



NIST MEP 2017 ANNUAL REPORT

*Making an Impact on
U. S. Manufacturing*



**MEP • MANUFACTURING
EXTENSION PARTNERSHIP®**

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LETTER FROM THE MEP DIRECTOR

As Director of the NIST MEP Program, I am very proud of the work we have done this year. The innovative efforts we launched in 2017 to better meet the needs of U.S. small and medium-sized manufacturers (SMMs) have been and continue to be outstanding. To quantify the value of our efforts, we again commissioned the W.E. Upjohn Institute for Employment Research, an independent third-party firm, to do a study using the 2017 impacts achieved by MEP Center client engagements. The report found that the NIST MEP Program generates a substantial economic and financial return of nearly 14.5:1 for the \$128 million FY 2017 federal government investment.

With support from the MEP Advisory Board, we completed a five-year strategic plan for 2017-2022, setting the course for even greater, more comprehensive support of U.S. manufacturers through an integrated MEP National Network™. Per the American Innovation and Competitiveness Act that was signed into law in January 2017, we added 10 new members to the MEP Advisory Board with dynamic voices representing the manufacturing community across the nation. I am truly grateful to every member of our Board, both past and present, for their valuable insight.

We moved forward with important new successful industry initiatives in 2017 and started a few exciting initiatives. Briefly, here are a few of these new strategic focus areas which are further elaborated upon in this report. We launched a branding campaign around the MEP National Network. With the theme “The Go-To Experts for Advancing U.S. Manufacturing,” we’re focused on empowering manufacturers to be successful and to help them navigate new technology with strategic outreach efforts to increase awareness of the Program. We reduced to practice the NIST cybersecurity framework by creating and publishing a cybersecurity handbook for the MEP National Network and their clients. The Handbook along with a series of workshops, webinars and trainings is now being used by MEP trusted advisors to help SMMs better understand cybersecurity requirements and risks they face. Another major breakthrough in 2017 came when we tested and created the MEP-Assisted Technology and Technical Resource (MATTR) program. MATTR now provides a framework to more efficiently and effectively connect MEP Center clients with specific technical expertise, laboratory user facilities, and other resources of the NIST laboratories they need while conversely providing NIST Laboratories with an instant connection to smaller manufacturers all across the country. Fantastic!

During 2017, I had the opportunity to visit a couple of our MEP Center staff across the country embedded in the 14 Manufacturing USA institutes who are working on special projects. We also were able to select seven new competitive awards for MEP Centers that focused on critical manufacturing industry areas, including digital manufacturing, supply chain management and workforce.

I have the great fortune to interact with people in the MEP National Network who share my passion for U.S. manufacturing. These are the most dedicated, talented manufacturing experts and trusted advisors in the world! Tirelessly helping SMMs be more competitive, they also strengthen local manufacturing ecosystems. I know what we do contributes to what makes our country strong and safe and I’m especially proud that our work provides a substantial return on investment to the American taxpayer.



Carroll Thomas, MEP Director

ABOUT MEP

Mission: To strengthen and empower U.S. Manufacturers

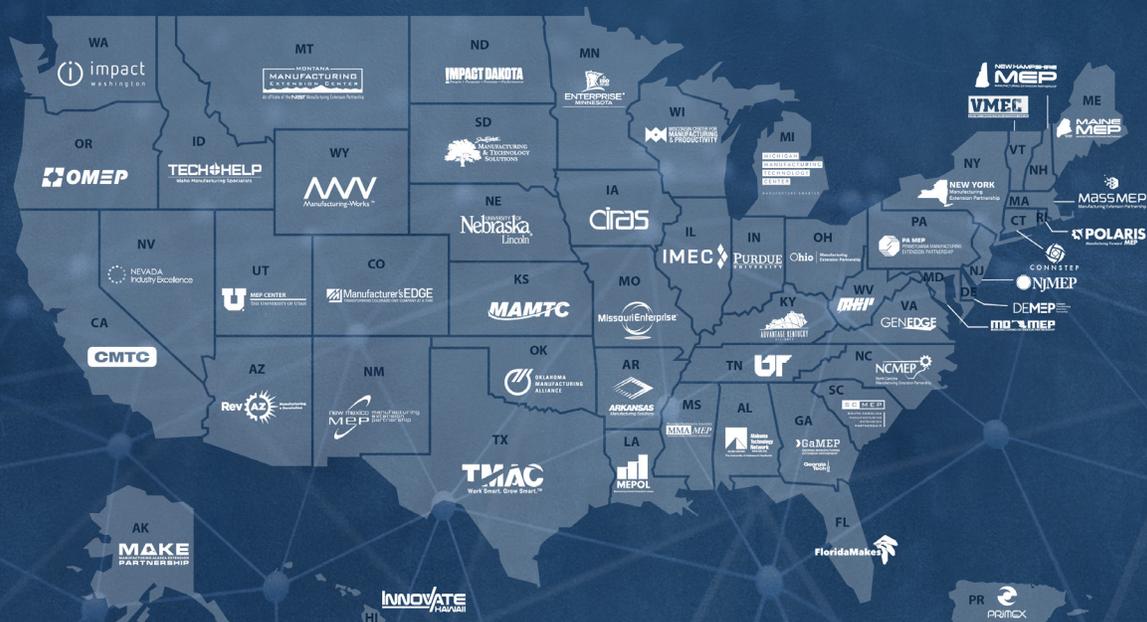
Since 1988, the Hollings Manufacturing Extension Partnership (MEP) has worked to strengthen U.S. manufacturing. The Program was created by the Omnibus Trade and Competitiveness Act of 1988 to improve the competitiveness of U.S. based manufacturing by making manufacturing technologies, processes and services more accessible to small and medium-sized manufacturers (SMMs). Over the last twenty-nine years, NIST MEP has focused on bridging the manufacturing productivity gap, identifying opportunities for growth and encouraging technology deployment.

MEP is part of the National Institute of Standards and Technology (NIST), a U.S. Department of Commerce agency. Through its collaborations at the federal, state and local level, MEP Centers in every state and Puerto Rico work with manufacturers to develop new products and customers, expand and diversify markets, adopt new technologies and enhance value within supply chains.

The MEP Centers and their partners, including state governments, universities, community colleges, non-profit entities, associations and private consultants provide manufacturers with the services needed to reduce bottom-line expenses and grow top-line profits, both of which are necessary to thrive in the global marketplace.



The Go-To Experts for Advancing U.S. Manufacturing



MEP NATIONAL NETWORK™



In 2017, we launched an initiative creating the MEP National Network™ Brand, making it easier for manufacturers to learn more about who we are, what we can do for them and how to reach their local MEP Centers for assistance. Together with a group of Center Directors, the MEP Advisory Board and an outside agency, NIST MEP created a way to clearly communicate who we are and what we offer as one Network to manufacturers, funders and other stakeholders across America. The MEP National Network serves as “The Go-To Experts for Advancing U.S. Manufacturing” focused on helping SMMs generate business results and thrive in today’s technology-driven economy.

MEP AT A GLANCE

The MEP National Network is a unique public-private partnership that delivers comprehensive, proven solutions to U.S. manufacturers, fueling growth and advancing U.S. manufacturing. Focused on helping SMMs generate business results through growth and economic impact as well as thrive in today’s technology-driven economy, the MEP National Network comprises 51 MEP Centers located in all 50 states and Puerto Rico, with over 1,300 manufacturing experts at more than 400 service locations, providing any U.S. manufacturer with access to resources they need to succeed.

In 2017, the MEP National Network connected with 26,313 manufacturers, leading to \$12.6 billion in sales, \$1.7 billion in cost savings, \$3.5 billion in new client investments, and helping to create and retain more than 100,000 U.S. manufacturing jobs. View the National Impact Data PDF for more information about NIST MEP, the National Network, and client impacts.

More than **100,000** Jobs Created or Retained

\$12.6 Billion in New and Retained Sales

\$3.5 Billion in Total Investment U.S. Manufacturing

\$1.7 Billion in Savings



National Network

One Center in Every State and Puerto Rico

Over **1,300**



Manufacturing Experts

Nearly

2,100



Service Providers & Partners

Over

400

Service Locations



Interacted with

26,313



Manufacturers

W.E. UPJOHN INSTITUTE STUDY

A study by the W.E. Upjohn Institute found the NIST MEP Program generates a substantial economic and financial return of nearly 14.5:1 for the \$128 million invested in FY 2017 by the federal government. The study also found total employment in the U.S. was over 219,000 higher because of MEP Center projects. In addition, the Upjohn study examined additional areas of economic impact not previously reported by the NIST MEP Program: (1) personal income is \$13.76 billion higher and (2) GDP is \$22.01 billion larger, translating into an increase of \$1.86 billion in personal income tax revenue to the federal government than without the program.



* Dollars in Billions

PASSAGE OF AMERICAN INNOVATION AND COMPETITIVENESS ACT

On December 12, 2016, Congress passed S. 3084, the American Innovation and Competitiveness Act (AICA) which was signed into law in January 2017 (Public Law 114-329). The AICA represents one of the most important legislative changes in the NIST MEP Program’s history, third only to the Program’s creation in 1988 and sunset clause removal in 1998. The AICA essentially rewrote the original authorizing legislation, including permanently changing the cost share ratio required of the Centers from 2:1 to at least 50 percent. The AICA also provided new language requiring a re-competition of all MEP Centers which have received 10-years of consecutive federal funding, changed the MEP Center review cycle, updated the MEP Advisory Board membership requirements, and provided additional clarifying clauses regarding performance, confidentiality, and Center board oversight.



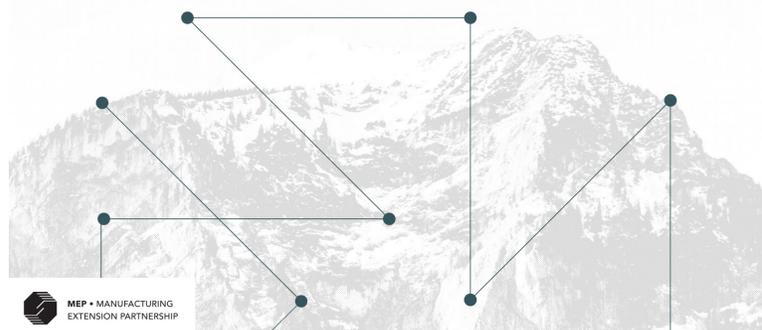
2017 MEP NATIONAL SUMMIT

NIST MEP hosted a National Summit in Denver, CO April 30th – May 3rd, 2017 for the first time in five years. The 2017 MEP National Summit brought together approximately 475 attendees, including MEP Center leadership and staff, NIST MEP staff, key partners, stakeholders, and industry thought leaders. Over the course of three days, the Summit featured more than 70 sessions, insightful keynote speakers, plenary sessions, and panel discussions, and provided a platform to build, expand, and grow our capabilities to take U.S. manufacturers to the next level and prepare them for Manufacturing 4.0. Highlights included:

- A networking event on the evening of Sunday, April 30th featured the launch of NIST MEP's new National Network Brand, with discussion of what makes NIST MEP unique and the value of our Brand;
- Colorado Governor John Hickenlooper welcomed attendees to the Summit during his opening address on the morning of Monday, May 1st;
- Dynamic and informative keynote speakers who shared their experiences and represented small manufacturers that "Make it in America," Original Equipment Manufacturers (OEMs) that work with small manufacturing suppliers, and experts on relationship management; and,
- Plenary panels provided thoughtful discussion on the embedding of MEP staff into the Manufacturing USA institutes projects, the future of manufacturing policy, and the Future is Now initiative's progress toward defining and piloting what it means to be a fully integrated MEP National Network.



MEP | CONNECTS
2017 NATIONAL SUMMIT | COLORADO
National Institute of Standards and Technology



MEP ADVISORY BOARD

The statutory purpose of the Board is to provide advice and recommendations to the NIST Director on:

- The activities, plans and policies of MEP;
- The soundness of MEP's plans and strategies;
- Current performance in relation to MEP Program plans; and,
- Functions solely in an advisory capacity, in accordance with the provisions of the Federal Advisory Committee Act (FACA), as amended, 5 U.S.C. App.

MEP ADVISORY BOARD SUBCOMMITTEES AND WORKING GROUPS

The MEP Advisory Board met in March, April and September of 2017 and its members spent time advising NIST MEP leadership and working within subcommittees to explore and develop recommendations on essential programmatic goals, ultimately hearing final report-outs to conclude those subcommittees. This included a subcommittee on Connecting User Facilities and Labs with SMMs as well as a n MEP Learning Organization subcommittee.

Looking toward 2018, the Board will be actively engaged in moving forward the principal goals of the the 5-year MEP National Network 2017-2022 Strategic Plan with the development of new Board-level working groups, specifically the Supply Chain Development Working Group (with focus on defense supplier gaps) and the Performance/Research Development Working Group.

2017 ADVISORY BOARD MEMBERS

This was an unprecedented year of growth for the MEP Advisory Board. Based on the new statute requirements and four long-time Board members' terms ending, it was essential to add new members. In 2017, 10 new Board members were added to the roster, increasing the Board from 10 to 15 members. Designating a new Chair and Vice Chair were also a part of this transitional effort, as the Board's previous Chair, Vicki Wessel, ended her second term in May of 2017. The four Board members leaving service offered leadership and advice over their years of service and we thank them for their time and commitment to MEP's Advisory Board.

Jefferey Wilcox, former Board Vice Chair, stepped into the Chair role and Bernadine Hawes accepted the role of Vice Chair. Gary Groleau announced his retirement at the end of 2017. The current group represents the diversity of the U.S. manufacturing industry, from CEOs and executives at manufacturers both large and small, as well as leaders from educational institutions at both the state and community college level. The important perspectives of these volunteers will positively impact the MEP Program into the future.



JEFFREY WILCOX,
Chair

Jeffrey J. Wilcox is the Vice President for Engineering at the Lockheed Martin Corporation, and is responsible for leading the development and execution of engineering strategy for the Lockheed Martin Engineering Enterprise and its 60,000 engineers, scientists, and technologists.



BERNADINE HAWES,
Vice-Chair

Bernadine Hawes is an executive level nonprofit professional and economic development specialist working in the areas of project management, strategy development, compliance, and evaluation. Ms. Hawes is the chairwoman of the Delaware Valley Industrial Resource Center, part of Pennsylvania MEP.



JOSE ANAYA

Jose Anaya, Dean, oversees the El Camino Community College District's Community Advancement Division and Business Training Center. He has broad experience and expertise in the areas of product design, manufacturing and management as well as economic and workforce development.



E. LADON BYARS

E. LaDon Byars is the President and CEO of Colonial Diversified Polymer Products, LLC of Dyersburg, Tennessee. She is on the Advisory Board of the University of Tennessee Center for Industrial Services.



CAROLYN CASON

Carolyn L. Cason, Professor Emerita at The University of Texas at Arlington, has had a distinguished career as a scientist, teacher, academic leader and innovator. She led the effort that created Smart Care, a living laboratory dedicated to developing non-invasive, pervasive technology to monitor health changes and support independent living.



JOE EDDY

Joe Eddy is the President and CEO of Eagle Manufacturing, which produces more than 750 industrial safety and materials-handling products, many of them from high-density polyethylene. He is an advocate for regional ethane crackers that would create polyethylene.



GARY GROLEAU

Gary Groleau is the Corporate Manager of Labor Relations & Organizational Development for New Hampshire Ball Bearings (NHBB), a subsidiary of global manufacturer MinebeaMitsumi Inc. headquartered in Tokyo, Japan.



EILEEN GUARINO

Eileen Guarino is currently President and COO of Greno Industries located in Scotia, New York. Ms. Guarino attended the University of South Carolina.



KATHAY RENNELS

Kathay Rennels is the Associate Vice President for Engagement at Colorado State University and works to advance collaborative networks across the state and create economic development opportunities. Ms. Rennels is now leading the Food and Agriculture key industry network for the State of Colorado. She is on the Board of Manufacturer's Edge.



GEORGE SPOTTSWOOD

George Spottswood is owner and CEO of Quality Filters, Inc. (QFI) in Robertsdale, Alabama. Mr. Spottswood has been involved with the Alabama Technology Network since 2005.



LESLIE TAITO

Ms. Leslie Taito is currently the Senior Vice President for Corporate Operations for Hope Global, a manufacturer of products and engineering of textile solutions. She held the Chief Executive Officer position for Rhode Island Manufacturing Extension Services, Inc. (formerly Rhode Island MEP).



CHRIS WEISER

Chris Weiser is the owner and President of J.V. Manufacturing, Inc., which has provided the best equipment solutions for America's waste and recycling.



MARY ISBISTER

Mary Isbister is President of GenMet Corporation, a custom metal fabricating company located in Mequon, Wisconsin. Ms. Isbister also served on the U.S. Manufacturing Council reporting to the U.S. Secretary of Commerce. She has served as Chair of the Wisconsin MEP Board.



THOMAS M. LEE

Thomas M. (Tommy) Lee has been employed by Vulcan, Inc., an aluminum manufacturing company in Foley, Alabama, since 1985. He is currently President and CEO, and also Secretary/Treasurer of Vulcan Scholarships, Inc.



MITCH MAGEE

Mitch Magee is Director of Engineering for PPG's Architectural Coatings business unit, the consumer paints business of PPG, with over 35 manufacturing plants and distribution centers in North America. Mr. Magee is also actively engaged in workforce development.



MATTHEW NEWMAN

Matthew Newman is the Director of Business Management for Covanta, and is responsible for all business matters pertaining to the financial management and public affairs initiatives of the Covanta Tulsa Renewable energy facility located in Tulsa, OK.



VICKIE WESSEL, Immediate Past Chair

Vickie Wessel is the founder and President of Spirit Electronics, LLC. She has more than 37 years of business leadership in sales, marketing, procurement, operations, contracts, finance, and quality systems management.



ED WOLBERT

Ed Wolbert is the President of Transco Products Inc., a leading U.S. medium-sized manufacturer and contractor dedicated to nuclear power.



JIM WRIGHT

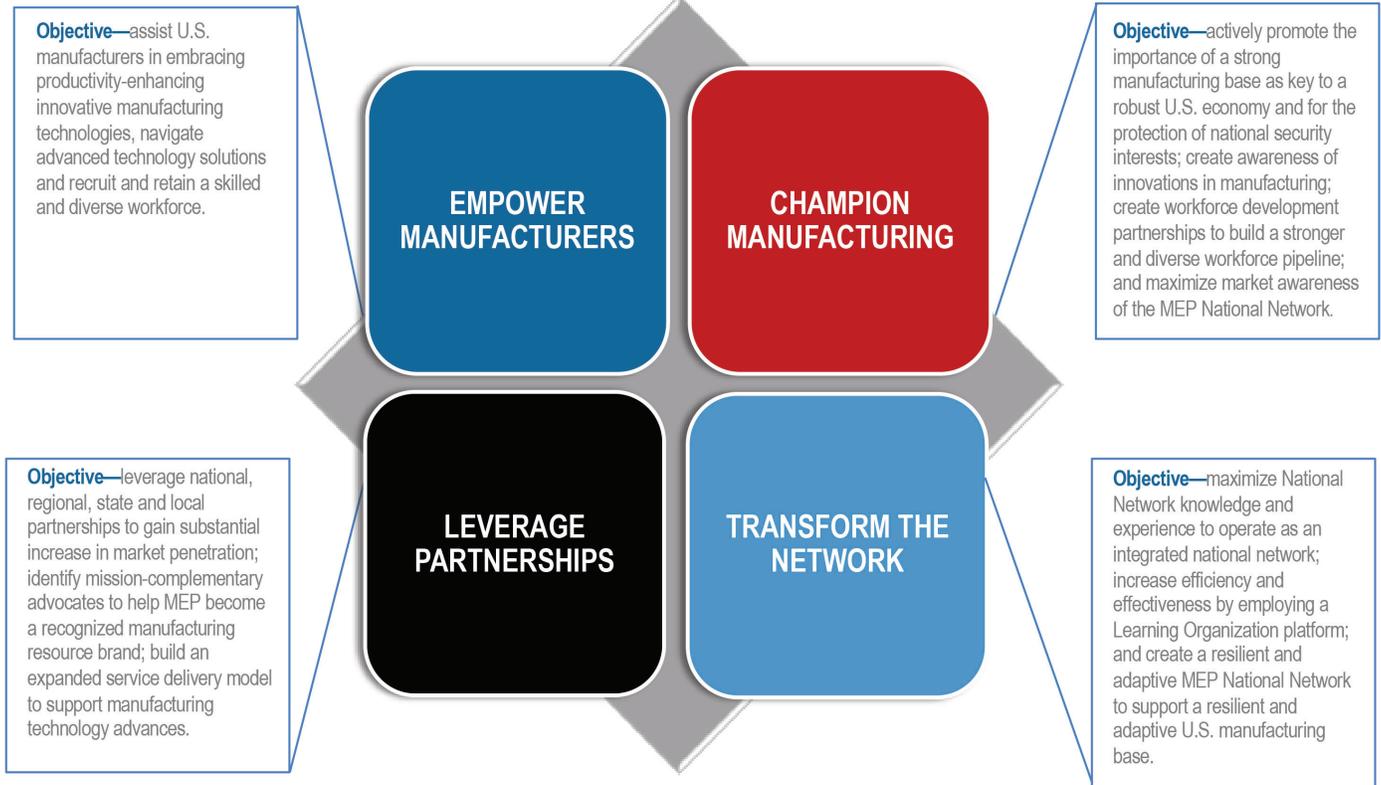
Jim Wright is the Vice-President of Operations for Proof Research located in Columbia Falls, Montana. He has served as a member of the Advisory Board of the Montana Manufacturing Extension Center.



2017-2022 STRATEGIC PLAN

In 2017, NIST MEP completed development and began implementing the new 5-year comprehensive strategic plan. As part of this Strategic Plan’s development, NIST MEP and MEP Center staff were invited to participate in an inclusive strategic sprint exercise that provided guidance to the MEP National Network, helping to create a dynamic plan. This strategic sprint served to translate high-level goals and strategic input from the MEP National Network into specific strategic and executable elements of the final 5-year comprehensive strategic plan.

The strategic plan’s four principal goals include:



MEP NATIONAL NETWORK MEASURES OF SUCCESS

18-MONTH MEASURES OF SUCCESS:

- Piloted integrated MEP National Network approach to delivery system engaging **50%** of Centers in multi-center delivery projects.
- Increased small/rural engagements through 3rd party partnerships by **10%** and increased longer-term impactful projects with these smaller firms by **5%**.
- Attained Operational Excellence in **25%** of Centers' operations and in **50%** of NIST MEP administrative support.
- Increased awareness of the MEP National Network brand by **10%** over base brand recognition measurement a year after the Network launches the brand.

FIVE-YEAR VIVID DESCRIPTION:

As the go-to resource for U.S. manufacturers...

- Recognized by small and medium-sized manufacturers as a valuable and essential resource for delivering advanced technology solutions and cited by key manufacturing stakeholders (local, state, federal) as integral to growing U.S. manufacturing ecosystems.
- We have increased our market penetration as an integrated national network by **20%**.
- We deliver integrated digitalization and cybersecurity assistance to dispersed supply chains and we have embraced Industry 4.0 in our own operational excellence.

SIGNIFICANT LONG-TERM GOAL:

The MEP National Network is known and recognized by U.S. manufacturers and stakeholders as an indispensable resource whose trusted experts help them grow and embrace manufacturing technology advances. A doubling of federal and state funding in the Network along with a strategic expansion of the current members of the MEP National Network:

- **Known and recognized** by U.S. manufacturers as the go-to resource for manufacturing.
- We've **tripled** the number of manufacturers served annually.
- We've increased the MEP National Network impact numbers **four-fold**.

NIST MEP HIGHLIGHTS

PRESIDENTIAL MEMORANDA

The Administration issued a number of Presidential Memoranda and Executive Orders which impacted manufacturers, but not the Program directly. In January and February 2017, two memoranda concerning regulatory and permitting reforms and pipeline construction were issued. NIST MEP was a very active participant in both the collection and analysis of information for the streamlining permitting and reducing regulatory burdens for domestic manufacturing. The final report to the President on Streamlining Permitting and Reducing Regulatory Burdens for Domestic Manufacturing was published on October 6th, 2017.

COMPLETION OF MEP CENTER COMPETITION

In March 2014, the Government Accountability Office (GAO) recommended that NIST MEP update its process for recompetition of state MEP Centers and distribution of funds. Because of this recommendation, NIST MEP developed a strategy for executing four separate competitions over three years beginning in 2014 which concluded this year, as well as an ongoing performance assessment and regular 10 year recompetition of Centers. Competitions for 44 states in these four rounds were completed as of this year.

The seven (7) remaining states not competed in rounds 1-4 are: Kentucky, Rhode Island, South Dakota, Arizona, Maryland, Nebraska, and Florida. These states had been or were in the process of being recompeted during 2012-2014 before the GAO report and its recommendations were issued.

ROUND 1

Five-year awards began July 1, 2015 and included 10 states

Colorado, Connecticut, Indiana, Michigan, New Hampshire, North Carolina, Oregon, Tennessee, Texas, and Virginia.

ROUND 2

Competition awards began January 1, 2016 and included 10 states

Alaska, Idaho, Illinois, Minnesota, New Jersey, New York, Oklahoma, Washington, West Virginia, and Wisconsin.

ROUND 3

Competition awards began October 1, 2016 and included 13 states

Alabama, Arkansas, California, Georgia, Louisiana, Massachusetts, Missouri, Montana, Ohio, Pennsylvania, Puerto Rico, Utah, and Vermont.

ROUND 4

Competition awards began on April 1, 2017 and include 11 states

Delaware, Hawaii, Iowa, Kansas, Maine, Mississippi, New Mexico, Nevada, North Dakota, South Carolina, and Wyoming.



PERFORMANCE BASED COMPETITIVE AWARDS PROGRAM (CAP)

As part of NIST MEP's ongoing efforts to make the Program more effective and efficient, in FY 2017, NIST MEP launched the performance-based Competitive Awards Program (CAP). The Program is based on an existing NIST Measurement Science and Engineering solicitation used by the Laboratory Organizational Units (OUs) in their grants programs. Like the NIST Labs OU solicitation, the NIST MEP CAP accepts proposals on a rolling basis throughout the fiscal year. The CAP is performance-based and was open to applications from eligible MEP Centers this past year to add capabilities to the MEP National Network, including the development of projects to solve new or emerging manufacturing problems.

While the CAP funding opportunity was open for applications to all topical areas related to manufacturing,

themes for this Program included new manufacturing technologies of relevance to SMMs, particularly those related to Industry/Manufacturing 4.0; supply chain management technologies and practices; and workforce intermediary and business services.

As a result of the competition process, NIST MEP received many applications in the following topical areas;

- Cybersecurity
- Digital Supply Chain
- Food Safety
- Market Development (Industry and Data Analysis)
- Technology Development & Deployment
- Workforce



The following MEP Centers received Performance Based CAP Awards Program under FY17 Funding:

Virginia MEP (GENEDGE)

Growth through MedAccred

Georgia MEP (Ga Institute of Technology)

Growing the Capabilities of the Small Machine Shop

Michigan MEP

Demonstration of the National MEP Network with the Development of Cybersecurity Services

New Jersey MEP

NJMEP Pro Action Food Safety Modernization Act/Food Safety Training for MEP Centers

NV MEP

(Nevada Industry Excellence)

Improving Sales & Market Share of MEP Centers and Manufacturers

NC MEP (North Carolina State University)

NIST MEP Network Digital Supply Chain Project

2017 MANUFACTURING DISASTER ASSESSMENT PROGRAM (MDAP)

The 2017 hurricane season had a significant and devastating impact on manufacturers and their facilities with Hurricanes Harvey, Irma, and Maria affecting the states of Texas, Louisiana, Florida, Georgia and the territory of Puerto Rico to the greatest extent. According to the Federal Emergency Management Agency (FEMA), Hurricane Harvey tied with Hurricane Katrina as the costliest tropical cyclone on record; Irma was the strongest storm on record to exist in the open Atlantic region; and Hurricane Maria was regarded as the worst natural disaster on record in Puerto Rico. Within a month, these three hurricanes impacted over 41,000 manufacturers with over 340,000 employees totaling over \$221 billion in manufacturing GDP in the FEMA disaster declared counties.

To respond in record time to this disastrous event affecting a record number of SMMs and for the first time, NIST MEP used a NIST authority to provide immediate funds to the MEP Centers in the affected areas through non-competitive awards which allowed them to quickly provide expert business assessment and assistance to manufacturers that were impacted by the hurricanes.

Each MEP Center in the affected state and territory used these funds to rapidly identify and contact local manufacturers, collect information to link to federal, state, and local resources, and to develop an assessment used by the manufacturer as a recovery action plan. The new award authority also allowed the MEP National Network to develop future strategies to support disaster recovery planning and risk mitigation.

Following a disaster, a quick response is critical as an SMM's recovery may not be possible if they are not connected to manufacturing-specific resources in a timely fashion. Hence, to reach as many SMMs as soon as possible, this effort required an accelerated project delivery process with organizations that already understand the situation, are local to the affected region, and are connected to resources trained to return the manufacturer to a sustainable functionality. These noncompetitive awards and their immediate roll out for the disaster assessments projects in the affected areas helped seriously compromised manufacturers forego a likely wait of 120 days or more that it could take to conduct an award competition.

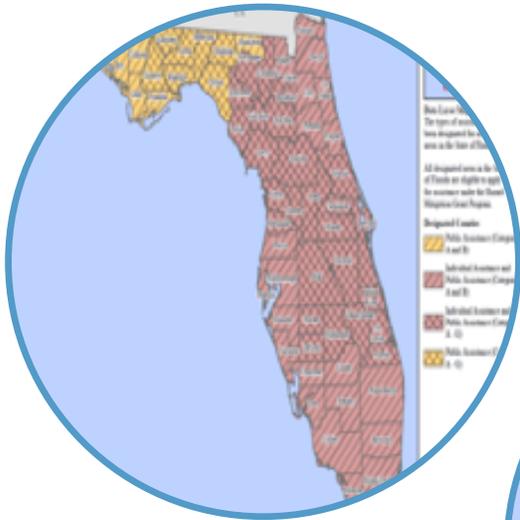
The following 5 states were impacted by hurricanes and are receiving MDAP assistance.



Texas



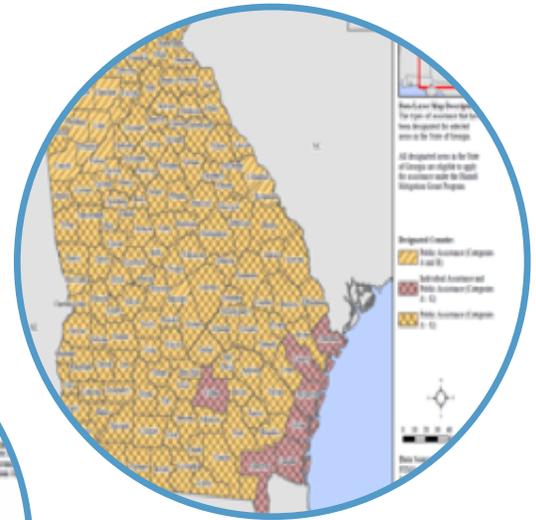
Louisiana



Florida



Puerto Rico



Georgia

**Note: All shaded areas/counties in each state are designated as eligible to apply for assistance under the Hazard Mitigation Grant Program.*

FUTURE IS NOW INITIATIVE

Based on the rapid technological changes in and to manufacturing, in September 2016, Director Carroll Thomas asked for leaders among the 51 MEP Center Directors to work with NIST MEP to help define and shape the future of the NIST MEP Program. The goal of the Center Directors who stepped forward to form the “Future is Now” group was to create a more effective and efficient national network of MEP Centers that can meet the evolving demands of U.S. manufacturers. Twenty Center Directors volunteered their time to create a framework for how NIST MEP and the MEP Centers become a truly integrated national network, capable of sharing resources and expertise throughout the country.

During 2017, a smaller group of six Center Directors plus NIST MEP developed a framework for transforming what was known as the MEP System into a fully integrated MEP National Network. The framework defined the MEP National Network and detailed the rationale for the migration from a loosely confederated system of Centers to a nationwide Network. Network benefits have been described. Roles in the National Network and the Network Ecosystem were described for each participant. The role of NIST MEP Staff were included with recommendations on how NIST MEP could support the development of the Network. The framework outlined the critical challenges the Network will face in the future as Centers gain understanding of their role and commitment to the National Network and how the Network can better serve U.S. manufacturers. Center expectations were established for Network participation.

EMBEDDING MEP IN MANUFACTURING USA INSTITUTES PILOT PROJECTS PROGRAM (EMBED)

This year, NIST MEP released an additional nine embedding awards, subsequent to the five awards made in FY 2016, which allowed the MEP National Network to partner with all 14 Manufacturing USA institutes. This effort provided needed technology acceleration assistance to SMMs. The \$17 million in awards and collaborations supported special projects that included MEP Center staff embedded into each of the Manufacturing USA institutes to help connect SMMs with the Manufacturing USA institutes. The nine FY 2017 awards made to MEP Centers included:

- California Manufacturing Technology Consulting (CMTCC) working with the Clean Energy Smart Manufacturing Innovation Institutes (CESMII),
- Delaware MEP working with the National Institute for Innovation in Manufacturing Biopharmaceuticals (NIIMBL)
- Massachusetts MEP working with Massachusetts MEP (Worcester) working with The Advanced Functional Fabrics of America (AFFOA) Institute,
- Massachusetts MEP working with the Advanced Regenerative Manufacturing (ARM), BioFabUSA
- Michigan Manufacturing Technology Center working with Lightweight Innovations for Tomorrow (LIFT)
- NY MEP working with the Reducing Embodied-energy and Decreasing Emissions (REMADE) Institute
- Oregon MEP working with the Rapid Advancement in Process Intensification Deployment (RAPID) Institute
- Pennsylvania MEP working with the National Additive Manufacturing Innovation Institutes (America Makes), and
- Pennsylvania MEP working with the Advanced Robotics Manufacturing (ARM) Institute.

The overall emphasis of each of these Embedding Projects was to engage SMMs in the given institute’s technology focus area, to develop and to test sustainable business models, as well as to build expert national resources within the MEP National Network for these institute technical focus areas.

To foster MEP National Network knowledge sharing, two groups of project teams met monthly to share what they had learned from their experiences and to effectively build the National Network’s capability to transition technology to U.S. manufacturers.



CYBERSECURITY

During FY2017, NIST MEP added the NIST IT Laboratory scientist who developed the NIST Cybersecurity Framework to the staff of the NIST MEP Partnership and Program Division. With this added expertise, NIST MEP created a handbook that reduced the NIST Cybersecurity Framework to practice with step by step instructions for SMMs to use to comply with the Department of Defense (DoD) Defense Federal Acquisition Regulation Supplement (DFARS) requirements. A Memorandum of Understanding (MOU) with the DoD-funded Procurement Technical Assistance Centers (PTAC) was signed that initiated a formal collaboration between the MEP Centers and PTACs to provide cybersecurity assistance to defense supplier clients. Through a series of workshops, webinars and other interactions, NIST MEP provided cybersecurity awareness materials and training to MEP Centers; promoted understanding of cyber risks; developed manufacturing-specific guidance; provided cyber risk management tools; encouraged development of cyber risk management programs; and, developed assessment methodologies.



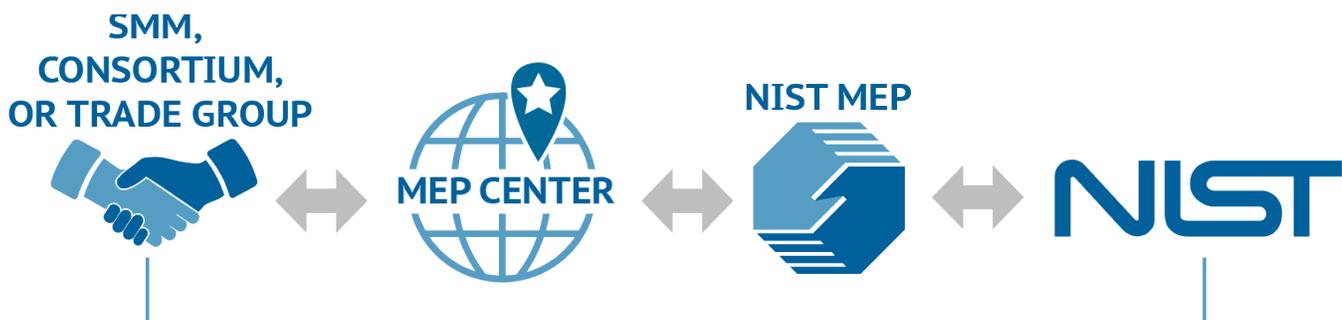
FOOD SAFETY

NIST MEP is in the process of designing and developing a program which will guide and advise the MEP Center practitioners of the upcoming regulations introduced by the FDA, which require all SMMs to comply with the newly introduced Food Safety Modernization Act (FSMA). This program will also cover how MEP Center practitioners can assist their clients to address the challenges they face due to the FSMA regulations, and how these new regulations can be used by MEP Centers to broaden their value-added services and to expand the client base in the food manufacturing industry.



MATTR

In an effort to utilize NIST Laboratory expertise, NIST MEP also added another NIST scientist to its staff who created and tested the NIST MEP-Assisted Technology and Technical Resource (MATTR) Program for the MEP National Network. The ongoing MATTR Program provides a mechanism for manufacturers with specific needs or questions concerning products or processes to be connected through the MEP Centers to the technical expertise, laboratory facilities, and other resources of the NIST laboratories. It also allows NIST lab staff to inquire of the MEP National Network if there are needs in the manufacturing arena that NIST should address and to better understand SMM barriers to adopting new technology.



DEPARTMENT OF DEFENSE/OFFICE OF ECONOMIC ADJUSTMENT

NIST MEP continues to serve a vital and diverse role as a nationwide provider of hands-on technical and business assistance services supporting the development and competitiveness of manufacturing supply chains, including those that serve the needs of our nation's defense industries. Through the services it provides to individual manufacturers and its partners, NIST MEP has a significant impact on the growth and competitiveness of thousands of manufacturers that are in the critical defense industrial supply chain. In FY 2017, MEP Centers completed 1803 projects with 1090 companies that are prime suppliers to the Department of Defense (DoD).

In 2017, foremost among the needs of companies in the DoD supply chain were necessities to meet rigorous cybersecurity requirements. The MEP National Network served as a vital link between the required cybersecurity standards and assisting companies to understand their risks and provided tools to mitigate them.

NIST MEP has active partnerships at the DoD Office of Economic Adjustment (OEA) and the Manufacturing and Industrial Base Policy (MIBP) office. These partnerships position MEP Center staff to understand the needs and requirements of the top-most tiers of the defense supply chain while simultaneously providing access and resources to the lower tier suppliers to implement change.

NIST MEP is also working collaboratively with all eight of the DoD-sponsored Manufacturing USA institutes. These collaborations are focused on engaging SMMs in the technology focus areas of the Manufacturing USA institutes via hands-on assistance mechanisms and services. Ultimately, these relationships will foster more and faster technology transfers between the institutes and the SMMs that serve as suppliers in the defense supply chain.

WORKFORCE

Employee recruitment and retention represented the second most frequent challenge cited by clients in FY 2017, behind only the challenge of cost reduction. In fact, since introducing the question into the survey nine years ago, the share of NIST MEP clients reporting this challenge has more than doubled. As innovation and the use of technology in the workplace increases, the demand for skilled workers continues to increase as well.

During FY 2017, MEP Centers engaged in a wide variety of activities to help SMMs develop a skilled workforce and support efforts to build the workforce development ecosystem for manufacturing. Essential components of these efforts included: ensuring access to career ladders; reviewing competitive wages and benefits; identifying training opportunities and skill certifications; assisting companies with work-based learning, mentorships, internships and apprenticeships; and, talent planning for growth and development of the future talent pipeline.

As part of their state ecosystem, MEP Centers partnered with local and state education systems, including career and technical education institutions (CTEs), community colleges, and universities to provide access to career pathways, training opportunities, and mentorships/internships/apprenticeships. MEP Centers also partnered with local and state workforce systems as well as the Department of Labor (DOL) Workforce Investment and Opportunity Act (WIOA) that encourages industry sector partnerships.

MEP Centers across the country used innovative initiatives to help support companies' workforce pipeline needs. Examples included coordinating and facilitating workforce pipeline initiatives, supporting and expanding Manufacturing Day, and partnering with the Manufacturing Institute's "Dream It Do It" initiative to inspire next-generation manufacturing professionals through school programs.

MANUFACTURING 4.0

During FY 2017, NIST MEP used multiple means to support the adoption of programs and services across the MEP National Network to help SMMs to become aware of the portfolio of advanced manufacturing technologies that make up Manufacturing 4.0. These technologies, individually and in combination, can drive U.S. manufacturing competitiveness. For SMMs, adoption of these technologies can improve productivity and profitability. These efforts included:

- The launch of the performance-based Competitive Awards Program (CAP) consistent with 15 U.S.C. 278k-1, which specified a desired theme of “new manufacturing technologies of relevance to small and medium-size manufacturers, particularly those related to Manufacturing 4.0” as one among a handful of other themes for which proposals were sought and awarded;
- The issuance of two CAP awards with specific focus on Manufacturing 4.0-related technologies, including an award to North Carolina MEP focused on digital supply chains and an award to the Michigan Manufacturing Technology Center (MMTC) to develop a Network Cybersecurity Program;
- The development of a cybersecurity practice area that began to be deployed across the MEP National Network;
- The issuance of an additional nine embedding awards in FY 2017, subsequent to five awards made in FY 2016, allowing for the MEP National Network to partner with all 14 Manufacturing USA institutes; and,
- The creation of the MATTR program to both provide the NIST Labs access and expertise as means to help address Manufacturing 4.0-related needs among MEP Centers and their SMM clients as well as to help the NIST Labs to better understand those needs and barriers among SMMs to adopting Manufacturing 4.0- related technologies.



MANUFACTURING DAY 2017

On the first Friday in October of every year, thousands of manufacturers and educational institutions across the nation participate in Manufacturing Day (MFG Day), designed to draw public attention to the unique value of manufacturing's present-day reality and encourage careers to help grow this sector of the economy. President Trump proclaimed October 6, 2017 "National Manufacturing Day" at a White House event. MEP National Advisory Board member Joe Eddy, President and CEO of Eagle Manufacturing, was in attendance.

According to a Deloitte perception survey conducted for MFG Day in 2016, of the students that participated in MFG Day events:

- 89% were more aware of manufacturing jobs in their communities;
- 84% were more convinced that manufacturing provides interesting and rewarding careers; and,
- 64% were more motivated to pursue a career in manufacturing.

The MEP National Network of 51 Centers advanced the ideals of the Manufacturing Day movement for the sixth consecutive year on October 6th, 2017. Manufacturing companies across the country opened their doors to educators and students, inspiring future generations of innovators and encouraging skilled talent to join manufacturing's workforce. NIST MEP (and its partnership with the National Association of Manufacturers) was an integral part of making 2017's Manufacturing Day the most successful yet.

MEP Centers and their staff led in organizing and attending many of the nearly 3,000 events that took place around the country. Over 255,000 students of all ages attended those events, and the "#MFGDay17" hashtag reached 44 million people and trended nationally the entire day.

For example, a MFG Day event was held in Gadsden, AL and hosted by the Alabama Technology Network (ATN), the official

representative of the MEP National Network in Alabama. The event highlighted Girls Employed in Manufacturing (GEM) and brought together 28 high school junior and senior girls from across Etowah County, AL to participate in a day dedicated to inspiring careers in manufacturing as part of the National MFG Day celebration.

PepsiCo closed MFG Day 2017 by ringing the Closing Bell® at the New York Stock Exchange with associates from the company's supply chain. PepsiCo is one of North America's largest manufacturers, operating more than 100 manufacturing facilities, over 600 warehouses and distribution centers and a fleet of nearly 59,000 vehicles across its three North America Divisions: Frito-Lay North America (FLNA), North America Beverages (NAB) and Quaker Foods North America.



COMING NEXT: WHAT'S HAPPENING IN 2018

30TH ANNIVERSARY

The NIST MEP Program was established by the Omnibus Trade and Competitiveness Act (P.L. 100-418) signed into law by President Reagan on August 23, 1988. As a result, next year will mark the 30th anniversary of the NIST MEP program. To recognize this exciting time, we will be engaging our Centers and other stakeholders to be at the forefront because they are what have made the Program a success for the past 30 years. NIST MEP plans to celebrate this special occasion during late November 2018.

MEP ADVISORY BOARD

In FY 2018, the MEP Advisory will continue to build upon the important innovations in programming that took place during the prior year. Three meetings of the MEP Advisory Board will take place in March, June, and September of 2018, and will include discussion and updates from three Board Working Groups that have been formed during FY 2018 with the following deliverable:

- Supply Chain Development Working Group — deliverables include guidance and perspectives on MEP National Network support and development of manufacturing supply chains with an emphasis on defense suppliers regarding Defense Industrial Base gaps; and expertise on who should be brought into the discussion to provide insight on defense supplier gaps;
- Performance/Research Development Working Group — deliverables include input and guidance on the management portfolio and Program performance measurement processes of the MEP National Network; and,
- Executive Committee Working Group — deliverables include guidance on future Advisory Board leadership and insights from the Board Assessment; Board membership; and board role in regards to MEP Center boards.

2017-2022 STRATEGIC PLAN

Building upon the completion of the 5-year comprehensive strategic plan's development and the start of its implementation, Network priorities will be developed for the next 18 months. These are expected to include:

- Expand an integrated National Network service delivery system;
- Update national-level partnerships and performance support services;
- Define areas of focus for manufacturing technology advances;
- Develop supply chain national services and information and technology access; and,
- Build infrastructure for a National Network learning organization

Additionally, measures of success will be developed and monitored across an eighteen-month period, including the development of initial baselines as well as quarterly measurement to assess progress against these baselines. It is anticipated that these measures of success will focus on:

- Piloted integrated national networked approach to delivery system engaging 50% of Centers in multi-Center delivery projects;
- Increased small/rural engagements through third party partnerships by 10% and increased longerterm impactful projects with these smaller firms by 5%;
- Attained Operational Excellence in 25% of Centers' operations and in 50% of NIST MEP administrative support; and,
- Increased awareness of the MEP National Network Brand by 10% over base brand recognition measurement a year after the Network launches the Brand.

MANUFACTURING 4.0

During 2018, NIST MEP will continue to support the adoption of programs and services across the MEP National Network to help SMMs to become aware of and, when possible, adopt Manufacturing 4.0 technologies that drive U.S. manufacturing competitiveness. Efforts are expected to include:

- Growth of the cybersecurity practice area across the MEP National Network via the creation of a Cybersecurity Working Group; continued deployment and expansion of efforts resulting from the CAP award to Michigan MEP to develop cybersecurity services across the MEP National Network; deployment of the NIST MEP Cybersecurity Self-Assessment Handbook to enable SMMs to begin securing their critical information infrastructure; and, a continuation of workshops, webinars and other interactions to provide cybersecurity awareness materials and training to MEP Centers.
- Continued piloting of the 14 Embedding MEP in Manufacturing USA institutes projects to share knowledge about advanced manufacturing technology focus areas via awareness activities such as training and assessments, development and deployment of expert national resources within the MEP National Network, and development of sustainable business models;
- Refinement and deployment of the MATTR program to both provide the NIST Labs access and expertise as means to help address Manufacturing 4.0-related needs among MEP Centers and their SMM clients as well as to help the NIST Labs to better understand those needs and barriers among SMMs to adopting Manufacturing 4.0-related technologies; and,
- CAP initiatives such as the aforementioned cybersecurity award, as well as the potential issuance of additional Manufacturing 4.0-related awards.

CENTER LEADERSHIP INITIATIVE

In 2018, the Center Directors involved with the “Future is Now” charge will begin to expand its footprint across the nation by including more Centers in the implementation efforts. Moving forward, the Future is Now Initiative is evolving into the “Center Leadership Team” and its National Network Building Committees. Much of this work is expected to be accomplished via the four Committees, including Network Evolution, Knowledge Sharing, Communications and Manufacturing Technology Solutions. Each team is led by a Center Director with a NIST MEP staffer and has at least five additional members representing the diversity of the Network. The goal is to have all 51 Centers participating and contributing to the MEP National Network by September 2019.

NIST RETURN ON INVESTMENT IN TECHNOLOGY TRANSFER

NIST MEP is expecting to play a significant role in the NIST Director’s initiative on evaluating and possibly changing federal technology transfer authorities and processes. Senior NIST MEP leadership will be participating in four public meetings to gather information from a variety of sources to inform the effort.

PERFORMANCE BASED COMPETITIVE AWARDS PROGRAM (CAP)

It is anticipated that in FY 2018, NIST MEP will be evaluating additional funding opportunities and will potentially make additional awards focusing on topic areas such as food processing and safety, robotics and automation, big data, Toyota Kata and workforce development.

MANUFACTURING DAY 2018

Manufacturing Day (MFG Day) 2018 will be held October 5, 2018. This will mark NIST MEP's seventh year of participation. NIST MEP, in conjunction with the National Network of MEP Centers, will use MFG Day to draw public attention to manufacturing's presentday reality and encourage careers in this secure and growing sector of the economy. MEP Centers will work with local manufacturers, planning events, and spreading the word about MFG Day 2018 to ensure its success.

We believe that by actively being part of this national effort, during and after MFG Day, manufacturers will find additional resources to address the skilled labor shortage many face, connect with future generations, take charge of the public image of manufacturing and help ensure a prosperous future for manufacturing throughout the U.S.



2017 MEP CENTERS

MEP Centers serve as the foundation of the MEP Program. Throughout the U.S. and Puerto Rico, more than 400 field offices comprised of over 1,300 experts help make U.S. manufacturing stronger.

Alabama

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Alaska

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Anchorage, AK 99503
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<http://makealaska.org/>

Arizona

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118 N. 7th Avenue, Suite 400
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www.revaz.org

Arkansas

AEOC Manufacturing Solutions
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Little Rock, AR 72201
Phone: 501-683-4411
www.mfgsolutions.org

California

California Manufacturing Technology Consulting (CMTC)
690 Knox Street, Suite 200
Torrance, CA 90502
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www.manufacturersedge.com

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www.connstep.org

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Delaware Manufacturing Extension Partnership (DEMPEP)
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Kentucky

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www.advantageky.org

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Massachusetts

Massachusetts Manufacturing Extension Partnership
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Michigan Manufacturing Technology Center
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Vermont

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