

**National Institute of Standards and Technology  
Manufacturing Extension Partnership  
Advisory Board  
Minutes of the June 18, 2019 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 10:30 a.m. to 4:30 p.m. on June 18, 2019 at El Camino College in Torrance, California. The meeting included about 25 attendees including Board members, NIST and NIST MEP staff, participants from MEP Centers, guest speakers and observers. Carroll Thomas, Director of MEP, is the Designated Federal Officer for the MEP Advisory Board.

## Attendees

### Board Members

Jose Anaya, Dean of Community Advancement, El Camino College  
E. LaDon Byars, President and CEO, Colonial Diversified Polymer Products, LLC  
Bernadine Hawes, Chair, MEP Advisory Board and Senior Research Analyst, Community Marketing Concepts  
Mary Isbister, President, GenMet Corporation  
Mitch Magee, Director, Global Advanced Manufacturing Team, PPG Aerospace Business Unit  
Patricia Moulton, President, Vermont Technical College  
Matthew Newman, Vice Chair, MEP Advisory Board and Director of Sustainability Advocacy and Development, ONEOK, Inc.  
Kathay Rennels, Associate Vice President for Engagement, Colorado State University  
George Spottswood, Owner and CEO, Quality Filters, Inc.  
Leslie Taito, CEO, Hope Global  
Chris Weiser, Owner and President, J.V. Manufacturing, Inc.  
Jim Wright, Vice-President of Operations, Proof Research

### NIST MEP Participants

Cheryl Gendron, Advisory Board Liaison, NIST MEP  
Mary Ann Pacelli, Acting Division Chief Network Learning & Strategic Competitions, NIST MEP  
David Stieren, Division Chief for Extension Services Division, NIST MEP  
Carroll Thomas, Director of MEP and Designated Federal Officer, MEP Advisory Board  
Phillip Wadsworth, Regional Manager, NIST MEP

### Guest Speakers

Dan Berglund, President and CEO, State Science & Technology Institute (SSTI)  
Dena Maloney, Ed.D., President, El Camino College  
Jim Watson, CEO and President, California Manufacturing Technology Consulting (CMTC)

### Observers

Mellissa Ayala, NIST MEP

Tom Bugnitz, Manufacturer's Edge  
Jose Colucci, NIST MEP  
J. Chancy Lyford, NIST MEP  
Carol Shibley, NIST MEP

## Welcome and Introductions

### Speakers:

Bernadine Hawes, Chair, NIST MEP Advisory Board  
Carroll Thomas, Director, MEP  
Dena Maloney, President, El Camino College

B. Hawes made introductory remarks, noting that this was her first meeting as Board Chair. Board members and attendees introduced themselves.

D. Maloney thanked the Board and welcomed them to El Camino College. She noted that she was attracted to the college partly because of its focus on workforce development and partnerships with the aerospace industry. As a state, California has invested in workforce development and a structure where colleges work together to develop programs. El Camino is one of the leaders in this initiative and they recently received a grant to build out their apprenticeship model.

B. Hawes thanked D. Maloney and said that the theme of competitive collaboration is one the Board has talked about for a long time. C. Thomas said that manufacturing is about people and she was very impressed with El Camino College because it was one of those sites with connections to support and motivate people.

## MEP Director's Update

**Speaker:** Carroll Thomas, Director, MEP

MEP Program Budget Outlook (as of May 6, 2019)

- FY 2019 Appropriation Status:
  - The appropriation was signed into law on Feb. 15, 2019.
- FY 2020 Appropriation Status:
  - Proposed for elimination of federal funding in the President's Budget.
  - The House mark came back at \$154 million.
  - The Senate mark is proposed for completion by the end of June, date TBD.

### Discussion

- M. Newman asked where the Senate mark has historically fallen in relation to the House mark, and C. Thomas said that the House mark has historically been less than the Senate mark.

NIST MEP FY 2019 Projected Spend Plan

- Available Funding:
  - Full year appropriation: \$140 million.
  - Carryover from FY 2018: \$6.8 million.

- Funding from other agencies: \$2.8 million.
  - Total available funding: \$149.6 million.
- Planned Expenditures:
  - Center renewals: \$116.4 million.
  - Strategic competitions: \$9 million.
  - Contracts: \$6.6 million.
  - NIST MEP Labor: \$10 million.
  - NIST and Program Overhead: \$7.6 million.
    - Total planned expenditures: \$149.6 million.

## Discussion

- B. Hawes asked about types of contracts and C. Thomas said that one NIST MEP contract was the MEP Enterprise Information System (MEIS). MEIS is a major part of the MEP National Network IT infrastructure and captures data from MEP Centers. There are also contracts for different types of support including financial analysis to help Centers maintain proper stewardship of federal funds. NIST MEP works to keep non-MEP Center operational funding below 13% and this is currently at 11%.
- M. Magee asked if there were any negative consequences of the Program being zeroed out for federal funding. C. Thomas answered that this is the twelfth time the MEP Program has been marked for federal funding elimination. The MEP Program continues to deliver value however it can be difficult to attract new people of quality when they see that the MEP Program could potentially be eliminated.

## Legislative View – Requirements of the American Innovation & Competitiveness Act (AICA)

- Government Accountability Office (GAO) Report Part 1: Report Completed.
  - Due two years after enactment of AICA, in consultation with this Board, the report analyzed the effectiveness of the change in cost share, engagement, characteristics of MEP Center services and what effect the cost share change has had on MEP Center services.
  - The report was made public on March 7, 2019. It can be found at: <https://www.gao.gov/products/GAO-19-219>
- NIST Report on MEP Center Recompetition: A draft report has been completed and is awaiting Office of Management and Budget (OMB) approval before submission to Congress.
  - The report covers the first and second years of operations for MEP Centers from the recompetition.
  - It includes details on engagement in services provided by MEP Centers, characteristics of services provided, and volume and type of services.
- GAO Report Part 2: Pending.
  - The NIST Director is required to contract with an independent organization to revisit the initial GAO report and again may consult with this Board.
  - NIST MEP is in the process of identifying a third-party contractor.

## Legislative Outlook

- Efficiencies Report: Set for final OMB clearance.
  - The report will update the status of the cost efficiencies of NIST MEP.
- Competition Report: Waiting for DOC clearance and was due to Congress April 11, 2019.
  - The report will update the status of recompetition of the MEP Centers.

## Discussion

- P. Moulton asked about the GAO's reference to the cost share adjustment and its relationship with recompetition impacts. C. Thomas said that when they have a recompetition it gets automatically set back from 2:1 to 1:1 and it was impossible to tell if that was a change from the cost share due to the legislation or a change due to the recompetition.

## MEP Economic Impact Analysis

- According to a study published by the W.E. Upjohn Institute for Employment Research in May 2019 it was found that the MEP Program generated a substantial return on investment for the federal government.
  - 14.4:1 for the \$140 million invested in FY 2018.
  - Jobs: 238,000.
  - GDP: \$24.9 billion.

## Discussion

- L. Taito said that the W.E. Upjohn Institute's impact numbers were impressive and it was important to use these statistics when advocating for and communicating about the MEP Program.

## MEP National Network 2017-2022 Strategic Goals

- Empower Manufacturers.
  - Objective: to assist U.S. manufacturers in embracing productivity-enhancing, innovative manufacturing technologies; navigate advanced technology solutions; recruit and retain a skilled and diverse workforce.
- Champion Manufacturing.
  - Objective: to 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; maximize market awareness of the MEP National Network.
- Leverage Partnerships.
  - Objective: to leverage national, regional, state and local partnerships to gain a 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.
- Transform the Network.
  - Objective: to maximize MEP National Network knowledge and experience so that it operates 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 resilient and adaptive U.S. manufacturing.

## Eighteen-Month Network Priorities

- Create an Integrated MEP National Network Service Delivery System.
  - Building capabilities to provide services at a higher level while mitigating risk.
- Updated National-level Partnerships and Performance Support Services.
  - Creating good foundational support to keep moving forward.
- Define Areas of Focus for Manufacturing Technology Advances.

- Helping to deploy new designs quickly while maintaining quality.
- Develop Supply Chain National Services and Information and Technology Access.
  - Coordinating what is happening with suppliers and helping them to build capabilities and move the needle.
- Build Infrastructure for MEP National Network Learning Organization.
  - Working smarter with the Network to bring in many capabilities, including the American Small Manufacturers Coalition and the Foundation for Manufacturing Excellence.

#### Progress on Eighteen-Month Measures of Success to Goals

- Integrated MEP National Network – Percent of Goal as of Quarter One 2019:
  - 88% of MEP Centers engage in Multi-Center Delivery.
  - 196% of small and medium-sized manufacturers (SMMs) served via third party.
  - 147% of rural manufacturers served via third party.
- Integrated MEP National Network – Percent of Goal as of Quarter Four 2018:
  - Number of Transformational Clients: 143%.
  - Job Impact: 163%.
  - Sales Impact: 161%.
  - Investment Impact: 138%.
  - Cost Savings Impact: 106%.
- Quarter One MEP National Network Progress:
  - 350 instances of branded searches vs. baseline of 350.
  - 744 page views on the webpage vs. baseline of 695.
  - 80 backlinks vs. baseline of 14.
- Measures of Success to Goals – Operational Excellence:
  - 43 MEP Centers engaged in 17 Competitive Awards Program (CAP) proposals.
  - NIST MEP staff mitigating risk, establishing and implementing standard operating procedures, and aligning panel review feedback with regional manager coaching.

#### MEP National Network: Center Leadership Team (CLT)

- At least 31 MEP Centers are actively involved.
- Working Committees with MEP Center leaders:
  - Outreach Initiative (Tom Bugnitz).
  - Multi-state Engagement (Bill Donohue).
  - Learning (Buckley Brinkman).
  - Network Evolution (Bonnie Del Conte).
  - Manufacturing Technology Solutions (Mike Coast).
  - Communications (Jim Shillenn).
- A Memorandum of Understanding (MOU) has been created for the MEP Centers to encourage participation across the MEP National Network.

#### Discussion

- L. Byars noted that the relationships the CLT is developing will help the goal of increasing multi-Center use to reach small and rural manufacturers.
- B. Hawes asked what the catalyst was for creating the CLT and how the MEP Center leaders were picked to participate. C. Thomas answered that she did not pick the individual MEP Center leaders; she put out the message that the MEP National Network and NIST MEP needed to be more connected to serve and empower manufacturers and many MEP Center leaders volunteered.

#### Industry 4.0 Practices Developing at MEP Centers

- MEP Centers utilizing user and demonstration facilities.
- CLT Subcommittee on Advanced Manufacturing Technology Solutions addressing MEP Center practices and the needs of SMMs.
- Smart Manufacturing connections are occurring between MEP Centers and NIST.
- MEP Centers featured at Industry 4.0-related conferences and events.

#### Cybersecurity Practice Maturing Across Network

- MEP Center participation in Cybersecurity Working Group.
  - Approximately 200 awareness/training events.
  - More than 3,100 SMMs served.
  - Over 530 projects conducted.

#### Discussion

- M. Magee asked if there were good stories on this topic that could be shared and C. Thomas said that this was an area where they will be able to point to the value and uniqueness of the MEP National Network.

#### 2019 MEP National Network Summit

- The next MEP Advisory Board Meeting will be held Sept. 15, 2019 along with other pre-Summit programming. The Board is encouraged to consider attending the full MEP National Network Summit.
  - Theme: The United State of Manufacturing.
  - Dates: Sept. 15-18, 2019 in Atlanta, Georgia.
  - 500+ attendees are anticipated.

#### NIST MEP Extension Services Division

- Food Industry Services.
  - MEP National Network Steering Team is leading national capabilities development; evolving into an MEP National Network Food Working Group.
  - National Memorandum of Understanding (MOU) in process with the Food and Drug Administration (FDA).
    - The MOU is executed with the Food Safety Preventive Controls Alliance (FSPCA).
- Toyota Kata.
  - MEP National Network Working Group is leading national capabilities development.
  - NIST MEP CAP Award to multiple Centers led by PA MEP, kicked off in May 2019.
- Workforce.
  - MEP National Network Working Group leading national capabilities development.

#### Discussion

- M. Isbister pointed out that water goes hand in hand with food and the two should be linked whenever possible. Water is becoming an increasingly important resource and sensors and artificial intelligence (AI) are the most important tools in water technology at the moment. B. Hawes asked M. Isbister to think about how they could pull the Wisconsin Water Council to present at a future Board meeting. M. Isbister said that she did have connections there for a possible future presentation.

- J. Wright asked how the MEP National Network could help their partners with tariffs and supply chain sourcing strategies. C. Thomas said that they had a service called supplier scouting but it was not a panacea for the current tariff situation. The MEP Program can help to a point, but some companies are outside of the MEP National Network's area of expertise.

#### MEP's Enterprise Information System (MEIS)

- A new search feature was just added to MEIS.
  - It allows Centers to search across all Center-submitted clients and projects based on company name, city, Dun & Bradstreet number and NAICS.
  - Search results do not include detailed project or impact data.
  - Intended to promote MEP National Network integration and provide enough information about engagements outside of a given Center to encourage Centers to contact each other to learn more about the interaction based on the MEP Center/Cooperative Agreement Recipient (CAR).

#### Performance-based Peer Panel Review

- The Peer Panel Reviews are required by statute.
- The Hollings MEP statute (15 U.S. Code 278k).
  - Third and eighth year evaluations by panel.
    - In general, the Secretary shall ensure that each Center is evaluated during its third and eighth years of operation by an evaluation panel appointed by the Secretary.
- Four rounds of reviews completed or scheduled through the fall of 2019.
  - Rounds one and two finished in 2018.
    - Round one: CO, CT, FL, IN, MI, NC, NH, OK, OR, TN, TX and VA.
    - Round two: AK, ID, IL, MN, NJ, NY, WA, WI and WV.
  - Rounds three and four currently ongoing.
    - Round three: AL, AR, CA, GA, LA, MA, MO, MT, OH, PA, PR, UT and VT.
    - Round four: DE, HI, IA, KS, ME, MS, NV, NM, ND, SC and WY.
- The University of Utah MEP Center has been placed on probation as a result of their recent third-year performance evaluation panel review.
  - A performance improvement plan has been created for the Utah MEP Center.
  - The MEP National Network is engaging other MEP Center leaders and NIST MEP staff to assist this Center.
- The fifth-year secretarial review ensures that Centers are in compliance.
  - After the first five years, there is a decision about whether to give an MEP Center an additional five-year agreement.

#### Discussion

- P. Moulton asked when MEP Centers that are on probation are reevaluated. C. Thomas said that the Utah MEP Center will be on probation for a year to fulfill deficiency areas and they will be monitored with progress reports.

#### NIST MEP on the M.O.V.E.: "MEP on Virtual Engagement"

- Indoor mold levels such that all NIST MEP staff had to relocate.
- Since November 2018, 55 NIST MEP staff shared temporary space requiring heavy telework.
- Now all NIST MEP staff have temporary locations in three buildings throughout campus.
- It is now estimated that NIST MEP staff could be back into Building 301 by October 2020.

- NIST MEP staff will remain in three buildings until Building 301 space has been remediated, which could be 15 months or longer.
- Through this process it was recognized that there has never been a sign on the NIST campus signaling the presence of the MEP Program and one will be put up in the near future.

### Discussion

- B. Hawes declared her frustration with the situation and extended her support in any way possible. She recognized the resiliency and creativity of the NIST MEP leadership and staff and asked for this to be recorded in the minutes.

### MEP Organization Chart

- Two new Regional Managers (RMs) have joined the staff.
- “Regional Managers” will become “Resource Managers.”
  - Portfolios will not necessarily be geographic.
- NIST MEP is doing its best to bring on new employees.
- The Organization Chart – June 2019 can be reviewed as part of the posted presentation online.

### Discussion

- P. Moulton asked how staff vacancies might be affecting the NIST MEP divisions. C. Thomas said that the staff vacancies are moving towards being filled. NIST MEP has position descriptions posted but it will take time to fill them. NIST MEP has some people in acting positions, but that is difficult because they are trying to learn even as urgent work is needing to get done.

## Delivering the MEP Program with California’s Manufacturing Network

**Speaker:** Jim Watson, CEO and President, CMTC

### California’s Manufacturing Network and the Current Manufacturing Landscape in California

J. Watson discussed how the state’s manufacturing industry support has been organized into a localized network with sharing between the state network and the MEP National Network. He said that the same behaviors and principles exist at the national and state levels.

He continued the discussion with details on California’s manufacturing landscape and performance. He stated that there are 39,000 manufacturers in the state – the same number of manufacturers in Florida and Texas combined. There is a migration trend from urban areas and overall manufacturing in the state is flat with no growth in manufacturing employment predicted until 2023-2024.

California’s manufacturing is 10.9% of the total output in the state and employs 7.7% of the workforce. It has a total output of \$302 billion, up 37% since 2011. He stated that California is a high-cost state and manufacturers must develop efficiencies to remain in business. CMTC’s job is to keep the line between manufacturing output and costs far apart.

### CMTC’s Client Impacts and Contributions to the Public Good

- J. Watson summarized the client impacts as follows:
  - \$285 million total investments.
  - \$109 million cost savings.
  - \$1 billion total sales.



- 10,405 jobs created and retained.
- 1,202 manufacturers served.
- He also discussed details on how CMTC's manufacturing assistance contributes to the public good including CMTC's 2018 Client Economic Impact on California:
  - \$3.7 billion contribution to the state GDP.
  - 28,570 total employment impact.
  - \$2.1 billion in labor income.
  - \$337 million in state and local taxes.
- Last year CMTC received \$2.3 million in state money to serve manufacturers. J. Watson clarified that the state money is strictly growth for the Center rather than supplanting the MEP program.

### **Discussion**

- C. Thomas asked how much money they get from the federal program and J. Watson said that they received \$15 million.

### **Nine Regions: Manufacturing Data and Key Industry Sectors**

- J. Watson discussed the division of the state into key industry sectors. After consulting various research organizations, they divided the state into nine regions. Several factors were considered:
  - 2/3 of the state's manufacturers are in Southern California.
  - 46% of manufacturers in the state are in Los Angeles and Orange County.
- 20% of manufacturers in the state are in the Bay Area.
- The regions are tied to industry sectors.
  - Almost every sector includes food and beverages which is the fastest-growing industry in the state.
- A detailed map of the nine regions with supporting data can be found in the presentation posted on the NIST MEP website.

### **CMTC Serves California with an Integrated Business Model**

- J. Watson described how services are provided to the state through a combination of internal, contractors and subrecipients (SRAs).
  - Services are delivered by 52 internal resources, more than 70 contractors and 14 SRAs: 26 full-time equivalents or full-time employees (FTEs).
  - SRAs generate 25% of the surveyable clients and 16% of the impact.
  - SRAs are selected based on financial capabilities, manufacturing program and geography.

### **Discussion**

- M. Magee asked for an example of an SRA and J. Watson said that El Camino College was a subrecipient.
- P. Moulton asked if this was primarily a workforce partnership or if they looked to college partners for technical aspects as well. J. Watson said that with colleges it was primarily workforce, although El Camino also provides a technology aspect.

### Building a Value Based California Network to Serve Manufacturers

- J. Watson discussed that this network includes SRAs and alliances; alliances are formed with organizations via MOUs. The network was built by looking at geography, gaps, sectors and partners.

### CMTC Alliances include the following:

- In Region 2, the North Bay Food Industry gives CMTC access to all of the wineries in Napa and Sonoma.
  - Introduces them to the manufacturers in the area.
- The San Joaquin Valley Manufacturing Alliance and the Fresno Business Council have made CMTC part of their yearly summit.
- All of these groups are workforce-based and CMTC supports them by introducing industry to potential areas where a skilled workforce can be found.

### Discussion

- P. Moulton asked if they used any state dollars to fund SRAs and J. Watson said that it was all federal funding.

### California's Manufacturing Network Goals and Progress

J. Watson shared the goal of the California Manufacturing Network: To be recognized as the leader in providing support and services for manufacturers with performance goals to achieve by the end of 2020:

- Manufacturers served: 1,500.
- Economic impact: contribution to California in excess of \$4 billion.

Outcomes in manufacturers served and contributions to the California GDP continue to increase. Over time, as partners began to contribute to penetration, time was freed up for CMTC to form relationships with larger manufacturers. As CMTC begins to see gaps that their partners cannot fill, they will put more of their own staff members in Northern California.

J. Watson detailed that managing the network requires a focus on six key areas including the following:

- Network Branding.
  - Many partners already have their own brands.
- Training on the MEP Program, compliance, financial reporting and the NIST MEP survey process.
  - A lot of time was spent explaining the CMTC program to partners.
- Aligning network partners with each other.
  - Working with subrecipients to understand their roles in the region in relation to CMTC and other subrecipients.
- Managing through partner personnel changes.
  - Finance department personnel changes require particular attention.
- Setting achievable goals.
  - Starting with a medium amount of money and building the relationship over time.
- Monitoring performance.
  - Looking at report card scores for 14 SRAs to give them feedback and improve performance if necessary, to build a stronger Center.

## Discussion

- M. Isbister asked whether SRAs wear CMTC badges. J. Watson said that the customer sees the SRAs, the local subrecipient, not as CMTC. The client sees the connection to CMTC, but if the subrecipient does the work, it falls under their brand.
- M. Isbister asked how many internal staff it took to manage the 14 SRAs and J. Watson said that five staff members managed the SRAs. There is tension in the organization between the current state and the future state and that is exacerbated by retirements.
- L. Taito asked if their audit team was part of that five and J. Watson said that they were.

Detailed slides presented by J. Watson can be found on the NIST MEP website.

## National and State Economic Challenges and Opportunities, Data Trends

**Speaker:** Dan Berglund, President and CEO, State Science & Technology Institute (SSTI)  
D. Berglund presented trends in manufacturing economic development and resulting impacts with specific feedback and recommendations for the MEP National Network.

### Prime Issues for Policymakers

- Income inequality/erosion of the middle class.
- Rural.
- Decline of financial support for higher education.

### The Fading American Dream

- Research by the Equality of Opportunity Project.
  - They have analyzed the percent of children earning more than their parents by year of birth.
    - 90% of the children born in 1940 earned more than their parents did.
    - This has faded over time.

### Farm Income Decline

- Projections from the U.S. Department of Agriculture have seen significant decreases in farm income for the last seven years.
- They initially projected a bump up in 2019, but since then weather events and tariffs have taken their toll on farm income.

### Benefits of Manufacturing

- Manufacturing has the largest multiplier of any economic sector: each dollar's worth of manufactured goods generates \$1.40 in output from other sectors of the economy.
- It provides higher wages for blue-collar workers and a higher level of economic input.

### Manufacturing Facts

- The Upjohn Institute looked at overall growth in the U.S. in jobs.
  - Manufacturing-intensive communities, compared to the entire United States, have a job growth gap of over 11 percentage points.
- Upjohn Recommendations:
  - Expand customized services to SMMs.

- Invest in infrastructure and services that make the community's land better for business development.
- Increase public spending on services that increase local workers' job skills.
- University of Chicago Manufacturing Study:
  - They found that the decline in manufacturing employment was a substantial cause of the decline in employment rates during the 2000s, particularly for less-educated prime age workers.
  - Declining local manufacturing employment was related to rising local opioid use and deaths.
  - All things point back to manufacturing as a positive possible policy solution.
- Manufacturing Jobs and Earnings in Urban and Rural Areas.
  - Manufacturing has a more significant economic presence in rural areas than urban areas.
  - Manufacturing plays a big role in addressing income and job disparity between rural and metro areas.
- Aging Manufacturing Workforce.
  - Almost 50% of the manufacturing workforce nationwide is 45 years or older.
    - That also translates to the ownership of manufacturing.
  - For example, 10,000 manufacturing jobs in rural Montana could be lost as business owners retire, according to the Small Business Administration (SBA) statistics.

#### Policy Academy

- One-third of the states have applied in the last two years to participate in a year-long planning process funded by NIST MEP and coordinated by SSTI and the Center for Regional Economic Competitiveness (CREC).
- Potential focus areas include:
  - Addressing talent gaps.
  - Accelerating business start-ups and scale-ups.
  - Promoting exports and diversified customer bases.
  - Enhancing supply chain linkages for big and small companies.
  - Improving economic development ecosystem efficiency.
- The outcomes of this effort will seek to advance a state's manufacturing agenda.
  - Examples include:
    - Invigorated state leadership.
    - New programs and initiatives.
    - Revised program design and delivery.
    - Legislation supporting manufacturing priorities.
    - Executive orders and other actions.
    - Improved economic development efficiency.
- Previous Policy Academy outcomes in participating states:
  - Strategy.
    - Created an interactive hub for manufacturers.
    - Developed a statewide manufacturing strategic plan.
    - Coordinated a public-private partnership to advocate for the state's advanced manufacturing sector.
    - Secured legislative funding for manufacturing priorities.
  - Workforce.
    - Implemented a postsecondary career and technical education pathways program.
    - Began a manufacturing career awareness initiative targeting K-12 students.

- Formed an apprenticeship program in the state's MEP Center.
- Passed legislation to renew and extend a community college initiative to fund manufacturing workforce partnerships.
- Innovation.
  - Led an effort by the state's research universities to drive innovation in manufacturing.
  - Passed legislation to provide funding for innovation vouchers.
  - Developed liaison offices at universities to bridge the gap between research and development and industry needs.
  - Planned an Advanced Manufacturing, Design and Innovation Center to support innovation amongst SMMs.

### Challenges and Opportunities

- 20 newly-elected state governors elected in 2018, all with new personalities and new priorities:
  - AK, CA, CO, CT, FL, GA, ID, IL, KS, ME, MI, MN, NM, NV, OH, OK, SD, TN, WI, WY.
- Three new governors took office in 2017:
  - AL, IA, SC.
- Three additional new governors took office in 2018:
  - MO, NJ, VA.
- Hundreds of new state legislators.
- Only six chambers flipped parties.
  - In general, the blue got bluer and the red got redder.
- There is relatively flat state spending on economic development over the last three fiscal years, around \$6.5 billion per year.
- There are some political problems for higher education which serve as host for 20 MEP Centers.
  - 16 states have MEP Centers based in universities.
    - AK, GA, IA, ID, IN, KY, MT, NC, NE, NV, SD, TN, TX, UT, WV, WY.
  - Four states have MEP Centers based in community colleges.
    - AL, DE, LA, VT.
  - Moody's downgraded its financial outlook for higher education in the U.S. from stable to negative in 2017.
    - Partly due to a 3% drop in new foreign student enrollment.
  - Year-to-year growth in states' higher education funding is relatively low.
  - The State Higher Education Executive Officers Association (SHEEOA) reported that only six states spend more now on a per-student basis than they did in 2008.
  - Projections of student enrollment in regional and state universities over time show that only a handful of states are predicted to see an increase; the rest will see declines, and many states will see declines greater than 15%.
  - Student loan debt continues to grow and is now the second largest form of debt in the U.S.
- The Next Recession.
  - Economic expansion is about to hit 10 years, which would tie the 1991-2001 record.
  - While state budgets are better now, the next recession will put increased pressure on state funds to MEP Centers.

## Discussion

- C. Thomas noted that Senator Gary Peters of Michigan recently held a conference about creating an institute of manufacturing and asked if there were any other similar initiatives. D. Berglund said there was a lot of conversation around manufacturing because it addresses so many economic problems. Most of the activity that he sees is on the workforce side and states are more interested in short-term solutions than long-term investment.
- P. Moulton asked whether anyone was effectively linking societal problems (like opioid use) to manufacturing in a way that might influence policymakers. D. Berglund said he was not sure anyone was doing that at the moment, but he hoped this was a topic for the Policy Academy to address.
- B. Hawes asked for clarification around the Policy Academy participants. D. Berglund said that SSTI issued requests for proposals that went to every economic development secretary and every governor's policy advisor focused on economic development. They invited them to submit proposals, with the requirement that the state's MEP Center director be a part of the core team. The hope is that this will help educate the state policymakers and leaders about what the MEP National Network is already doing and what they could do with more resources at the state level.

In conclusion, MEP is well positioned to address today's issues, but the approach must include all elements of the MEP National Network working together. Detailed slides presented by D. Berglund can be found on the NIST MEP website.

## Workforce Challenges and Solutions

**Speaker:** Mary Ann Pacelli, Acting Division Chief Network Learning & Strategic Competitions, NIST MEP

### Workforce Challenges

- When MEP Centers ask their clients about their top three challenges, workforce comes up.
  - For most companies, the biggest challenge is recruiting and retention.

### What the MEP National Network is Doing

- Collaborating with education and economic development.
- Facilitating education and training for company needs.
- Helping to improve the public's image of manufacturing careers.

### Education and Economic Development

- Collaborating on state/federal training funds for the manufacturing workforce.
- Joint delivery service.
- Referrals.
- Complimentary services.
- Co-located staff.

### Developing the Future Workforce

- Pipeline activities.
- Manufacturing Day.
  - Focused activities:
    - "What's So Cool About Manufacturing" video competition in Pennsylvania

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- More students are enrolling in high school manufacturing-related programs in areas with concentrated programs.
- Student competitions.
- Internships for high school and college students.
  - In Virginia, GENEDGE (state MEP Center) has a close relationship with Virginia Tech.

#### Client Growth through Workforce Development

- Layoff aversion.
  - This is an opportunity that exists within state workforce funding systems.
  - MEP Centers can get funding to help companies facing potential layoffs.
- Smart Talent.
  - This program was developed by the Oregon MEP Center.
  - The MEP Center hired a consultant who specialized in helping companies through talent planning and training needs.
  - Hawaii applied for a NIST MEP Performance Based CAP project to capitalize on what Oregon was developing, and other states followed.
- Organizational development and human resource performance consulting.
  - MEP Centers help companies figure out what they can do differently to recruit and retain workforce.

#### Discussion

- P. Moulton asked if the layoff aversion funds came from the Workforce Innovation and Opportunity Act (WIOA) and M. Pacelli confirmed that it was WIOA money.

#### Skills Development

- Some MEP Centers are working through certifications like the Manufacturing Skill Standards Council (MSSC) and the National Incident Management System (NIMS).
- Career Pathways.
- Apprenticeship.
  - Some MEP Centers sponsor apprenticeships and develop competency models; others become intermediaries.

#### MEP Center Highlights

- Bootcamps: Short-term, intense training to provide qualified entry level candidates to hiring manufacturing companies.
- State Manufacturing Certification Pathways: developed by industry and implemented in partnership with the MEP Center, state manufacturing coalition, vocational schools and community colleges.
- State Workforce Development Industry sector partner for Advanced Manufacturing.
  - Coordinating with educational providers for career pathways and apprenticeships.
- MEP Centers are sponsors for customized apprenticeships at small companies, using multiple training opportunities in rural areas.
- Utilizing university students as interns on client projects in their area.

#### Workforce Challenges

- Discussion Items and Questions.
  - Resources needed to support each type of initiative; not all are revenue-generating.

- Relationships with training providers: career and technical education, community colleges, universities.
  - How can we develop more positive relationships?
- Impact opportunities: “getting credit” for non-revenue/non-project type activities.

### **Discussion**

- P. Moulton asked if there was any coordination between MEP Centers and the U.S. Chamber of Commerce’s Talent Pipeline Management Curriculum. M. Pacelli said that a few MEP Centers have looked at that model, which tends to work better in regional settings as opposed to across an entire state.
- P. Moulton noted that workforce work could be very time-consuming, and she asked if any MEP Centers had been successful at navigating the WIOA process and forming good relationships with their workforce development boards. M. Pacelli said that there were some states that have been strong recipients of WIOA incumbent worker training funds, but this tends to be easier for smaller, centralized states. Larger states that are decentralized have to go to each individual workforce board and in some states the companies themselves have to apply to WIOA.
- M. Magee asked J. Watson if CMTC had been able to incorporate workforce development into their SRAs and get credit in their impact analysis. J. Watson said that CMTC has been working with workforce development boards for many years and it is all relationship-based. There are many boards that have high concentrations of manufacturers in their areas and they are committed to working with CMTC on avoiding layoffs. J. Anaya talked about the local Northrop Grumman in Hawthorne, California, which started outreach to local high schools to develop STEM programs. Together with El Camino College, they developed an engineering program where students earn college credit and are mentored by engineers from Northrop Grumman.
- M. Newman noted that by the time students get into high school their path is often set. One of the challenges in workforce is to have a programmatic approach in the middle school years that is engaging to all students. J. Anaya said that they do approach the middle schools in their area to get them interested in STEM.
- M. Pacelli said that the MEP Centers recognize the challenges and opportunities. The MEP National Network has to figure out how to help some MEP Centers move into that realm and how to potentially fund more projects.

## **MEP Advisory Board Working Group Updates**

### **Supply Chain Development Working Group**

#### **Speakers:**

Matt Newman, Vice Chair, MEP Advisory Board

Dave Stieren, Division Chief for Extension Services Division, NIST MEP

#### Working Group Deliverable

- Guidance and perspectives on the 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.

#### Discussion Topics for the Board



- The MEP National Network supports Department of Defense (DoD) supply chains in many areas, including:
  - Cybersecurity assistance.
  - Working with the DoD-sponsored Manufacturing USA Institutes.

#### Manufacturing USA Institutes

- There are 14 operating Manufacturing USA Institutes.
  - Eight of the 14 institutes are sponsored by the DoD, five by the Department of Energy (DOE) and one by NIST.
  - One more Institute is in the process of potentially being stood up with funding from the DOE.
  - Award Status:
    - Round One: Two awards operating on no-cost extensions in 2019.
    - Round Three awards operate through Aug. 31, 2019.
  - Initial results and learnings were summarized in the March 2019 report (distributed to the Board in March).
  - Ongoing MEP Centers – Institute partnerships are evolving.

#### Embedding MEP into Manufacturing USA Institutes

- Beginning in 2016 NIST MEP made an investment through the MEP Centers to embed personnel at each operating Manufacturing USA Institute.
  - The intent was to expose the MEP National Network to technology focus areas and market opportunities associated with each Manufacturing USA Institute.
  - The MEP Centers can then engage small manufacturing clients and connect them to Manufacturing USA Institutes.
- Programmatic results and learnings documented in March 2019 NIST MEP White Paper:
  - SMMs tend to explore opportunities before making decisions to commit or implement.
  - SMMs are interested in demonstration sites and interactive experiences that help them understand technologies.
  - SMMs are interested in state-of-the-art technologies that can be leveraged in the very near term, as opposed to R&D-based intellectual property (IP).
    - SMM needs must match Manufacturing USA Institute outputs.
  - Local resources (less than a two-hour drive) are particularly helpful for engagement.
- NIST MEP and the MEP Centers are currently planning the next phase of collaborations to support the MEP National Network advanced manufacturing technology solutions services for manufacturers nationwide.
  - Some Manufacturing USA Institutes focus on technologies and market opportunities that are cross-cutting and apply to multiple industries across the manufacturing sector, and this is where partnerships are more likely to evolve.

#### Additional Updates

- NIST MEP and the MEP National Network are engaging the Manufacturing Times Digital (MxD) Institute in Chicago on active collaboration involving cyberawareness and training, along with implementation of operational technology (OT) protections for small defense manufacturing cybersecurity.
  - Potential efforts go beyond Defense Federal Acquisition Regulation Supplement (DFARS) requirements.

- This also involves partnership with the NIST Information Technology Lab and NIST Engineering Lab.
- NIST MEP is also engaging the DOE regarding a potential role for the MEP National Network in the new DOE-funded Manufacturing USA Institute being planned with a focus on advancing cybersecurity in energy efficient manufacturing.

## Discussion

- P. Moulton commented that proximity to demonstration sites and MEP Centers seemed to be very important and asked about places that are not close to these resources. C. Thomas agreed that this was a problem and said that they would like to bring in the MEP Centers that had no opportunities at all and connect them with the MEP Centers that were strongest. D. Stieren said that in the future they might incentivize MEP Centers to develop demonstration sites in certain technology areas where SMMs can test out new technologies and processes.
- M. Magee asked if the funding to embed the MEP Centers was part of the base funding award to operate the MEP Centers and C. Thomas said that it was an additional award.

## Cybersecurity

- Development of MEP National Network cybersecurity assistance capabilities are progressing through some of the following activities:
  - Continues to be spurred by strong partnerships with DoD programs, still mainly driven by the DFARS requirements for the defense sector.
  - The market is still not showing urgency in non-defense manufacturing sectors.
  - Closely monitoring other supply chains: auto, food, etc.
    - The FDA is interested in working with NIST around cybersecurity and food safety.
  - The CLT is using cybersecurity to demonstrate operation of the MEP National Network.
    - Great progress in creating a national footprint for cybersecurity capabilities.
  - Also engaging NIST Labs on cybersecurity protections for manufacturing OT.
- Cybersecurity and U.S. Small Businesses.
  - SMMs are less likely to have strategies in place to:
    - Prevent cyberattacks.
    - Detect them early if they occur.
    - Reduce damage.
    - Withstand the financial impact of a hack or breach.
  - 70% of small businesses are not prepared for a cyberattack.
  - One in 369 emails received by users in the manufacturing sector are malicious.
    - Third highest rate among key industry sectors.
  - A denial of service (DoS) or distributed denial of service (DDoS) attack on average costs a small business \$120,000.
  - Small businesses invest less than \$500 per year in cybersecurity products.
- MEP National Network Progress: Cybersecurity Assistance Practice.
  - As of June 2019, more than 3,100 SMMs served.
  - More than 530 projects conducted by the MEP National Network since 2014.
  - More than 200 awareness and training events.
  - 19 MEP Centers doing Office of Economic Adjustments (OEA) Cybersecurity project work with FY17, 18 OEA funding ~ \$8.8 million.
    - The FY19 OEA awards competition is in progress.

- MEP National Network Cybersecurity Working Group Workshop was held in Orlando in May 2019.
- NIST Cybersecurity Handbook: 162 downloaded ~ 52,000 times since November 2017.
- The NIST Internal Report 7621, “A Small Business Guide for Cybersecurity,” downloaded over 125,000 times since publication in November 2016.
- MEP National Network Cybersecurity Progress Summary as of June 2019.
  - Defense contractor cybersecurity implementation is still low.
    - Less than 25%.
  - 46 MEP Centers in Cybersecurity Working Group.
    - Lost three Centers since March 2019.
  - 41 out of 51 MEP Centers offer a cybersecurity practice.
  - The MEP National Network has made significant progress and continues to move forward addressing important needs.

#### Additional Updates

- NIST MEP and the Office of the Under Secretary of Defense for Research and Engineering has an ongoing partnership focused on defense manufacturing supply chain cybersecurity awareness and technical assistance.
  - NIST MEP Notice of Funding Opportunity (NOFO) released to MEP National Network in April 2019; closed May 22, 2019.
  - NOFO review and selection process in progress.
  - Anticipate NIST MEP funding award in Summer 2019 of more than \$1 million to MEP Centers.
- NIST MEP engaging collaboration of defense and aerospace original equipment manufacturers (OEMs) on behalf of the MEP National Network in development and implementation of common approach to cybersecurity from OEMs for supply chains called Shared Assist.
  - Includes Lockheed Martin, Northrop Grumman, Boeing, Raytheon and BAE Systems.
  - Leverage MEP Centers nationwide to raise supply chain awareness and provide technical assistance based upon common approaches to cybersecurity for suppliers to these OEMs.

#### Discussion

- M. Newman commented that the effort with the OEMs is a great opportunity to show the nation the value of the MEP National Network.

#### Additional Updates (continued)

- The DoD has announced a new Cybersecurity Maturity Model Certification (CMMC) Program.
  - Under DFARS manufacturers must demonstrate that they are implementing adequate cybersecurity protection for controlled, unclassified information.
  - DoD states cybersecurity self-certification is “not working.”
  - DoD contractor information systems to be certified compliant by third party.
  - Planned implementation by early 2021.
- NIST MEP is working with DoD to learn details of this future new policy, including implications of its implementation.
  - NIST MEP will provide guidance to MEP National Network approach.

#### Discussion

- G. Spottswood asked about the exposure for MEP Centers to lawsuits by clients in relation to cybersecurity defense implementation. J. Watson said that because CMTC makes

recommendations and does not get into remediation, they are not at risk for lawsuits. D. Stieren added that MEP Centers are non-regulatory and they do not audit, guarantee, or certify.

## **Executive Committee Working Group**

### **Speakers:**

Cheryl Gendron, Advisory Board Liaison NIST MEP

Phillip Wadsworth, Regional Manager, NIST MEP

### Working Group Deliverable

- Provide guidance on future MEP Advisory Board leadership and membership recruitment, provide insights into cultivating strong Board governance as well as explore ways to expand the MEP Advisory Board's role in regard to the local MEP Center Boards.

### Discussion Topics for the Board

- MEP Advisory Board Annual Report.
  - Delivered to Congress on May 2, 2019.
- Supporting/mentoring new members.
  - Three new members over the next few months.
    - Two in the pipeline, looking at bringing on a third.
    - Discussed role of mentors for the new members.
      - Participating in orientation webinar, accepting phone calls with questions.
- Next face-to-face meeting.
  - Sept. 15, 2019 at the MEP National Network Summit in Atlanta, Georgia.
    - Meeting with Center leadership participation.
- Center Board Outreach Program.
  - Increase strength of relationships between MEP Advisory Board and local MEP Center Boards.
  - Each MEP Advisory Board member will reach out to local MEP Center Board Member.
    - Open up dialogue with MEP Center Boards.
    - Goal to attend one local MEP Center Board meeting (virtually) for each MEP Center yearly.

### **Discussion**

- C. Thomas noted that the outreach program is a chance for MEP Advisory Board members to reach out and make sure that MEP Center boards understand what the MEP National Network is and what they do. M. Newman suggested that it would be helpful for there to be a communication from C. Thomas or the working group to MEP Center boards to facilitate conversations with the MEP Advisory Board members. P. Moulton asked who the outreach should be directed towards and C. Thomas said that the introduction would go to the MEP Center board chair with the MEP Center director copied.

### Future Meeting Schedule

- Sunday, Sept. 15, 2019 in Atlanta, Georgia.
  - In conjunction with the 2019 MEP National Network Summit.
- Late February/Early March 2020 in Washington, D.C.
- Middle of June 2020, location TBD.

- Middle of September 2020 in conjunction with the NEP National Network Update Meeting and FORME Best Practice Conference.

## Wrap-Up/Public Comments

### Public Comments

- There were no public comments.

### Concluding Comments

- C. Weiser said that he had made several notes to take back to the MEP Center Director in Arkansas.
- L. Taito said that she always came away from these meetings with things to take back to her own business and to her local MEP Center, and she thanked J. Anaya for hosting the meeting.
- L. Byars said that from the MEP Advisory Board standpoint, it is important to find a way to communicate to lawmakers the values of manufacturing and the high return on investment. She said it was energizing to hear comments at the meetings that echoed her own experience in her state.
- J. Anaya thanked the MEP Advisory Board for coming to El Camino College and said it was good to hear so much conversation around workforce, because that is their passion at El Camino.
- C. Weiser said that Northwest Arkansas has a community college and a technical school that fights instead of collaborates, and it was inspiring to see how El Camino works so well with the local MEP Center. J. Anaya said it is important to figure out how to make it a win-win situation.
- M. Newman said there is an exciting opportunity to leverage the MEP National Network with the challenge of making manufacturing a cool and viable career path for young adults.
- M. Isbister said she felt very much at home during the tour of the manufacturing space. She commented on Dr. Maloney's passion for the school and J. Anaya's work in making the meeting educational for everyone. She said that her "a-ha" moment was realizing that they are the nexus between industry, education and the government.
- M. Magee echoed M. Isbister's comments and said that workforce development is the light of the current manufacturing situation and the megatrend of the future is collaboration.
- G. Spottswood praised the organization and efficiency of the meeting and said their work here was about creating and sustaining jobs in America.
- P. Moulton said the time she spent at these meetings was validating and energizing, and that their job was to keep spreading the message about pride in manufacturing and how it drives economy and innovation.
- C. Thomas noted that everyone on the Board has an MEP Center that is performing well, which means that all of their local manufacturers are receiving those benefits. For business owners who feel alone in their experiences, it makes a huge difference to have these resources to turn to when they need help.
- B. Hawes said that her keyword for this meeting was excitement. During the meeting they saw a lot of excitement around community colleges, workforce development, links between social ills and the role that manufacturers can play and more. She said that she was also excited to be the new Board Chair and to have M. Newman as her Vice Chair, and she thanked the Board members for supporting her. She expressed her excitement about the upcoming meeting at the MEP National Network Summit and thanked the NIST MEP staff for all of their hard work.

### Next Meeting

The next Advisory Board Meeting is set for Sept. 15, 2019 in Atlanta, Georgia.

### Adjournment

With no further business, B. Hawes adjourned the meeting at 4:24 p.m.