

Industrial Assessment Centers

Multiple Contracts

Multiple Partners

September 1, 2017 – August 31, 2021

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U.S. DOE Advanced Manufacturing Office Program Review Meeting

Washington, D.C.

July 17-19, 2018

This presentation does not contain any proprietary, confidential, or otherwise restricted information.

Overview

Timeline

- IAC awards issued September 2016
- IAC Field Manager award issued November 2017
- Projected end date August 2021
- Project ~40% “complete”

Budget

	FY 16 Costs	FY 17 Costs	FY 18 Costs	Total Planned Funding
DOE Funded	–	9.0M	9.0M	\$45.0M
Project Cost Share	–	1.8M	1.8M	\$9.0M

Barriers

- Delays in obligating funds created significant disruptions to operations

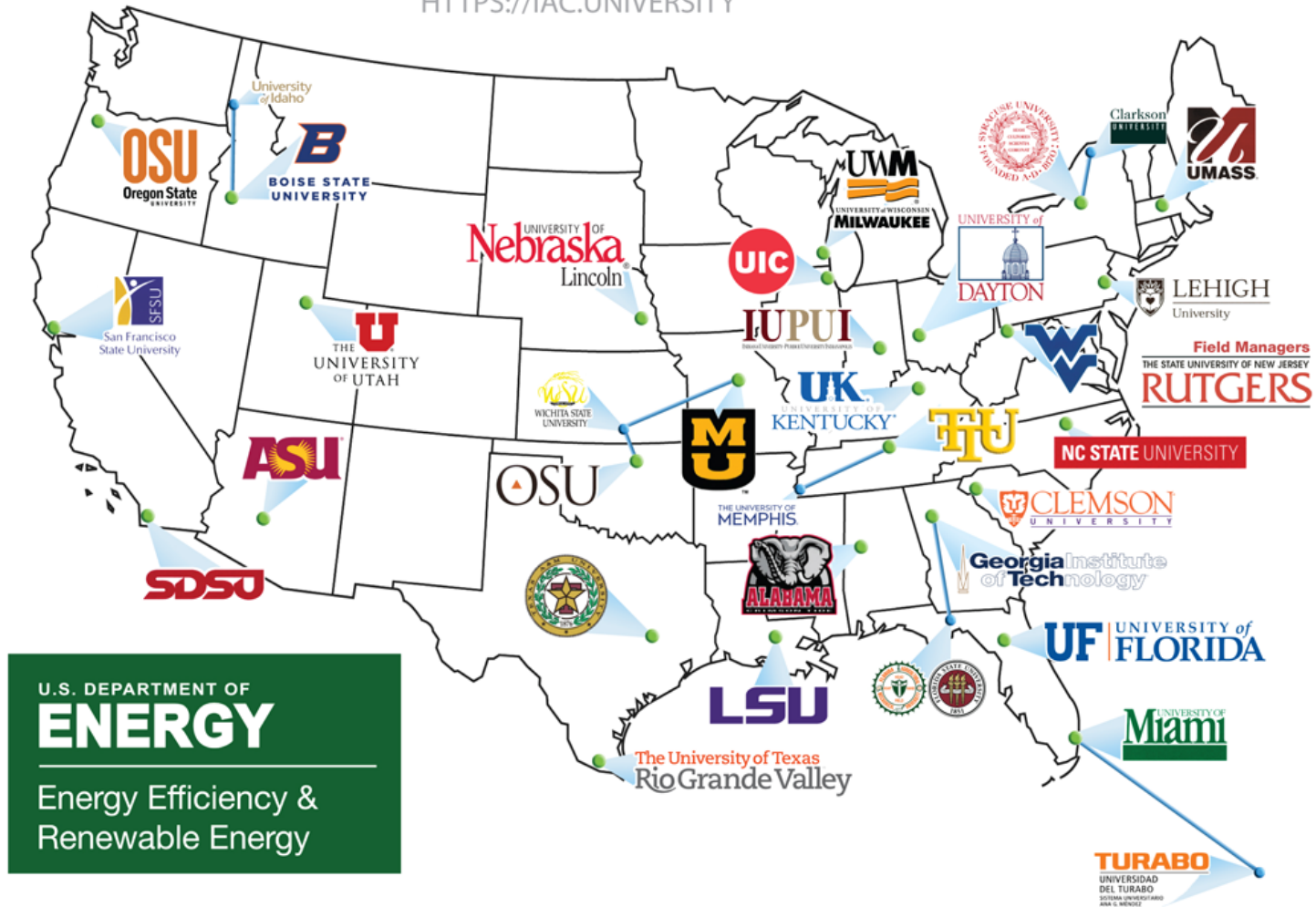
Partners

- IACs are located at 28 ABET-accredited engineering programs at American universities
- IAC Field Manager located at Rutgers University

Overview (continued)

Industrial Assessment Centers 2017-2021

[HTTPS://IAC.UNIVERSITY](https://iac.university)



Project Objectives

AMO Mission

- AMO activities are addressing the skills gap manufacturers are currently facing because of retirement of trained workers and a lack of workers trained in the latest technologies and energy management skillsets
- AMO objective is to provide educational resources for students as well as mentoring and on-the-job training opportunities to increase the number of qualified technical employees in advanced manufacturing

Addressing appropriate barriers

- AMO is developing skillsets in energy management and emerging technologies
 - Develop or advance 15 workforce curricula focused on manufacturing energy systems and advanced technologies
 - Train at least 3,000 individuals per year in advanced manufacturing technologies and solutions, including energy management practices

Technical Innovation

- Offer new and enhanced services:
 - **Smart manufacturing:** identify opportunities for productivity gains through smart communications between machines, processes, operators and management
 - **Cybersecurity:** assist SMEs in threat detection and mitigation
 - **Water/wastewater:** support the efficiency and productivity of water utilities, including operations and the biological component of wastewater treatment
 - **Energy management systems:** help SMEs to continuously improve their energy performance through the entire spectrum of management systems
- Expand the number and extent of formal partnerships with critical stakeholders to multiply program impacts through conversion, recruitment, and financial leveraging
- Development of online resources for any client to access to be able to increase productivity
- Increased coordination with other academic disciplines and technical resources to advance the IAC mission
- Expand coverage of water savings potential in facilities

Technical Approach

- Center Directors – tenured engineering faculty members with an interest in practical applications
 - Mentor and evaluate student performance on assessments
- Assessments – a teaching tool and the backbone of the real-world IAC experience
 - Normally consists of a one day site visit at an industrial plant
 - Integrated to include waste and productivity
 - Fundamentally a multiple-system assessment
 - When resources are limited teams can focus on a subset of important systems
- Clients – directed at small and medium sized manufacturers:
 - Have gross annual sales of \leq \$100 million
 - Consume energy at a cost between \$100,000 and \$2.5 million/year
 - Employ no more than 500 people
 - Have no technical staff whose primary duty is energy management

Technical Approach (continued)

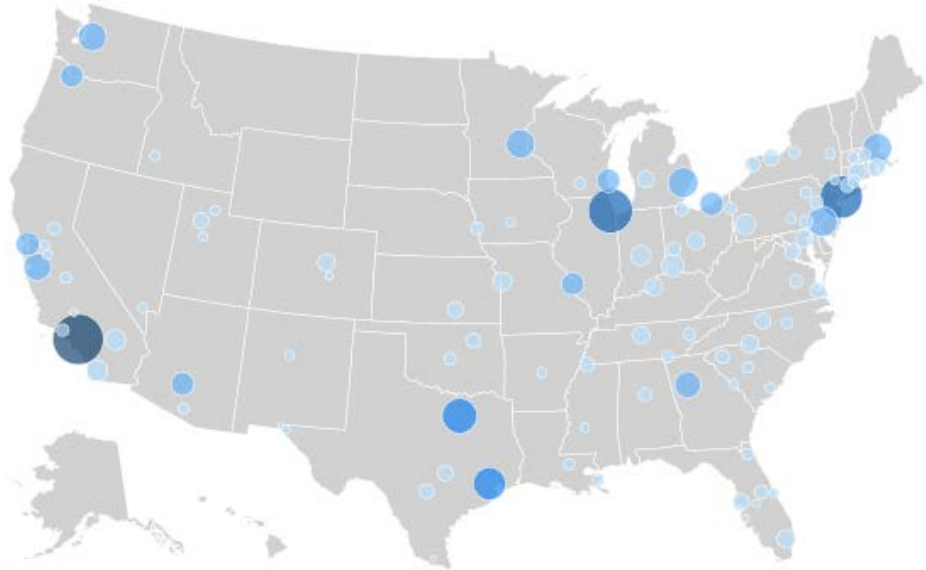


- Assessment results in a formal report being sent to the client firm
 - Each report has several recommendations which provide:
 - Sufficient engineering design to explain the recommendation
 - Anticipated savings
 - Implementation costs
 - Simple payback
- Students are fully involved
 - Pre-assessment prep
 - Onsite data and measurement
 - Post-assessment analysis
 - Report writing and presentation of results
- Formal implementation follow-up occurs 9-12 months later

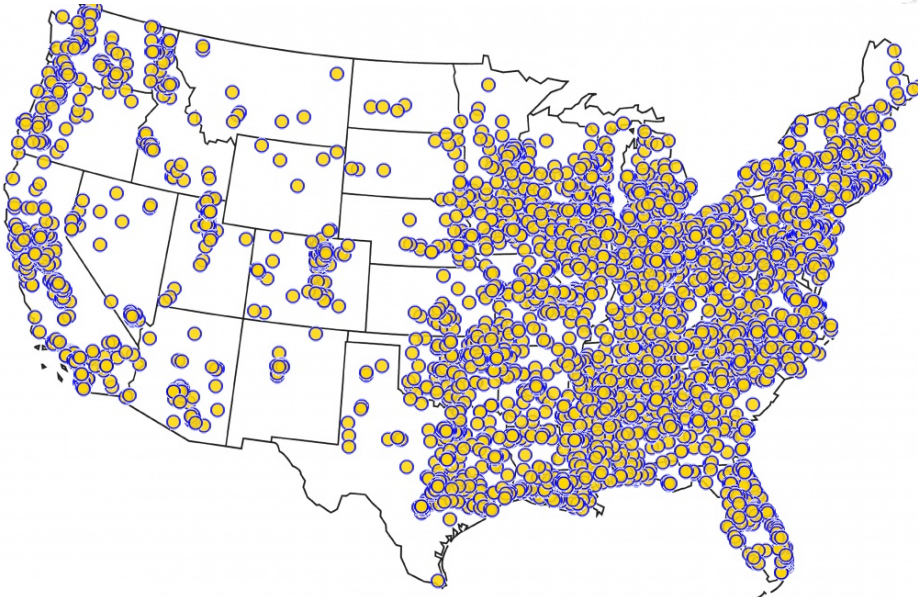
Results and Accomplishments

- IACs have conducted more than 18,000 assessments and provided more than 135,000 recommendations
- Average recommended yearly savings is \$135,989

U.S. Manufacturing Jobs – Top 100 Locations



IAC Assessments Since 2000



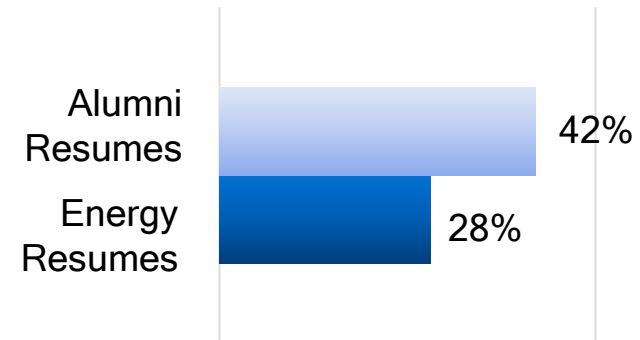
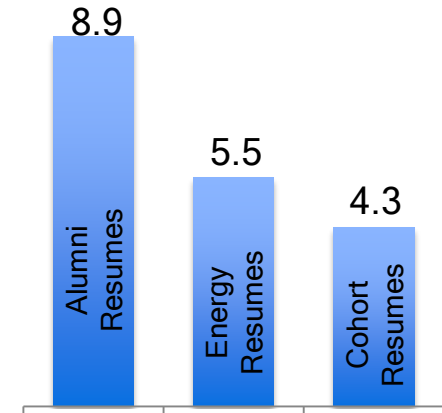
- For every \$1 invested in the IACs between 1997 and 2013:
 - \$5 were invested in energy efficiency improvements by participating firms

Results and Accomplishments (continued)

- On average, an IAC client saves more than \$47,000 in energy savings, productivity enhancements, and water use and waste reduction per assessment in one year
- Costs to DOE are less than one-fourth of energy savings
 - Savings do not account for persistence
 - Savings do not account for activities associated with IAC graduates
- More than 50 percent of IAC graduates initial job includes energy efficiency as a primary responsibility

Results and Accomplishments (continued)

- Graduates have an average of 8.9 specific, applicable skills in energy efficiency, as opposed to 5.5 or 4.3 for peer control groups
- Graduates have a skill mix estimated to be \$6,210 more valuable than the skill mix of an energy peer control group
- Graduates spend 42% of their career in EE, as opposed to 28% for an energy peer control group



Questions?

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