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

HEARING CHARTER

Assembling the Facts:
Examining the Proposed National Network for Manufacturing Innovation

Thursday, May 31, 2012
10:00 a.m. – 12:00 p.m.
2318 Rayburn House Office Building

I. Purpose

On Thursday, May 31, 2012, the Committee on Science, Space, and Technology Subcommittee on Technology and Innovation will hold a hearing to examine the proposed National Network for Manufacturing Innovation (NNMI). The Administration requested $1 billion in mandatory spending for the NNMI in the fiscal year 2013 budget request for the National Institute of Standards and Technology (NIST). The NNMI is designed to promote the development of manufacturing technologies with broad applications through collaboration between the Federal Government and public and private sector stakeholders.

II. Witness

Dr. Patrick Gallagher, Under Secretary of Commerce for Standards and Technology and Director, National Institute of Standards and Technology

III. Background

Manufacturing has been a significant part of American productivity since the industrial revolution. Although not as dominant as in the past, manufacturing's share of gross domestic product remains around 11 percent, and manufacturing output has risen by 13 percent in the last several years. Nevertheless, manufacturing employment has faltered[1]. Many recent reports have cited declines in manufacturing employment as an indicator of surrendering leadership to other nations, but others suggest that declines are overblown and job losses can, in part, be attributed to increases in productivity[2]. Also, some of the manufacturing that moved to other countries in the early part of the decade may be returning to the U.S. due to increasingly competitive labor rates overseas as well as other factors[3,4].

[1] Federal Reserve Board Industrial Production Indexes; http://www.federalreserve.gov/releases/g17/Current/default.htm; Bureau of Labor Statistics' monthly Current Employment Statistics database, http://www.bls.gov/data/.
[2] Council on Competitiveness Report, Make: An American Manufacturing Movement, December 2011, http://www.compete.org/publications/detail/2064/make/
[3] Made in America, Again, August 2011, Boston Consulting Group.

Manufacturing has changed and continues to change, making comparative data difficult to obtain and analyze. Because the future of manufacturing is likely to focus on more personalized, single-production widgets as opposed to mass manufacturing, the number of jobs in this sector may continue to be relatively high-skilled but will drop in overall number of jobs[5].

Because manufacturing is research and development intensive[6] and often tied to new innovations, any decline in the domestic manufacturing sector raises concerns that changes may ultimately limit the capacity for American innovation.

Though most stakeholders agree that manufacturing continues to be an important part of our economy, the opinions on the appropriate prescription to maintain or strengthen the manufacturing sector are diverse. Efforts to maintain manufacturing leadership have largely focused on "advanced manufacturing", or manufacturing processes and products resulting from new technologies.

Across the globe, many nations have developed specific manufacturing strategies that guide both government investment and private sector focus in manufacturing. In order to keep the U.S. competitive and ensure that new technologies are created domestically, some advocate that the U.S. should have a defined manufacturing strategy[7,8].

Administration Efforts in Advanced Manufacturing

The President's advisors have recently elevated manufacturing policy as a priority in improving the national economy[9,10,11]. In response to their recommendations, the President created an Advanced Manufacturing Partnership (AMP) and a National Program Office for Advanced Manufacturing (AMNPO), housed at the Department of Commerce's National Institute for Standards and Technology (NIST).

The AMP was launched by the President in June, 2011 to bring together industry, universities, and the Federal Government to invest in emerging technologies that have the potential to create high quality manufacturing jobs and to enhance the United States' global competitiveness. The mission of the AMP is to identify opportunities for investments in research and development,

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[4] Manufacturing's Secret Shift: Gaining Competitive Advantage by Getting Closer to the Customer; March 2011, Accenture
[5] Economist special report: Manufacturing and Innovation, Solid print, http://www.economist.com/node/21552892
[6] OECD Science, Technology and R&D Statistics http://www.oecd-ilibrary.org/content/data/data-00183-en
[7] New America Foundation report, Value Added: America's Manufacturing Future, April 2012, http://newamerica.net/publications/policy/value_added_americas_manufacturing_future
[8] ITIF The Case for a National Manufacturing Strategy, April 2011, http://www.itif.org/files/2011-national-manufacturing-strategy.pdf
[9] The President's Council of Advisors on Science and Technology (PCAST), Report to the President on Ensuring American Leadership in Advanced Manufacturing, June 2011.
[10] National Science and Technology Council, A National Strategic Plan for Advanced Manufacturing, Feb. 2012.
[11] The President's Jobs Council Report to the President: Road Map to Renewal, 2011 Year-end report.

precompetitive collaboration, and shared facilities and infrastructure that have the potential to transform advanced manufacturing in the United States.

The AMNPO is an interagency office designed to further coordinate federal advanced manufacturing activities. The office builds links through establishing technology and innovation partnerships involving U.S. manufacturers, universities, state and local governments, and other organizations. The AMNPO (hosted at NIST) is staffed by representatives from the Departments of Commerce, Energy, and Defense; the National Science Foundation; and other agencies as well as fellows from industry.

The National Network for Manufacturing Innovation (NNMI)

The President's FY13 budget request included a proposal for a one-time mandatory fund of $1 billion to establish a public-private partnership to revitalize U.S. manufacturing. In remarks given on March 9, 2012, President Obama described the NNMI as a network of institutes for manufacturing innovation around the country. According to background information provided by the Administration, the goal of the institutes is to "bring together industry, universities and community colleges, federal agencies, and regional and state organizations to accelerate innovation by investing in industrially relevant manufacturing technologies with broad applications, and to support manufacturing technology commercialization by bridging the gap between the laboratory and the market."[12] The NNMI also includes an emphasis on education and workforce development in advanced manufacturing skills. Up to 15 institutes are proposed across the country, with the federal support to last 5-7 years.

The NNMI is intended to close the gap between research and development activities and the deployment of technological innovations in domestic production of goods. The Administration envisions the NNMI to be the foundation of a U.S. innovation infrastructure of linked regional hubs of manufacturing excellence. Each institute is to be competitively selected, cost-shared, and each would concentrate on a particular area of technology development.

The focus of the NNMI lies squarely in the applied research region, after basic research has been conducted but prior to full commercialization of a technology. Technologies for further development by the NNMI are targeted at Manufacturing or Technology Readiness Levels of 4-7[13] according to Administration background documents.

The NNMI is a collaboration involving the Departments of Commerce, Defense, Energy, the National Science Foundation, and possibly other federal partners. The AMNPO, housed at NIST, is the interagency body tasked with coordinating federal resources and programs related to manufacturing, including the NNMI. On May 4, the AMNPO published a Request for Information (RFI) on how each institute and the NNMI as a whole will integrate capabilities and facilities required to reduce the cost and risk of commercializing new technologies[14]. In addition

[12] National Network for Manufacturing Innovation http://www.manufacturing.gov/amp/nnmi.html
[13] DOD Manufacturing Readiness Levels; http://www.dodmrl.com/
[14] NIST Request for Information on Proposed New Program: National Network for Manufacturing Innovation (NNMI), http://www.gpo.gov/fdsys/pkg/FR-2012-05-04/pdf/2012-10809.pdf

to the RFI, the AMNPO is holding a series of workshops across the country during the remainder of fiscal year 2012 to facilitate input from stakeholders, and to identify a set of technology focus areas for the institutes. The RFI and workshops are intended to address design and governance issues, and the management of the NNMI as a whole.

Each institute will have a focus area, which could be an advanced material, a manufacturing process, an enabling technology, or an industry sector. Institutes will be selected based upon criteria such as technology focus, research, development, and demonstration plan, impacts, partner resource and investments, and self sustainability.

Legislation to authorize the NNMI has not been introduced.

NNMI Pilot Institute in Fiscal Year 2012

This information-gathering effort for the NNMI is proceeding in parallel with steps to establish a pilot institute for manufacturing innovation during the current fiscal year (FY12). This pilot institute will focus on a specific manufacturing process known as "additive manufacturing", and it is intended to serve as a proof-of-concept for the proposed network of institutes to be funded starting in FY13.

The pilot institute will involve an initial federal investment of approximately $45 million, and will draw on existing resources and authorities of the Departments of Defense (Office of Manufacturing and Industrial Base Policy), Energy (Advanced Manufacturing Office), Commerce (NIST), NSF (Engineering Directorate and Advanced Technological Education program) and, potentially, other civilian agencies. A broad agency announcement of solicitation for the "Additive Manufacturing Innovation Institute" pilot was released by the Department of Defense on May 8, 2012[15] with anticipated funding of $18.8 million in FY12. Proposals are due June 14, 2012. At this time it is unclear if the other federal agencies participating in the pilot will also release fiscal year 2012 solicitations for their contributions to the pilot.

Issues for Examination

Since the NIST fiscal year 2013 budget hearing in early March, the Administration has moved forward with establishing the pilot institute as well as the planning process for the greater NNMI. At the time of the hearing, Under Secretary Gallagher was unable to provide substantial details about the program. This hearing will seek to learn more about the proposed network and status of FY12 activities related to the pilot institute.

Goals of Program and Focus Areas

As described, the NNMI is an ambitious endeavor bringing together all types of companies, educational institutions, and non-profit entities as partners to advance manufacturing. Will the

[15] https://www.fbo.gov/?s=opportunity&mode=form&tab=core&id=2bbada5cae4ab97438dc3f57fed050d0&_cview=0

institutes be stretched too thin to attempt to partner with so many different entities and achieve results in a relatively short period of time? How will success of an institute be defined?

The intention of the Administration is to have each institute focused on a particular manufacturing process, technology, or material. This may favor one area over another and inadvertently provide an unfair advantage or attention to one area that is not justified by market forces. Is it appropriate for each institute to pick a certain subject area?

Funding

The proposed NNMI represents a new, $1 billion program. Though subject to PAYGO, it is unclear what revenues would be used to offset the mandatory funding, and when legislation authorizing the NNMI will be available to Congress.

The amount of funding going toward the pilot institute from participating agencies in fiscal year 2012 as well as what other activities those funds will be diverted from to support the NNMI pilot is also unclear. Finally, is it uncertain how both the pilot and the proposed institutes will demonstrate a path towards becoming financially self-sustaining within five years from initiation when federal funds will no longer support the NNMI.

Duplication

The Administration has devoted significant resources to manufacturing activities at many different federal agencies. How will it ensure that the NNMI will not duplicate other efforts underway in the Federal Government to support advanced manufacturing?

Federal Role

The goals of the NNMI, while diverse, appear to focus on advancing certain types of technology through applied research and demonstration. Though still considered "pre-competitive" in nature, some question whether government support at this point in the innovation process alters normal market forces which would determine the best available technology and processes instead. Does the NNMI overstep the role of government and wade into areas which would be more appropriately handled by the private sector?