

Training Tools Offered to Industry



METAL and ACE Curriculum

- **Use as a training tool for Onboarding**
 - Have new hires take the online curriculum at their own pace
 - Send those who complete to a bootcamp in-person
- **Use existing bootcamps as recruiting events** to hire inspired individuals looking for employment
- **Upskill employees** with in-depth specialized bootcamps
- **No charge** for curriculum to employer

METAL

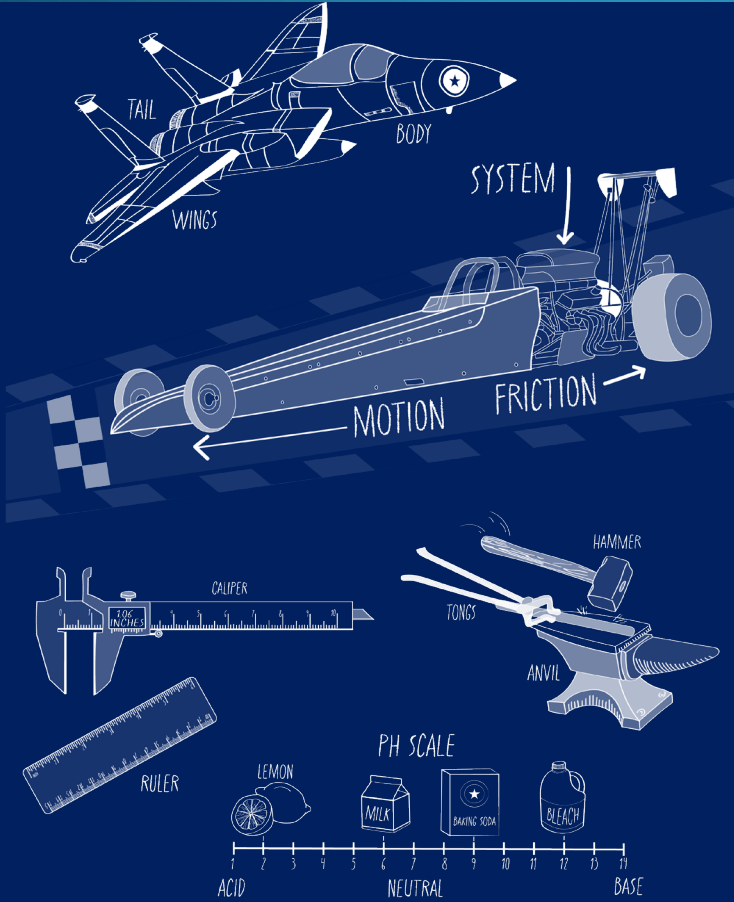


ACE METAL
FOUNDATIONS

By IACMI



What is ACE METAL Foundations?



ACE METAL Foundations is a set of pre-packaged, ready-to-use STEM kits that introduce K-5 students to advanced manufacturing concepts through hands on activities.

Each kit comes with everything teachers need, including:

- ◆ Ready-to-use classroom kits with hands-on activities
- ◆ Short, high-quality videos guiding each activity

Lessons connect to:

- ◆ Math
- ◆ Science
- ◆ Problem-solving
- ◆ Manufacturing
- ◆ Creativity
- ◆ Standards aligned

ACE METAL
FOUNDATIONS
By IACMI

Why ACE METAL Foundations Matters?



Students begin forming career identity around age 10

- Today's students are growing up in a world where how things are made matters again
- Manufacturing is critical to national security, economic stability, and innovation
- The challenge is most students are never exposed to these careers early enough
- Without early exposure, many pathways are never considered

ACE METAL Foundations helps students:

- See themselves as builders and problem-solvers
- Connect classroom learning to real-world applications
- Discover careers that are:
 - High-paying
 - High-impact
 - In-demand

Part of a larger, nationally supported pipeline that connects:

Elementary → Middle → High School → Career pathways

ACE METAL
FOUNDATIONS
By IACMI



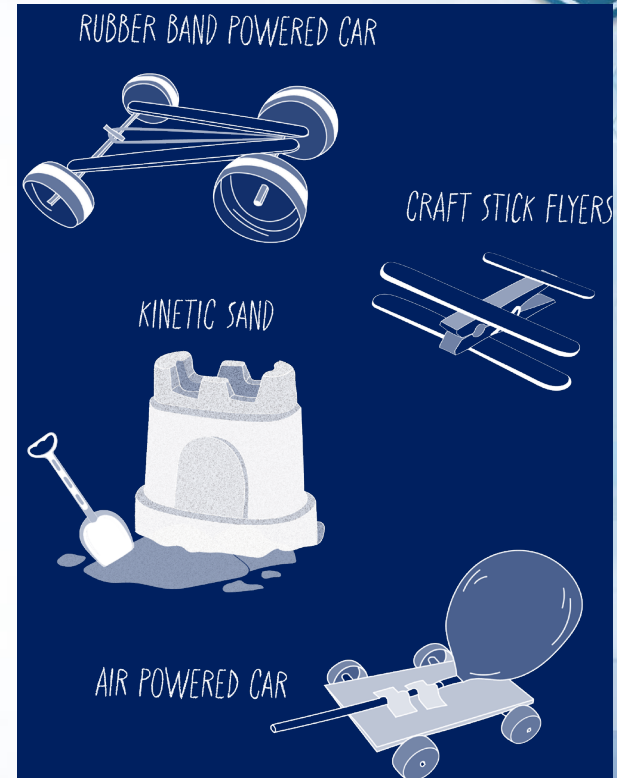
What It Looks Like in the Classroom

Hands-on Learning

- Students engage in guided, experiment-driven activities
- Build rubber band or balloon-powered cars
- Explore and experiment with kinetic sand
- Create color-changing slime
- Learn about advanced materials

Educational Impact

- Interactive lessons designed to spark curiosity
- Deepens understanding of material science
- Introduces foundational manufacturing processes in an engaging way



Activity Example: The Reel Machine



Foundational Learning

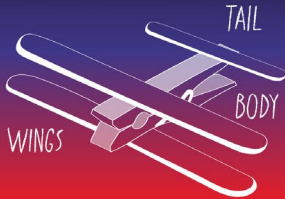
- **Teaches core mechanics early:** Students learn how rotational motion powers real machines (cranes, winches, manufacturing systems).
- **Builds hands-on engineering skills:** Design, build, test, and improve, mirroring real industrial workflows.
- **Develops problem-solving mindset:** Students analyze performance and adjust designs.
- **Connects to real careers:** Clear link from classroom activity to jobs in construction, logistics, and manufacturing.
- **Strengthens future talent pipeline:** Builds foundational skills and interest needed for CTE, trades, and technical careers.

ACE METAL Foundations Activities



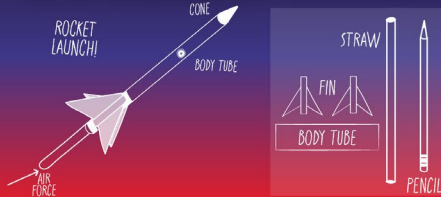
Grades K-5

Craft Stick Flyers



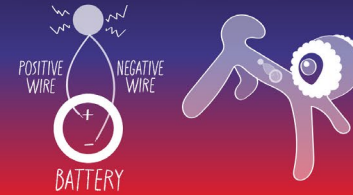
Grades K-5

It's Rocket Science



Grades 2-5

Kinetic Critters



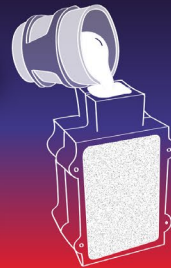
Grades 2-5

Modern Materials Ancient Technology



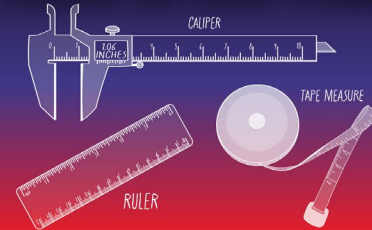
Grades 4-5

Molding and Casting



Grades 4-5

Tools of the Trade



**Grade recommendations are based on the skills needed for the kit activities, but all kits can be adapted for use as appropriate*

The Bigger Impact and Future Vision

Overview

- Developed by teachers for teachers
- In partnership with IACMI and supported by the U.S. Department of War
- Goal: Expand nationwide to build a more diverse talent pipeline in advanced composites and manufacturing

ACE METAL Foundations Kit Details

- Six different kit models
- Four activities per kit
- 24 activities total
- Each activity includes supplies for 25 students per grade
- Activities are flexible and effective
- Ideal with existing curriculum, after-school, and summer school programs
- Quarterly shipments
- Four shipments total per school year
- Delivered directly to your school
- Beginning 2026-2027 school year





Internships and Career Pathways

Internships and Career Pathways



Internships and Career Pathways

- Internships will expand into the ACE program, modeled after success from the IACMI Internship and METAL program
- Sites will partner with industry to provide real-world, hands-on experience aligned with ACE training

Internship to Career Pathway



- Reinforces learning through practical application
- Gives employers access to job-ready talent
- Increases participant retention, confidence, and job placement outcomes

Bridging Training to Jobs



Internships and Career Pathways

Program	Fall 2026	2027	2028	2029	2030	2031	Total
ACE	7	21	21	21	22	8	100
METAL	15	45	45	15	-	-	120
IACMI 2.0	6	31	27	-	-	-	64

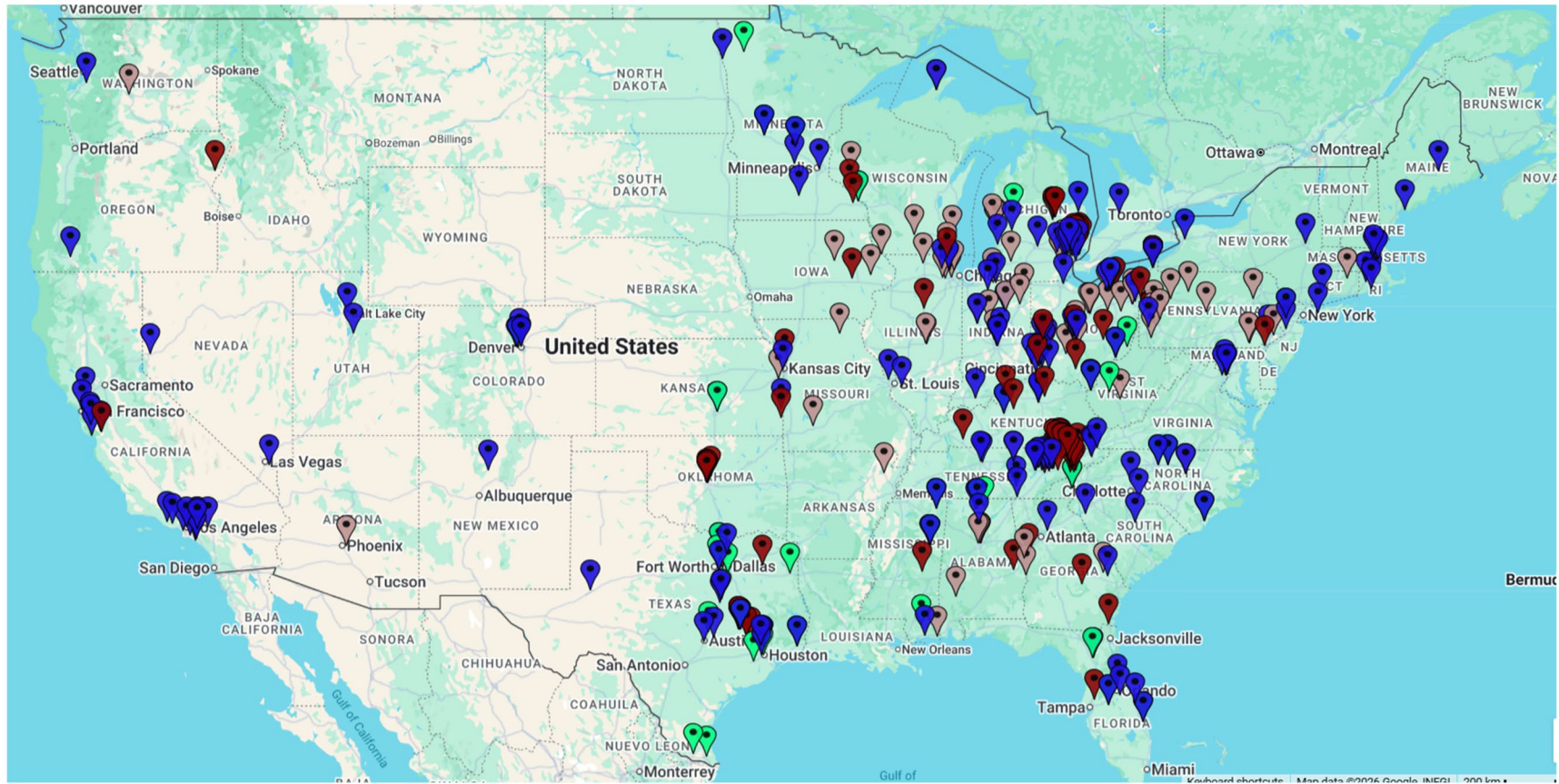
From fall of 2026 to Spring of 2031, **IACMI will have provided 284 Internships**

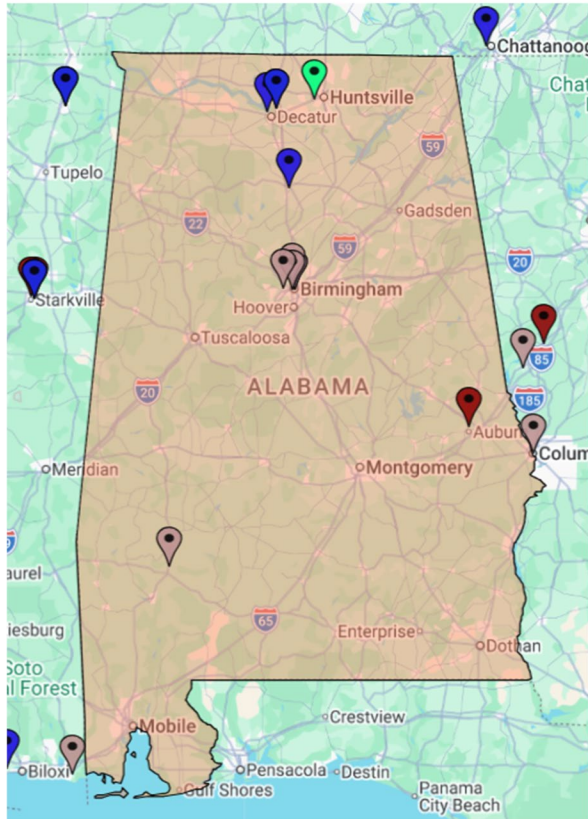
Partnering with companies to bridge training to real jobs:

Laborup connects manufacturing bootcamps (like METAL) to actual internship and job opportunities, ensuring training leads directly to employment, not just skills exposure.



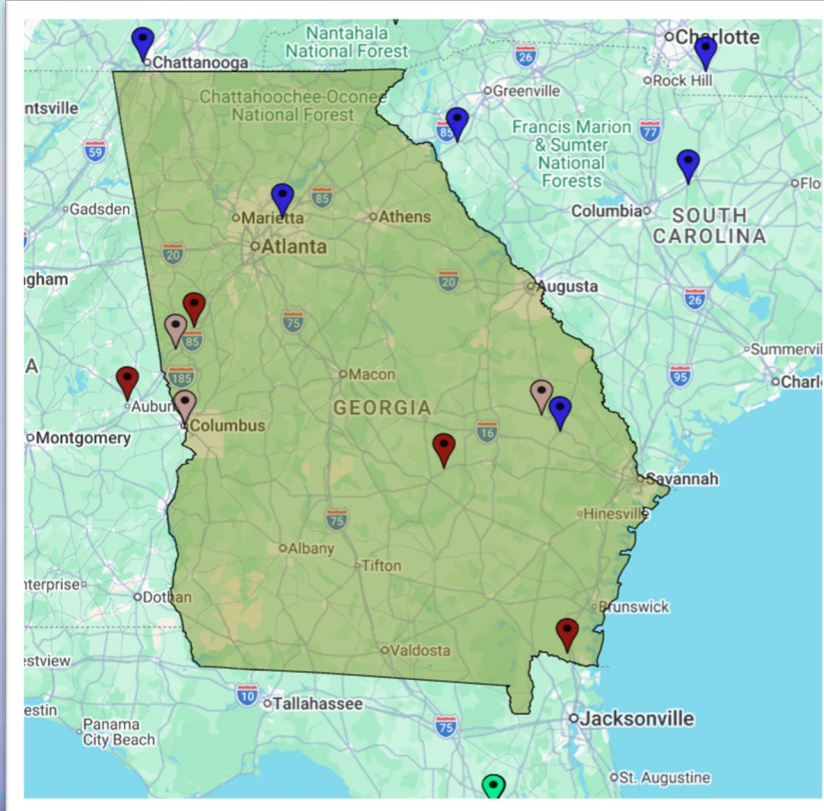
Connecting with Us





Our Current Footprint in AL

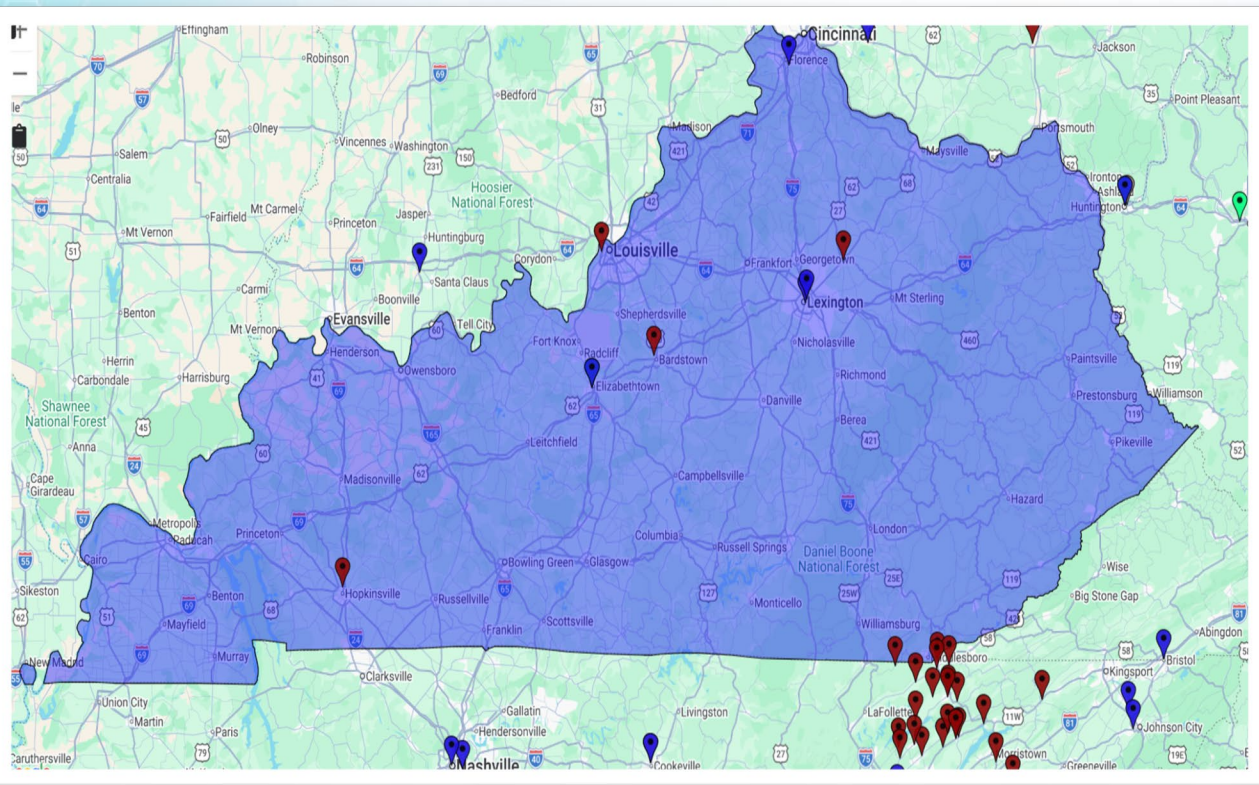
- 4 IACMI Members
- 2 ACE Training Sites
- 5 METAL Training Sites
- 1 Foundations School



Our Current Footprint in GA

- 2 IACMI Members
- 3 Foundations Schools
- 3 METAL Training Sites

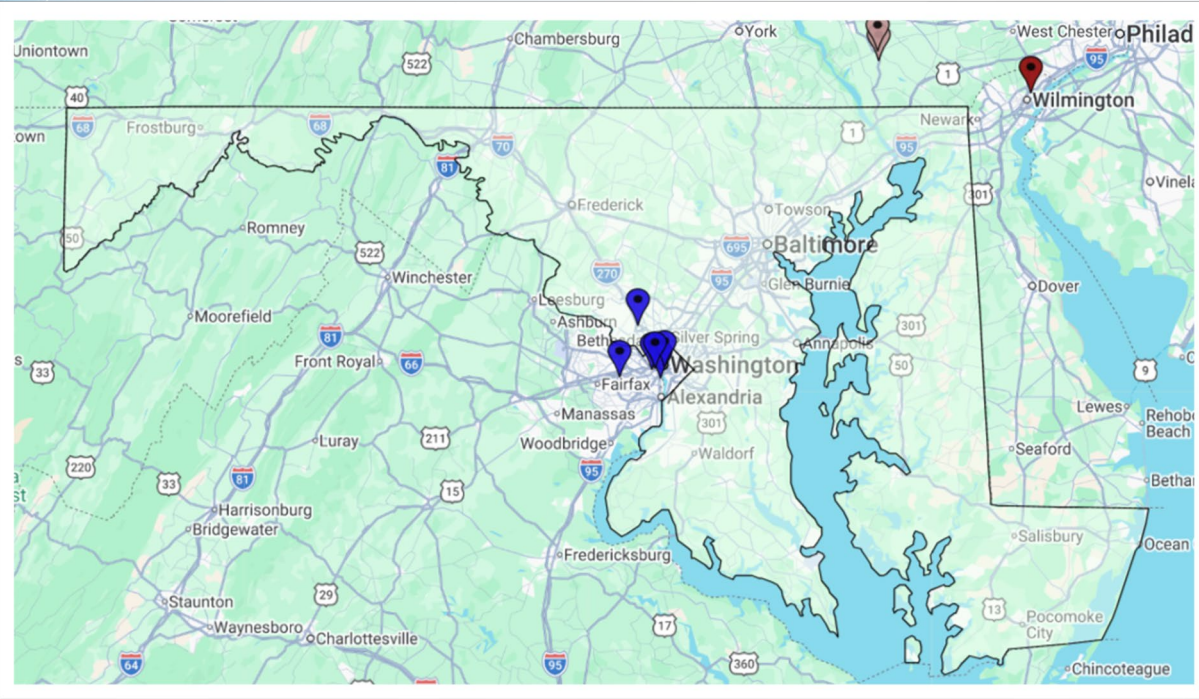
Kentucky



Our Current Footprint in KY

- 4 IACMI Members
- 1 ACE Training Site
- 4 Foundations Schools

Maryland



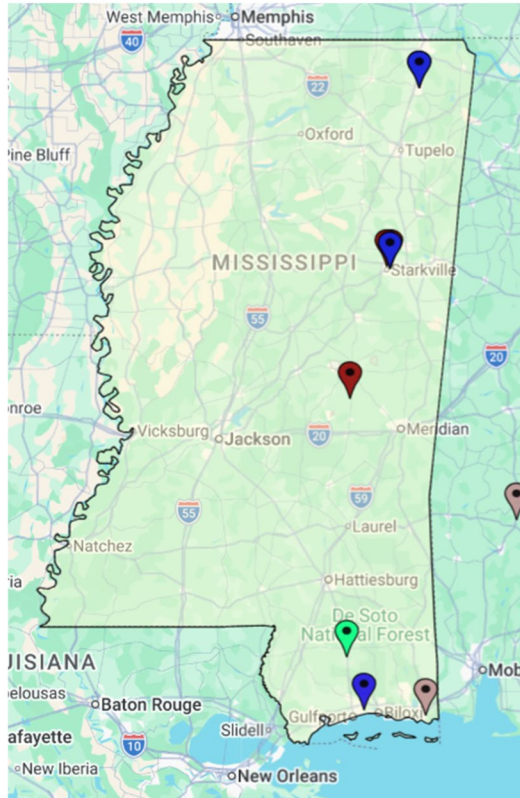
Our Current Footprint in Maryland

- 1 IACMI Member

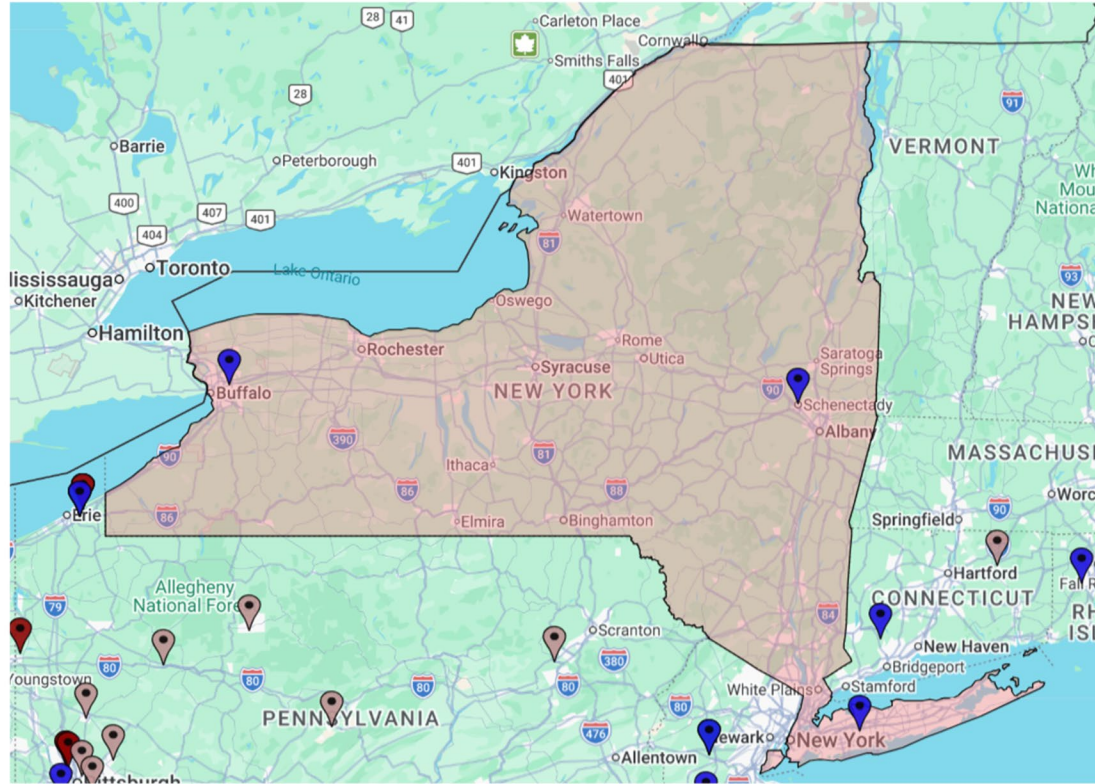
Mississippi

Our Current Footprint in MS

- 3 IACMI Members
- 3 ACE Training Sites
- 1 METAL Training Site
- 3 Foundations Schools



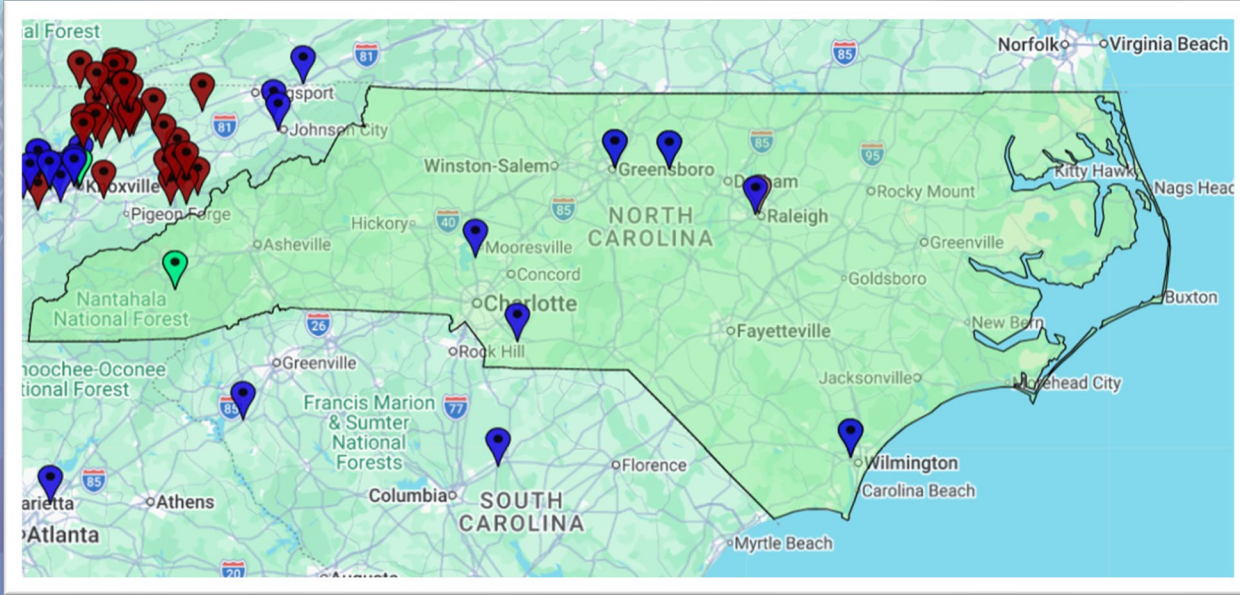
New York



Our Current Footprint in NY

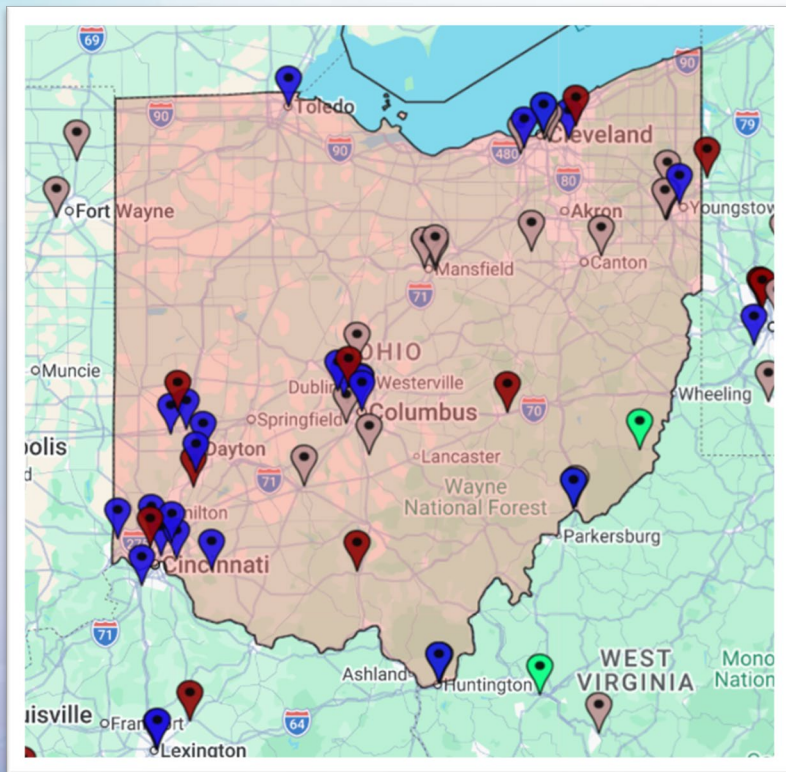
- 3 IACMI Members

North Carolina



Our Current Footprint in NC

- 7 IACMI Members
- 4 ACE Training Sites
- 1 METAL Training Site



Our Current Footprint in OH

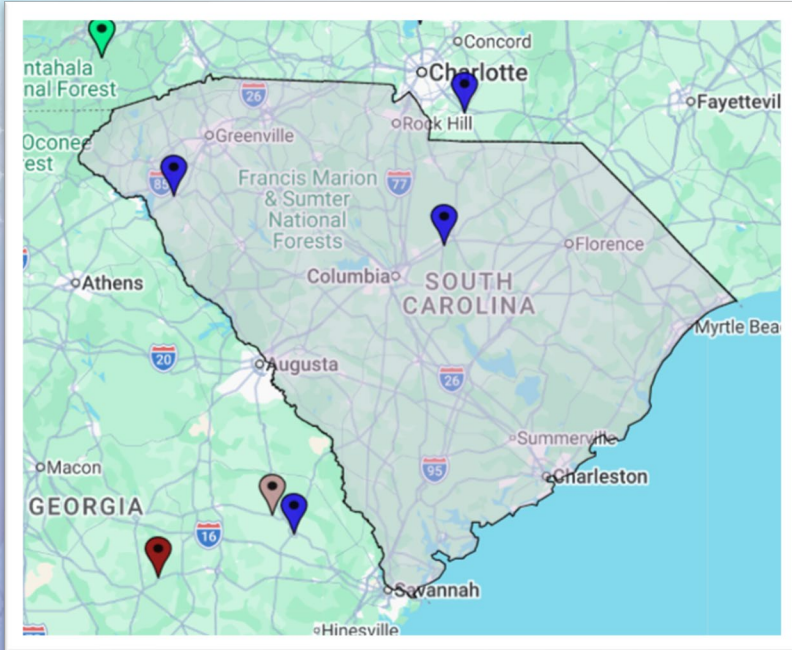
20 IACMI Members

3 ACE Training Sites

19 Metal Training Sites

8 Foundations Schools

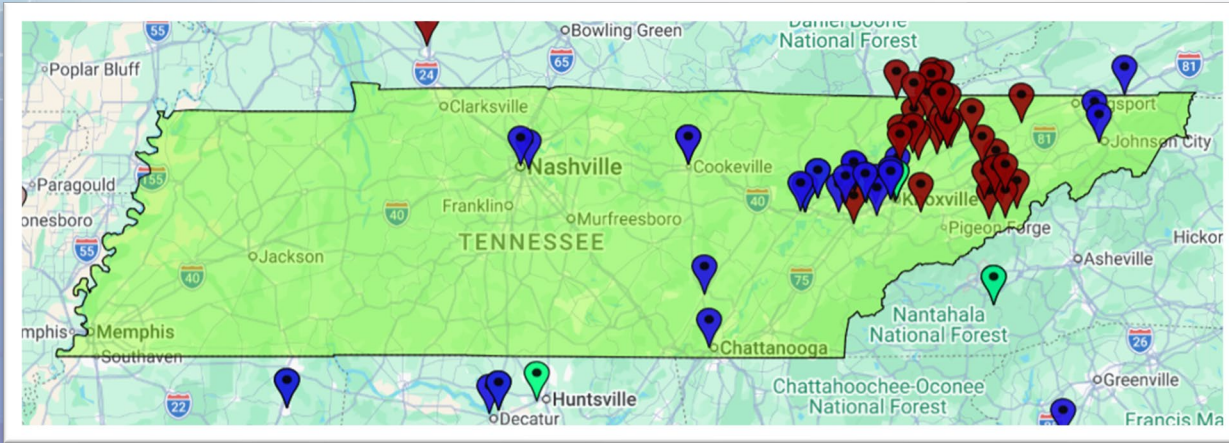
South Carolina



Our Current Footprint in SC

- 2 IACMI Members

Tennessee



Our Current Footprint in TN

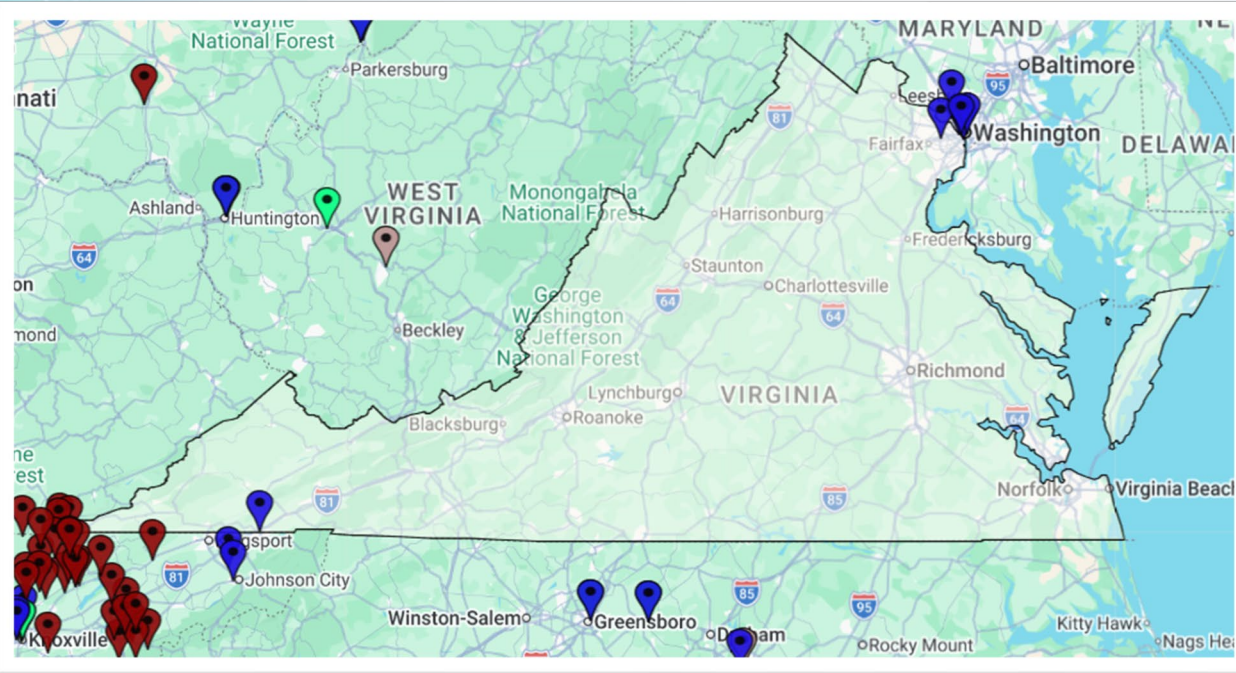
- 19 IACMI members
- 6 ACE Training Sites
- 2 METAL Training Sites
- 32 Foundations Schools

Virginia

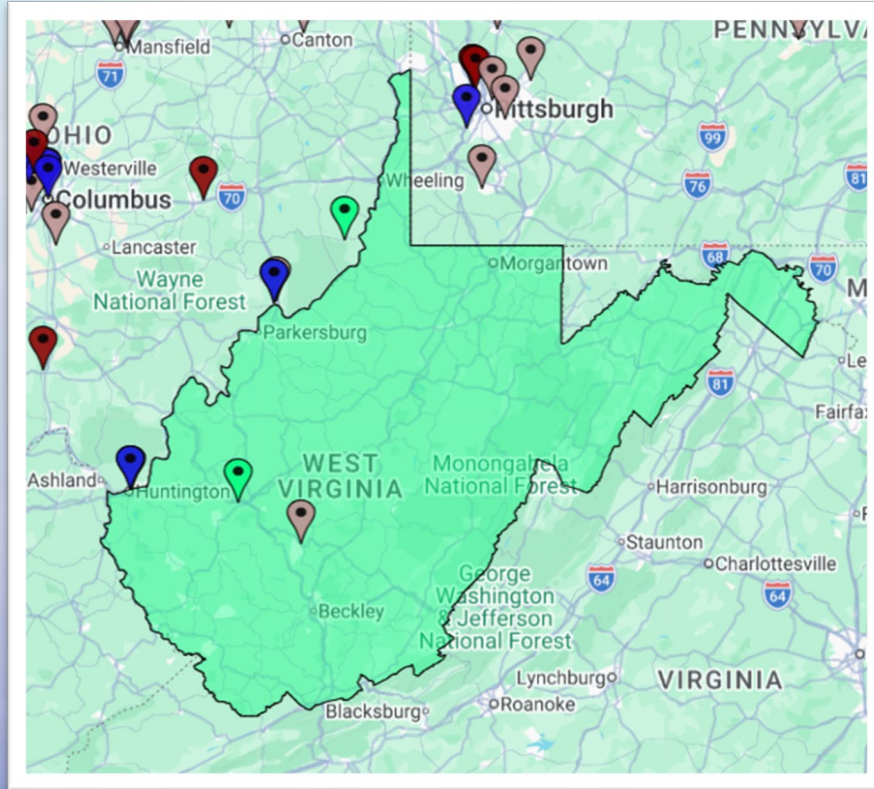


Our Current Footprint in VA

- 5 IACMI Members



West Virginia



Our Current Footprint in WVA

- 1 IACMI Member
- 2 ACE Training Sites
- 2 METAL Training Sites

Jennifer Woods

Industry Initiatives Manager

jwoods@iacmi.org

865- 293-1996



Questions?

Thank you.

