U.S. HOUSE OF REPRESENTATIVES
SUBCOMMITTEE ON RESEARCH AND TECHNOLOGY
COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY

HEARING CHARTER

Building Regional Innovation Economies

Wednesday, June 9, 2021
10:00 a.m. EDT – 12:00 p.m. EDT
Zoom

PURPOSE

The purpose of this hearing is to explore the role of the Department of Commerce, and particularly the Economic Development Agency (EDA), in supporting the development of regional innovation economies, and the opportunities for and challenges to expanding this role, including in partnership with Federal science agencies.

WITNESSES

- **Mr. Dan Berglund**, President and CEO, SSTI
- **Professor Erica R.H. Fuchs**, Department of Engineering and Public Policy, Carnegie Mellon University
- **Ms. Paula Nas**, Director, Office of Economic Development, University of Michigan-Flint
- **Hon. Elizabeth Hutt Pollard**, Secretary of Science and Innovation, State of Oklahoma

OVERARCHING QUESTIONS

- What are the critical elements and who are the necessary partners in developing a successful strategy for local and regional innovation economies?
- What is the role of the Federal government, and in particular the Economic Development Agency (EDA), in supporting the development of local and regional innovation economies?
- How can research universities strengthen their role in helping to anchor local and regional innovation economies?
- How can efforts to build regional innovation economies include equity and shared prosperity as a priority?

OVERVIEW

For decades, Silicon Valley, Boston's Route 128, and a short list of other regions have garnered international attention for seeding dynamic high-tech companies that bring jobs and wealth to the region. Policymakers across the United States have tried to replicate this success by supporting the development of local, state, and regional innovation economies through the funding of growth centers, innovation clusters, and technology hubs. These efforts generally involve investments in infrastructure—such as science parks or manufacturing facilities—and/or programs that support commercialization, workforce development, entrepreneurship, and industry maturation.

Typically, local governments focus on certain industries, such as automobiles, batteries, and robotics, in which they have some underlying strengths or infrastructure. New Mexico, New York, and Ohio have all created public private partnerships to develop R&D centers, awarded cash to build manufacturing facilities, and gathered funds to provide early-stage capital for start-ups. Since 2006, the Michigan Economic Development Corporation has worked with the Federal Government to build up an advanced battery cluster in the state.

The Federal Government has long played a supportive role in regional innovation, both directly and indirectly, through funding research at universities, location of Federal R&D facilities, co-funding construction of research parks, and its purchase power (i.e. military procurement). Many Federal agencies have programs that contribute to regional economic development, including the Department of Energy (DOE), the Department of Labor, the Small Business Administration, the Department of Commerce, the Department of Health and Human Services, and the Department of Defense. For example, DOE's Energy Program for Innovation Clusters, known as EPIC, is devoted to developing technologies and systems for energy-efficient buildings.[1] However, to date, the funding for these programs has been relatively small.

Responding to the National Academy of Sciences report, *Rising Above the Gathering Storm*,[2] that argued the United States was ceding leadership in advanced technologies, Congress created new authorities and programs in the *America COMPETES Act* in 2007 and the *America COMPETES Reauthorization of 2010* to boost regional and local innovation economies across the United States. Most notably, in the 2010 Act (P.L. 111-358) the Committee on Science, Space, and Technology led the authorization for a new Regional Innovation Program (Sec. 603), now known as Build to Scale, and a new Office of Innovation and Entrepreneurship (Sec. 601) at the Economic Development Administration.

THE ECONOMIC DEVELOPMENT ADMINISTRATION

The Economic Development Administration (EDA) was created with the passage of the *Public Works and Economic Development Act (PWEDA) of 1965*. The mission of the agency is to lead the Federal economic development agenda by promoting innovation and competitiveness and

[1] https://www.energy.gov/technologytransitions/initiatives/energy-program-innovation-clusters
[2] https://www.nap.edu/catalog/11463/rising-above-the-gathering-storm-energizing-and-employing-america-for

preparing American regions for growth and success in the worldwide economy. At its peak in 1979, funding for EDA was 0.25% of total GDP.[3] In comparison, today's EDA budget is less than 1 percent of that level. EDA runs several regional innovation programs through its Office of Innovation and Entrepreneurship.

Build to Scale

The goal of the Regional Innovation Program created in the *America COMPETES Reauthorization of 2010* is to encourage and support the development of regional innovation strategies, including regional innovation clusters and science and research parks.[4] EDA established the program, recently renamed Build to Scale, with an initial appropriation of $10 million. For years, the program was funded at $15 million. The most recent appropriation was $38 million.

The Build to Scale program is comprised of three competitions to further technology-based economic development. All competitions have a cost share requirement of 50 percent. The Venture Challenge supports entrepreneurship and accelerates company growth in communities, regions, or combinations of regions. The Venture Challenge awards grants to intermediary organizations like accelerators, universities, community colleges, and non-profits supporting new business ventures that are scalable by nature, challenging the status quo of markets, commercializing technologies, and furthering job creation.

In many regions across the United States, start-up companies can struggle to get access to capital to advance and grow their businesses. The second challenge, the Capital Challenge, seeks to increase access to capital in communities where risk capital is in short supply by providing operational support for the formation, launch, or scale of investment funds that would invest their capital in scalable startups as well as organizations that expand capital deployment within a community, region, or regional industry.

Finally, in 2020 the EDA partnered with the Department of Energy to fund a pilot challenge called the Industry Challenge.[5] This competition supported entrepreneurship related to the use of ocean resources, including support for commercialization of "blue" technologies, related startups, and job creation. EDA announced it would not host the Industry Challenge for the FY 2021 cycle.

There are several notable limitations to the Build to Scale program. The foremost challenge for the program is its funding. The program is limited in the number and size of the awards it can make. While the EDA does prioritize geographic diversity in its awards, many rural communities struggle to compete for funding. Moreover, the matching requirements in this program can exclude rural communities that lack the resources to participate.

University Center Program

Institutions of higher education are critical players in the development of vibrant economic ecosystems. To bolster this resource, EDA established the University Center program to focus on

[3] https://fraser.stlouisfed.org/title/budget-united-states-government-54/fiscal-year-1979-19033
[4] https://www.govinfo.gov/content/pkg/PLAW-111publ358/html/PLAW-111publ358.htm
[5] https://eda.gov/oie/buildtoscale/capital/

leveraging university assets to build regional economic ecosystems that support innovation and high-growth entrepreneurship, resiliency, and inclusiveness. University Centers (UCs) respond to the needs of their specific regions. For example, some UCs have responded to the needs of small- and medium-sized manufacturers and processors by offering technology transfer and commercialization assistance. EDA has allocated approximately $7.4 million to this program in FY 2021, funding approximately 22 grants.

STEM Talent Challenge

EDA also operates the STEM Talent Challenge, which seeks to develop or expand regional workforce capacity to support entrepreneurial ventures, industries of the future, and other businesses that have a high likelihood of accelerating economic competitiveness and job creation within a region.[6] The STEM Talent Challenge is designed to help communities with two activities – planning and development, and program implementation.[7] For FY 2021, EDA allocated $2 million to this program.

Accelerate Response and Recovery (R2) Network Challenge

In 2020, EDA collaborated with the National Institute of Standards and Technology (NIST) and the First Responder Network Authority (FirstNet) to create the Accelerate R2 Network Challenge.[8] This competition sought to create a nationwide network or networks of organizations working to address the nation's most pressing disaster response and resiliency challenges with innovative technologies. In July 2020, the agencies selected a public-private partnership to establish and operate the R2 Network.[9]

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

NIST is a non-regulatory agency within the Department of Commerce with a mission to promote U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology. NIST has two extramural programs focused on building manufacturing capabilities in regions across the United States: Manufacturing USA and the Hollings Manufacturing Extension Partnership (MEP).

Manufacturing USA

Manufacturing USA is a network of manufacturing innovation institutes coordinated through NIST. These institutes serve as partnerships between companies, academia, and entrepreneurs to develop and deploy manufacturing technologies. There are currently 16 Manufacturing USA institutes focused on a wide range of technologies. NIST currently operates one manufacturing USA institute on behalf of the Department of Commerce. Most of these institutes are funded by the Department of Energy and the Department of Defense. In FY 2021, the Manufacturing USA program at NIST was funded at $16.5 million. The FY 2022 President's Budget Request includes

[6] This program is authorized under the Stevenson-Wydler Technology Innovation Act (15 U.S.C. § 3723).
[7] https://eda.gov/files/oie/stem/Section-28-STEM-Talent-Challenge-NOFO.pdf
[8] https://eda.gov/oie/accelerate-r2/
[9] https://eda.gov/news/press-releases/2020/07/01/r2-network-challenge.htm

$166.65 million for the Manufacturing USA program to support the establishment of two additional institutes.[10]

Manufacturing Extension Partnership

The MEP program is a Federal-State-industry partnership made up of Centers in all 50 states and Puerto Rico. These Centers work with local manufacturing communities to strengthen the U.S. domestic manufacturing base. MEP Centers also provide small- and medium-sized businesses with technical assistance and guidance on cybersecurity. MEP has proven to be a successful model for Federal-State partnerships with significant payoff in economic growth and job creation in the U.S. As of 2019, for every dollar of Federal investment, the MEP National Network generates roughly $29 in new sales growth for manufacturers and $31 in new client investment.[11] While Congress funded MEP at $150 million in FY 2021, the President's Budget Request calls for a large increase to $275 million in FY 2022.[12] President Biden has stated he wants to quadruple the program within a few years.

Advanced Technology Program

The Advanced Technology Program (ATP) (later renamed the Technology Innovation Program (TIP)), was a NIST program established by Congress in the late 1980s and last funded a decade ago. ATP was designed to stimulate early-stage advanced technology development in industry that would otherwise not be funded. Rather than focus on basic science to advance the knowledge base or development of consumer products, ATP focused on high-risk, generic, pre-competitive, enabling technologies with the potential for high social returns. NIST offered funding through the program to single companies and industry-led consortia of universities, businesses, and/or government laboratories. Only large companies participating in the program were required to have a 60 percent cost share. At its height, this program received $340 million in 1995. In 2007, the *America COMPETES Act* replaced ATP with TIP, restricting the program to SMEs and requiring a blanket 50 percent cost share. Ultimately, despite moderate success, the program failed to attract a strong constituency and fell victim to political battles over the role of government in supporting industry-led research.

EXPANDING THE FEDERAL ROLE IN REGIONAL INNOVATION

In recent years, many stakeholders and policymakers have called for Congress to supercharge Federal regional innovation programs to bolster resources for local and regional innovation economies.

In 2011 and 2012, the National Academies Board on Science, Technology, and Economic Policy held two symposiums to study the role of innovation clusters in promoting economic growth, efforts to develop an integrated regional innovation initiative, and the role of research parks in promoting innovation and regional and national economic development.[13]

---

[10] https://www.whitehouse.gov/wp-content/uploads/2021/05/appendix_fy22.pdf

[11] https://www.nist.gov/news-events/news/2019/03/new-mep-center-will-serve-needs-alaskas-small-and-medium-sized-0.

[12] https://www.whitehouse.gov/wp-content/uploads/2021/05/appendix_fy22.pdf.

[13] https://www.nap.edu/read/13249/chapter/3

In 2019, in response to the concentration of economic growth in the United States, especially on the coasts, MIT Professors Jonathan Gruber and Simon Johnson published the book *Jump Starting America*, which proposed increased public and private investment broadly spread across the country in metropolitan areas that are on the cusp of becoming vibrant tech hubs.[14] They proposed investments on a large scale – several hundred million to $1 billion per hub, with hubs selected through a competitive process.

Later that same year, the Brookings Institution and the Information Technology and Innovation Foundation jointly published a report called *The Case for Growth Centers*.[15] This report highlighted the problem of "regional divergence" where an upper tier of certain metro areas began to grow at a faster rate than the median ones. Their report also calls for the nation to use a competition to designate 8 to 10 new regional "growth centers" across the heartland and use Federal support to scale up the innovation industries in those cities.

These ideas have caught the attention of policymakers. In *the American Jobs Plan (AJP)*, President Biden called for Congress to invest $20 billion into a Community Revitalization Fund, with the aim of growing "at least ten regional innovation hubs".[16] The goal of each tech hub is to "spark new economic activity, provide services and amenities, build community wealth, and close the current gaps in access to the innovation economy for communities of color and rural communities that have suffered from years of disinvestment."[17] Additionally, the AJP included $14 billion for NIST to bring together industry, academia, and government to advance technologies and capabilities critical to future competitiveness as well as to quadruple support for the Manufacturing Extensions Partnership (MEP). In the Senate, lawmakers are currently considering the *United States Innovation and Competition Act* (USICA) of 2021, formerly known as the *Endless Frontier Act*, which would fund regional technology hubs and boost funding for Manufacturing USA and MEP. In recent drafts, the bill would authorize $10 billion over 5 years to establish at least 3 tech hubs in each of the EDA's 6 regions.

CHALLENGES REMAIN

Any such large-scale investment must build on the lessons learned from the long history of local, state, and Federal investments in developing tech hubs and innovation economies, including the successes, the failures, and the unintended consequences.

Budding innovation economies often face a "chicken-or-egg" problem where innovation industries will not go to a region without a technical workforce, but a technical workforce will not go to a region without innovative businesses at which to work. It is unclear if increased funding for R&D or infrastructure alone will be enough to attract the workforce required for an innovation economy to flourish over the long term. As such, these investments may also have to focus on STEM education at all levels, as well as workforce development.

[14] Jonathan Gruber and Simon Johnson, *Jump Starting America* (New York: Hachette Book Group, 2019).
[15] http://www2.itif.org/2019-growth-centers.pdf
[16] https://www.whitehouse.gov/briefing-room/statements-releases/2021/03/31/fact-sheet-the-american-jobs-plan/
[17] Ibid.

Another challenge is the evaluation criteria that are used for selecting regions to fund. The proposals from MIT, and Brookings and ITIF all call for various evaluation criteria—such as a regional airport, top-tier research universities, and existing technical workforce. Most avoid the quality of the K-12 education systems, which is a significant factor for many who might consider picking up and moving to new hubs. It remains unclear what direction Congress can or should apply to this funding to build lasting innovation economies.

Many regions may not have easy access to venture capital or angel funding, which is concentrated in existing successful innovation economies. In credit-scarce environments, small companies are finding it difficult to survive the so-called "Valley of Death," the 5 to 12 years it often takes to turn an invention into a commercial product. It is not clear how Federal funding alone will support access to credit for new firms.

Yet another key concern is how to ensure more equitable distribution of the benefits of regional innovation economies. Places like Silicon Valley are stark examples of the income inequality and economic divides in our country. The cost of real estate has driven many Silicon Valley workers far inland, resulting in 2-hour commutes each day. The shift to more remote work as a result of the pandemic will mitigate this for some, but most technical jobs cannot be done remotely. Shared prosperity must be a goal of any new competition from the outset, including by bringing diverse community voices into planning discussions.

Finally, it is unclear which Federal agency, or combination thereof, should implement this type of program. While the EDA certainly has the expertise in regional development, it lacks the technology expertise of NIST. Moreover, it is unclear how or if the other Federal regional innovation programs from DOE, Department of Labor, the Small Business Administration, the Department of Health and Human Services, and the Department of Defense should coordinate to help facilitate regional innovation economies as envisioned by these proposals.