THE CENTURY FOUNDATION

9 Steps to Revitalize America's Manufacturing Communities

Action 7: Invest in Innovation

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Rationale

Strong manufacturing communities depend on the ability of firms to innovate. Innovation is a vital component of a sustainable manufacturing future, because the new products and processes that result drive growth and create new wealth. And because being close to the production process can support innovation, a focus on innovation can be a manufacturing retention strategy.

State investments in innovation should focus on strengthening regional industrial clusters. Building resources to support research and development (R & D) can be a cost-effective way of supporting networks of manufacturers and anchoring them to the region. R & D creates value that regions can capture and keeps firms competitive in the global market. Yet small- and medium-sized firms, which comprise a growing share of the manufacturing base, often lack R & D capabilities of their own. To be effective, states must carefully direct resources to activities that will create growth among firms that operate in the region and retain investments in a thriving workforce. States can build out existing resources to establish an industrial commons of public resources that all local manufacturers can tap.

Lastly, states should anticipate the impact of innovation on the manufacturing workforce and take steps to both support job-creating innovation and to mitigate job losses from technological changes in the production process.

Key Actions

- Build capacity for innovation to strengthen regional industrial clusters. States can do this by supporting manufacturing innovation through formal, funded relationships with state universities to engage in applied research. For example, a group of Ohio's institutes originally formed through its Edison program, such as the University of Akron's Edison Polymer Innovation Center and Ohio University's Edison Biotechnology Institute, deliver an applied research capacity that can create new marketable technologies and work with existing firms to solve engineering and research challenges. State

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programs can provide cost-share grants to such projects and centers in support of the fourteen federally funded regional Manufacturing USA Institutes, which are developing next generation advanced manufacturing, often in partnership with higher education.[1]

- Manufacturing extension programs (MEPs) provide another vehicle for innovation that strengthens regional manufacturing infrastructure.[2] MEPs already excel at assisting individual manufacturers with a wide variety of competitiveness issues. States should increase capacity and specifically task MEPs with identifying and leading process and supply chain innovation strategies that could benefit whole clusters in manufacturing industries that are vital to the region, thereby giving small and medium manufacturers a greater role in the state's innovation ecosystem.

- Choose investments to help manufacturers to overcome a specific hurdle in the development process of an otherwise marketable product. Clearing a production hurdle for a good that has (or can generate) consumer demand enables firms to expand. Innovation vouchers and research and development tax credits are two forms of state support to address these challenges.

Issues to Remember

- Innovation can take the form of either product development or changes in the manufacturing process. Product innovation tends to be job-creating—at least within the scope of a given firm—because it results in a new or better product that the firm must scale up to produce. Process innovation is important in a different way, because it increases productivity, which is vital to sustained economic growth and keeping manufacturers competitive and viable.

- States should focus on helping firms to identify how new technologies and automated production strategies can augment workers instead of replacing them. Innovation investments should require that technology design take interactions into account and require state-funded innovation projects to partner with education and training institutions and employers to develop specific trainings for new technology. A good example is the federally funded Lightweight Innovations for Tomorrow in Detroit, which has developed multiple educational programs to prepare students and incumbent workers for careers in advanced manufacturing focusing on lightweight metal.[3]

- States must also tackle the fact that process innovations can cause job losses. Improving layoff notification and strengthening unemployment insurance are some important state actions.

- Investing in manufacturing innovation is a key component for retaining and reshoring strong industry clusters. Because proximity to the physical manufacturing process enables a clearer understanding of challenges and better problem-solving, manufacturers that offshore the production portion of their work often lose their competitive edge.

Recent Progress

- Rhode Island provides innovation vouchers of up to $50,000 for small manufacturers to partner with Rhode Island universities, research centers, or medical centers to develop and commercialize a new product.[4] Unlike R & D tax credits, the program focuses on small companies who have the most trouble accessing scientific and engineering expertise. Similarly, MassDevelopment is a new voucher program to provide grants to start-ups and small- and medium-sized firms to use University of Massachusetts labs to help develop product prototypes.

- The Massachusetts Mass Life Sciences program provides tax incentives to companies engaged in life sciences research and development, commercialization, and manufacturing in Massachusetts. More than 200 awards totaling over $181 million have been awarded to life sciences companies across the state. Massachusetts also has committed up to $20 million for five years for life sciences projects that are part of the Manufacturing USA National Institute for Innovation in Manufacturing Biopharmaceuticals (NIIMBL)[5].

Model Programs

- Manufacturing extension partnerships help firms to problem-solve by connecting small- and medium-sized companies that lack their own research departments or engineers to a team of experts with the skills to meet their needs. Ohio has seven MEPs located strategically across the state funded by a combination of federal and state funding, as well as by fees from manufacturers that use their services. Cleveland-based Manufacturing Advocacy and Growth Network (MAGNET) helps firms to overcome hurdles in product development or marketing, and gives them access to capital resources such as CNC machines, which smaller firms may not own.[6] MAGNET also supports regional manufacturing hubs by linking firms to supply chain partners. MEPs could be tapped to build regional manufacturing clusters.

- The Massachusetts Technology Collaborative's Massachusetts Manufacturing Innovation Initiative (M2I2) runs multiple projects that bolster state and federal investments for regional innovation.[7] The M2I2 program provides capital cost-shares for Massachusetts projects within Manufacturing USA institutes, targeting photonics, robotics, fabrics, and flexible electronics. Similarly, the Mass Ramp-Up program provides supplemental funding to firms awarded federal Small Business Innovation Research or Small Business Technology Transfer grants to commercialize technologies developed through federal research.[8]

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Notes

1 "Institutes," Manufacturing USA, accessed April 1, 2019, https://www.manufacturingusa.com/institutes.
2 "Manufacturing Extension Partnership (MEP)," National Institute of Standards and Technology, accessed April 1, 2019, https://www.nist.gov/mep.
3 See the Lightweight Innovations for Tomorrow website at http://lift.technology/.
4 "Innovation Incentives," Rhode Island Commerce Corporation, accessed April 1, 2019, https://commerceri.com/innovation-incentives/.
5 "Massachusetts Selected to Partner in Biopharmaceutical Manufacturing Innovation," Office of Governor Charlie Baker and Lieutenant Governor Karyn Polito, Commonwealth of Massachusetts, December 19, 2016, available at http://www.masslifesciences.com/wp-content/uploads/NIIMBL-121916.pdf.
6 See the MAGNET website at https://www.manufacturingsuccess.org/.
7 See the Massachusetts Technology Collaborative website at https://masstech.org/.
8 "Massachusetts Ramp-Up Program (MassRamp) Frequently Asked Question (FAQ)," Massachusetts Life Sciences Center, accessed April 1, 2019, http://www.masslifesciences.com/wp-content/uploads/MassRamp-FAQ-02-08-17.pdf.