Tool Building: Manufacturing Communities Ecosystem Metrics (MCEM) Project Statement

Why is a MCEM Tool necessary?
Manufacturing communities around the country, either federally designated or not, know that manufacturing has a strong and positive ripple effect on local and regional economic development. While both the public and private stakeholders who make up these communities want to improve their manufacturing ecosystem of support, they are also unclear about what constitutes a thriving manufacturing ecosystem. Without a MCEM tool to understand the major components and relationships that drive success in manufacturing ecosystems, both federal and regional stakeholders lack the ability to design and implement appropriate interventions that promote sustainable development; development that includes economic innovation, inclusive equity, environmental sustainability, and security. As a result, efforts to support local manufacturing sectors and economies fail to achieve their full potential. Both public and private actors need an open source MCEM tool that relies on public data and a playbook of interventions to determine feasible and mutually beneficial short and long-term community driven objectives. Creating such a MCEM tool will enable communities to better design appropriate programmatic and other interventions in pursuit of these objectives and align activities across stakeholders to strengthen manufacturing ecosystems, manufacturing, and communities.

How will the MCEM Tool help stakeholders achieve objectives?
The MCEM tool will incorporate an evolving, open-access set of metrics for public and private manufacturing community stakeholders to:

1. Identify the major component parts of a thriving manufacturing ecosystem
2. Identify how best to measure each of those component parts and the ecosystem as a whole
3. Identify gaps in how to measure the component parts and the ecosystem as a whole
4. Identify how best to bridge gaps in measurement and performance to inform the efficacy of interventions toward desired outputs and outcomes
5. Identify a playbook of targets and interventions most likely to improve the component parts and the ecosystem as a whole

How will the MCEM Tool differ from existing benchmarking and metric initiatives?
This project seeks to co-create a novel, community based data infrastructure around manufacturing ecosystem health and capacity that can serve as a common language for entities to use to align interests and actions. Many ongoing projects provide indicators for regional economic health, such as the Kauffman Foundations Entrepreneurship Index, the US Cluster Mapping Project, Economic Innovation Group's Distressed Communities Index, and the ITIF's New State Economy Index. These existing resources and others like them primarily provide assessments of community level economic health that local stakeholders can use to identify regional weaknesses and strengths. However, manufacturing community stakeholders still need better metrics, roadmaps, and playbooks to focus their efforts, identify regional collaborators, align incentives across multiple public and private entities, and implement adaptive and dynamic interventions.

This project seeks to build on existing collections of metrics and measures used to assess "thriving" or "distressed" communities to 1) identify the metrics most relevant to manufacturing ecosystems and 2)

bridge the gap between descriptive metrics and actionable measures. As manufacturing ecosystems increasingly involve multiple public and private entities (from firms of different sizes, to regional economic development organizations (EDOs,) Manufacturing Extension Partnerships (MEPs), and state governments to name a few), this project seeks to use data and metrics to create a common language that entities with different interests and incentives can use to align activities.

To accomplish this goal, the following initial tasks and workflow have begun:

Task 1: The project began by organizing its efforts using the 6 designation criteria areas of a previous [Department of Commerce program called IMCP](#) to frame an assessment of what types of metrics and data we have and what metrics and data we need to create. Starting with one of the 6 areas, Workforce and Training to establish a proof of concept, we have begun to identify nodes and subnodes of workforce activities relevant to a thriving regional manufacturing workforce and training ecosystem. An additional description of this activity is described after this listing of initial tasks.

Task 2: Build case studies of what makes up thriving regional manufacturing ecosystems and benchmark these ecosystems against a) stated state objectives, b) stated regional objectives, c) local EDO organizations and initiatives (including MEP centers), and d) the metrics and measures gathered from Task 1.

Task 3: Synthesize a set of best practices from the results of the first two Tasks to understand the nature of successful programs and the mix of regional actors necessary to achieve success.

Task 4: Iterate on the best practices from Task 3 within this project and with community stakeholders to create a validated, understandable, and executable roadmap and playbook with a set of usable metrics as described above.

What are recent and next steps for the project?

Who are collaborators who can help co-create the MCEM Tool?

Task 1 Has Begun: Because of the unprecedented investments in US manufacturing, it is more important than ever to increase the efficiency and effectiveness of federal and other investments in manufacturing communities. An important outcome of this project is to enhance the impact of federal investments in manufacturing communities by developing a consistent and increasingly accurate understanding of what constitutes the best interventions to produce a thriving manufacturing community. Presently, federal agencies help manufacturing communities thrive by providing agency resources in the form of assistance, funds, and incentives; however, manufacturing communities often struggle to effectively and efficiently utilize these disparate resources. Similarly, it is hard for federal agencies to understand many of the key actors in these communities and their individual (and intersecting) needs and values. Regional metrics can allow manufacturers to provide, aggregate and synthesize data that they may not be aware of or might be otherwise hesitant to disclose. Such disclosure can add value to manufacturers and their ecosystem supporters in understanding the activities of regional peers, assets that are present in their region that they can benefit from, what is lacking in-region, and where gaps and opportunities exist. Furthermore, such disclosures may help federal agencies evaluate, in real-time, their grantee's performance. A common understanding of regional manufacturing participants and health will also enable federal agencies and

local communities to drive more strategic and targeted investments in the areas most needed. This common understanding will also likely empower local manufacturing communities to better articulate the impact of investments made in their community to their constituents.

In early 2022 to open the conversation with a national set of stakeholders, AMCC and NIST MEP co-convened a number of key public data providing agencies and players to discuss addressing that need. In the meeting we discussed how we build an open source roadmap for providing manufacturing community leaders with a set of useful indicators and metrics they can use right away and improve upon over time.

Here is a link to the attendee list, notes, and recording.
📁[AMCC NIST MEP Discussion on Community Metrics](#)

Since then, a small group of stakeholders have been meeting biweekly to advance the work. Led by NIST MEP and AMCC, these conversations include key federal agencies. As of February 2023, representatives from DOC's EDA, DOD, NSF and DOE are frequent attendees as well as the Center for Regional Economic Competitiveness (CREC). AMCC is working to include DOL, SBA and other key stakeholders in future discussions.

Task 2 Has Begun: Because of EDA's support of AMCC's regional visits to expand its national manufacturing community of practice, AMCC convened a hybrid virtual/in-person workshop in January 2023 with Utah's manufacturing community stakeholders. Part of those meetings included the launch of the first beta test of a partition of the MCEM tool. As a result of the workshop, the Utah Manufacturers Association (UMA) agreed to spearhead data collection on the workforce and training module of the MCEM project. The MCEM project team asked UMA to gather data on the following questions:

1. Who are the stakeholders or groups of stakeholders addressing various activities and sub-activities in your region?
2. What initiatives and programs are they running?
3. What key metrics are being used to measure outputs and outcomes?

UMA appears well-positioned to lead the beta test work because it has already mapped workforce stakeholders in the region. To complement their efforts, UMA is coordinating with the state of Utah's Department of Workforce Service to gather metrics associated with its regional workforce stakeholders. UMA is also collaborating with higher education representatives from Davis Technical College to identify relevant programs associated with workforce development.

Using AMCC's regional visits as a conduit for additional beta tests, the MCEM project team is in conversation with stakeholders in Connecticut, Florida, Rhode Island, North Carolina, Massachusetts and Georgia. The project team hopes these regional tests from various geographic regions will help the project team better understand the challenges and complexities that will be required for a useful ecosystem metrics tool.

Early challenges identified in conversations with potential beta testers include:

1. Variance in the regions' hierarchy among its consortia of stakeholders;
2. Regional willingness to participate based on past experiences with similar metrics projects;
3. Transformation of pre-existing work and data in a region to inform the MCEM model;
4. Apprehension related to the scope of the project and work required to gather the data.

The MCEM project team is working to solve these challenges and others by providing a more structured framework for regions to gather necessary information, understanding and translating work that has already been performed in the region to apply to the MCEM model, and working with regional stakeholders to identify the organizations most suited to collaborate on the beta test in each region. AMCC and NIST MEP are also working to frontload beta test work with communities prior to an in-person workshop to maximize the effectiveness of the regional in-person workshop.

More work will need to be done to support beta test communities as they understand the requirements and eventual benefits of supporting the development of the MCEM tool.

This project takes inspiration from the US Cluster Mapping project, and will allow for both *regional* and *cluster* representations of manufacturing ecosystem activity, where specific nodes of activity define the manufacturing ecosystem cluster. We also look to partner and/or leverage federal investments under way in the development of related tools. For example, EDA is helping to develop the Economic Development Capacity Index (EDCI) which brings together 53 indicators across five major capacity areas: Financial, Human Capital, Industry Composition, Infrastructure, Institutions and Partnerships.

Soon we hope to advance the work with a survey structured around questions like those above.

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