



MEP • MANUFACTURING
EXTENSION PARTNERSHIP®

MEP Advisory Board

June 18, 2019 Board Meeting

NIST

National Institute of
Standards and Technology
U.S. Department of Commerce





Meeting Agenda Details

10:30 a.m. – 10:35 a.m.	Board Meeting Opening/Logistics
10:35 a.m. – 11:15 a.m.	Welcome and Introductions <ul style="list-style-type: none">• Opening Remarks• Welcome from El Camino College President• Welcome from NIST Leadership• Board and Audience Introductions
11:15 a.m. – 12:00 p.m.	Director's Update, including the MEP National Network™ 2017-2022 Strategic Plan Update
12:00 p.m. – 1:00 p.m.	Lunch Break <i>Onsite Catered; Individual Pay</i>
1:00 p.m. – 1:05 p.m.	Welcome Back/Afternoon Overview
1:05 p.m. – 1:35 p.m.	Presentation: Delivering the MEP Program with California's Manufacturing Network <ul style="list-style-type: none">• Jim Watson, CMTTC• <i>Board Feedback & Discussion</i>



Meeting Agenda Details Continued...

1:35 p.m. – 2:05 p.m.	Presentation: National and State Economic Challenges and Opportunities, Data Trends <ul style="list-style-type: none">• Dan Berglund, SSTI<ul style="list-style-type: none">• <i>Board Feedback & Discussion</i>
2:05 p.m. – 2:35 p.m.	Presentation: Workforce Challenges and Solutions <ul style="list-style-type: none">• Mary Ann Pacelli, NIST MEP<ul style="list-style-type: none">• <i>Board Feedback & Discussion</i>
2:35 p.m. – 2:50 p.m.	Break
2:50 p.m. – 3:35 p.m.	Working Group Update <ul style="list-style-type: none">• Supply Chain Development Working Group<ul style="list-style-type: none">• <i>Board Feedback & Discussion</i>
3:35 p.m. – 4:00 p.m.	Working Group Update <ul style="list-style-type: none">• Executive Committee Working Group<ul style="list-style-type: none">• <i>Board Feedback & Discussion</i>
4:00 p.m. – 4:30 p.m.	Wrap-up/Public Comments



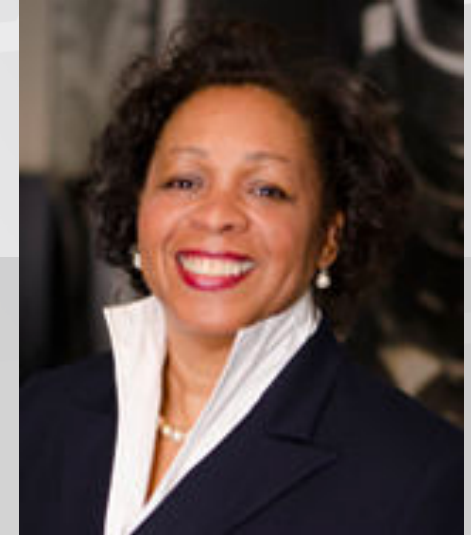
Welcome and Introductions



Bernadine Hawes
MEP Advisory Board Chair



Dr. Dena P. Maloney
President/Superintendent
El Camino College



Carroll Thomas
NIST MEP Director

Guests

- Name
- Name of organization
- How many years involved with MEP

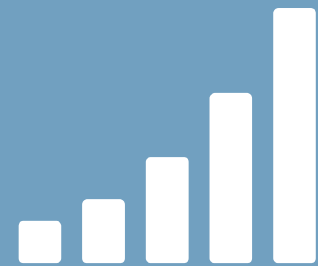


MEP Director's Update

- 1 MEP Program Budget Outlook/Spend Plan
- 2 Special Reports
- 3 MEP National Network™ Updates
- 4 NIST MEP Updates



MEP Program Budget Outlook/Spend Plan





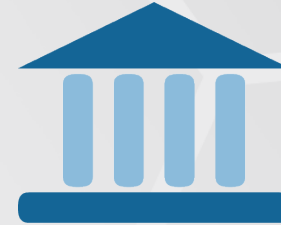
MEP Program Budget Outlook

(as of 5/6/2019)



FY 2019 Appropriation Status

Appropriation signed into law 2/15/2019



FY 2020 Appropriation Status

Proposed for elimination of federal funding
in the President's Budget

House Mark at **\$154 million**

Senate Mark proposed for completion by
end of June, date TBD



NIST MEP FY 2019 Projected Spend Plan

	(\$ millions)
<u>Available Funding:</u>	
Full Year Appropriation	\$140.0
Carryover from FY 2018	\$ 6.8
Funding from Other Agencies	<u>\$ 2.8</u>
Total Available Funding	\$149.6
<u>Planned Expenditures:</u>	
Center Renewals	\$116.4
Strategic Competitions	\$ 9.0
Contracts	\$ 6.6
NIST MEP Labor	\$ 10.0
NIST and Program Overhead	<u>\$ 7.6</u>
Total Planned Expenditures	\$149.6



Special Reports





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

GAO Part 1



Report Completed: From AICA due two years after enactment (1/06/2017) in consultation with this Board, the GAO conducted a report on the cost share impact due to the legislative change and it was made public on March 7, 2019. It can be found at:

<https://www.gao.gov/products/GAO-19-219>

Pursuant to the AICA (P.L. 114-329)

Draft report completed and awaiting OMB approval before submission to Congress.

NIST Report



The NIST Director shall submit to Congress a report on the 1st and 2nd years of operations for Centers from the recompetition. The report provides details on the engagement in services provided by Centers, the characteristics of services provided, and the volume and type of services.

Pursuant to the AICA (P.L. 114-329)



Legislative View - Continued with AICA Requirements

GAO Part 2



Pursuant to the AICA (P.L. 114-329), a final report is required after three years of the date of the above GAO study (3/7/2022), 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 3rd party contractor.



Legislative Outlook

- **Efficiencies Report – set for final OMB clearance**

Pursuant to House Report 115-704 accompanying the Consolidated Appropriations Act, 2019 (P.L. 116-6) signed to reopen DOC post shutdown (2/15/2019), NIST shall provide the Committee on Appropriations with a report updating the status of the cost efficiencies of NIST MEP. Report was due to congress 4/11/2019.

- **Competition Report – is in DOC Clearance – due to Congress 4/11/2019**

Pursuant to House Report 115-704 accompanying the Consolidated Appropriations Act, 2019 (P.L. 116-6) signed to reopen DOC post shutdown (2/15/2019), NIST shall provide the Committee on Appropriations with updates on the status of re-competition of the MEP Centers. Report was due to congress 4/11/2019.



MEP Economic Impact Analysis

In May 2019, the *W.E. Upjohn Institute for Employment Research* published a study that found the MEP Program generated a **substantial return on investment** of nearly **14.4:1** for the **\$140 million** invested in FY 2018 by the federal government.





MEP National Network Updates





MEP National Network™ 2017-2022 Strategic Goals

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.

**EMPOWER
MANUFACTURERS**

**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.

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.

**LEVERAGE
PARTNERSHIPS**

**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.



Strategic Plan Mapped To National Network

EMPOWER MANUFACTURERS

Primary

51 Centers & Partners

Collaborative Support

Extension Services

Important Support

NIST MEP Leadership
R&S Partnerships
Network Learning & Comp
M&C
PEER
FM/Center Ops
Admin
IT/Security

CHAMPION MANUFACTURING

Primary

51 Centers & Partners
NIST MEP

Extension Services

M&C

R&S Partnerships

NIST MEP Leadership

Advisory Board

Center Boards

ASMC/FORME

Collaborative Support

Network Learning and Comp
PEER

Important Support

FM/Center Ops
Admin
IT/Security
Staff Resource Mgmt.

LEVERAGE PARTNERSHIPS

Primary

51 Centers & Partners
NIST MEP

Extension Services

M&C

NIST MEP Leadership

R&S Partnerships

Center Boards

Collaborative Support

Advisory Board
ASMC/FORME
PEER

Important Support

Admin
FM/Center Ops
IT/Security
Staff Resource Mgmt.

TRANSFORM THE NETWORK

Primary

51 Centers & Partners
NIST MEP (All)

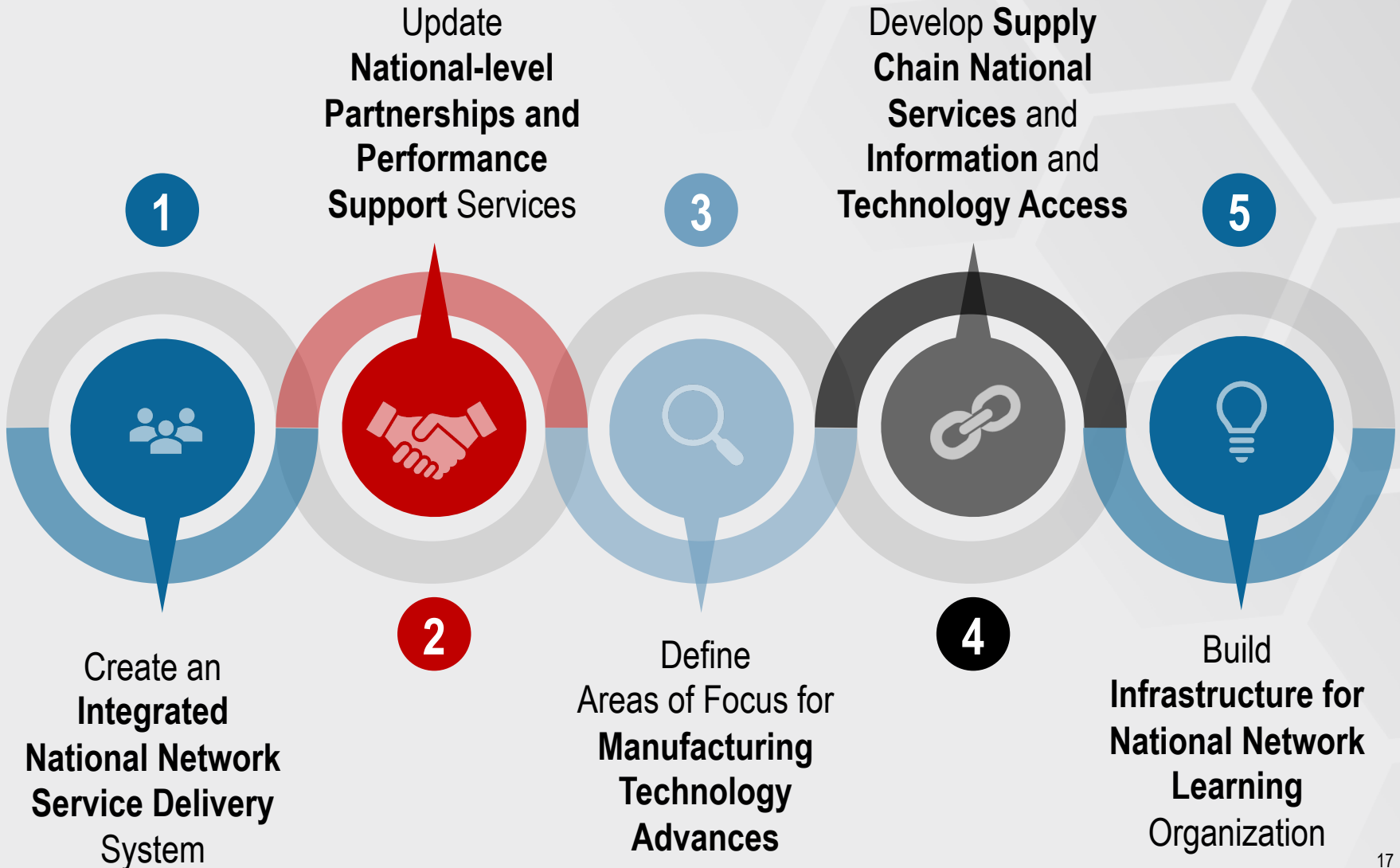
Collaborative Support

Advisory Board
Center Boards
ASMC/FORME



18-Month Network Priorities

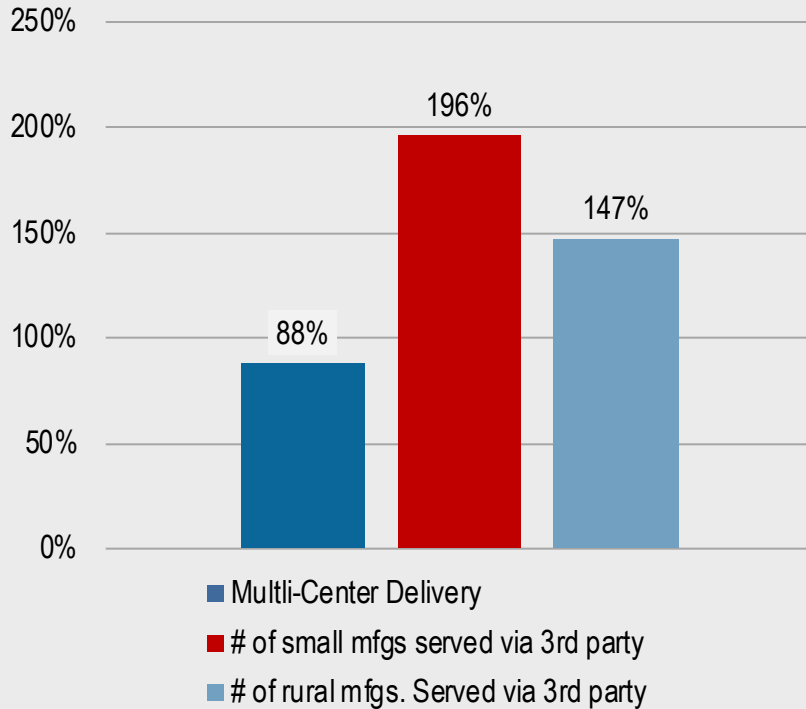
April 2018 – September 2019



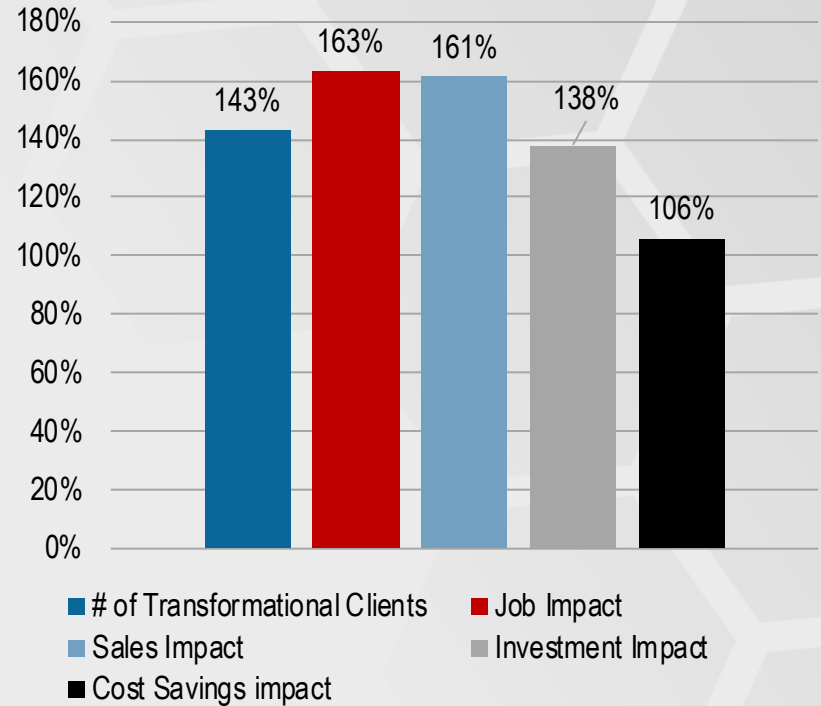


Progress on 18-Measures of Success to Goals

Percent of Goal as of Q1 2019



Percent of Goal as of Q4 2018



Increased awareness of the MEP National Network brand by 10% over base brand recognition measurement a year after the Network launches the brand.

- For Q1 MEP National Network had **350 instances of branded searches vs baseline of 350**
- For Q1 MEP National Network webpage received **744 page views vs baseline of 695**
- For Q1 MEP National Network webpage had **80 backlinks vs baseline of 14**



18-Month Measures of Success to Goals

Operational Excellence

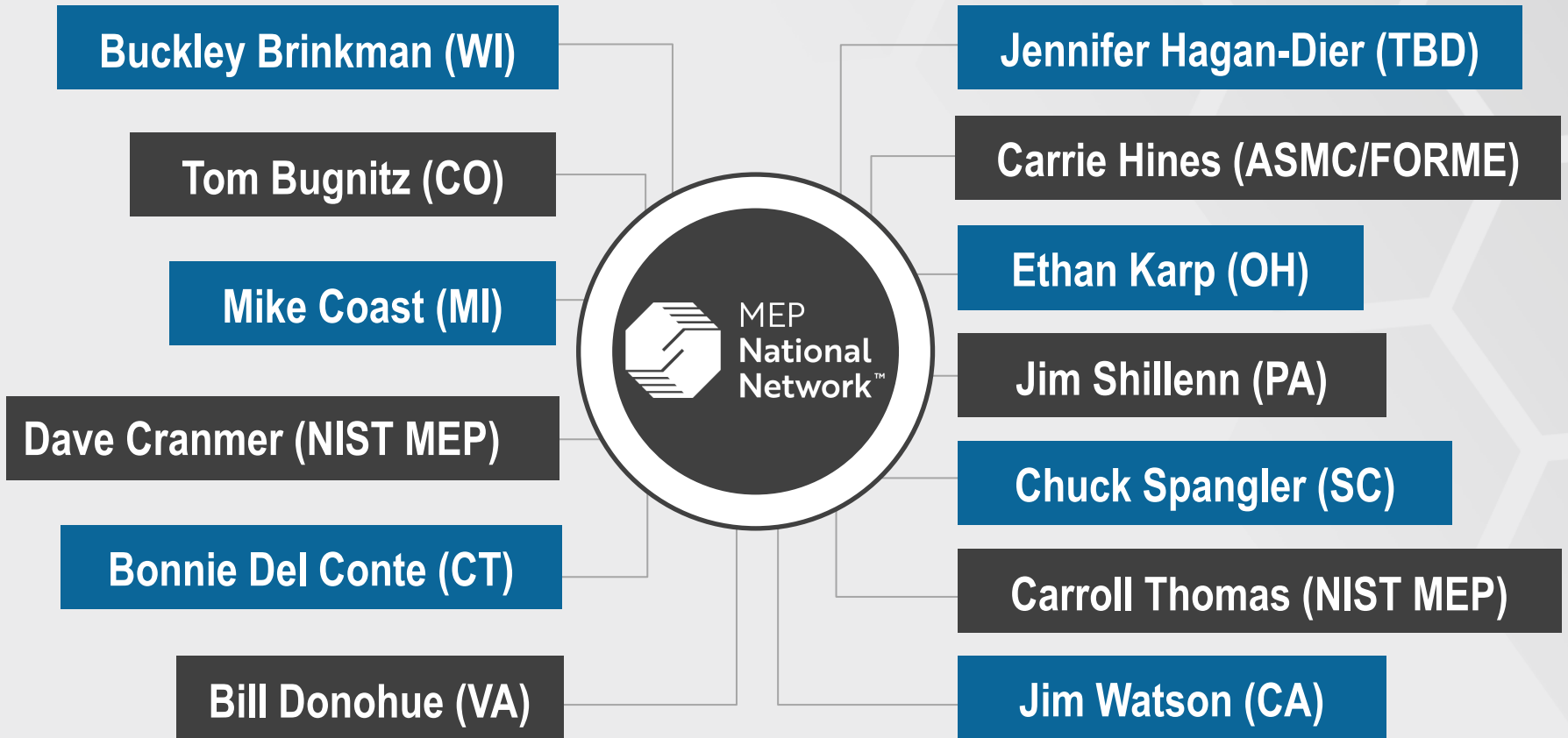
MEP Centers - Tons of incredible work happening

- **IL, ND, SD, WI** - All are hosting Manufacturing Conferences this year to attract new clients
- **IA, MI** - Developing Industry 4.0 demonstration facilities
- **SC** - Launched a TV commercial to expand their marketing efforts
- **NJ** - Expanding internship training programs
- **VA** - Executing the new, more efficient process for Prospect-to-Client conversion
- **HI** - Increased the number of manufacturing companies getting Hawaii SBIR funding
- **CT** - Aligned with CT Business & Ind Assn for outreach & new products/services and vice versa
- Across the board – **43 Centers engaged in 17 CAP proposals**

NIST MEP - Not to be outdone!

- Aligning Panel Review feedback with RM coaching
- Complete a draft of the Center Compliance Guidelines
- Establish and implement SOPs for competitive and non-competitive awards and train staff
- Reduce reporting burden on MEP Centers by 10%

MEP National Network Center Leadership Team





MEP National Network Center Leadership Team

Major Themes: Go-to Collaborative Center, Operating Principals

Working Committees:



Outreach Initiative (Tom Bugnitz)

- Regional Meetings, Summit
- One-Pager



Multi-state Engagement (Bill Donohue)

- MOU
- Multi-state engagement project and process



Learning (Buckley Brinkman)

- Leveraged Learning Framework: Moving from Knowledge Sharing to Learning
- Mapping Knowledge Sharing/Learning Platforms



MEP National Network Center Leadership Team

Working Committees Continued:



- **Network Evolution (Bonnie Del Conte)**
 - Understanding the sequence of healthy evolving of the National Network



- **Manufacturing Technology Solutions (Mike Coast)**
 - Determining how to handle manufacturing technology requests to partner, share and leverage other Centers



- **Communications (Jim Shillenn)**
 - Determining communication process
 - Documenting communication channels
 - Highlighting Centers collaborating on projects
 - Integration of Brand Council



Industry 4.0 Practices Developing at MEP Centers

CLT Subcommittee on Advanced Manufacturing Technology Solutions addressing MEP Center practices and SMMs needs

Smart Manufacturing connections occurring between MEP Centers and NIST

MEP Centers utilizing user / demonstration facilities

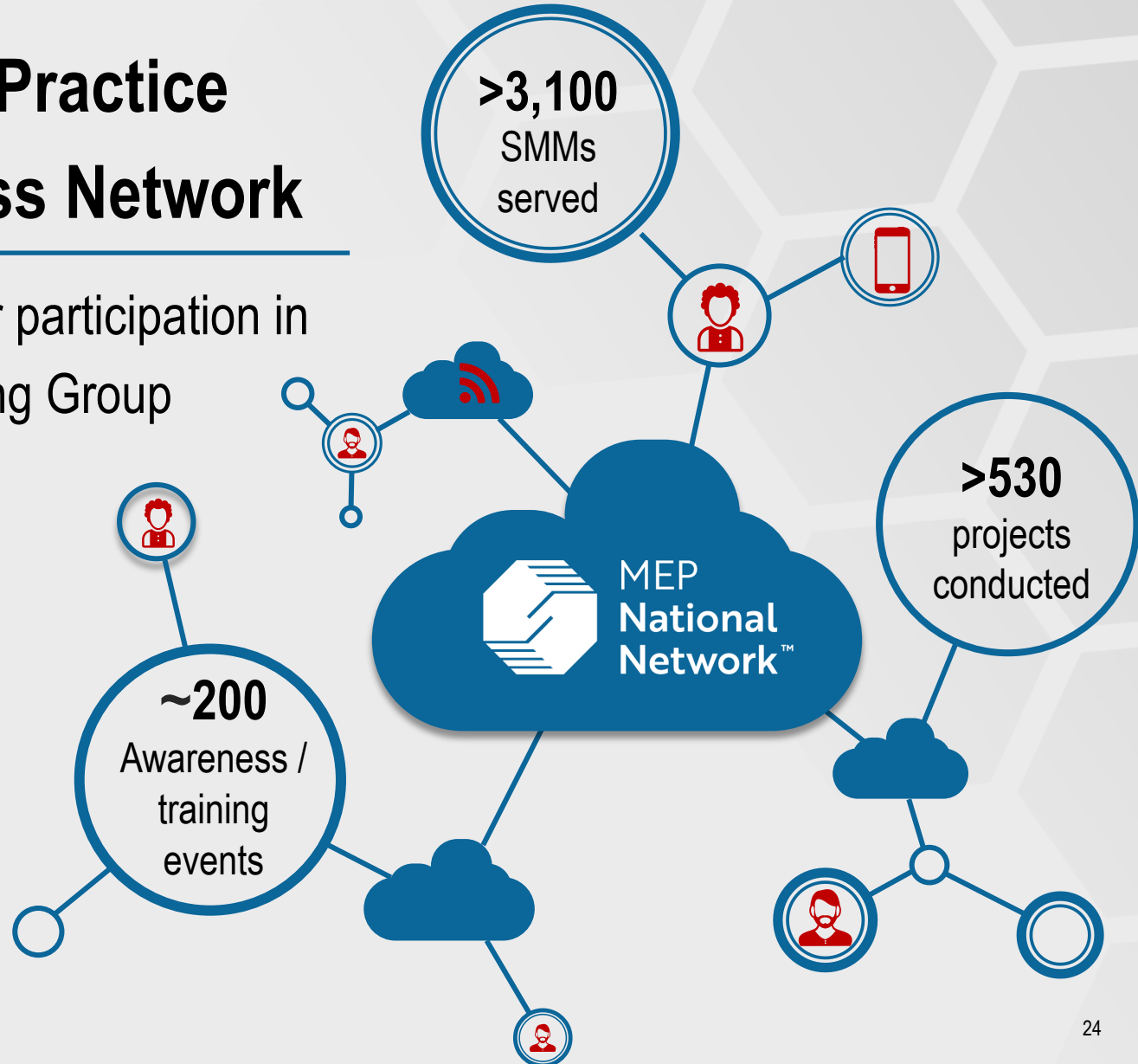
MEP Centers featured at Industry 4.0 - related conferences and events





Cybersecurity Practice Maturing Across Network

National MEP Center participation in
Cybersecurity Working Group





2019 MEP National Network Summit

- September 15-18, 2019 – Atlanta, Georgia
- **Board Meeting, Pre-Summit Programming and Networking Kick off event planned for Sunday, September 15, 2019**
- Anticipate 500+ attendees
- Board invited (reimbursed) to attend full event
- Work with Monica Claussen to confirm dates/ensure hotel room is secured





2019 MEP National Network Summit Featured Keynotes



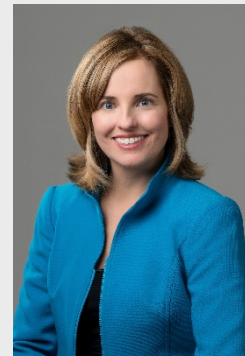
GREG SATELL
Author, Speaker, Advisor



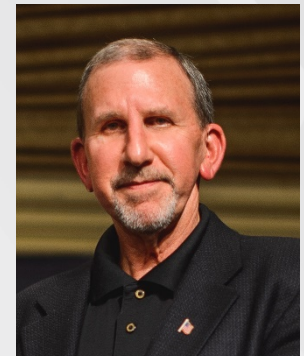
DAVID BEURLE
CEO, Future IQ



DR. LONNIE JOHNSON
Inventor and Engineer



BECKY FRANKIEWICZ
President ManpowerGroup
North America



DR. RON ROSS
Fellow, NIST
Cybersecurity



NIST MEP Updates



NIST MEP Extension Services Division

Food Industry Services

- MEPNN Steering Team leading National capabilities development; evolving into MEPNN Working Group
- National Memoranda of Understanding (MOU) in process with Food and Drug Administration (FDA); MOU executed with Food Safety Preventive Controls Alliance (FSPCA)

Toyota Kata

- MEPNN WG leading National capabilities development
- NIST MEP CAP Award to multiple Centers, led by PA MEP, kicked off in May 2019

Workforce

- MEPNN WG leading National capabilities development



MEP's Enterprise Information System (MEIS)

- New Search feature just added to MEIS.
- Allows Centers to search across all Center submitted clients and projects based on company name, city, Dun and Bradstreet number, and NAICS.
- Search results do not include detailed project or impact data.
- Intended to promote 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 Center/CAR Key Staff noted.



Performance-based Peer Panel Review

The Hollings MEP statute (15 U.S. Code § 278k)

Hollings Manufacturing Extension Partnership:

(1) Third and eighth year evaluations by panel

(A) 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.

Round 1

Completed
Dec 2017 - Feb 2018

CO, CT, FL, IN, MI,
NH, NC, OK, OR, TN,
TX, and VA

Round 2

Completed
May 2018 - July 2018

AK, ID, IL, MN, NJ,
NY, WA, WV, and WI

Round 3

Underway
Mar 2019 – June 2019

AL, AR, CA, GA, LA,
MA, MO, MT, OH, PA,
PR, UT, and VT

Round 4

To be completed
Fall 2019

DE, HI, IA, KS, ME,
MS, NV, NM, ND, SC
and WY

Note: the University of Utah MEP Center has been placed on probation as a result of their recent 3rd year performance evaluation panel review.



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 Nov 2018, 55 NIST MEP staff shared temporary space requiring heavy telework.
- Now all NIST MEP staff have temporary locations in 3 buildings throughout campus.
- New estimate that NIST MEP staff could be back into Building 301 ~ October 2020!
- NIST MEP staff will remain in 3 buildings until Building 301 space has been remediated which could be 15-months or longer.



MEP Org Chart (57.5 FTE)

480 Carroll Thomas
MEP Director

David Cranmer
Deputy Director

Staff Resource Management
Monica Claussen
Michele Montgomery
Monyelle Mingo

481
External Affairs & Performance
Division
Chancy Lyford, Chief
Vacant/Temp

Team IT Security & Support
Kathy Martin
Justin Mocca
Bryan Wade

481.01
Marketing &
Communications Group
Ben Vickery, Group Manager
Nicole Ausherman
Cheryl Gendron
Jennifer Rosa
Vacant

481.02
Program Evaluation & Economic
Research Group
Ken Voytek, Group Manager

Megean Blum
Stephen Campbell
Kim Coffman
Missy Davis
Diane Henderson
Holly Jackson
Megan Spangler
Nico Thomas

488
Extension Services Division
Dave Stieren, Chief
Vacant (AA)

Samm Bowman
Doug Devereaux
Brian Lagas
Dileep Thatte
Pat Toth
Marlon Walker
Vacant
Vacant

487
Regional and State Partnerships
Division
Mark Schmit, Chief
Carol Shibley

Beth Colbert
Jose Colucci-Rios
Sunni Massey (Partial Detail)
Vacant (Partnership Specialist)
Phillip Wadsworth
Thomas Williams
Anthony Mastalski
Gerson Santos-Leon
Vacant (Partnership Coordinator)

489
Network Learning & Strategic
Competitions Division
Vacant, (Mary Ann Pacelli, Acting
Div. Chief)
Vacant (Temp AA)
Vacant
Adelwiza Lequin
Vacant

Mike Simpson (Detail Assign)

486
Finance Management & Center
Operations Division
Vacant, (Kevin McIntyre, Acting
Div. Chief)
Vacant (AA)

Finance/Administration
Tony Gomez (AO 486, 487)
Autumn Hernandez (AO 481)

486.01
Center Operations Group
Nadine DeJesus, Group Manager
Mellissa Ayala
Sekou Johnson
Julia Shriner
Hope Snowden
Gloria Solomon

June 2019



Lunch Break



Welcome Back – Afternoon Overview

1:05 p.m. – 1:35 p.m.	Presentation: Delivering the MEP Program with California’s Manufacturing Network <ul style="list-style-type: none">• Jim Watson, CMTTC• <i>Board Feedback & Discussion</i>
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Delivering the MEP Program with California's Manufacturing Network



Jim Watson
CMTC (California MEP)
Center Director

California's Manufacturing Network



MEP Advisory Board Meeting
June 18, 2019

Agenda

- ❑ California's Manufacturing landscape
- ❑ California's Manufacturing Performance
- ❑ CMTC Contribution the California 'Public Good'
- ❑ Nine Manufacturing Regions
- ❑ California's Manufacturing Network Design
- ❑ Network Goals
- ❑ Managing the Network



California's Manufacturing Landscape



- 39,000 Manufacturers
- 1.3M Manufacturing Employees
- 54% Revenues less than \$1M
- 70% Employ 19 or less

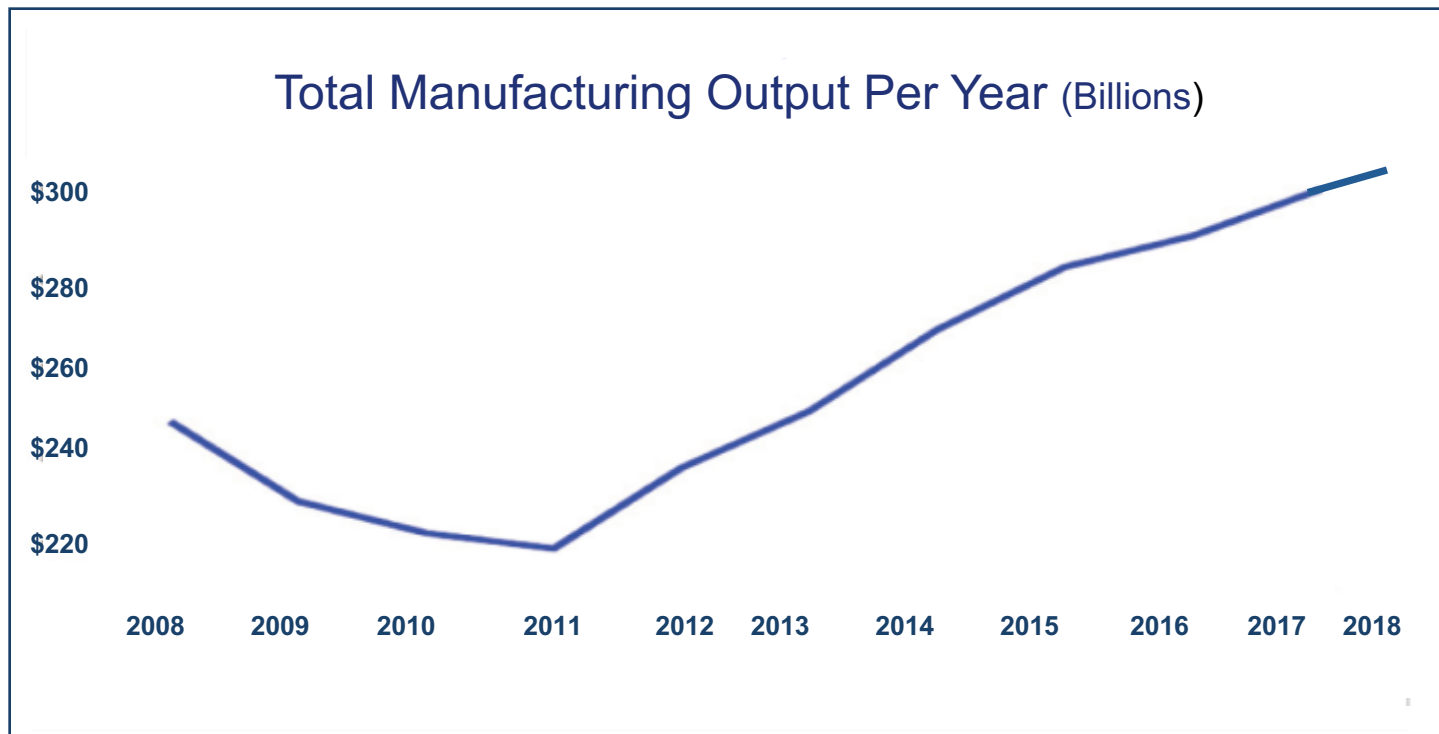
Revenue Reported	Number of Manufacturers	Percent
Less than \$1MM	20,949	54%
\$1MM - \$10MM	13,427	35%
\$10.1MM - \$20MM	1,835	5%
Over \$20 MM	2,578	7%
Total Number of Manufacturers	38,789	100%

Number of Employees	Number of Manufacturers	Percent
1 - 19	27,059	70%
20 - 49	6,172	16%
50 - 100	3,060	8%
Over 100	2,498	6%
Total Number of Manufacturers	38,789	100%

California's Manufacturing Performance



- 10.9% of the total output in the state
- Employing 7.7% of the workforce
- Total output \$302B up 37% since 2011



Our Client Impacts

- In 2018, CMTC clients reported the following benefits:



\$285 Million
Total Investments



\$109 Million
Cost Savings



\$1.0 Billion
Total Sales



10,405 Jobs
Created / Retained



1,202
Mfgs Served



CMTC's Manufacturing Assistance Contributes to the “Public Good”

CMTC's 2018 Client Economic Impact on California:

- **\$3.7B Contribution to the State GDP**
- **28,570 Total Employment Impact**
- **\$2.1B in Labor Income**
- **\$337M in State and local Taxes**



Nine Regions: Manufacturing Data and Key Industry Sectors

California Manufacturing Regions

① Northern California

Manufacturers 2.5 %
 Manufacturing Jobs 1.5 %
 Small Manufacturers 2.6 %
 Wood Products
 Food Processing | Beverage
 Rural

④ Central Coast

Manufacturers 3.9 %
 Manufacturing Jobs 2.7 %
 Small Manufacturers 4.0 %
 Computer & Electronics
 Food Processing | Beverage
 Urban

⑥ Los Angeles Area

Manufacturers 33.8 %
 Manufacturing Jobs 30.6 %
 Small Manufacturers 35.1 %
 Fabricated Metal
 Transportation Equipment | Apparel
 Urban

⑧ Orange County

Manufacturers 12.3 %
 Manufacturing Jobs 12.6 %
 Small Manufacturers 11.9 %
 Computer & Electronics | Fabricated Metal
 Medical Equipment
 Urban

California Manufacturing Regions Legend

Regions % of California's 39,686 Manufacturers
 Regions % of California's 1.3M Manufacturing Jobs
 Regions % of California's 28,129 Small Manufacturers (< 20 Employees)
 Top 3 Manufacturing Sectors
 Primary Regional Make-up Urban or Rural

② San Francisco Bay Area

Manufacturers 20.9 %
 Manufacturing Jobs 26.0 %
 Small Manufacturers 20.6 %
 Computer & Electronics
 Food Processing | Chemicals
 Urban

③ Sacramento Area

Manufacturers 3.5 %
 Manufacturing Jobs 2.9 %
 Small Manufacturers 3.8 %
 Computer & Electronics
 Food Processing | Fabricated Metal
 Urban

⑤ Central Valley

Manufacturers 7.0 %
 Manufacturing Jobs 8.7 %
 Small Manufacturers 6.1 %
 Food Processing | Fabricated Metal | Beverage
 Rural with some Urban

⑦ Inland Empire

Manufacturers 8.3 %
 Manufacturing Jobs 7.3 %
 Small Manufacturers 8.1 %
 Fabricated Metal
 Plastics & Rubber
 Food Processing
 Urban

⑨ San Diego

Manufacturers 7.8 %
 Manufacturing Jobs 7.8 %
 Small Manufacturers 7.8 %
 Computer & Electronics
 Transportation Equipment,
 Biotechnology & Pharmaceutical
 Urban



CMTC Serves California with an Integrated Business Model

- Services are provided by a combination of internal, contractors and subrecipients (SRAs)
- Services are delivered by 52 internal resources, more than 70 contractors and 14 SRAs (26 FTEs)
- SRAs generate 25% of the surveyable clients and 16% of the impact.
- SRAs are selected based on financial capabilities, manufacturing program and geography



Building a Value Based California Network to Serve Manufacturers

California's Manufacturing Network



California's Manufacturing Network Goals and Progress

- Goal – Utilize “California’s Manufacturing Network” to be recognized as the leader in providing support and services for manufacturers
 - Performance goals to achieve by the end of 2020
 - Manufacturers served– 1500
 - Economic Impact - Contribution to California in excess of \$4B
- Outcomes continue to increase

Manufacturers Served

Year	CMTC	Network Partners	Total
2015	938	0	938
2016	989	76	1065
2017	959	189	1148
2018	906	296	1202

Contribution to CA GDP

Year	GDP
2014	\$1.2B
2016	\$3.3B
2018	\$3.7B



Managing the Network Requires a Focus on 6 Key Areas

- Network Branding
- Training on the MEP Program, Compliance, Financial Reporting and the NIST Survey Process
- Aligning Network Partners with each other
- Managing through Partner personnel changes
- Setting Achievable Goals
- Monitoring Performance



Questions





National and State Economic Challenges and Opportunities, Data Trends



Dan Berglund
SSTI
Executive Director



National and State Economic Challenges and Opportunities

Presentation by:

Dan Berglund

June 18, 2019



Prime issues for policymakers

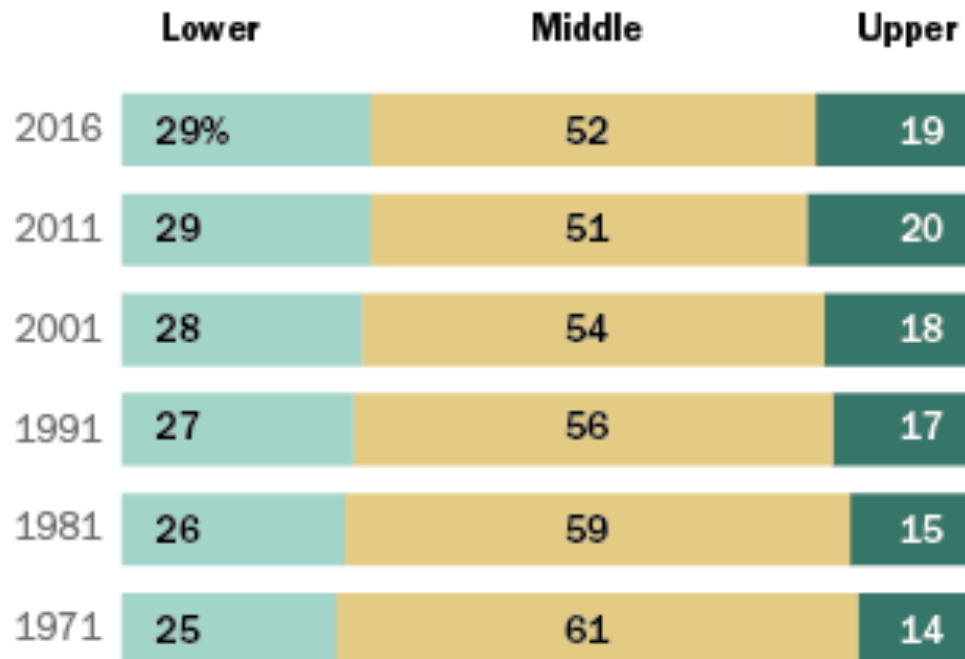
- Workforce
- Income inequality/erosion of the middle class
- Rural
- Decline of financial support for higher education
- Inclusion
- Disruption as a result of technology
- Climate change



Erosion of the middle class

Share of adults living in middle-income households is unchanged since 2011

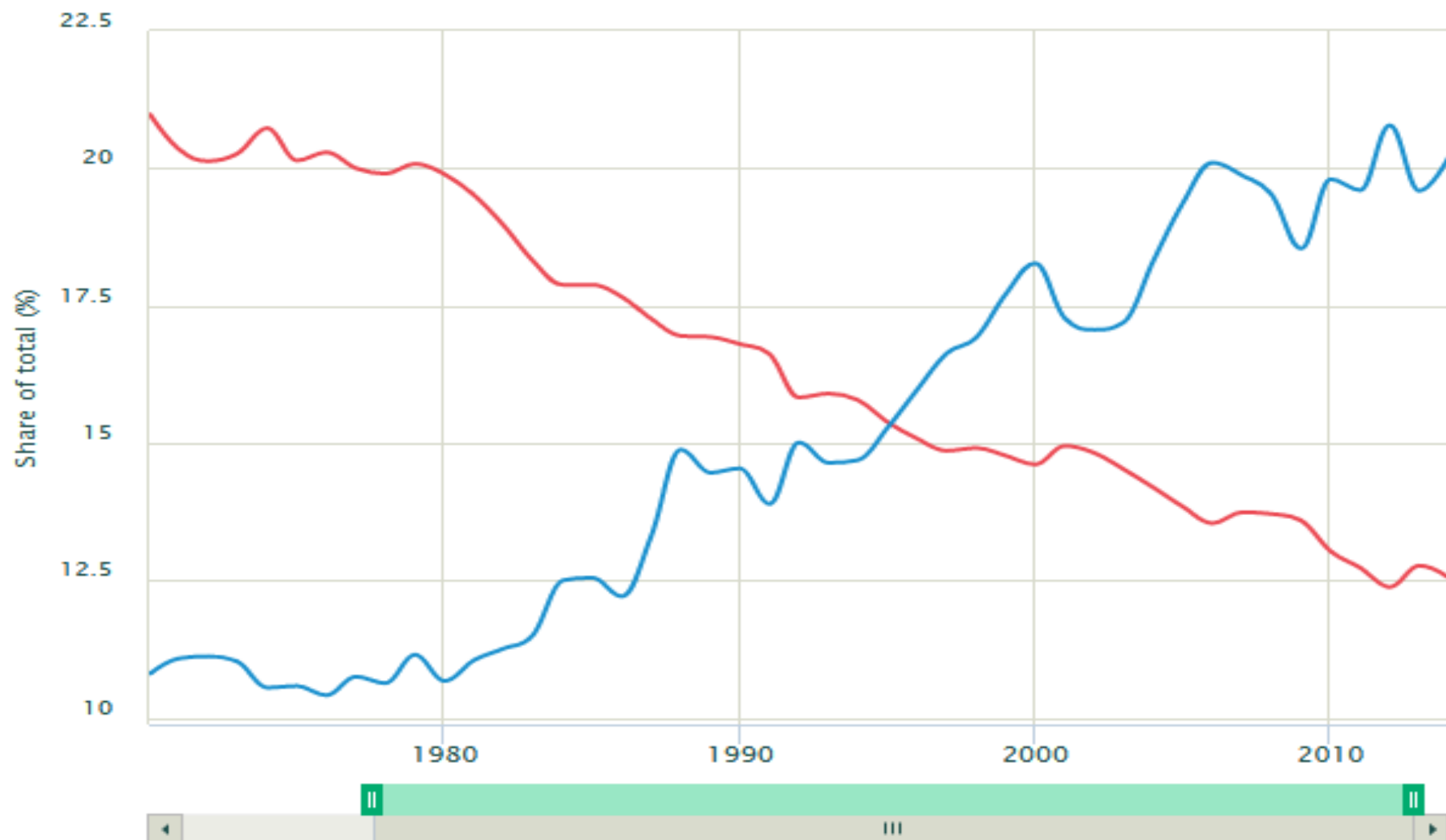
% of adults in each income tier



Income inequality, USA, 1971-2014

Share (%) ▼

Share (%) ▼

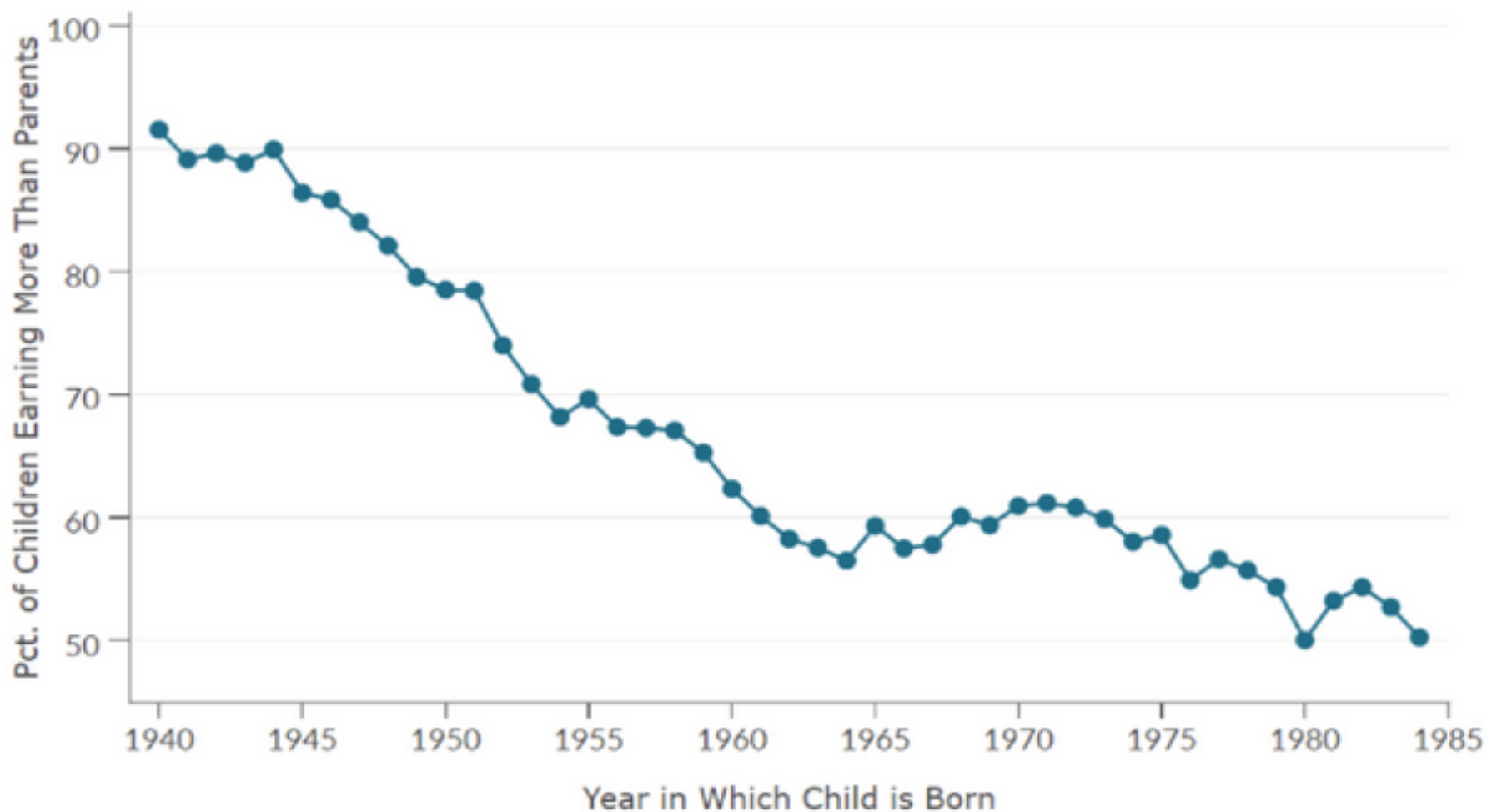


Pre-tax national income | Bottom 50% | share | ADULTS | EQUAL SPLIT ✕

Pre-tax national income | Top 1% | share | ADULTS | EQUAL SPLIT ✕

The Fading American Dream

Percent of Children Earning More than their Parents, by Year of Birth



The Fading American Dream: Percent of Children Earning More than their Parents, by Year of Birth

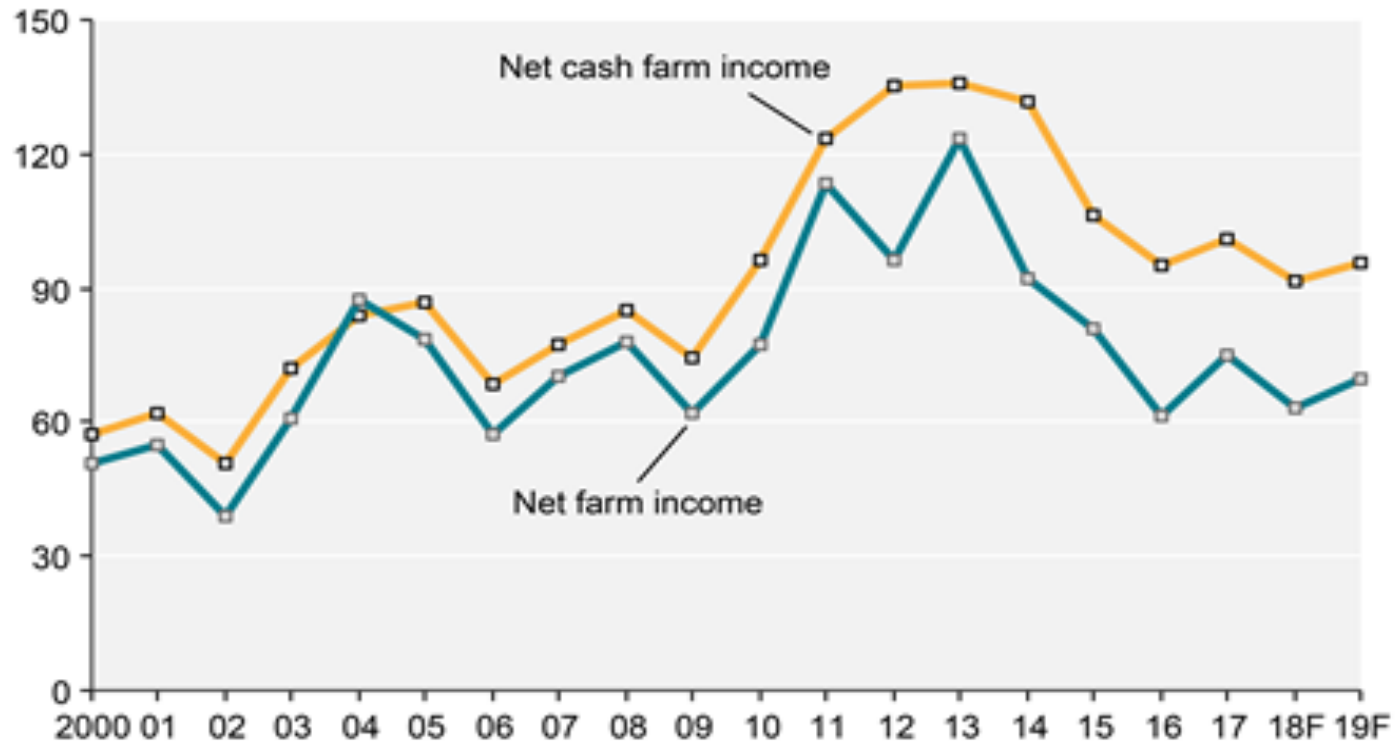
Equality of Opportunity Project, 2016



Farm income decline

Net farm income and net cash farm income, 2000-19F

\$ billion, nominal



Note: F = forecast.

Source: USDA, Economic Research Service, Farm Income and Wealth Statistics.

Data as of March 6, 2019.



Mfg pros

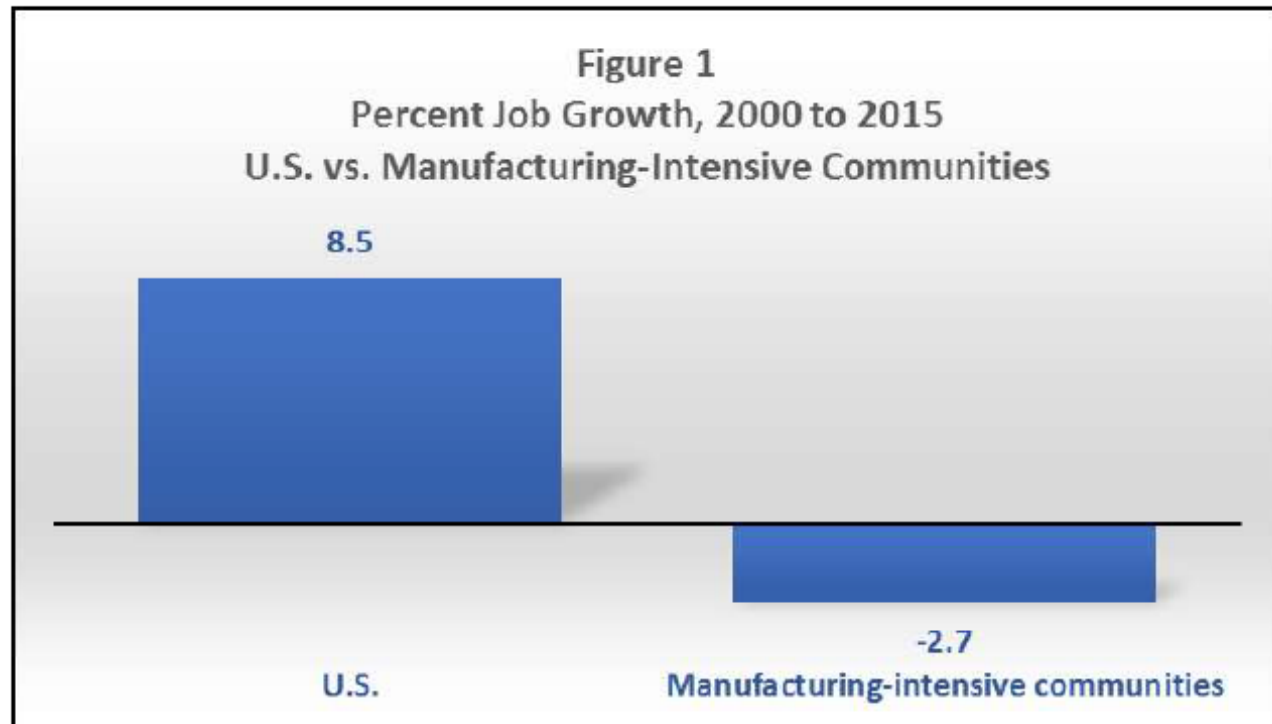
- It has the largest multiplier of any economic sector: each dollar's worth of manufactured goods generates \$1.40 in output from other sectors of the economy. Perhaps most important may be the higher wages it provides for blue-collar workers.

Joel Kotkin



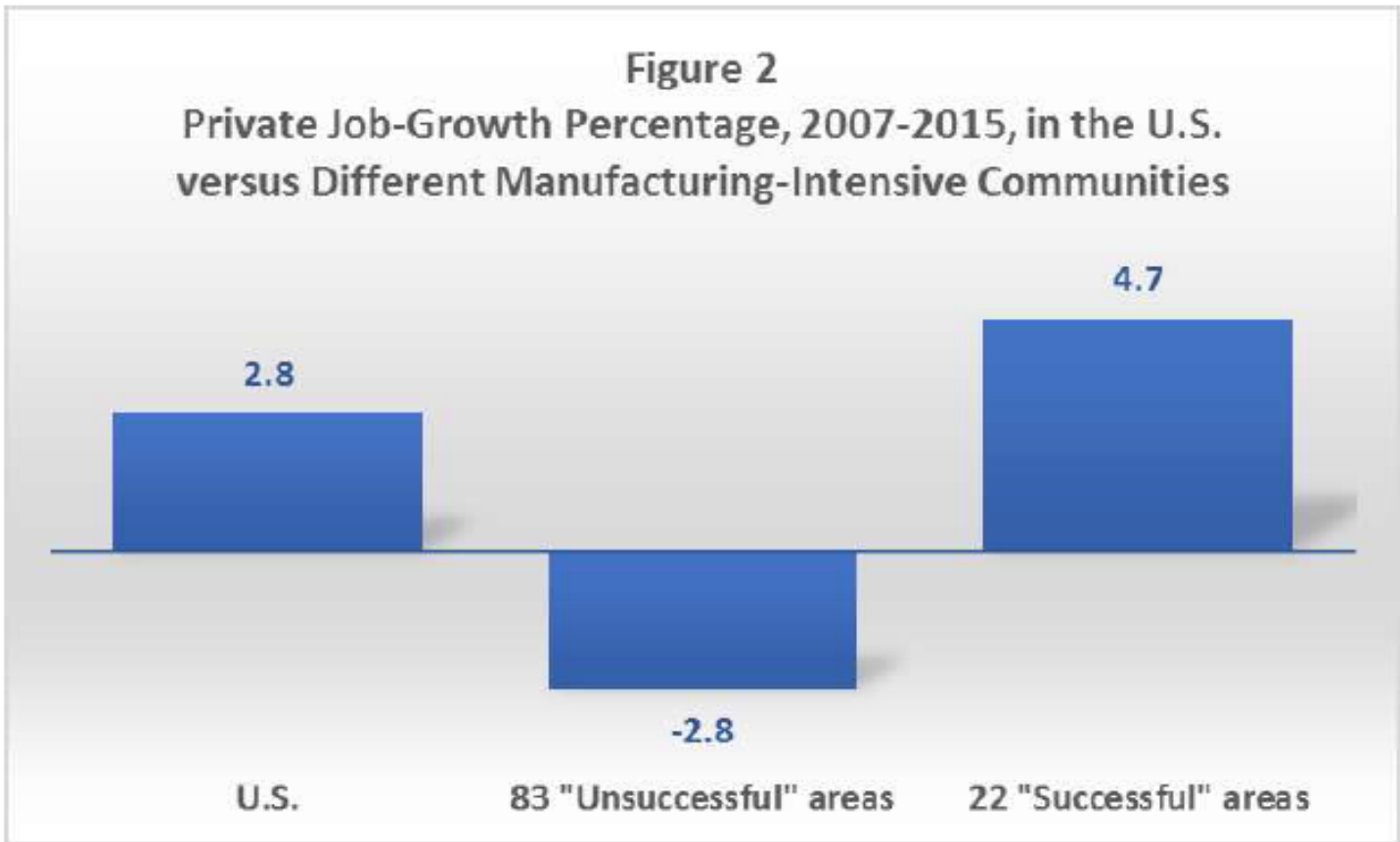
Mfg facts

- Upjohn Institute: Manufacturing-intensive communities, compared to the entire United States, have a job growth gap of over 11 percentage points
 - 2.7 percent loss of total private jobs in the manufacturing-intensive communities
 - versus an 8.5 percent gain in the entire United States
- At least three-fifths of this job-growth gap is explained by these areas' greater manufacturing share.



NOTE: See Bartik (2018b) for data sources and definitions. Manufacturing-intensive communities are the 324 commuting zones (CZs) with a manufacturing location quotient in 2000 of 1.19 or higher. U.S. includes entire country, including both manufacturing-intensive CZs and the rest of the U.S. Data from the Upjohn Institute's WholeData, which comes from County Business Patterns. Private job growth percentage change is change in jobs divided by the average of 2000 and 2015 jobs.

Upjohn: Some areas grew





Upjohn recommendations

- Expand customized services to small and medium-sized manufacturers.
- 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



Manufacturing

- Univ of Chicago researchers
 - Decline in mfg 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 related to rising local opiod use and deaths



Mfg decline impacting blacks

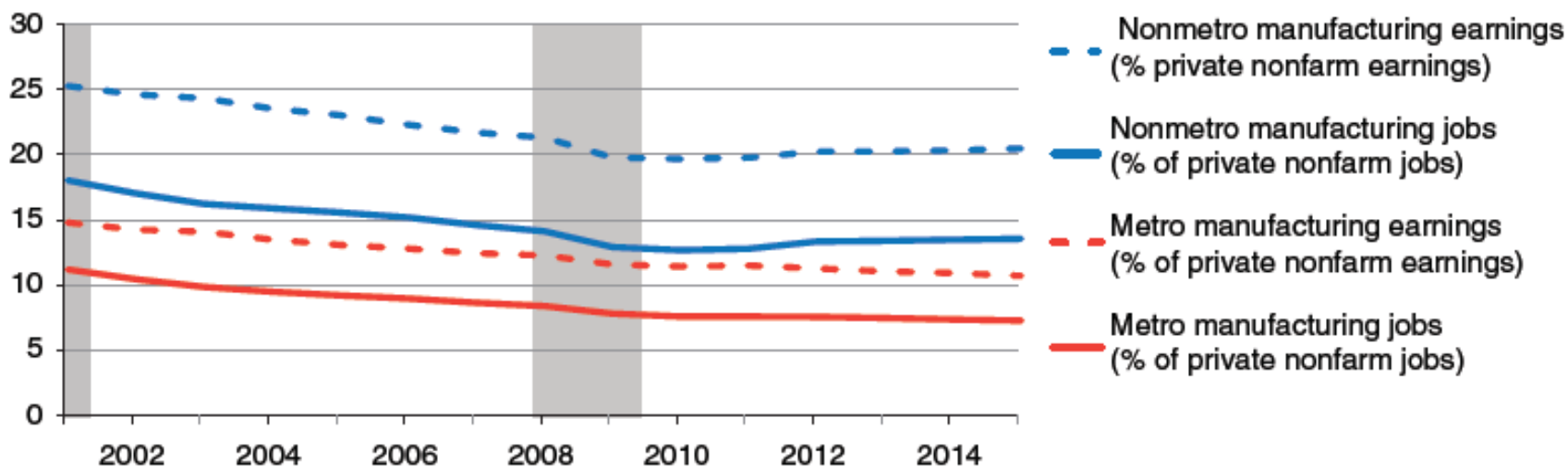
- Hebrew Univ of Jerusalem researcher found
 - “Decline in manufacturing increased inequality within the black community in terms of overall wages and the gaps between education groups in wages, employment, and marriage rates. Many of the same patterns are found for whites, but to a lesser degree leading to larger gaps between whites and blacks in wages, marriage patterns, poverty, single-parenthood, and death rates.”

Figure 4

Manufacturing jobs and earnings are a higher share in nonmetro than metro counties

Manufacturing share of private nonfarm full- and part-time jobs and earnings

Percent

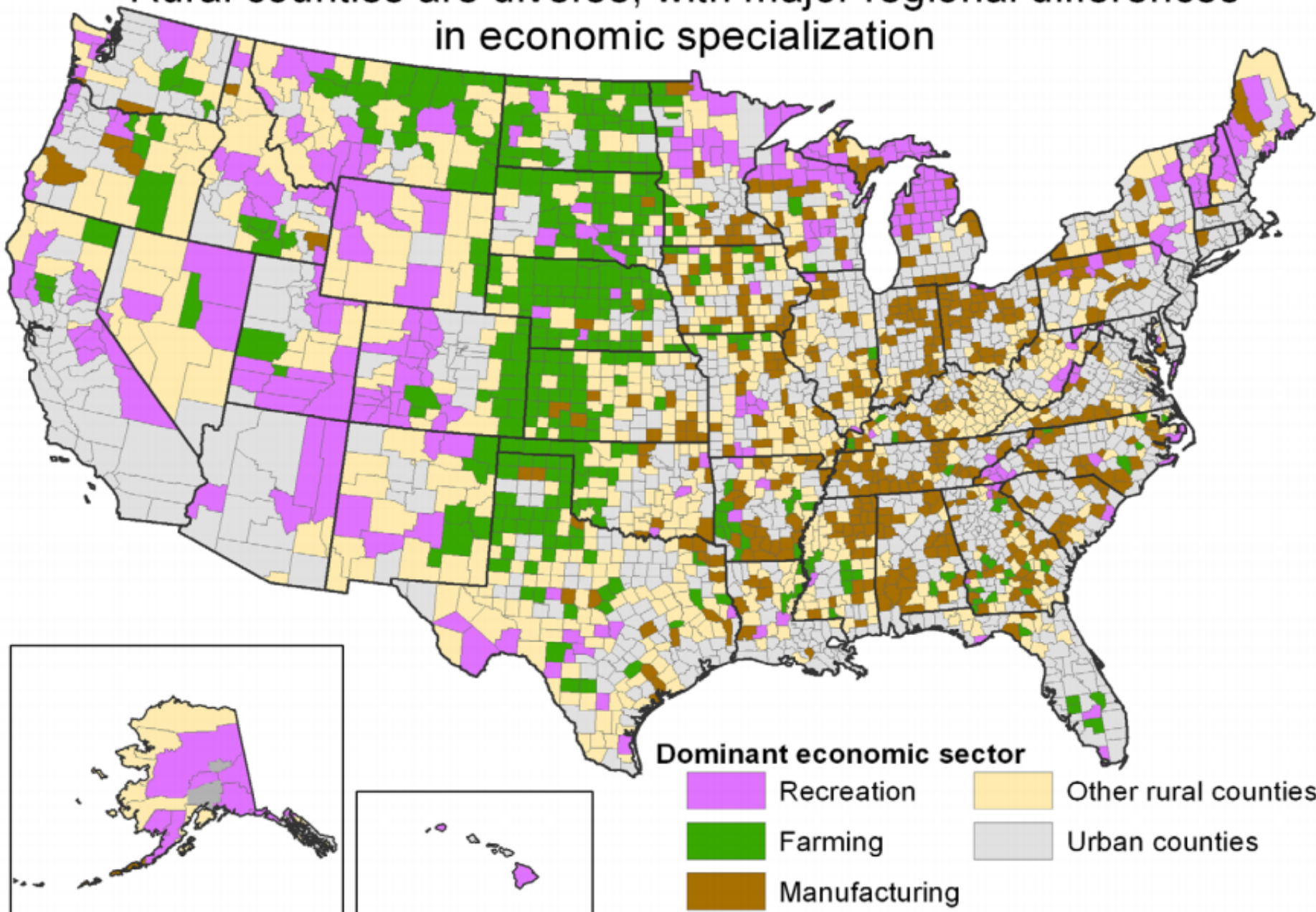


Note: Gray background indicates recessionary periods.

Source: USDA, Economic Research Service analysis of Bureau of Economic Analysis, Regional Economic Information System data.

¹Manufacturing jobs accounted for 11 percent of total jobs (including farm and government) in rural America in 2015; manufacturing jobs accounted for 6 percent of total jobs in urban counties in 2015.

Rural counties are diverse, with major regional differences in economic specialization



Source: USDA, Economic Research Service, using data from the Bureau of Economic Analysis and the U.S. Census Bureau.



EMSI: Changes in mfg

- Manufacturing has added nearly one million new jobs since the end of the recession. A growing share of these jobs require post-secondary education.
- Increasingly behaves like a high-tech industry in that it needs a smaller, specialized workforce
- Employers need workers who blend traditional production skills (machining, welding, fabrication technologies) with engineering skills (process improvement, quality assurance, design)
- Workers who successfully blend these skills receive higher wages and, perhaps more importantly, can move up the career ladder in their companies or transition to other industries.



Aging mfg workforce

FIGURE 5. INDUSTRY AGE BREAKDOWN, 2017





Montana as an example

- 10,000 manufacturing jobs in rural MT could be lost as business owners retire, according to SBA official



Employee ownership

■ Employee-owned businesses

- employee-owned small businesses see an average of 4% to 5% higher productivity levels and more stability and potential for growth. In contrast to traditional businesses, worker co-ops see much lower rates of employee turnover and business closure. They're also known to boost both profits and worker wages.
- millions of baby boomer-owned businesses set to change hands in the upcoming decades
- 40%—of co-ops in the U.S. are born out of traditional workplaces whose owners decide to sell the business to their employees



Policy Academy

- One-third of the states have applied in the last two years to participate in a year-long planning process funded by MEP and coordinated by SSTI and CREC



Potential Focus Areas

- Potential topics related to manufacturing that may be pursued by states include, but are not limited to:

Addressing talent
gaps

Accelerating
business start-ups
and scale-ups

Promoting exports
and diversified
customer-bases

Enhancing supply
chain linkages for
both big and small
companies

Improving economic
development
ecosystem efficiency



Types of Outcomes

- 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

Strategy

- Created an interactive hub for manufacturers to access resources and customized technical assistance
- Developed a statewide manufacturing strategic plan that complements the state's overall economic development strategy
- Coordinated a public-private partnership to advocate on behalf of the state's advanced manufacturing sector
- Secured legislative funding for manufacturing priorities around five high-priority areas

Workforce

- Implemented a postsecondary career and technical education pathways program focused on manufacturing skills
- Began a manufacturing career awareness initiative targeting K-12 students
- Formed an apprenticeship program embedded in the state's MEP center
- Passed legislation to renew and extend a community college initiative that funds manufacturing workforce partnerships

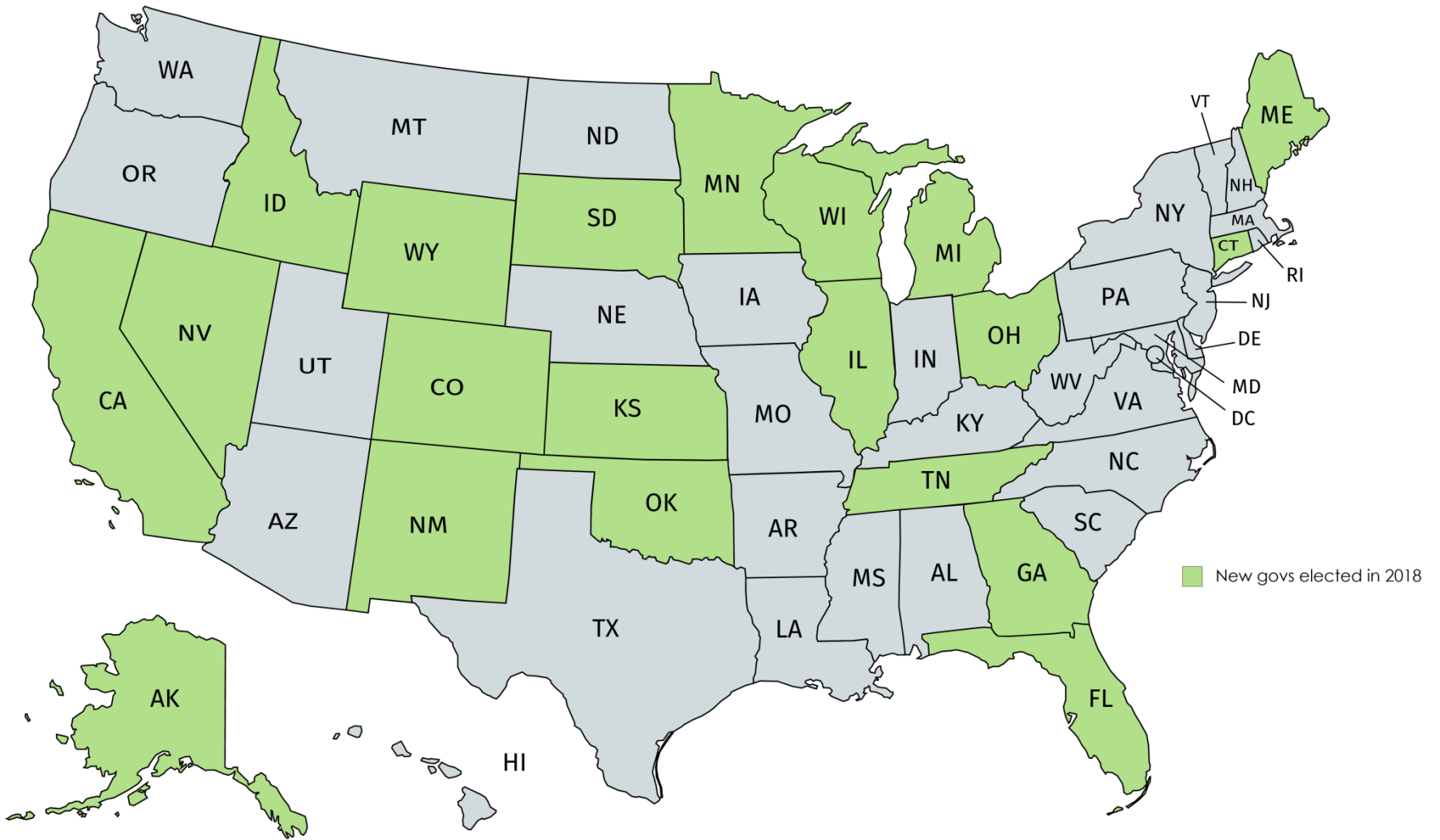
Innovation

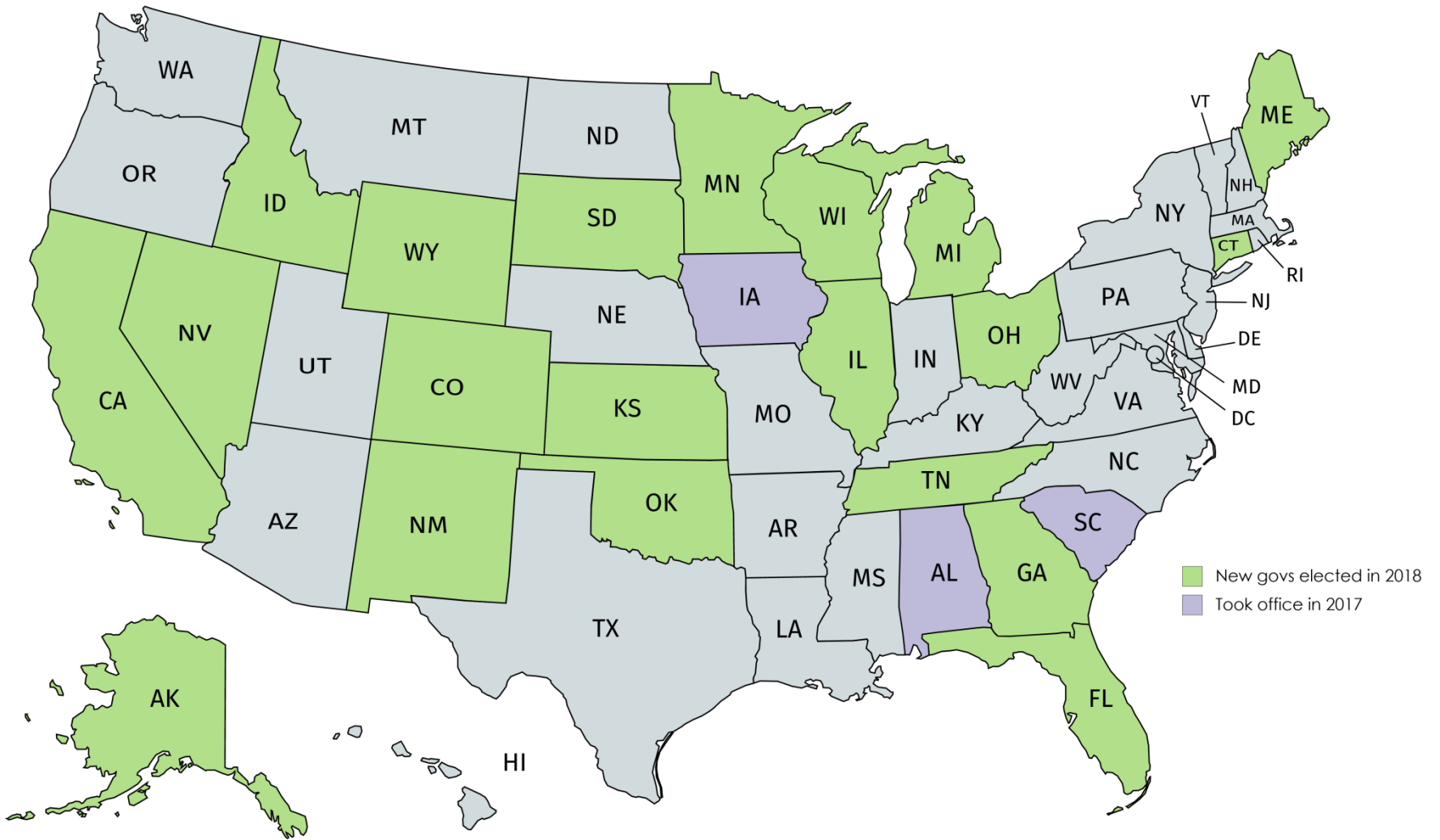
- Led an effort by the state's research universities to drive innovation in the manufacturing sector
- Passed legislation to provide funding for innovation vouchers to offer manufacturers grants to access R&D and other services
- Developed liaison offices at universities to bridge the gap between R&D and industry needs
- Planned an Advanced Manufacturing, Design, and Innovation Center to support innovation amongst small and mid-sized firms

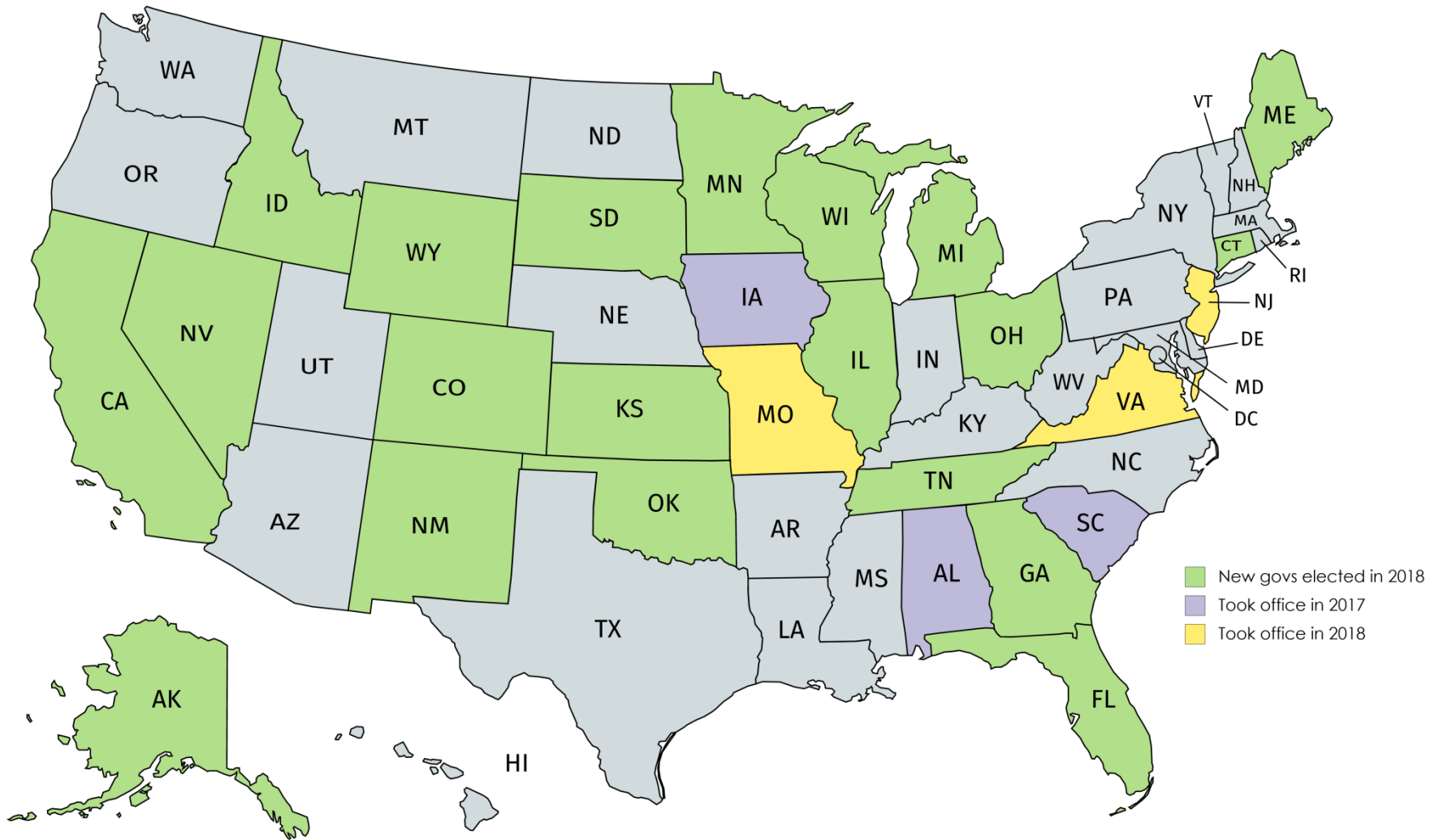


Challenges/opportunities

- 20 newly-elected governors
 - New personalities
 - New priorities
- Hundreds of new state legislators
- Relatively flat state spending on economic development
- Political problems for higher education which serves as host for 20 centers





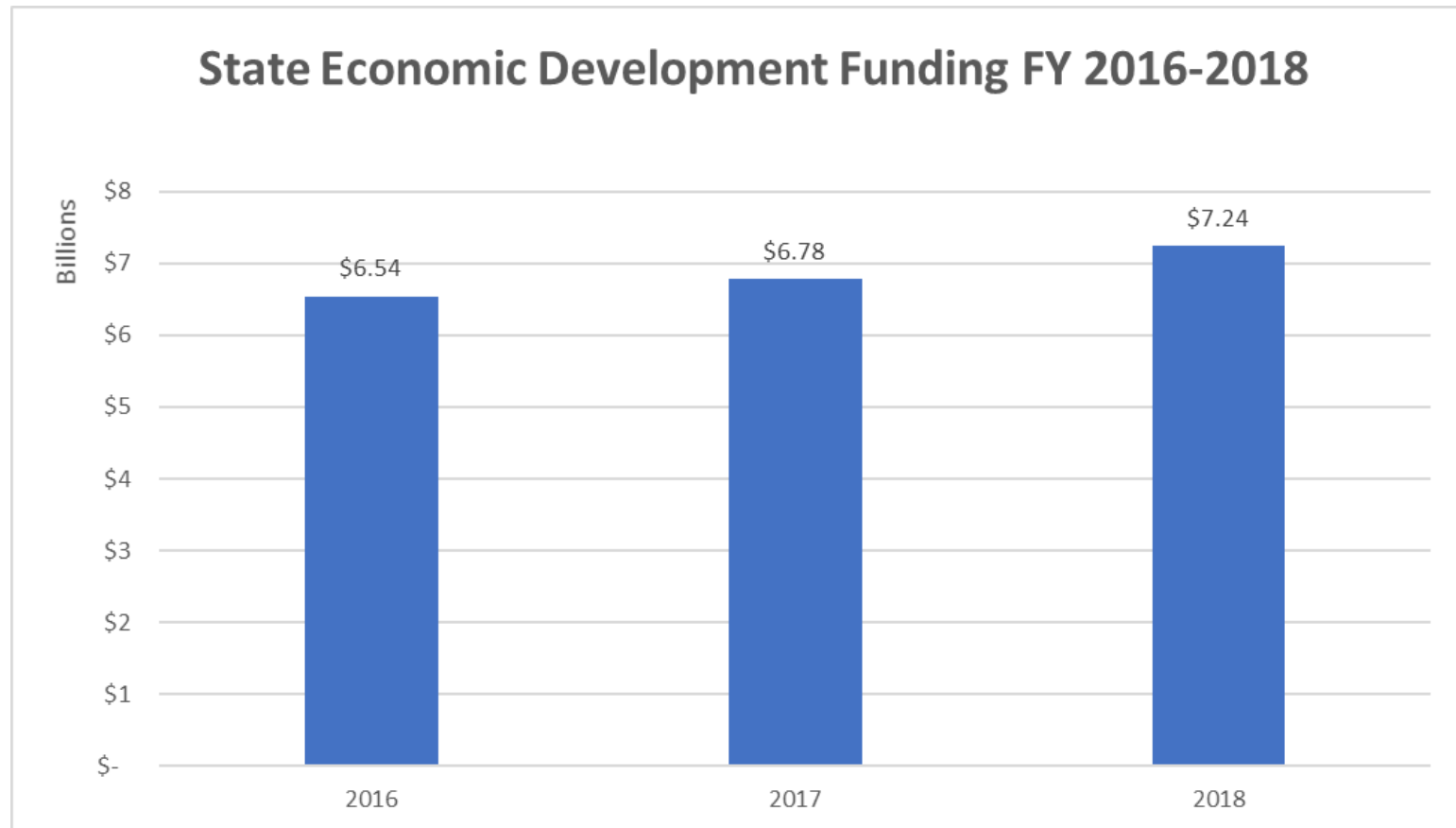




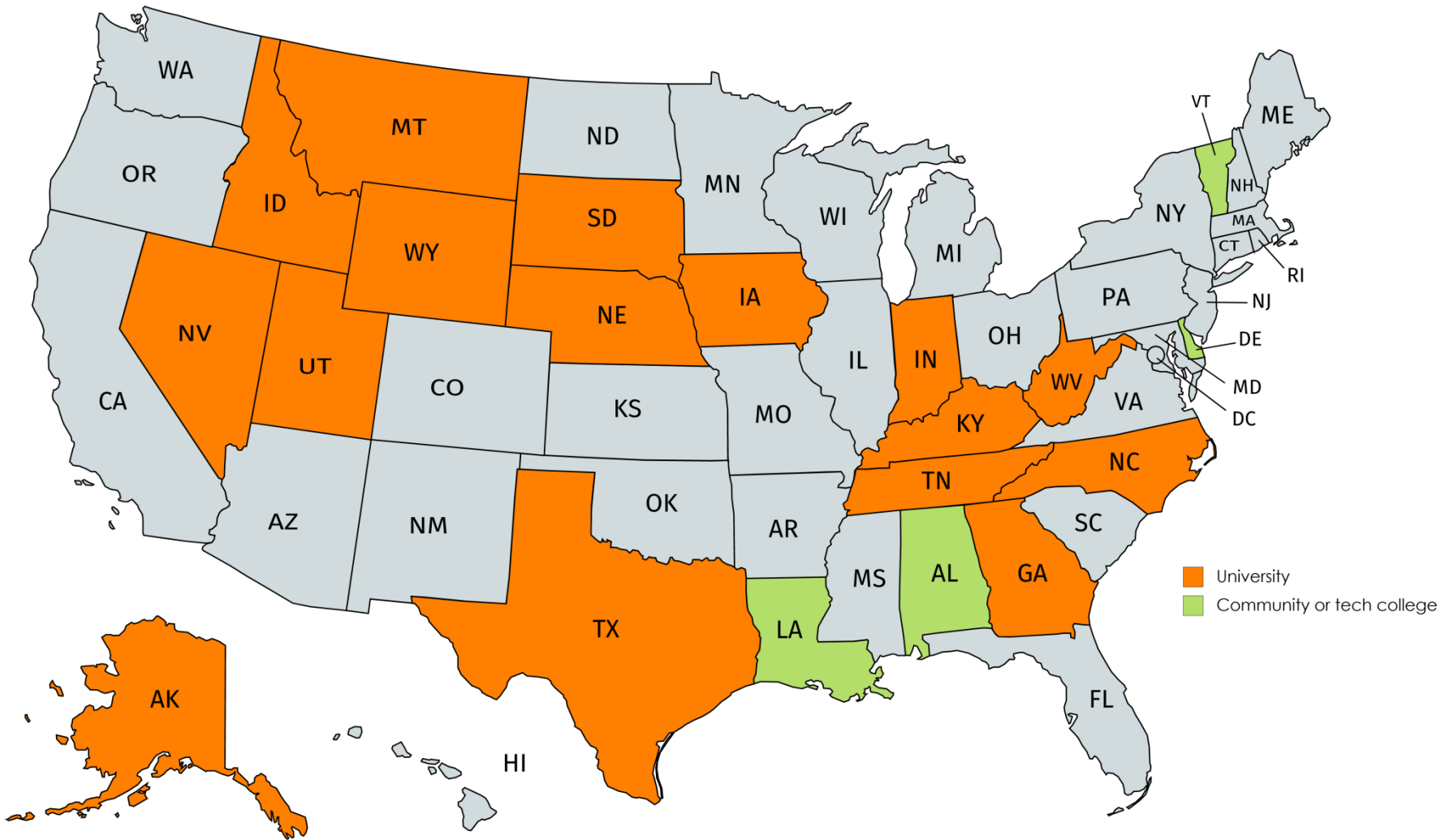
State legislatures

- Hundreds of new legislators
- Only six chambers flipped parties
 - In general, blue got bluer and red got redder
- MN is the only state that has one chamber controlled by Republicans and one chamber controlled by Democrats
 - First time since 1914
- NV is first legislature with majority of women in both chambers

How much do states spend on economic development?



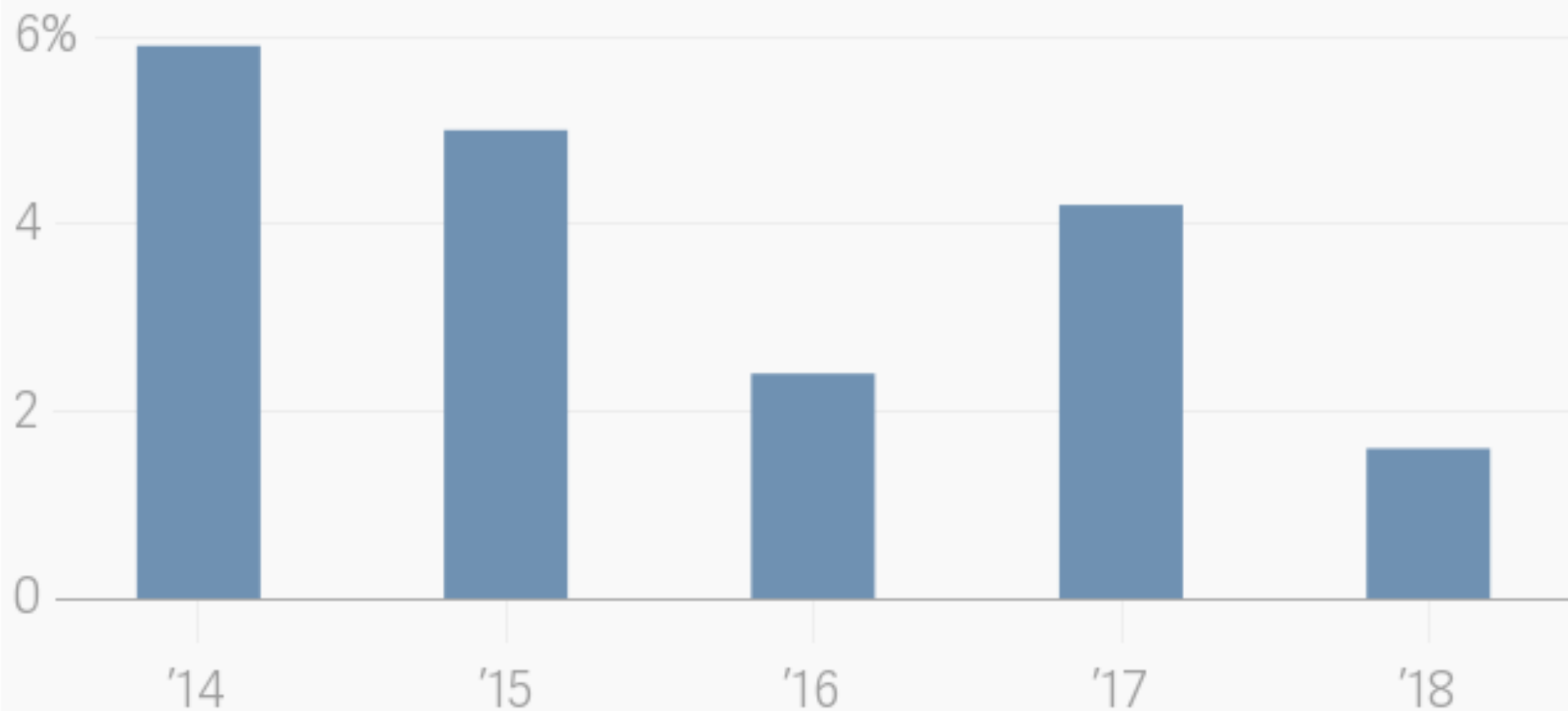
- Source: C2ER State Economic Development Expenditures Database www.stateexpenditures.org





-
- Moody's downgraded its financial outlook for higher education from "stable" to "negative" in late 2017
 - New foreign student enrollment in the U.S. dropped by 3 percent during the 2016-17 school year, and that decline is projected to double this school year, data show. At the same time, universities overseas are seeing increases as high as the double digits.

Year-to-year growth in states' higher-education funding, by percentage





SHEEOA report

- Only six states spend more now on a per-student basis than they did in 2008
- Total per-student funding in 2017 is actually \$2,000 lower, in real dollars, than before the 2001 dot-com crash

Source: State Higher Education Executive Officers Association.



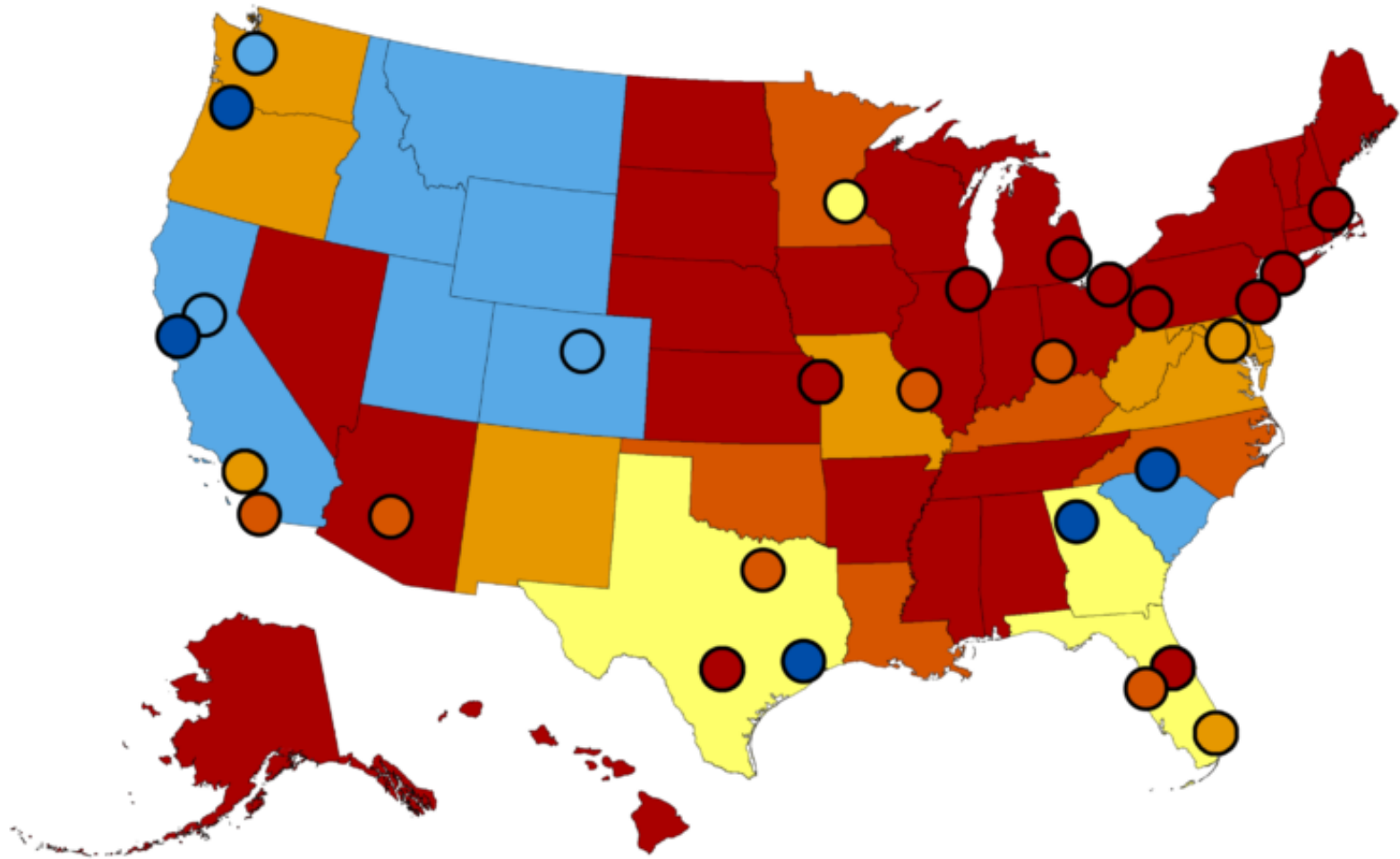
SHEEO report

- For the first time in 2017, the report found, more than half of all states—28—relied more heavily on tuition dollars than on government appropriations to fund public systems of higher education.
- Net revenue from tuition is up 37% since its pre-recession high point (in 2008) and has nearly doubled over the past 25 years.
- Student tuition now makes up about 46% of public colleges' revenue—and SHEEO predicts that during the next economic downturn, it will pass 50%.



One example: IA

	1998	2018
Size of state budget	\$4.36B	\$7.26B
Students at Univ of IA	27,871	33,564
State approp for Univ of IA	\$223M	\$216M

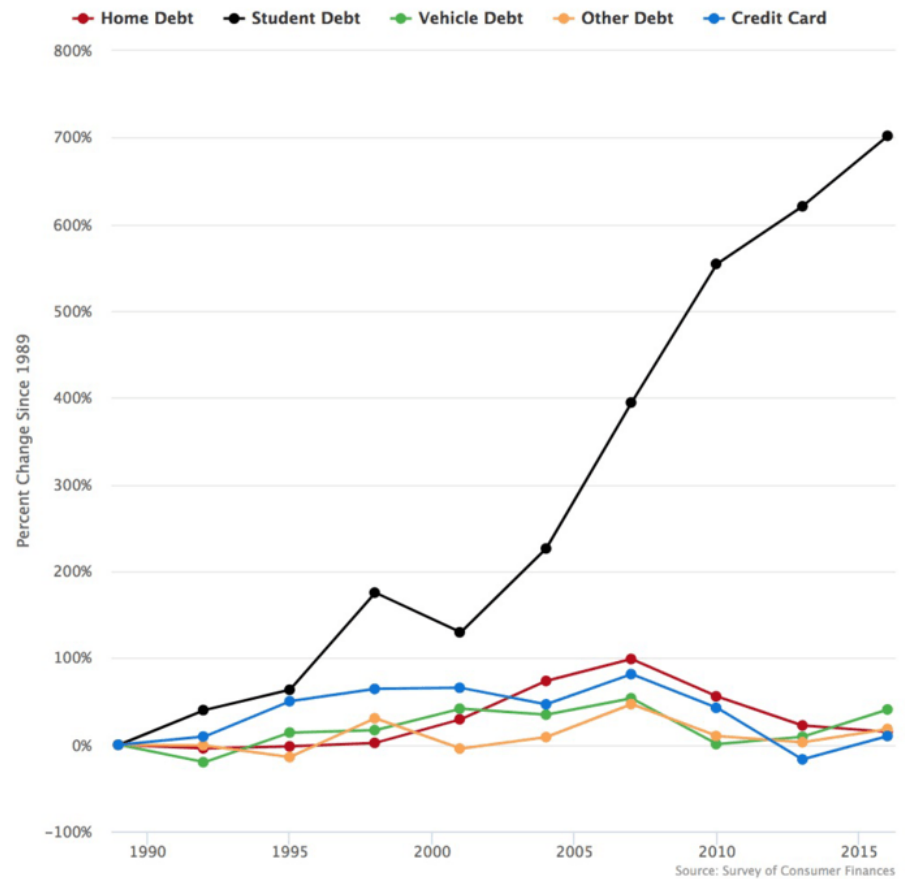


<-15% **-15% to -7.5%** **-7.5% to -2.5%** **-2.5% to 2.5%** **2.5% to 7.5%** **>7.5%**



Growth of student loan debt

Cumulative Percent Change in Mean Debts for Families Under Age 35

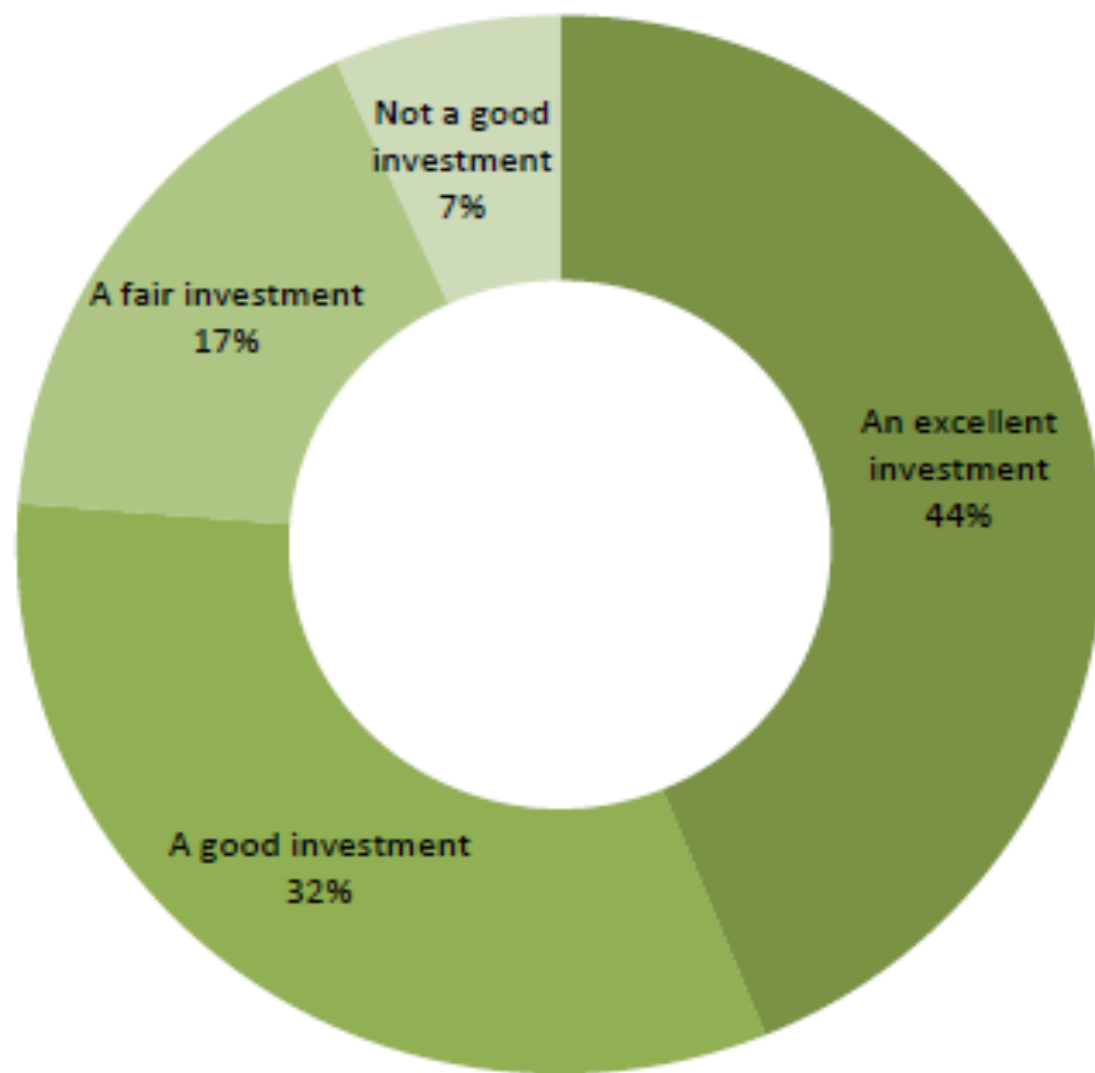




Student loan debt

- A 2018 study from student loan management company IonTuition found that 75% of respondents would rather their employer offer monthly contributions to their student loans over 401(k) benefits.
- Student loan debt is the second largest form of consumer debt in the U.S. — behind mortgage loans.

Figure 2.1: Views towards public investment in higher education





MT vote

- Approves property tax for state's public colleges and universities
- 63% for
- 37% against
- 46 of 56 counties approved the levy



New America poll on higher ed

- A majority of Republicans, 52 percent, believed students should fund their own higher education because it is a personal benefit. Meanwhile, 76 percent of Democrats believed government should spend tax revenue on higher education because it is a good for society.
- Only a quarter of those polled said that higher education was fine as it is.
 - This year's survey dug deeper into that question to discover why people were so dissatisfied. Not surprisingly, the top response to that question, from more than 38 percent of those surveyed, was that college was too expensive.



The next recession

- Economic expansion is about to hit 10 years, which would tie the 1991-2001 record
- Possible things that will end it from NY Times Upshot:
 - Stimulus from tax cuts runs out
 - Fed Reserve miscalculates on interest rates
 - Trade war
 - Corporate debt or emerging markets debt bubble pops



Pew: State budgets are better

- Tax collections in 34 states finally topped their recession-era peaks by the start of 2018, after adjusting for inflation.
- Rainy day funds could cover a bigger share of spending than before the recession in at least 26 states.



But...

- Unexpected surge in tax receipts provided budget relief for many states—may be one-time gains from taxpayers shifting income and payments in reaction to federal tax changes.
- S&P Global Ratings cautions about Medicaid, pension liabilities and economic downturn
- Moody's: 17 states unprepared for moderate downturn
- FL approved amendment requiring 2/3 vote in legislature to increase taxes; rejected in OR



New revenue sources

- Legalization of marijuana
 - PA Auditor General estimated \$580M in one scenario for PA
 - NV collected almost \$70M in first year
- Supreme Court approval of sports betting
 - CT, MS, NY, PA and WV already have legalized
 - American Gaming Association estimates \$3.4B in taxes
- Supreme Court ruling on collection of sales tax on online purchases



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To sign up for *SSTI Weekly Digest* go to:

<http://www.ssti.org>



Workforce Challenges and Solutions



Mary Ann Pacelli
NIST MEP
Acting Division Chief –
Network Learning & Strategic
Competitions Division

MEP National Network -- Workforce Challenges and Solutions

Mary Ann Pacelli, NIST MEP Program Manager, Workforce Development



What MEP is Doing

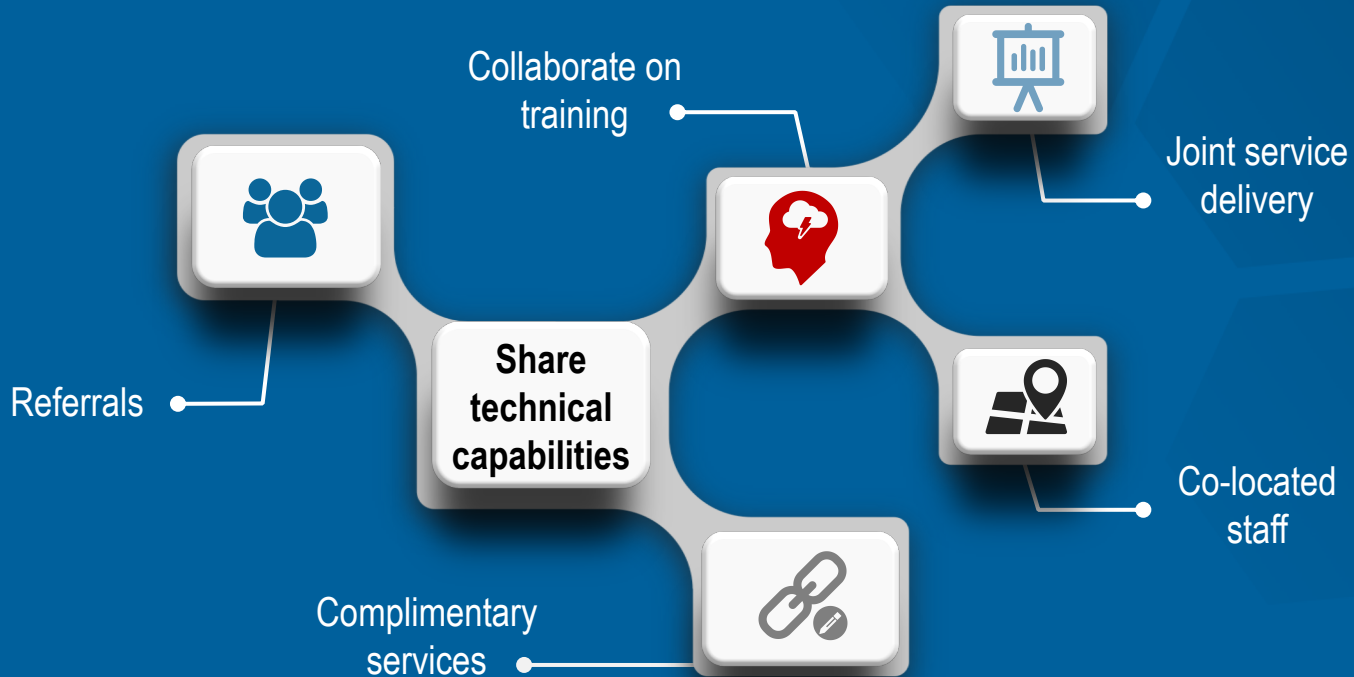
Accelerate the development of industry-led skills strategies that result in a productive workforce for employers.

- 1 Collaborate with Education and Economic Development
- 2 Facilitate education and training for company needs
- 3 Help improve the public's image of manufacturing careers



Education and Economic Development

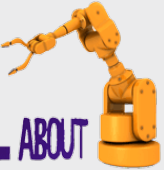
Collaborate on state/federal training funds for manufacturing workforce



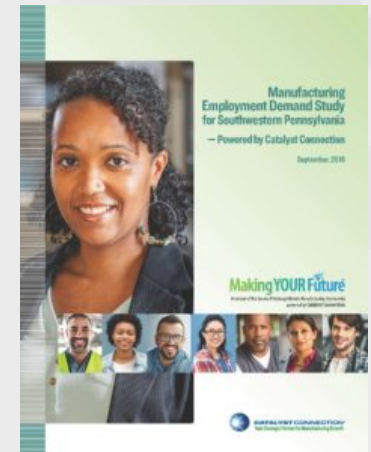


Developing the Future Workforce

WHAT'S
SO COOL ABOUT
MANUFACTURING?



Student Competitions



Industry Workforce Research



Client Growth through Workforce Development

Talent Attraction & Retention
Succession Planning



Layoff Aversion



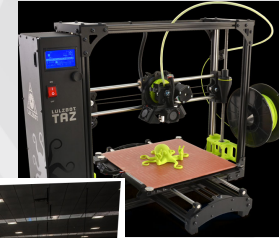
HR Strategy & Performance Management





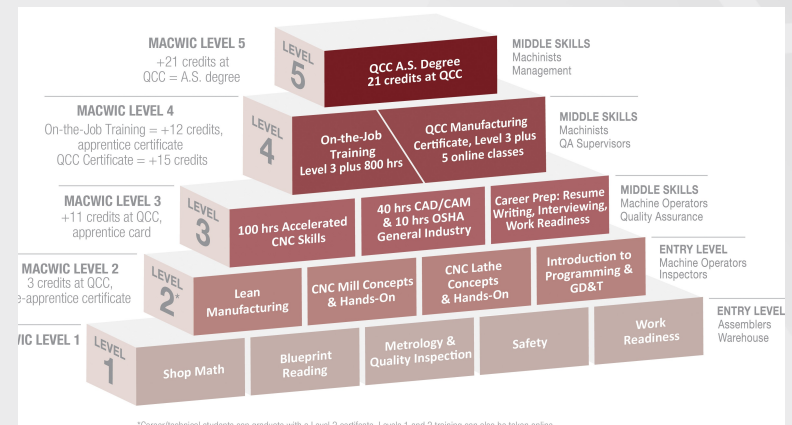
Skills Development

Certifications



Apprenticeship

Career Pathways



*Career/technical students can graduate with a Level 2 certificate. Levels 1 and 2 training can also be taken online.



MEP Center Highlights

- Bootcamps: Short-term, intense training designed to provide qualified entry level candidates to small groups of hiring manufacturing companies.
- State Manufacturing Certification Pathways, developed by industry, implemented in partnership with the MEP Center, State manufacturing Coalition, Vocational schools and Community Colleges
- State-wide Student Video contest – What’s So Cool About Manufacturing (www.whatssocool.org)
- State Workforce Development Industry sector partner for Advanced Manufacturing. Coordinate with State Workforce Development Board, Career and Technical Education, Community Colleges, Universities and other educational providers for career pathways and apprenticeships
- MEPs are sponsors for Customized Apprenticeships at small companies, using multiple training opportunities in rural areas
- Utilize University Students as ‘interns’ on client projects in their area



Workforce Challenges

Discussion Items/Questions

- Resources needed to support each type of initiatives—not all are revenue generating
- Relationships with training providers –CTE, Community Colleges, Universities: How can we develop more positive relationships.
- Impact opportunities: “Getting Credit” for non-revenue/non-project type activities (i.e. What’s So Cool)



Break





MEP Advisory Board Working Group Updates





Supply Chain Development Working Group

- **Committee Members**
 - Board Leadership
 - **Matthew Newman**
 - Board Members
 - **LaDon Byars, Bernadine Hawes, Mary Isbister, Chris Weiser**
 - NIST MEP Support
 - **Dave Stieren, Phil Singerman, Mark Schmit**
- **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

MEP National Network supports DOD Supply Chains in many areas, highlighted by:

- Cybersecurity assistance
- Working with the DOD-sponsored Manufacturing USA Institutes

NIST MEP seeks ongoing Advisory Board perspectives on these MEP National Network focus areas, approaches, challenges



Supply Chain WG Deliberation Highlights

Manufacturing USA Institutes

- Round 1, 2 Awards operating on no-cost extensions in 2019; Round 3 awards operate through Aug 31, 2019
- Initial results and learnings summarized in March 2019 report (distributed to Board in March)
- Ongoing MEP – Institute partnerships evolving

LEAD MEP CENTER		MFG USA INSTITUTE & SPONSORING AGENCY
CA MEP	Round 2 Award	CESMII - DOE
CA MEP	Round 1 Award	Next Flex – DOD
DE MEP	Round 3 Award	NIIMBL – NIST
Illinois Mfg Excellence Center	Round 1 Award	MxD – DOD
Mass MEP	Round 2 Award	AFFOA – DOD
Mass MEP	Round 3 Award	BioFab USA – DOD
Michigan Mfg Tech Center	Round 2 Award	LIFT – DOD
NC MEP	Round 1 Award	Power America – DOE
NY MEP	Round 1 Award	AIM Photonics – DOD
NY MEP	Round 3 Award	REMADE – DOE
OMEP	Round 3 Award	RAPID – DOE
PA MEP	Round 3 Award	Advanced Robotics – DOD
PA MEP	Round 2 Award	America Makes – DOD
TN MEP	Round 1 Award	IACMI - DOE

Embedding MEP into 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 interested in demonstration sites and interactive experiences that help them understand technologies
 - SMMs 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 Institute outputs
 - Local resources (less than a two-hour drive) are particularly helpful for engagement
- NIST MEP / MEP Centers currently planning next phase of collaborations here to support MEPNN Advanced Mfg Tech Solutions services for manufacturers Nationwide

LEAD MEP CENTER	MFG USA INSTITUTE & SPONSORING AGENCY
CA MEP Round 2 Award	CESMII - DOE
CA MEP Round 1 Award	Next Flex – DOD
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OMEPA Round 3 Award	RAPID – DOE
PA MEP Round 3 Award	Advanced Robotics – DOD
PA MEP Round 2 Award	America Makes – DOD
TN MEP Round 1 Award	IACMI - DOE



Additional Updates

- NIST MEP and MEP National Network engaging MxD Institute in Chicago on active collaboration involving cyber awareness and training, along with implementation of operational technology (OT) protections for small defense manufacturing supplier cybersecurity
 - Potential efforts go beyond DFARS requirements
 - Also involves partnership with NIST Information Technology Lab and NIST Engineering Lab
- NIST MEP also engaging U.S. Department of Energy (DOE) regarding potential role for MEP National Network in new DOE-funded Mfg USA Institute being planned with focus on advancing cybersecurity in energy efficient manufacturing

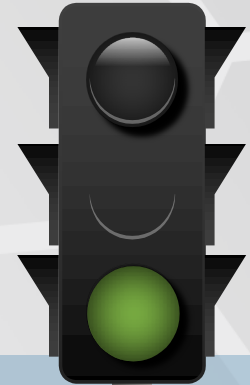


Supply Chain WG Deliberation Highlights

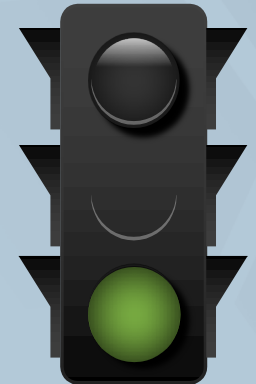
Cybersecurity

Development of Network cybersecurity assistance for small manufacturers continues to progress

- Continues to be spurred by strong partnerships w/DoD programs, OSD – still mainly driven by DFARS requirements for defense sector
- Market still not showing urgency in non-defense manufacturing sectors
- Closely also monitoring other supply chains: e.g. auto, food
- MEP Center Leadership Team using Cyber to demonstrate operation of MEP National Network
- Also engaging NIST Labs on cybersecurity protections for manufacturing OT



MEP Centers
Cyber-in-a-Box
Available



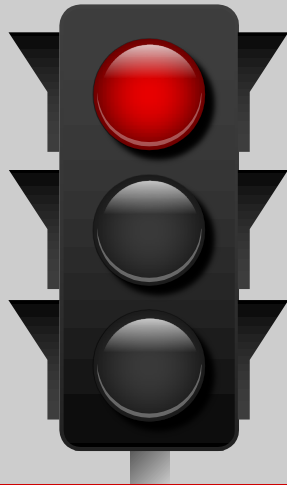
MEP Centers
Nationwide
Participating in MEP
NN Cybersecurity WG



Cybersecurity and U.S. Small Businesses

Small businesses are less likely than larger firms to have strategies in place to:

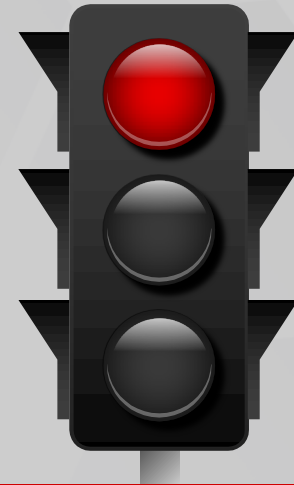
- Prevent cyber attacks,
- detect them early if they do occur,
- reduce the damage, and
- withstand the financial impact of a hack or breach.



70% of Small Businesses Not Prepared for a Cyber Attack*

*According to the 2018 HISCOX Small Business Cyber Risk Report

Small manufacturers are especially vulnerable and attacked in significant numbers.

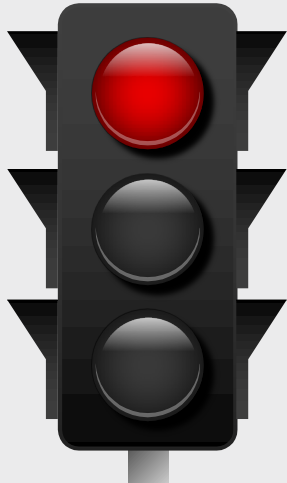


1 in 369 emails received by users in the manufacturing sector are malicious. The 3rd highest rate among key industry sectors.**

**From the Feb 2019 Symantec Internet Security Threat Report

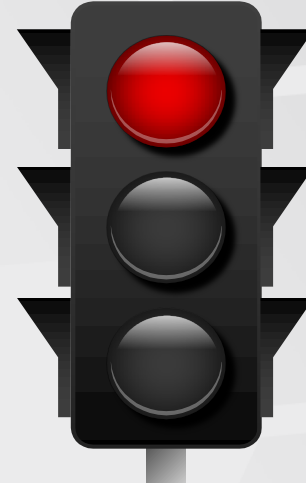


Cybersecurity and U.S. Small Businesses



A DoS or DDoS attack on average costs a small business \$120,000*

*Bulletproof Annual Cybersecurity Report 2019



Small businesses invest less than \$500 per year in Cybersecurity products .**

**From the Juniper Research 2018 Study



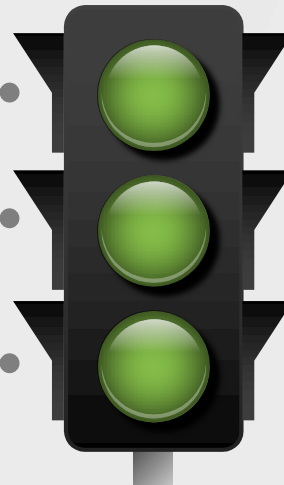
MEP National Network Progress: Cybersecurity Assistance Practice

June 2019

>3,100 Small
manufacturers served

>530 projects
conducted by MEP NN
since 2014

~200 Awareness &
Training Events



19 MEP Centers doing OEA Cyber
project work with FY17, **18** OEA funding
at ~\$8.8M (FY19 OEA awards
competition in process)

MEPNN Cybersecurity WG Workshop
held in Orlando, May 2019

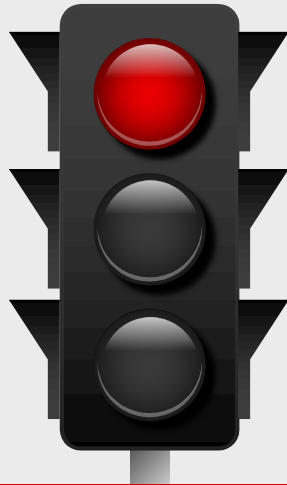
NIST Handbook 162 downloaded
~52,000 times since Nov 2017
NIST MEP publication

Expanding Capabilities across
Network

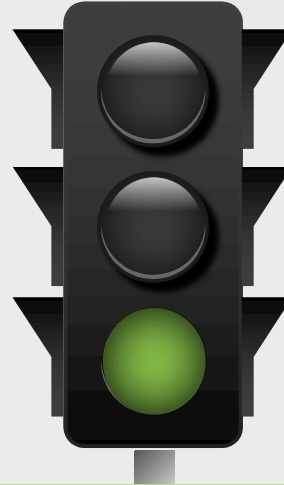
NOTE: NISTIR 7621 – Small Business Guide has also been
downloaded over 125,000 times since publication in Nov 2016.



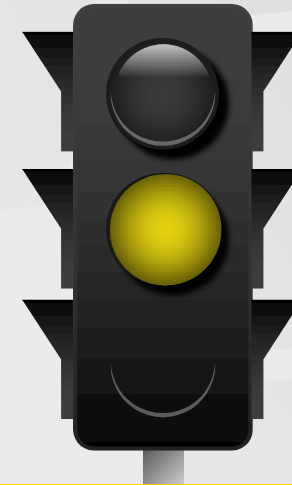
MEP National Network Cybersecurity Progress Summary – June 2019



Defense Contractor
Cybersecurity
Implementation Still Low



46 MEP Centers
in Cybersecurity WG



41/51 MEP Centers
with Cyber Practice

The MEP National Network has made significant progress ... and continues to move forward addressing important needs



Additional Updates

- NIST MEP – Office of the Under Secretary of Defense for Research and Engineering ongoing partnership focused on defense manufacturing supply chain cybersecurity awareness and technical assistance
 - NIST MEP NOFO released to MEP NN in April 2019; closed May 22
 - NOFO review and selection process in progress
 - Anticipate NIST MEP funding award in Summer 2019 of >\$1M to MEP Centers
- NIST MEP engaging collaboration of defense and aerospace OEMs on behalf of MEP NN in development and implementation of common approach to cyber from OEMs for supply chains – called Shared Assist
 - Includes Lockheed, Northrop Grumman, Boeing, Raytheon, 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



Additional Updates

- DoD announces new Cybersecurity Maturity Model Certification (CMMC) Program
 - DoD states Cybersecurity self-certification is “not working”
 - DoD contractor info systems to be certified compliant by 3rd party
 - Planned implementation by early 2021
- NIST MEP working with DoD to learn details of this future new policy, including implications of its implementation
 - Will provide guidance to MEP National Network approach



Executive Committee Working Group

- **Committee Members**

- **Board Leadership**

- **Bernadine Hawes, Chair of MEP Advisory Board**
 - **Matt Newman, Vice-Chair of MEP Advisory Board**

- **Board Members**

- **Mitch Magee**
 - **George Spottswood**
 - **Pat Moulton**

- **NIST MEP Support**

- **Carroll Thomas, Cheryl Gendron, Phill Wadsworth, Wiza Lequin**

- **Deliverable**

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 **May 2, 2019**
- Supporting/Mentoring New Members
 - Three new members over the next few months
 - *Request for Mentors*
- Next Face-to-Face meeting
 - September 15, 2019 – At the MEP National Network Summit
 - Board Dinner, Saturday, September 14, 2019
 - Meeting with Center Leadership Participation



Discussion Topics for the Board

- **Center Board Outreach Program**
 - Increase strength of relationships between MEP Advisory Board (MAB) and Center Boards
 - Each MAB Member will reach out to local Center Board Member
 - Open up dialogue with Center Board
 - Attend one board meeting (virtually) for each Center yearly



Future Meeting Schedule

2019

**Sunday,
September 15, 2019**

Atlanta, GA

In conjunction with the 2019 MEP
National Network Summit

2020*

Late February/ Early March
Washington, D.C.

Middle of June
Location TBD

Middle of September
In conjunction with the MEP National
Network Update Meeting and FORME
Best Practice Conference

*Timing Subject to Change



Thank You

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