

The Advanced Manufacturing Office (AMO) partners with industry, small business, universities, and other stakeholders to identify and invest in emerging technologies with the potential to create high-quality manufacturing jobs, enhance the global competitiveness of the United States, and reduce energy use by encouraging a culture of continuous enrichment in corporate energy management.

What We Do

The Advanced Manufacturing Office uses an integrated approach that relies on three pillars to deliver energy and consumer cost savings:

- ✓ **Next Generation Manufacturing Research and Development (R&D) Projects** will target the development of application-specific and crosscutting manufacturing technologies to dramatically improve the U.S. transition from laboratory invention to domestically manufactured products.
- ✓ **Advanced Manufacturing R&D Facilities** will support public-private partnerships using shared facilities for technology development, including the creation of Clean Energy Manufacturing Innovation Institutes consistent with the President’s vision for a multi-agency National Network for Manufacturing Innovation (NNMI). These are shared research facilities where industry and research institutions collaborate and leverage cutting-edge, crosscutting advanced manufacturing capabilities to develop high-impact commercial manufacturing innovations.
- ✓ **Industrial Technical Assistance** will support the deployment of energy-efficient manufacturing technologies and practices, including strategic energy management and combined heat and power, across American firms through corporate commitment, engagement, tools and training, site assessments, and expert advice.

Program Goals/Metrics

- Develop industry-specific and crosscutting foundational manufacturing technologies to assist U.S. industry reduce its energy intensity by 2.5% per year (EPACT 2005).
- Reduce life-cycle energy use by 50% in manufacturing processes and products through technology research, development, and demonstration.
- Develop, demonstrate, and assist industry with the adoption of cost-competitive combined heat and power (CHP) technologies (supporting EO 13624) toward a national goal of 40 GW of new CHP by 2020.
- Demonstrate technical and economic viability of energy management approaches (building off of ISO 50001).
- Establish at least two new Clean Energy Manufacturing Institutes as the Energy Department (DOE)-led component of the NNMI.

FY 2016 Priorities

- **Clean Energy Manufacturing Institutes and R&D Facilities** will focus on accelerating the development of cutting- edge technologies in areas such as critical materials, power electronics, advanced composites, smart manufacturing, and additive manufacturing.
- **Individual High-Impact Foundational R&D Projects and Incubators** will invest in crosscutting materials and process technologies to drive energy productivity and domestic manufacturing competitiveness. New R&D projects will be initiated in areas such as advanced materials manufacturing and next-generation electric machines, with crosscutting impacts on manufacturing energy efficiency and the performance and cost of multiple clean energy technologies.

(Dollars in Thousands)	FY 2014 Enacted	FY 2015 Enacted	FY 2016 Request
Next Generation Manufacturing R&D Projects	76,971	84,000	133,000
Advanced Manufacturing R&D Facilities	81,500	92,500	241,000
Industrial Technical Assistance	22,000	23,500	30,000
Total, Advanced Manufacturing	180,471	200,000	404,000

- **Transformation of Industrial Technical Assistance** will help manufacturers establish energy savings targets and improve energy management with significant energy savings, as well as dedicated support for manufacturers. In addition, the office supports industrial system tools and training for professionals, as well as trains the next generation of energy technical leaders. Critical to this effort will be in-depth, transparent, and replicable quantitative analysis and quantification of program impacts, as well as an enhanced integration of technical assistance program components.

Key Accomplishments

- Led DOE contribution to the establishment of the NNMI, including the Institute for Advanced Composites Manufacturing Innovation—covering 34 states and a consortium of 122 companies, nonprofits, universities, and research laboratories. The Institute is supported by \$70 million of federal funding and more than \$180 million of non-federal funding over five years.
- Led by Ames Laboratories, the Critical Materials Institute (CMI) is a 5-year investment of up to \$120 million that focuses on technologies that make better use of materials and recycling them to reduce dependence on foreign supplies (such as rare earths) for clean energy applications. In its first year of operation, CMI researchers have filed seven patent disclosures.
- DOE launched 12 new projects across the country for the Innovative Manufacturing Initiative in partnership with the private sector, co-investing a total of \$20 million in pre-competitive, foundational manufacturing technologies that have the potential to yield significant improvements in energy productivity, product yield, and crosscutting economic benefits. Increased the Better Building, Better Plants Program to more than 140 Program Partners, representing close to 2,300 plants and close to 11% of the total U.S. manufacturing energy footprint. Partners have committed to reduce their energy intensity by 25% over 10 years and, as of October 2014, have saved around 320 trillion Btu and \$1.7 billion.
- Between fiscal year (FY) 2009 and FY 2013, DOE CHP TAPs (and predecessors) provided technical support to more than 580 CHP projects. Of those projects, more than 180 are currently under development or online with a combined capacity of 1.53 GW. Preliminarily for FY 2014, DOE CHP TAPs provided technical support to

more than 380 potential CHP projects, with more than 200 sites receiving technical evaluations. Many of these projects are moving forward through the project development process to more in-depth assessments of CHP viability.

- Industrial Assessment Centers located within accredited engineering programs at 24 universities around the country conduct energy audit assessments to identify opportunities to save energy, improve productivity, and reduce waste at manufacturers' sites. On average, each manufacturer identifies about \$140,000 in potential annual energy savings and implements more than one-third of these within the first year of the assessment. Almost 17,000 manufacturers have benefitted from the program and implemented savings resulting in approximately 5 million metric tons in carbon dioxide emissions reductions.

