

**National Institute of Standards and Technology  
Manufacturing Extension Partnership  
Advisory Board  
Minutes of the June 8, 2022 Meeting**

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## **Background**

The Department of Commerce (DOC) National Institute of Standards and Technology (NIST) Manufacturing Extension Partnership (MEP) Advisory Board (Board) met in an open session from 10 a.m. to 1:43 p.m. on June 8, 2022, at the Hyatt Regency Tulsa Downtown and via video teleconference. The meeting had 57 attendees, including Board members, NIST and NIST MEP staff, participants from MEP Centers, guest speakers and observers. Cheryl Gendron is the Designated Federal Officer for the MEP Advisory Board.

## **Attendees**

### **Board Members**

Ray Aguerrevere, Vice President and General Manager, Custom Metal Designs  
Jose Anaya, Dean of Community Advancement, El Camino Community College  
Donald Bockoven, CEO, Fiber Industries LLC  
E. LaDon Byars, President and CEO, Colonial Diversified Polymer Products, LLC  
Peter Connolly, Owner, Connolly Consulting  
Bernadine Hawes, Senior Advisor, Econsult  
Mary Isbister, President of GenMet Corporation  
Miriam Kmetzo, Executive Vice President, Welding Technology Corp.  
Mitch Magee, Manufacturing Industry Consultant  
G. Christopher Mathews, Chairman, National Custom Hollow Metal Doors and Maple Leaf Awning and Canvas  
Patricia Moulton, President, Vermont Technical College  
Matthew Newman, Chair, MEP Advisory Board and Managing Partner of New Era Advisors  
Annette Parker, President, South Central College  
George Spottswood, Owner and CEO, Quality Filters, Inc.  
Leslie Taito, Executive Vice President of Business Operations, Taco Comfort Solutions  
Jim Wright, Vice President of Operations, Proof Research

### **NIST MEP Participants**

Pravina Raghavan, MEP Director  
Mark Schmit, NIST MEP, Division Chief for Regional and State Partnerships  
Cheryl Gendron, NIST MEP, Advisory Board Liaison and Designated Federal Officer, MEP Advisory Board

### **Guest Speakers**

Laurie Locascio, Under Secretary of Commerce for Standards and Technology and Director, NIST  
Mojdeh Bahar, Associate Director for Innovation and Industry Services, NIST  
Daniel Goldstein, CEO and President/Employee Owner, Folience  
Geoff Hager, Big Elk Energy  
Dave Rowland, Oklahoma Manufacturing Alliance

## **Observers**

Mellissa Ayala, NIST MEP  
Allegra Chilstrom, Neal R. Gross & Co., Inc.  
Monica Claussen, NIST MEP  
Jose Colucci-Rios, NIST MEP  
Larry Danner, The Clearing  
Nadine DeJesus, NIST MEP  
Doug Devereaux, NIST MEP  
Diane Henderson, NIST MEP  
Autumn Hernandez, NIST MEP  
Eliot Johnson, The Clearing  
Theresa Kerrigan, Sustainable Tulsa, Inc.  
Brian Lagas, NIST MEP  
Heather Mayton, NIST MEP  
Kevin McIntyre, NIST MEP  
Dimitrios Meritis, NIST MEP  
Andrew Nobleman, NIST MEP  
Mary Ann Pacelli, NIST MEP  
Kim Pinckney, NIST MEP  
Katie Rapp, NIST MEP  
Craig Reid, NIST MEP  
Kari Reidy, NIST Office of Congressional and Legislative Affairs  
Carol Shibley, NIST MEP  
Julia Shriner, NIST MEP  
Hope Snowden, NIST MEP  
Megan Spangler, NIST MEP  
Michael Taylor, NIST MEP  
Carroll Thomas, NIST MEP  
Nico Thomas, NIST MEP  
Ben Vickery, NIST MEP  
Phill Wadsworth, NIST MEP  
Marlon Walker, NIST MEP  
Samm Webb, NIST MEP  
Corey Williams, Sustainable Tulsa, Inc.

## **Welcome and Introductions**

### **Speakers:**

Pravina Raghavan, MEP Director  
Matt Newman, Chair, MEP Advisory Board  
David Rowland, Executive Director, Oklahoma Manufacturing Alliance (OK MEP)  
Geoff Hager, Big Elk Energy  
Laurie Locascio, Under Secretary of Commerce for Standards and Technology and Director, NIST  
Mojdeh Bahar, Associate Director for Innovation and Industry Services, NIST

P. Raghavan welcomed participants and expressed her regret that she could not attend the in-person meeting in Tulsa, Oklahoma. She thanked M. Newman and D. Rowland for hosting the Board and the NIST MEP staff for their work to facilitate the hybrid meeting. She reviewed the agenda and introduced the three new Advisory Board members: Peter Connolly, who serves as the current Chair of the New

Jersey MEP advisory board; G. Christopher Mathews, the Chairman of National Custom Hollow Metal Doors and Maple Leaf Awning and Canvas; and Dr. Annette Parker, President of South Central College. M. Newman welcomed the attendees to Tulsa and introduced Dave Rowland, President and CEO of the Oklahoma Manufacturing Alliance (OMA, the Oklahoma MEP Center), for his opening remarks. D. Rowland gave an overview of manufacturing in Oklahoma. Of the approximately 4,000 manufacturers in Oklahoma, 97% are small and medium-sized businesses. The state's main manufacturing industries are energy, aviation and aerospace, and biosciences, as well as drones and electric vehicles. G. Hager, CEO of Big Elk Energy Systems and Chair of OMA's board, spoke about his company's work manufacturing energy equipment. Like many in the energy industry, Big Elk is looking to pivot toward emerging technologies and energy sources. They placed their first hydrogen-related bid a year ago and produce biomethane skids. They also work in the carbon capture space, incorporating existing hydrogen blending technology into their equipment and using it as an injection point into traditional pipelines.

MEP Advisory Board members introduced themselves and their organizations. P. Raghavan introduced Dr. Laurie Locascio, the fourth Under Secretary of Commerce for Standards and Technology and 17th NIST Director. L. Locascio noted that NIST MEP was a consistent topic of conversation with senators during her confirmation process, which is a testament to MEP's impressive work. L. Locascio said that she was excited for opportunities to expand technology and innovation efforts to drive development and adoption of proven advanced manufacturing technology among small and medium-sized manufacturers (SMMs). Manufacturing is only as strong as the supply chain that supports it, and the past three years have exposed vulnerabilities in the supply chains. The MEP program is uniquely positioned to address known vulnerabilities and proactively strengthen domestic manufacturing capabilities. In recent years, President Biden has called on NIST and MEP through multiple executive orders to help strengthen U.S. supply chains and enhance competitiveness and national security. The National Defense Authorization Act and the President's proposed Bipartisan Innovation Act also cite the MEP program's role with respect to U.S. supply chains. The MEP program supports manufacturers' workforce needs and addresses worker shortages with new approaches to recruitment, training and retention in an effort to close the workforce gap. L. Locascio emphasized her commitment to supporting the MEP program's critical efforts and thanked Board members for their service.

P. Raghavan introduced Mojdeh Bahar, Associate Director for Innovation and Industry Services at NIST. M. Bahar noted that this was her first in-person Board meeting since joining NIST. She thanked the hosts in Oklahoma and said that she was looking forward to the tour of McElroy Manufacturing later that day. In the course of the COVID-19 pandemic, words formerly associated with manufacturing, such as supply chains, have become part of the daily lexicon. Since the last Board meeting in March, President Biden signed into law the Consolidated Appropriations Act of 2022, under which the MEP program received \$158 million. NIST continues to plan for an expansion of the MEP program and a focus on its themes of supply chain, workforce, and technology and innovation. Development of the MEP National Network™ (MEPNN) 2023-2028 Strategic Plan has continued. The new plan will build on and extend what we're doing, and address gaps. An expansion of the MEP-Assisted Technology and Technical Resource (MATTR) program has also recently been launched. MATTR+ will expand the existing MATTR program, providing the connection between NIST laboratories and MEP Centers, and through that connection provide SMMs with efficient and rapid technology support access via a consolidated approach. M. Bahar thanked Board members for their leadership and dedication.

## MEP Director's Update, part one

**Speaker:** Pravina Raghavan, MEP Director

### MEP program budget outlook

- Fiscal year (FY) 2021 appropriation status
  - Base funding: \$150 million
  - \$4 million increase over FY 2020
  - Funding not subject to cost share requirements (elective for Centers receiving state funds conditioned on federal cost share requirement)
- FY 2022 appropriation status
  - \$158 million for MEP
  - Funding not subject to cost share requirements (elective for Centers receiving state funds conditioned on federal cost share requirement)
- FY 2023 appropriation status outlook
  - President's budget calls for \$275 million for MEP
  - No expectation of cost share exemption
- NIST MEP projected spend plan through March 11, 2022
  - Available funding
    - Appropriation: \$158 million
    - Carryover from FY 2021: \$2 million
    - Anticipated prior-year recoveries: \$3.2 million
    - Funding from other agencies (from Department of Defense for contracts and project support): \$1.6 million
    - Total available funding: \$164.8 million
  - Planned expenditures
    - Center renewals: \$134.1 million
    - Strategic competitions: \$0.7 million
    - Contracts: \$6.5 million
    - NIST MEP labor: \$11.5 million
    - NIST and program overhead: \$12 million
    - Total planned expenditures: \$164.8 million
  - Projected FY 2022 efficiency rate: 11.84%; actual FY 2021 efficiency rate: 11.94%

### Manufacturing legislation

- The past few years have been a flurry of executive and legislative action regarding manufacturing
- Executive order (EO) 14005, EO 14017 and other actions have heightened manufacturing visibility nationwide
- FY 2022 appropriations require MEP to start work on the supply chain database
- Appropriations coming for a new Bipartisan Innovation Act?

### Uniqueness value MEP to build U.S. manufacturing

- MEP Centers partner with organizations including: federal government, state/local government, associations, higher education, regional economic development organizations, nonprofit organizations, for-profit consultants and others
- MEP Centers act as the lynchpin in boosting communities and ecosystems across the country
- MEP National Network can support the Administration's priorities focused on:
  - Ensuring operational domestic supply chains
  - Improving and increasing the available workforce at a living wage
  - Supporting growth of advanced manufacturing technology

- MEP Centers serve SMMs, a unique client base, that will need additional support to be able to increase their reach and penetration while also increasing their economic impact in their communities
- NIST MEP can partner with other bureaus in the Department of Commerce and other federal agencies to increase U.S. manufacturing by broadening the services available through the MEP National Network

#### MEP client demographics

- U.S. manufacturers statistics
  - Over 98.9% of U.S. manufacturers are small (<500 employees)
  - Over 90% have <100 employees
  - According to the Economic Census, SMMs historically account for 73% of paid employees, 62% of value added, and 67% of payroll in U.S. manufacturing
- MEP clients
  - Over 79% of MEP clients have <100 employees
  - 42% of MEP clients have <20 employees
  - 18% of MEP clients are in rural areas
  - 12% of MEP clients are women owned
  - 10% of MEP clients are startups
  - 6% of MEP clients are minority owned
- SMMs are critical to rebuilding U.S. manufacturing competitiveness, as they represent pathways to increase domestic supply chains for critical industries

#### MEP program themes

- NIST MEP has designed three new program themes:
  - Supply chain
  - Workforce
  - Technology and innovation
- Theme objectives:
  - Supply chain: To connect MEP's on-the-ground knowledge with macro-level monitoring and analysis in order to enable broad visibility across supply chains, identify trends and vulnerabilities and respond accordingly
  - Workforce: To support manufacturers' skilled and diverse workforce needs, and to address worker shortages with new approaches to recruitment, retraining and retention
  - Technology and innovation: To drive development and adoption of proven advanced manufacturing technology, integrating cybersecurity which will enable innovation
- NIST MEP has published a guide for MEP Centers that provides more information on each program theme, including:
  - Challenge/need
  - Strategy
  - Manufacturer and manufacturing impacts
  - Desired outcomes/metrics
  - Expectations

#### Supply chain – MEP program support

- Supply chain resilience and security is integral to U.S. manufacturers' competitive advantage
- MEP has extensive experience with and expertise in building supplier networks
- The Senate's United States Innovation and Competition Act of 2021 and House of Representatives' America COMPETES Act of 2022 both specify an MEP program role for a national supply chain database

- Supplier Scouting is the foundation of how MEP Centers can work with manufacturers to map their supply chains and populate supplier databases, which will enable us to identify required capabilities and potential vulnerabilities

#### Supply chain – Network support

- Supplier scouting success stories:
  - Edge Cycling Technologies, located in Dayton, Ohio, is the manufacturer of a bicycle saddle that reduces the pressure points created by conventional seats. FASTLANE (part of Ohio MEP) introduced the owners of Edge Cycling to additive manufacturing assistance, and helped vet suppliers with FASTLANE’s supplier scouting capabilities and network of manufacturers across the greater Dayton region.
  - Vac-Tron Equipment, LLC in Okahumpka, Florida, produces industrial vacuums, potholing, day-lighting, hydro-excavation and air excavation equipment. Vac-Tron was purchasing fabricated items from out of state, causing long lead times and challenges with quality control. FloridaMakes (Florida MEP) compiled a high-level assessment of the fabricated items purchased out of state, then matched the parameters to the capabilities of a local fabricator within the same county.
  - NIST MEP received a scouting request from Catalyst Connection (part of Pennsylvania MEP) seeking a domestic quick turn printable circuit board assembly. Innovative Manufacturers’ Center (part of Pennsylvania MEP) submitted a company as an exact match. Contact with matches was identified and the supply contract awarded.

#### Discussion

- L. Byars noted that in the supplier scouting success stories, instead of a report, the Centers put things into action, which is of the utmost importance for expanding all three program themes.
- L. Taito said that in the area of price competitive quotes, SMMs do not always realize that they need to price out and include overseas freight and transportation to state the return on investment. It would be useful for Centers to assist SMMs to competitively position themselves and to understand their own capacity.
- M. Magee added that the ability to do risk and vulnerability analysis is important. He said that through the Board's outreach efforts he has heard many Center board chairs express excitement about the supplier scouting program. He thinks there’s an opportunity to make it more than just a database, make it more robust.
- P. Moulton said that the mapping aspect of supplier scouting was important to understand the capabilities in each state and to serve as an introduction to SMMs who are not yet connected with MEP Centers.
- D. Bockoven said that MEP is serving a small percentage of manufacturers and they need to think about how to get a broader perspective and increase the knowledge of MEP across the country. They also need to make sure that when people pivot their manufacturing they are protected from risk on the downside, such as manufacturers who switched to making personal protective equipment during the pandemic.
- R. Aguerrevere said that in addition to the macro level, on the micro level it was important to support smaller manufacturers through visibility toward pipelines, businesses and supply chains. Materials are going to bigger players. He has also heard concerns about access to and cost of capital for smaller manufacturers.
- J. Wright suggested working with the federal government to improve the transportation problems that have become more common in the last two years, which are preventing manufacturers from getting materials on time.
- B. Hawes said that MEP Centers should be expanding opportunities for startups, women, and minority-owned businesses, and guiding them toward the supply chain issues. She agreed with P.

Moulton's comments about asset mapping and added that they needed to ensure collaboration across the MEPNN. Some companies that pivoted during the pandemic are returning to their core businesses while others are not, and this will have effects on the supply chain.

- M. Kmetzo said that as a small business her company is excited about the supplier sourcing efforts, but they probably will not experience the impact for a year or two. She suggested that MEP Centers could collaborate and help source components to meet the immediate needs of SMMs.
- L. Taito said that in the past few months her company has experienced five manufacturers shutting down their businesses because they could not continue under current conditions. MEP could be invaluable in helping these SMMs to either transfer or sell their business.
- M. Newman said that these challenges were very complex and predicted that his takeaways from the meeting would be the importance of increasing MEP's circle of collaboration, camaraderie and advising. MEP should use its Network and act as the connector and resource across the U.S. between different stakeholders.
- M. Bahar added that each stakeholder group was a network itself. At the macro level it is important for MEP to think about how to ensure that every node in every network has the opportunity to connect.
- P. Raghavan noted that MEP is working with the Treasury Department to connect MEP Centers to state organizations to receive loans from the State Small Business Credit Initiative.

#### Workforce – MEP program support

- MEP helps SMMs with an extensive range of workforce needs that address all stages of the employee lifecycle
- Customized training for entry-level workers
- Recruitment and talent acquisition
- Strategic talent planning
- Leadership coaching and development
- Organizational culture and employee engagement
- Succession planning

#### Workforce – Network support

- NIST MEP Competitive Awards Program (CAP) project: America Works
  - The main award is to Enterprise Minnesota (Minnesota MEP) but it is coordinated by a project manager at Manufacturing Advocacy and Growth Network (MAGNET, part of Ohio MEP)
  - The project will increase the efficiency and effectiveness of workforce development efforts at all levels through improving communication, collaboration and cooperation across the MEPNN
  - Second year of workforce services survey of MEP Centers (60 responses)
  - Working group developing a diversity, equity and inclusion best practice resource guide (expected July 1, 2022)
  - Workforce conference for MEP Centers taking place June 23-24, with over 40 registrations. This will focus on best practices in workforce at MEP Centers that are making an impact with SMMs, including how MEP Centers are helping fill open manufacturing jobs and retain workers for clients.
  - America Works has funded 13 minigrants so far and will fund 6-7 more this fall. Projects include:
    - In-prison manufacturing training and placement (2)
    - Pilot manufacturing training for individuals with autism
    - New apprenticeships, with materials translated into Spanish

- Using virtual reality for manufacturing awareness training in high schools
  - Robotics boot camp for displaced/underemployed adults
- CAP project: A Vision to Increase the Diversity of Manufacturing and Engineering Talent among the MEP National Network and Manufacturers
  - Lead: Iowa State University Center for Industrial Research and Service (Iowa MEP Center)
  - Collaborating partners:
    - Illinois Manufacturing Extension Center (Illinois MEP)
    - Kansas Manufacturing Solutions (Kansas MEP)
    - MAGNET
  - The project focuses on enhancing diversity in manufacturing by building a pipeline of diverse manufacturing leadership talent through deployment of an MEP internship program focused on under-represented minorities
  - The project will develop a minority internship program within the partner Centers; the pilot will expand to 10 other Centers in year two
  - Each Center will host two interns per year and supplement the technical experience of the internship with professional development, community building and networking
  - The Centers will collaborate to design a program that fits local needs while defining and maintaining standards and best practices that work across various Center models
- CAP project: Smart Talent Solutions (STS), three-year CAP ended August 2021
  - Lead: Innovate Hawaii (Hawaii MEP)
  - Collaborating partners:
    - Oregon MEP (OMEP)
    - Montana Manufacturing Extension Center (MMEC, Montana MEP)
    - Tennessee MEP (TMEP)
  - Smart Talent was initially developed by OMEP to help companies overcome the skills and talent shortage through in-house training development programming, reducing the learning hurdle for new employees
  - The objectives of the STS project were for OMEP to provide training on STS basics to Innovate Hawaii, MMEC and Tennessee MEP to deliver the STS program to companies in their respective states
  - STS will continue to be offered by all participating Centers
  - The funded MEP Centers surpassed the goal of engaging 24 companies
  - Non-funded Center Puerto Rico Manufacturing Extension Inc. (Puerto Rico MEP) created a Spanish language set of STS materials, thus increasing the reach of the STS program
  - Going forward, OMEP also expanded STS training to six additional states and territories: Arizona, Nevada, Ohio, Pennsylvania, Puerto Rico, and South Carolina

## Discussion

- M. Isbister said that one thing MEP can do is help companies access and deploy what is already there. The challenge for states is to identify existing programs that are effective and will work for manufacturers, as well as each company's most significant pain points. MEP could help companies identify strategies and connect them to the programs that already exist.
- R. Aguerrevere said that the demand side was there, but there is a supply issue. It's a messaging problem. MEP needs to get the message out that manufacturing provides good, viable, long-term careers. If the workforce is there, recruiting and retention become less of a problem.
- P. Moulton said that MEP Centers need to know what the existing resources are in order to connect with them. It is not cost effective to train one or two people from an SMM, but MEP could assist with gathering multiple SMMs to participate in training. In addition to devoting



energy and time to recruiting a new labor force, it is important for companies to commit to upskilling their incumbent workers.

- G. Spottswood agreed that many great local and regional workforce entities can assist and that MEP can explore best practices
- D. Bockoven said that MEP's uniqueness comes from driving productivity and competitiveness, which also helps the supply problem. There is a cultural problem in the U.S. because it is widely believed that a four-year degree is necessary to get a good job, but manufacturing provides good jobs to people who have just graduated from high school.
- A. Parker agreed that MEP should not reinvent the wheel. Federal and state agencies need to be part of the collaboration, and MEP needs to figure out how to connect to programs like the Department of Education's Second Chance Pell pilot, which offered financial aid to people in correctional facilities. Uniquely Abled is a project with a 98% success rate with high-functioning autistic people working in machine shops. Bring those people into the workforce with good paying jobs. Collaboration between multiple partners will be necessary to change the public perception of manufacturing, which has been a problem for a long time.
- P. Connolly said that they had a people issue, not a supply chain issue. Many people, not just in manufacturing, retired early or walked away from their jobs because of COVID-19.
- L. Taito said that if they do not help manufacturers figure out how to innovate and automate, the problem of finite workforce resources will not go away, and MEP can play a critical role in this area.
- J. Wright said that he is personally involved in his company's recruitment and training efforts, and while it is necessary to spend time on these areas it takes away from other aspects of business. He said that he had spent time in manufacturing in Europe, and the U.S. could learn from their education system and their early emphasis on the importance of trade schools. That's a very long-term program, but it's important and something we should look at.
- P. Moulton emphasized the importance of public relations advocacy to help people understand what manufacturing is. She said that MEP Centers could play a role in each state, highlighting what manufacturing looks like in the current age, though this will not necessarily generate measurable impact.
- M. Isbister said that manufacturers also have a responsibility to make inroads with communities through hosting teacher externs and holding events like Manufacturing Day. For example, her husband spends at least three days a week going to local high schools and middle schools to present on the positive elements of manufacturing these days.
- J. Anaya said that El Camino College had many effective community outreach programs before the pandemic, and they are currently trying to rebuild that ecosystem. It's harder to work with nontraditional students because you have to give them foundational skills before teaching them technical skills.
- B. Hawes noted that the supply of labor is localized, and MEP could have a role with something like supplier scouting on the labor side. MEP can help create industry-specific standards for workforce and manufacturing so students have that pathway.
- C. Mathews said that there was a need for better certificate training programs, where people can gain measurable skill sets and adhere to industry standards. We also have to help people with social skills. Immigrants are dedicated, hard-working people that come here for a dream – we should train them.
- L. Taito suggested that provider partners like trade associations could assist MEP in bridging the gap between the perception and the reality of manufacturing.
- P. Moulton said that many SMMs, especially in rural areas, do not have the time to do extensive outreach, and MEP can play a critical mass function in promoting the message about the future of manufacturing.

The Director's Update was paused to allow for the presentation on the Silver Tsunami and Succession Planning to commence.

## Presentation: Silver Tsunami and Succession Planning

### Speakers:

Pravina Raghavan, MEP Director  
Daniel Goldstein, CEO and President, Folience

P. Raghavan explored the direct impact of the silver tsunami on U.S. manufacturing and how the MEP National Network is striving to make a difference.

- Manufacturing is a key contributor to U.S. economy
  - Employs over 12 million Americans
  - Contributes over \$2.7 trillion to gross domestic product
- Both aging ownership and workforce threaten the productivity and competitiveness of manufacturers
- Nearly 99% of U.S. manufacturers have <500 employees
  - Many are family-owned
- The impact of aging ownership is significant for U.S. manufacturers in particular
  - Manufacturer owners are typically older than for other industries

U.S. manufacturer owners are older compared to all industries

- Manufacturing
  - 4.5% of owners are 34 and under
  - 34% of owners are 35 to 54
  - 61.4% of owners are 55 and older
- All industries
  - 5.7% of owners are 34 and under
  - 43.4% of owners are 35 to 54
  - 51% of owners are 55 and older

U.S. manufacturing has largest share of owners aged 55 and older among U.S. industry supersectors

- Manufacturing stands out as the industry with the highest share (61.4%) of business owners that are 55 and older
- The next closest supersector is financial activities, where 57.1% of business owners are 55 and older

MEP succession planning work

- Since 2016, MEP Centers have completed 190 succession planning related projects with 167 different manufacturers
- This work resulted in 113 completed client surveys, which had the following economic impact:
  - \$97.9 million in new and retained sales
  - \$7.4 million in total cost savings
  - \$33.2 million in total new client investments
  - 914 jobs created and retained

### Succession planning leads to restructuring for growth

- Client name: Greaves Corporation
- How CONNSTEP (Connecticut MEP Center) helped:
  - Created an infrastructure for growth, addressed employees' changing responsibilities and provided a greater understanding of management roles
  - Production floor capacity increased and a clear roadmap was established for transitioning of leadership roles
  - Greaves Corporation considers itself better positioned to become a leader in the electrical connector industry
- Client results:
  - \$600,000 in increased or retained sales
  - 5 new or retained jobs
  - \$1.1 million in new investment
  - \$40,000 in cost savings

### The small business closure crisis in the United States

- Baby boomers own half of all privately held firms in the U.S.
- As most of these owners retire, the local business landscape is shifting dramatically. In the U.S., this silver tsunami affects:
  - 2.9 million firms
  - 32.1 million employees
  - \$6.5 trillion in revenue
- The industries in the United States with the most businesses owned by baby boomers are (sources: Census 2018 Annual Business Survey and U.S. Bureau of Labor Statistics 2017 Quarterly Census of Employment and Wages):
  - Professional services: 755,460
  - Construction: 358,390
  - Retail trade: 330,129
  - Health care and social assistance: 301,227
  - Accommodation and food services: 269,318
  - Administration and waste management: 175,305
  - Wholesale trade: 154,013
  - Manufacturing: 124,767
  - Transportation and warehousing: 96,309
- Small businesses are the lifeblood of our economy
  - They make up 99.9% of all firms and provide 47.1% of all jobs in the U.S.
  - They circulate three times more money back into local communities than absentee-owned businesses and corporate chains
- By selling to their employees, business owners make a more enduring impact on their communities and help stabilize local economies through job preservation

### The small business closure crisis in Oklahoma

- Baby boomers own half of all privately held firms in Oklahoma
- In Oklahoma, the silver tsunami affects:
  - 33,400 firms
  - 355,000 employees
  - \$66 billion in revenue
- The industries in Oklahoma with the most businesses owned by baby boomers are (sources: Census 2018 Annual Business Survey and U.S. Bureau of Labor Statistics 2017 Quarterly Census of Employment and Wages):

- Professional services: 8,842
- Construction: 4,269
- Retail trade: 3,989
- Health care and social assistance: 3,762
- Accommodation and food services: 2,831
- Administration and waste management: 1,938
- Wholesale trade: 1,595
- Manufacturing: 1,387
- Transportation and warehousing: 1,094
- Small businesses are the lifeblood of our economy
- Small businesses make up 99.4% of all firms and provide 52.2% of all jobs in Oklahoma
- They circulate three times more money back into local communities than absentee-owned businesses and corporate chains
- By selling to their employees, business owners make a more enduring impact on their communities and help stabilize local economies through job preservation

The go-to experts for advancing U.S. manufacturing

- NIST MEP's mission is to enhance the productivity and technological performance of U.S. manufacturing
- MEP Centers and partners have developed a wide range of services and initiatives to enable manufacturers to identify opportunities that will accelerate and strengthen growth and competitiveness in the global marketplace

D. Goldstein explained how employee ownership works along with the systems and tools in place that MEP Centers may provide the education and resources for their manufacturing clients.

The employee ownership solution

- Employee ownership, including employee stock ownership plans (ESOPs) and worker cooperatives, addresses the silver tsunami by providing viable succession plans that lead to job retention and dollars staying local
- Over the last 12 years, ESOP companies were 235% better at keeping jobs rooted when compared to conventionally owned companies
- Benefits to communities
  - Jobs retained
  - Increased local spending
  - Heightened civic engagement
  - Community wealth building
- Benefits to workers
  - Better pay and benefits
  - Assets and business ownership
  - Voice in key decisions
- Benefits to businesses
  - Higher productivity and growth
  - Lower employee turnover
  - Improved longevity, lasting legacy
- Learn how government leaders, business advisors and others can advance employee ownership: <https://esopassociation.org/advocacy/esop-advocacy-issues>
- ESOPs are investments in locally owned, locally based companies, that offer economic inclusion for all eligible employees to become employee owners regardless of gender, ethnicity, age, education and job title/level

- Address known vulnerabilities
- Bolster manufacturing
- Keep manufacturing in U.S.
- Strengthen U.S. supply chain
- Employee recruitment, retention, training

What will happen to those 2.9 million businesses that need to transition ownership?

- Family businesses may not have children to take over or their children are not interested in taking over the business
- Private equity
  - In a private equity transaction, there is almost a certainty of entering the resale cycle
    - Raise capital
    - Evaluate market segments
    - Generate deal flow
    - Select investment candidates
    - Negotiate and structure investments
    - Nurture portfolio companies
    - Liquidate/sell portfolio companies
  - Every 3-5 years the company will probably be for sale or in another transition
    - Management and employees leave
    - Culture and long-term focus erode
    - Competitors take advantage
- Strategic buyers – seeking strategic operations alignment
- Financial buyers – seeking financial gain from acquisition
  - Value is where the two kinds of buyers overlap
- Where is the employee or community?
  - Employees and community are often not taken into consideration
  - Businesses often end up closing

What is an ESOP?

- Employee Stock Ownership Plan – a trust that allows employees to accrue beneficial ownership without contributing capital
- Employees invest their labor to earn equity
- ESOP companies have a competitive advantage over non-ESOP companies
- Most importantly, ESOP companies have strong alignment between employees' interests and the success of the company

The economic power of employee ownership

- Employee ownership keeps businesses and jobs in state
  - ESOP companies are 25% more likely to stay in business
  - Employee-owners were four times less likely to be laid off during the recent recession
- Employee ownership improves business performance
  - Productivity improves by 4%-5% on average in the year an ESOP is adopted
  - Over a 10-year period, ESOP companies have 25% higher job growth than comparable companies without an ESOP
  - ESOP companies see average yearly post-ESOP improvement in return on assets of +2.7%
  - ESOP companies increase sales by about 2.3%-2.4% per year

- A recent study conducted by Rutgers University and SSRS, funded by the Employee Ownership Foundation, compares employee-owned businesses to other firms during the COVID-19 pandemic and reports that employee-owned businesses are:
  - 3-4 times more likely to retain non-manager and manager employees
  - 3.2 times more likely to retain staff – even when other businesses received funding through the Paycheck Protection Program and the employee-owned firms did not
  - Significantly less likely to reduce employees’ hours or pay
  - More likely to send employees home to work during the pandemic – and did so earlier
  - More likely to provide employees with personal protective equipment, such as gloves and masks

## Discussion

- L. Byars said that this was what she had in mind with her earlier comment about MEP Centers providing boots on the ground support. In addition to reports of succession plans, Centers will need to provide suggestions so that businesses are aware of and understand viable options. D. Goldstein said that this was not just an experimental solution. There are around 6,700 ESOP companies across the U.S. in almost every sector and it is a viable path for many businesses looking to transition.
- L. Taito asked whether the increase in productivity and value for companies that transferred over could be attributed to employees feeling that they have ownership in the company, and whether it was sustainable long term. D. Goldstein said that it was and showed a picture of the license-sized plastic card that lists the rights and responsibilities of employees at Folience to engage in their ownership. This creates greater engagement, productivity and innovation. Because of this, over the past six years Folience has changed from a company with a very unprofitable financial statement and toxic culture to a company that won the 2022 Employee Owned Company of the Year award.
- P. Moulton said that she thought employee-owned companies are a great opportunity, but they need time and a good management team to succeed. D. Goldstein noted that employee ownership will not fix a broken company and that it should not be promoted to companies that are in trouble. He added that employee ownership is such a bipartisan issue that it is a nonpartisan issue.
- J. Wright asked for clarification about the 401(k) comparison to employee ownership. D. Goldstein said that when a business enters into the ESOP employees get an allocation, which is a percentage of eligible wages. Everyone in the company gets the same percentage allocation, and the absolute number is determined by the employee’s level of compensation. The longer an employee stays at the company, the more they build up their bucket of ownership in the company. Most companies have a six-year vesting schedule, but as they build tenure it becomes quite meaningful. Folience also offers a 401(k) with matching stock and has 92% of employees contributing to it.

## MEP Director’s Update, part two

P. Raghavan returned to the discussion of the MEP program themes, picking up with Technology and Innovation. She shared a recent video resulting from the collaboration between NIST MEP, the NIST Engineering Lab and the NIST Public Affairs Office.

Video: Technology Transfer Acceleration by the MEP National Network

- The video is available online: [https://youtu.be/EEHJ\\_5sMUuI](https://youtu.be/EEHJ_5sMUuI)

- The video features a collaboration between New York MEP’s FuzeHub, Insyte Consulting and the NIST Engineering Laboratory. The project uses NIST Engineering Laboratory’s sensor for robotic health in manufacturing and the small business integrator Buffalo Manufacturing Works to explore this technology for use on the manufacturing floor.
- This story features:
  - NIST expertise used in collaboration with MEP Centers
  - NIST technology (now patent pending) tested though MEP Centers with the industry integrator
- MEP Centers can use the video as a tool to showcase how to collaborate with NIST experts
- Within NIST, the video can show NIST researchers how to get technology out of their labs and into the commercial space though the MEP National Network.

#### Technology and innovation – MEP program support

- Robotic manufacturing sensor collaboration with NIST laboratories, NIST MEP and New York MEP
- MEP-Assisted Technology and Technical Resource Program (MATTR)/MATTR+
  - MATTR is expanding via MATTR+
  - MATTR+ will provide SMMs efficient and rapid technology consultation from world-class researchers
  - NIST MEP funding will provide dedicated consulting support with NIST laboratories for MATTR+
- Food Industry Services
  - Program with U.S. multinational supermarket chain serves to reach SMMs within their supply chain and establish direct prime/original equipment manufacturer relationship
  - Leverages U.S. Food and Drug Administration partnership to help SMMs meet Food Safety Modernization Act requirements

#### Technology and innovation – Network support

- A CAP technology project was funded in 2021 with Tennessee MEP as the lead
  - This CAP develops a one-stop resource for MEP Centers to help apply technology to process and product challenges at SMMs
  - The team has direct contact or connections to the 16 Manufacturing USA institutes, the 350 federally funded laboratories, as well as the larger MEPNN
  - Current outcomes:
    - 26 meetings/calls with SMMs
    - 19 business/project development meetings with Center staff across the Network
    - 16 meetings with potential industry partners
    - 6 meetings with Manufacturing USA institutes: Advanced Robotics for Manufacturing (ARM), CESMII, Institute for Advanced Composites Manufacturing Innovation (IACMI), LIFT, Rapid Advancement in Process Intensification Deployment Institute (RAPID), and Reducing Embodied-energy And Decreasing Emissions (REMADE)
    - Center Director informational webinar: 45 participants from 25 Centers
    - 11 Centers volunteered to receive targeted support as pilots to evaluate and improve the delivery framework for advanced technology projects
      - Developed and delivered one MEP client proposal
      - Current pipeline of 14 client projects
    - The team developed a one-page document for distribution to Centers explaining the CAP deliverables and providing contact information

### Strategic competition update

- FY 2022 Center State Competition
  - Notice of funding opportunity (NOFO) One: awards announced Oct. 1, 2022 for Jan. 1, 2023 start
    - Kentucky, Nebraska, Rhode Island and South Dakota
    - Applications received April 26. Review process ongoing. Award recommendations will be sent to NIST Grants Management Division by July 9.
  - NOFO Two: awards announced April 2023 for July 1, 2023 start
    - Arizona and Maryland
    - NOFO will be posted Aug. 1, 2022. Applications will be due Oct. 28, 2022.

### MEP National Network 2017-2022 Strategic Goals

- Empower manufacturers
  - Objective: assist U.S. manufacturers in embracing productivity-enhancing innovative manufacturing technologies, navigate advanced technology solutions and recruit and retain a skilled and diverse workforce
- Champion manufacturing
  - Objective: actively promote the importance of a strong manufacturing base as key to a robust U.S. economy and for the protection of national security interests; create awareness of innovations in manufacturing; create workforce development partnerships to build a stronger and diverse workforce pipeline; and maximize market awareness of the MEP National Network
- Leverage partnerships
  - Objective: leverage national, regional, state and local partnerships to gain substantial increase in market penetration; identify mission-complementary advocates to help MEP become a recognized manufacturing resource brand; build an expanded service delivery model to support manufacturing technology advances
- Transform the Network
  - Objective: maximize National Network knowledge and experience to operate as an integrated national network; increase efficiency and effectiveness by employing a Learning Organization platform; and create a resilient and adaptive MEP National Network to support a resilient and adaptive U.S. manufacturing base

### Measures for the 2017-2022 Strategic Plan

- Strengthening the national supply chain
- Increased awareness
- Serving the manufacturing workforce
- Leading in technology deployment

### 18-month measures of success

- Measure 1: Strengthening the national supply chain – increase supplier matches and clients served in critical areas
  - Supplier scouting requests
  - Successful scouts – matching buyers and sellers
    - Goal: Increase supplier scouting requests by 10%
      - Baseline: 124
      - Update through 2022 Quarter 1 (9 months): 122
      - Goal: 137
    - Goal: Increase successful supplier scouting matches by 10%
      - Baseline: 298



- Update through 2022 Quarter 1 (9 months): 411
  - Goal: 328
- Measure 2: Serving the manufacturing workforce – increase client engagement in workforce services
  - Clients and/or projects in workforce-related services
    - Goal: Increase clients engaged with workforce projects by 10%
      - Baseline: 1,800
      - Update through 2022 Quarter 1 (9 months): 1,357
      - Goal: 1,980
- Measure 3: Increasing awareness – amplify and measure Network brand awareness
  - Count occurrences of the hashtag #MEPNationalNetwork
  - Count of online mentions of brand terms “MEP National Network” and “NIST MEP”
  - Total subscribers to the NIST MEP blog
  - Aggregate count of backlinks
  - Number of followers on NIST MEP’s Facebook, Twitter and LinkedIn pages
    - Goal: Amplifying Network brand awareness by at least 10% (progress to date based on data from Jan. 1-March 31, 2022)
      - #MEPNationalNetwork hashtag occurrences
        - Baseline for current 18 months: 567
        - Progress to date: 636
        - New goal for current 18 months: 624
        - Change: +12%
      - Brand mentions
        - Baseline for current 18 months: 194
        - Progress to date: 142
        - New goal for current 18 months: 213
        - Change: -27%
      - Manufacturing Innovation blog subscribers
        - Baseline for current 18 months: 40,130
        - Progress to date: 47,451
        - New goal for current 18 months: 44,143
        - Change: +18%
      - Backlinks
        - Baseline for current 18 months: 186
        - Progress to date: 258
        - New goal for current 18 months: 205
        - Change: +39%
      - Social media followers
        - Baseline for current 18 months: 18,419
        - Progress to date: 19,035
        - New goal for current 18 months: 20,261
        - Change: +3%
  - Measure 4: Leading in technology deployment – increase client engagement in technology services and implementation
    - Clients and/or projects in technology services
    - MATTR engagements
      - Goal: Increase clients engaged with technology services projects by 10%
        - Baseline: 983
        - Update through 2022 Quarter 1 (9 months): 1,065
        - Goal: 1,081

- Goal: Increase MATTR requests/inquiries by 10%
  - Baseline: 25
  - Update through 2022 Quarter 1 (9 months): 10
  - Goal: 28

#### Current Advisory Board working groups

- Supply Chain Development Working Group
  - Board leadership:
    - Don Bockoven, Lead
    - LaDon Byars, Co-Lead
  - Focus: MEP National Network program support and development of manufacturing supply chains
- Executive Committee Working Group
  - Board leadership:
    - Mary Isbister, Lead
    - George Spottswood, Co-Lead
  - Focus: Support Board governance and connection with local Center boards
- Strategic Plan, 2023-2028 Working Group
  - Board leadership:
    - Bernadine Hawes, Co-Lead
    - Jim Wright, Co-Lead
  - Focus: Support development of the MEP National Network 2023-2028 Strategic Plan

#### Discussion

- P. Raghavan asked whether the current working groups were relevant to the challenges the Board will face in the coming months, or whether the groups should be reorganized or changed.
- M. Isbister said that that was the right question to be asking, especially in light of the new strategic plan. The work that each group does is still relevant and important, but it could take a different form if groups are changed or added.
- M. Kmetzo asked if the measures of success were broken down by Center or represented combined results for all Centers. P. Raghavan said that the results that they showed were aggregate data, but they also have the data broken down by Center.
- M. Magee agreed that the new strategic plan would inform new working groups. P. Raghavan added that they are forming a working group with the Centers to discuss whether they are looking at the right measures.

## Public Comments/Open Meeting Wrap Up

#### Public comments

- C. Williams, Executive Director of Sustainable Tulsa, thanked the Board for their commitment to supporting SMMs. She asked whether sustainability and the triple bottom line of people, profit and planet informed the Board's conversations about workforce, supply chain, and innovation and technology. M. Newman agreed that the triple bottom line is very important. The Board often talks about sustainability and environmental, social and governance (ESG), and the primes and the Securities and Exchange Commission are pushing those directives down through the supply chain. B. Hawes thanked C. Williams for her comment and said that it was time for the Board to fine-tune their discussion and to look at ESG for companies so that manufacturers can have an additional metric to measure competitiveness. P. Raghavan added that they are looking at how MEP Centers can help businesses focus on environmental and sustainable impacts.

### **Concluding comments**

- P. Raghavan noted that this was J. Anaya's last meeting as a Board member and thanked him for his years of service. M. Newman thanked J. Anaya for his invaluable insight and for hosting one of the past Board meetings. J. Anaya said that he had greatly enjoyed the Board meetings and thanked the MEP National Network for their work to keep manufacturing strong.

### **Next Meeting**

The next MEP Advisory Board meeting is set for Tuesday, Sept. 20, 2022 in Chicago, Illinois. It will be co-located with the MEP National Network Update meeting and the Foundation for Manufacturing Excellence Center Best Practice Conference.

### **Adjournment**

With no further business, M. Newman adjourned the open session of the meeting at 1:43 p.m.