United States Government Accountability Office

Report to Congressional Committees

March 2014

MANUFACTURING EXTENSION PARTNERSHIP

Most Federal Spending Directly Supports Work with Manufacturers, but Distribution Could Be Improved

GAO-14-317

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GAO Highlights

Highlights of GAO-14-317, a report to congressional committees

Why GAO Did This Study

Manufacturing plays a key role in the U.S. economy. Congress established the MEP program in NIST in 1988. The program's objectives are to enhance productivity and technological performance and to strengthen the global competitiveness of target manufacturing firms, namely small and medium-sized U.S.-based firms. Under this program, NIST partners with 60 nonfederal organizations called MEP centers. The centers, located in 50 states and Puerto Rico, help target firms develop new customers and expand capacity, among other things. NIST awards federal funding to centers under annually renewed cooperative agreements, subject to the centers providing matching funds and receiving a positive performance evaluation.

The Consolidated and Further Continuing Appropriations Act, 2013, mandated GAO to report on MEP program administrative efficiency, which relates to funding provided to centers. This report (1) describes, over the past 5 years, how NIST spent federal MEP program funds and (2) examines the basis for NIST's cooperative agreement award spending. To conduct this work, GAO analyzed obligations data, reviewed relevant legislation and policies, and interviewed NIST officials.

What GAO Recommends

GAO recommends that Commerce's spending on cooperative agreement awards be revised to account for variations across service areas in demand for program services and in MEP centers' costs of providing services. Commerce agreed with GAO's recommendation.

View GAO-14-317. For more information, contact Frank Rusco at (202) 512-3841 or ruscof@gao.gov.

What GAO Found

Of the approximately $608 million spent by the Department of Commerce's (Commerce) National Institute of Standards and Technology (NIST) in fiscal years 2009 through 2013 on the Manufacturing Extension Partnership (MEP) program, NIST used most of the funds to directly support MEP centers. Specifically, NIST spent about $495 million on awards to centers and spent the rest on contracts, staff, agency-wide overhead charges, and other items, some of which NIST considered direct support and some of which NIST considered administrative spending. Although NIST is not required to track, and has not historically tracked, administrative spending, NIST officials told GAO the agency developed definitions of direct support and administrative spending in fiscal year 2013 in response to congressional interest, then conducted an analysis of fiscal year 2013 federal MEP program spending using those definitions. NIST defines direct support spending as spending that directly supports the MEP center system's work with manufacturing firms, such as awards to centers or contracts to train MEP center staff on how to quickly assess innovative ideas for new products. NIST considers all other spending to be administrative, including spending on performance evaluations for MEP centers or on agency-wide overhead fees that pay for facilities operations and maintenance at the NIST campus. Using these definitions, NIST estimated that about 88.5 percent of federal MEP program spending in fiscal year 2013 was for direct support, and the remaining 11.5 percent was for administration.

NIST's spending on cooperative agreement awards is based on the historical amount awarded to each center when it was established. This took into account each center's identification of target manufacturing firms in its service area—including characteristics such as business size, industry types, product mix, and technology requirements—and its costs of providing services to those firms. However, because NIST made the awards on an incremental basis to individual centers serving different areas over a period of more than 15 years, NIST's awards did not take into account variations across service areas in the demand for program services—a function of the number and characteristics of target firms—or variations across service areas in costs of providing services. NIST's cooperative agreement award spending is, therefore, inconsistent with the beneficiary equity standard. This standard—commonly used to design and evaluate funding formulas—calls for funds to be distributed in a way that takes these variations into account so that centers can provide the same level of services to each target manufacturing firm, according to its needs. Because NIST did not account for these variations across service areas, NIST's cooperative agreement award spending may not allow centers to provide the same level of services to target manufacturing firms, according to their needs. NIST officials told GAO that an analysis they recently conducted showed wide variation across centers in the relationship between their cooperative agreement award amounts and the number of target manufacturing firms in their service areas. NIST officials told GAO they are exploring ways to revise NIST's cooperative agreement award spending to take into account variations across service areas in the number of target manufacturing firms, among other factors. The officials discussed various options they are considering, but they did not identify an option they had agreed to implement or a timeline for decision making and implementation.

Contents

Abbreviations

DVIRC	Delaware Valley Industrial Resource Center
E-CAR	Expansion of Services Cooperative Agreement Recipients
E3	economy, energy, and environment
GDP	gross domestic product
IT	information technology
MEP	Manufacturing Extension Partnership
NBS	National Bureau of Standards
NIST	National Institute of Standards and Technology
OMB	Office of Management and Budget
T-CAR	Tool Development Cooperative Agreement Recipients

U.S. GOVERNMENT ACCOUNTABILITY OFFICE
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March 27, 2014

The Honorable Barbara Mikulski
Chairwoman
The Honorable Richard Shelby
Ranking Member
Subcommittee on Commerce, Justice, Science, and Related Agencies
Committee on Appropriations
United States Senate

The Honorable Frank Wolf
Chairman
The Honorable Chaka Fattah
Ranking Member
Subcommittee on Commerce, Justice, Science, and Related Agencies
Committee on Appropriations
House of Representatives

Manufacturing plays a key role in the U.S. economy. According to the Bureau of Economic Analysis, manufacturing generated $1.9 trillion in gross domestic product (GDP)—or almost 12 percent of total U.S. GDP—in 2012, the most recent year for which data are available. In addition, the manufacturing sector employed almost 12 million workers in July 2013 according to the Bureau of Labor Statistics. To support U.S. manufacturing, Congress has established a variety of tax preferences, subsidies, and other programs,[1] including the Hollings Manufacturing Extension Partnership (MEP) program. The MEP program was authorized by the Omnibus Trade and Competitiveness Act of 1988 and is administered by the Department of Commerce's National Institute of Standards and Technology (NIST).[2] The program's objectives are to enhance the productivity and technological performance and to strengthen the global competitiveness of target manufacturing firms, namely small and medium-sized manufacturing firms (with fewer than 500

[1]See GAO, *Global Manufacturing: Foreign Government Programs Differ in Some Key Respects from Those in the United States,* GAO-13-365 (Washington, D.C.: July 25, 2013).

[2]Pub. L. No. 100-418 § 5121(a) (Aug. 23, 1988)(codified at 15 U.S.C. § 278k).

employees) based in the United States, helping these firms create and retain jobs.[3]

The MEP program operates through a network of 60 nonfederal organizations—called MEP centers—located throughout the United States and in Puerto Rico. MEP centers enter into contracts with manufacturing firms under which the centers deliver technical assistance to improve the firms' manufacturing processes and productivity; expand their capacity; and help them adopt new technologies, utilize best management practices, and accelerate company growth. NIST enters into cooperative agreements with each MEP center under which federal funding is awarded to the center conditional upon the center providing matching funds and receiving a positive performance evaluation;[4] these agreements are renewed annually.[5] Once established, a MEP center must obtain two-thirds of its budget from nonfederal sources, such as state or local governments or user fees collected from manufacturing firms, to receive a one-third federal funding match.[6] (See fig. 1.) NIST has

[3]For a comparison of the MEP program to the Trade Adjustment Assistance for Firms program, see GAO, *Trade Adjustment Assistance: Commerce Program Has Helped Manufacturing and Services Firms, but Measures, Data, and Funding Formula Could Improve,* GAO-12-930 (Washington, D.C.: Sept. 13, 2012), 47-49.

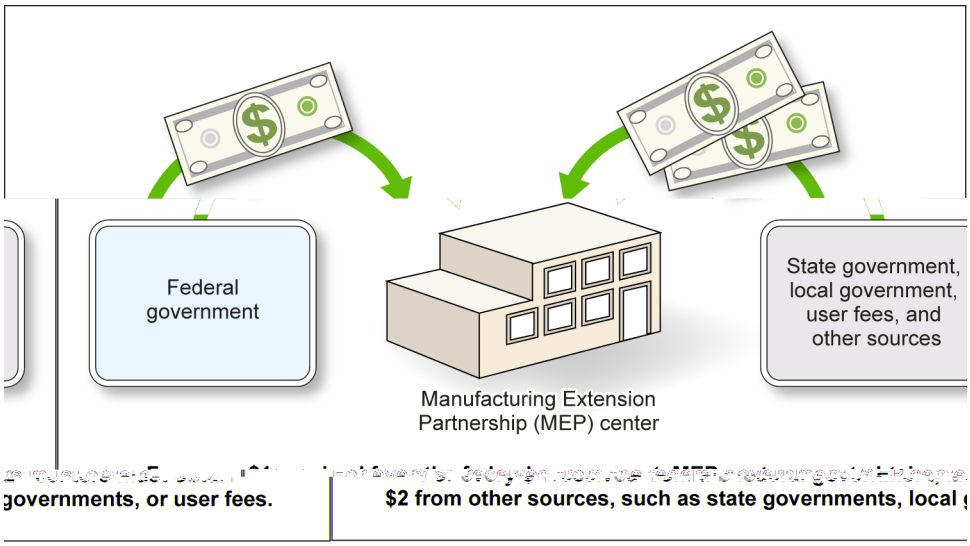
[4]According to the 2013 General Terms and Conditions of the program, NIST is to conduct a performance evaluation annually that focuses on each center's alignment with the program's overall objectives, resource expenditures, activities planned for the next year, and any proposed changes to the center's budget, among other things. The results of this evaluation are to be incorporated into the center's project plan or budget. In every other year this evaluation takes the form of an independent Merit Review Panel, in which private experts—not connected with the center being reviewed—assess the center's performance.

[5]Cooperative agreements are very much like grants in that they are used to transfer something of value to the recipient in order to accomplish a public purpose as authorized by law. The key difference between cooperative agreements and grants is that the federal agency providing the assistance has more involvement with the recipient in carrying out the activity being funded under a cooperative agreement than it does in the case of a grant. Cooperative agreements and grants differ from procurement contracts in that a procurement contract is to be used by an agency when the principal purpose is to acquire property or services for the direct benefit or use of the United States government, as opposed to when the principal purpose is to provide assistance to accomplish a public purpose as authorized by law.

[6]When MEP centers are being established—during the first 4 years of their operation—they receive a larger proportion of federal funds. For more information on the MEP program cost share, see GAO, *Factors for Evaluating the Cost Share of Manufacturing Extension Partnership Program to Assist Small and Medium-Sized Manufacturers,* GAO-11-437R (Washington, D.C.: Apr. 4, 2011).

also awarded competitive grants to some MEP centers in recent years in addition to their annual cooperative agreement funding.

Figure 1: Manufacturing Extension Partnership Program Cost Share



Source: GAO.

This engagement responds to a mandate in the explanatory statement accompanying the Consolidated and Further Continuing Appropriations Act, 2013 directing GAO to report to the House and Senate Appropriations Committees, Subcommittees on Commerce, Justice, Science, and Related Agencies on the extent to which the MEP program achieves administrative efficiencies, which relates to funding provided to centers. Our objectives for this review were to (1) describe, over the past 5 years, how NIST spent federal MEP program funds and (2) examine the basis for NIST's cooperative agreement award spending.

To describe how NIST spent federal MEP program funds over the past 5 years, we obtained and analyzed obligations data from NIST for fiscal years 2009 through 2013. For the purposes of this report, we are measuring spending based on obligations. We interviewed knowledgeable agency officials about the sources of the data and the controls NIST had in place to maintain the integrity of the data, and we determined that the data were sufficiently reliable for the purposes of our report. We also reviewed a NIST analysis of fiscal year 2013 spending that estimated the amount NIST spent for direct support of the MEP

center system's work with manufacturing firms and the amount NIST spent for administration. We interviewed agency officials about the analysis and independently reviewed their determinations of administrative and direct support spending, and we determined the resulting estimates were sufficiently reliable for the purposes of our report. In addition, we reviewed relevant laws—including the MEP program's enabling legislation, implementing regulations, and annual appropriations—and program policies and procedures concerning how NIST spends the federal program funds. We also reviewed relevant documents, such as strategic plans, performance reports, budget justifications, and excerpts of contracts, and we interviewed NIST officials about how they spent the funds. To examine the basis for NIST's cooperative agreement award spending, we interviewed NIST officials and reviewed MEP program data for fiscal years 2009 through 2013 to determine how NIST establishes cooperative agreement awards. We reviewed all federal funding opportunity announcements for the establishment of MEP center cooperative agreements published since the program's inception, which define the criteria used to establish cooperative agreement awards. We assessed NIST's basis for cooperative agreement award spending against equity standards from social science research for designing and evaluating funding formulas.

We conducted this performance audit from July 2013 to March 2014 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

The MEP program traces its origins to the Manufacturing Technology Centers Program,[7] which was established by NIST's predecessor, the National Bureau of Standards (NBS). In July 1988, NBS published the first of 12 federal funding opportunity announcements that have been

[7]In 1998, the program was renamed the Manufacturing Extension Partnership program. In 2004, the program was redesignated the Hollings Manufacturing Extension Partnership in honor of Senator Fritz Hollings.

issued to date for the establishment of MEP centers.[8] That announcement led to the establishment of the first 3 centers in 1989, as part of an initial pilot program. By 1990, NBS had become NIST, and the agency published the second federal funding opportunity announcement for the establishment of two additional centers, bringing the total number of centers to 5. In 1992, NIST announced a federal funding opportunity for 2 more centers, bringing the total to 7. The number of centers grew rapidly thereafter, with a nationwide network of 44 centers in place by 1995. NIST has since added to its network and, as of 2013, has 60 centers that cover all 50 states and Puerto Rico. Appendix I provides a list of the 60 MEP centers.

The original legislation authorizing the MEP program emphasized the transfer of advanced technologies developed within NIST and other federal laboratories to small and medium-sized manufacturing firms. As we reported in 1991, however, the centers soon found that firms primarily needed proven, not advanced, technologies because advanced technologies were generally expensive, untested, and too complex to be practical for most small manufacturing firms.[9] We reported, therefore, that a key mandate of the program was not realistically aligned with the basic needs of most small manufacturing firms. In recognition of this situation, NIST reoriented the program to focus on basic technologies that permitted firms to improve their competitive position. By the time we reported on the program in 1996, centers were providing a wide range of business services, including helping companies solve individual manufacturing problems, obtain training for their workers, create marketing plans, and upgrade their equipment and computers.[10]

More recently, the program's focus has evolved to an emphasis on enhancing manufacturing firms' innovative capacity. NIST calls this its

[8]See 53 Fed. Reg. 27060 (July 18, 1988), 55 FR 38280 (Sept. 17, 1990), 57 FR 1725 (Jan. 15, 1992), 60 FR 29827 (June 6, 1995), 61 FR 20242 (May 6,1996), 65 FR 41634 (July 6, 2000), 66 FR 15219 (Mar. 16, 2001), 68 FR 12890 (Mar. 18, 2003), 75 FR 6355 (Feb. 9, 2010), 77 FR 12563 (Mar. 1, 2012), 77 FR 37653 (June 22, 2012), and 78 FR 21109 (Apr. 9, 2013). Some of these announcements were to establish new centers, and some were to reestablish centers where existing centers had closed.

[9]GAO, *Technology Transfer: Federal Efforts to Enhance the Competitiveness of Small Manufacturers*, GAO/RCED-92-30 (Washington, D.C.: Nov. 22, 1991).

[10]GAO, *Manufacturing Extension Program: Manufactures' Views about Delivery and Impact of Services*, GAO/GGD-96-75 (Washington, D.C.: Mar. 14, 1996).

Next Generation Strategy and, in December 2008, NIST released its current strategic plan referred to by that name. The plan articulates NIST's new vision for the program as a catalyst for accelerating manufacturing's transformation into a "more efficient and powerful engine of innovation driving economic growth and job creation."[11] The plan also defines the program's mission: "to act as a strategic advisor to promote business growth and connect manufacturing firms to public and private resources essential for increased competitiveness and profitability." The plan focuses the program's activities around the following five strategic areas:

- *Continuous Improvement.* This area includes enhancing manufacturing firms' productivity and freeing up their capacity to provide them a stable foundation to pursue innovation and growth through services and programs that target manufacturing plant efficiencies.
- *Technology Acceleration.* This area includes developing tools and services to bring new product and process improvement opportunities to manufacturing firms, accelerating firms' opportunities to leverage and adopt technology, connecting firms with technology opportunities and solutions, and making available a range of product development and commercialization assistance services.
- *Supplier Development.* This area includes developing and delivering the national capacity, tools, and services needed to put suppliers in a position to thrive in existing and future global supply chains.
- *Sustainability.* This area includes helping companies gain a competitive edge by reducing environmental costs and impact by developing new environmentally focused materials, products, and processes to gain entry into new markets.
- *Workforce.* This area includes developing and delivering training and workforce assistance to manufacturing firms, as well as expanding partnerships and collaborations to develop and deliver tools and services to foster the development of progressive managers and entrepreneurial CEOs.

[11]NIST, *The Future of the Hollings Manufacturing Extension Partnership* (Gaithersburg, Md.: December 2008).

MEP centers work with manufacturing firms to plan and implement projects in these and other areas. For example, in 2011, the Delaware Valley Industrial Resource Center (DVIRC)—a MEP center in Pennsylvania—worked with a manufacturing firm in Hatfield, Pennsylvania, on a continuous improvement project when the company faced price increases from its vendors it did not want to pass on to its customers. DVIRC trained company staff on methods to achieve efficiencies and helped identify areas for improvement in the company's production process, resulting in increased productivity and reduced inventory levels that allowed the company to save space and lower costs, as reported by the manufacturing firm. Similarly, the Texas MEP center worked with a manufacturing firm in El Paso, Texas, on a sustainability project in 2013. The MEP center and the firm partnered with New Mexico State University's Institute for Energy and the Environment on an economy, energy, and environment (E3) project that included training and an effort to identify inefficiencies in the manufacturing process. As a result of this partnership, the firm reported saving 40,000 gallons of water and reducing solid waste by 56 tons, among other accomplishments.

NIST has recently begun developing a new strategic planning process for the MEP program to update its Next Generation Strategy. According to NIST officials, the process will include extensive participation by stakeholders, including MEP centers. NIST expects to implement the planning process through the spring of 2014 and release an updated strategic plan shortly after the planning process is complete.

The program has also evolved in its matching fund requirements. The program as originally implemented provided federal funding to reimburse each $1 of nonfederal contributions with no more than $1 of federal funding—referred to as a 1:1 cost share—for the first 3 years that a center operated. For the fourth year of operation, every $3 of nonfederal contributions were reimbursed with $2 of federal funding—referred to as a 3:2 cost share. For the fifth and sixth years of operation, every $2 of nonfederal contributions were reimbursed with $1 of federal funding—referred to as a 2:1 cost share. Under the original legislation, federal funding was scheduled to end once a center had operated for 6 years. The 6-year federal funding limit was temporarily suspended by the fiscal year 1997 and 1998 appropriations acts and was eliminated in 1998 when Congress passed legislation[12] changing the program to, among other

[12]Pub. L. No. 105-309 § 2 (October 1998) (codified at 15 U.S.C. § 278k(c)(5)).

things, provide for continued federal funding and set the cost share at 2:1 for all centers that had been in operation for at least 6 years.[13]

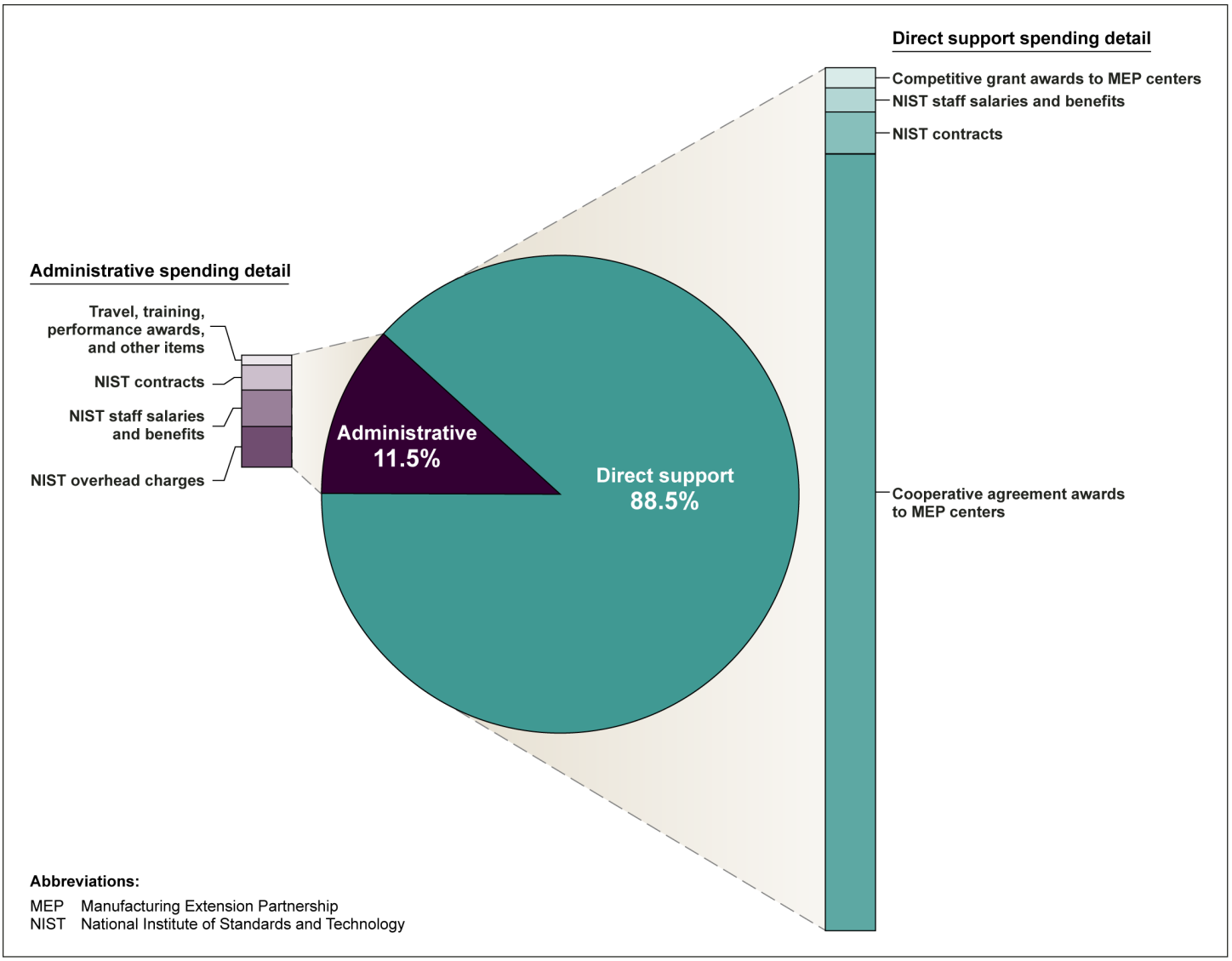
Most of the $608.3 Million NIST Spent on the MEP Program in Fiscal Years 2009 through 2013 Directly Supported MEP Centers

NIST spent $608.3 million in federal funding on the MEP program in fiscal years 2009 through 2013 and used most of these funds to directly support MEP centers and their work with manufacturing firms. Specifically, NIST spent $494.6 million on cooperative agreement awards and competitive grant awards to MEP centers, which NIST considers to be direct support. NIST spent $78 million for contracts, and for NIST staff salaries and benefits, some of which NIST considers direct support and some administrative spending. The remaining $35.7 million was spent for agency-wide overhead charges and travel, training, performance awards, and other items, all of which NIST considers administrative spending. NIST defines direct support as spending that directly supports the MEP center system's work with manufacturing firms, such as awards to centers or spending on training for MEP center staff. NIST considers all other spending to be administrative, including spending on performance evaluations of centers and on agency-wide overhead charges that pay for facilities operations and maintenance at the NIST campus.

NIST is not required to track, and historically has not tracked, administrative spending, but NIST officials told us the agency developed its definitions of direct support and administrative spending in fiscal year 2013 in response to congressional interest. It then conducted an analysis of fiscal year 2013 federal MEP program spending using those definitions. NIST estimated that about 88.5 percent of federal MEP program spending in fiscal year 2013 was for direct support, and the remaining 11.5 percent was administrative. (See fig. 2.)

[13]Some centers may still be subject to a lower cost share because they have been in operation for less than 5 years.

Figure 2: Manufacturing Extension Partnership Program Spending, Fiscal Year 2013



Source: GAO analysis of NIST data.

It is not possible to determine whether NIST's amount of administrative spending is appropriate because there is no standard definition of administrative spending for federal programs. In addition, conducting the analysis using different definitions could produce different results.

Defining Administrative Expenses

There is no standard definition of administrative expenses for federal programs. Executive Order 12837, issued on February 10, 1993, called on the Director of the Office of Management and Budget (OMB) to establish a definition of administrative expenses for agencies, but OMB did not develop a definition. Definitions and reporting of administrative expenses vary across public and private entities depending on their mission, priorities, services, clients, and on the purposes for which management needs the information.

Spending on MEP Center Cooperative Agreements

NIST spent $471 million on MEP center cooperative agreement awards in fiscal years 2009 through 2013. NIST considers all of this spending direct support. Federal funds for center cooperative agreements can be used by MEP centers for capital and operating and maintenance expenses. As stated earlier, these funds are awarded contingent on each MEP center meeting its cost-share requirement and having positive performance evaluations. NIST officials told us that spending on cooperative agreements and spending on staff salaries and benefits are NIST's top spending priorities.

Spending on MEP Center Competitive Grants

In fiscal years 2009 through 2013, NIST spent $23.6 million on awards to centers that were granted on a competitive basis. These awards are made in addition to cooperative agreement awards. The bulk of these awards went to two competitive grant programs; about $12.7 million was awarded to MEP centers through the Expansion of Services Cooperative Agreement Recipients (E-CAR) competition, and about $7.3 million was awarded through the Tool Development Cooperative Agreement Recipients (T-CAR) competition. NIST also awarded a small amount through grant competitions conducted under two other programs: the Advanced Manufacturing Jobs and Innovation Accelerator Challenge, and

the Energy-Efficient Buildings Hub project.[14] According to NIST officials, the competitive grants that it awarded under the four programs encourage projects in the five strategic areas identified in the MEP program's strategic plan. For example, NIST awards to MEP centers through the E-CAR competition funded 14 projects designed to integrate two or more of the five strategic areas, and NIST awards through the T-CAR competition funded 8 projects aimed at addressing the new and emerging needs of manufacturing firms in any of the strategic areas.

Spending on Contracts

In fiscal years 2009 through 2013, NIST spent $45.9 million on contracts for goods or services, some of which directly supported MEP centers and some of which were administrative. Of the $8 million spent on such contracts in fiscal year 2013, NIST estimated that it spent $5 million on direct support contracts and $3 million on administrative contracts. The contracts that NIST considered direct support in fiscal year 2013 were for training and support for MEP centers on tools that centers could use to assist manufacturing firms, or for work with centers on implementing MEP initiatives. For example, NIST awarded a $3.7 million contract to International Management and Consulting, LLC, to provide training for MEP center staff on innovation engineering, which NIST describes as a business support service that informs companies how to quickly assess innovative ideas resulting in new business models, processes, and products. The training is intended to help MEP center staff provide guidance in these areas to clients. Contracts that NIST considered administrative in fiscal year 2013 were for services related to performance evaluations of MEP centers, telephone and mobile broadband, information technology (IT), and other products and services.

According to NIST officials, some of these contracts helped the program meet legal requirements, such as for services related to performance evaluations of MEP centers, which are required by the program's enabling legislation and implementing regulations. Other contracts

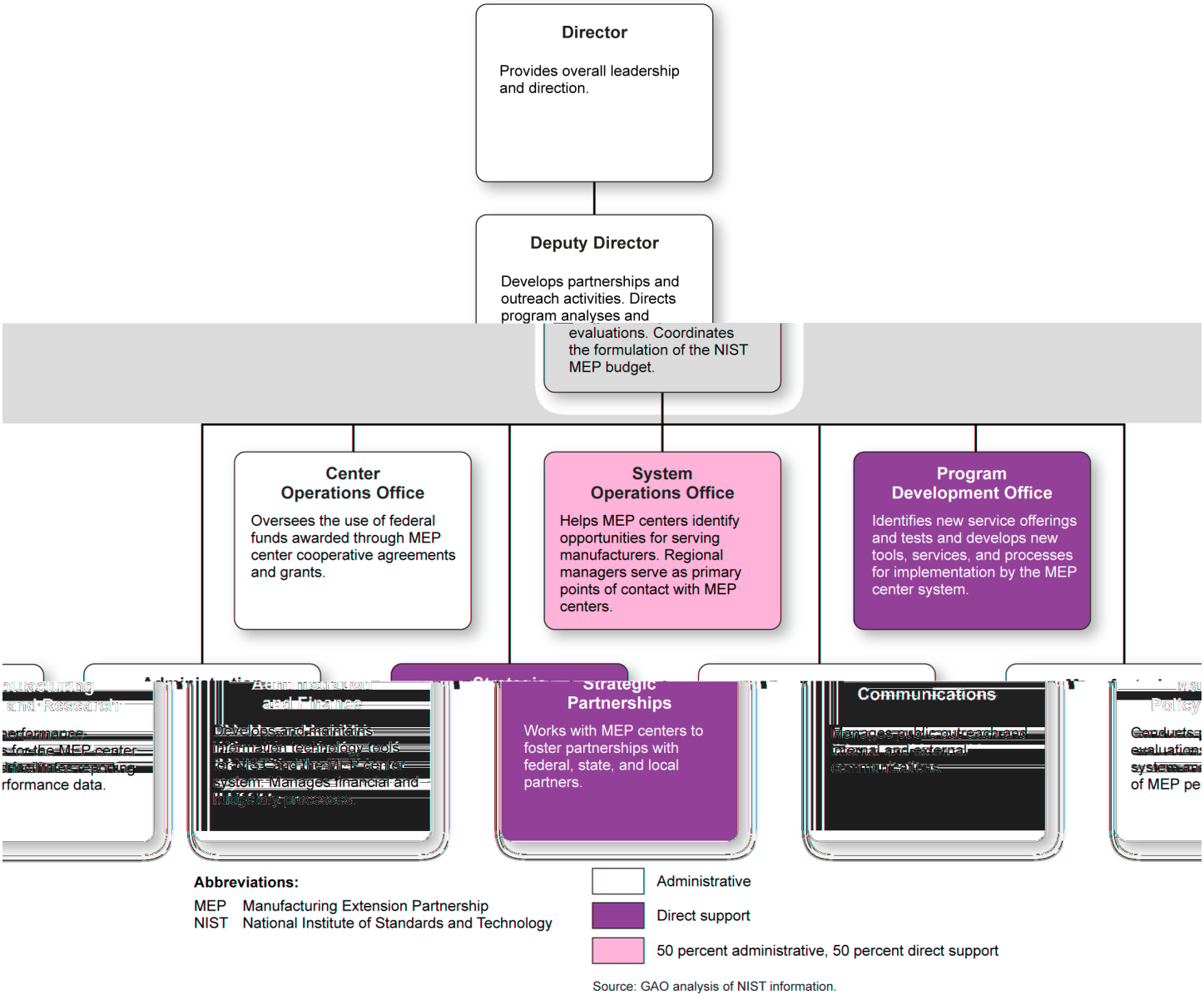
[14]The Advanced Manufacturing Jobs and Innovation Accelerator Challenge and the Energy-Efficient Buildings Hub are joint programs with other agencies. The Advanced Manufacturing Jobs and Innovation Accelerator Challenge is a partnership among NIST and the Economic Development Administration within the Department of Commerce, the Department of Energy, the Department of Labor's Employment and Training Administration, the Small Business Administration, and the National Science Foundation. The Energy-Efficient Buildings Hub project is a multiagency effort involving NIST and the Economic Development Administration, the Small Business Administration, and the Departments of Energy, Labor, and Education.

supported areas of the program's strategic plan, such as the contracts for MEP center staff training. Finally, some of the contracts were for operational functions, such as the contracts for telephone and mobile broadband and IT. NIST staff told us the program is currently reviewing all large direct support contracts with the intent of reducing contract spending and directing more funds to MEP centers. They expect the review to be complete in spring 2014.

Spending on Staff Salaries and Benefits

NIST spent $32.1 million on staff salaries and benefits in fiscal years 2009 through 2013. As of fiscal year 2013, NIST employed 55 staff under the MEP program. According to NIST's definitions, some of its staff directly supported MEP centers, and some were administrative. In fiscal year 2013, NIST estimated that it spent $2.9 million on direct support staff, and $4.4 million on administrative staff. As shown in figure 3, the direct support staff worked in NIST's strategic partnerships team, as well as in its program development and system operations offices for the MEP program. In NIST's 2013 analysis of administrative spending, NIST considered the strategic partnerships and program development staff to be entirely dedicated to directly supporting MEP centers, and the system operations staff to be half dedicated to directly supporting MEP centers and half dedicated to program administration. NIST considered the other six units and teams in the MEP program to be dedicated to program administration, including the Director and the administration and finance team. NIST officials told us that they increased spending for staff salaries and benefits during the past 5 years, in part to return the program's staffing level to that before substantial budget cuts in fiscal year 2004. New hiring focused on staff with expertise in areas of the program's strategic plan, according to these officials.

Figure 3: Manufacturing Extension Partnership Program Organizational Chart Showing Direct Support and Administrative Staff



Source: GAO analysis of NIST information.

Spending on Agency-Wide Overhead

NIST spent $30.6 million in federal MEP program funds in fiscal years 2009 through 2013 on agency-wide overhead required by NIST. NIST considers this spending to be administrative. NIST does not receive an appropriation for the costs of agency-wide general administration; instead it levies surcharges on programs to pay overhead costs, including the operation and maintenance of facilities, grants management, and mail distribution.

Spending on Travel, Training, Performance Awards, and Other Items

NIST spent the remainder of its federal funds—$5.1 million in fiscal years 2009 through 2013—on travel, training, staff performance awards, and other items. NIST considers all of this spending to be administrative. According to NIST's travel tracking spreadsheet, fiscal year 2013 travel included participation in on-site panel reviews of MEP centers, attendance at MEP center board meetings, and attendance at meetings with state and federal partners, among other things. Officials told us training funds are used for continuing education and professional training for MEP program staff, as opposed to training for MEP center staff. For example, some program staff hold professional credentials, such as a Contracting Officer Technical Representative, which require periodic training to be maintained. Performance award spending is used for discretionary bonuses and cash awards paid to MEP program staff for performance and to NIST staff outside the program, such as legal counsel, for exemplary support of the program.

Table 1 summarizes the spending described above.

Table 1: Manufacturing Extension Partnership (MEP) Program Spending, Fiscal Years 2009-2013

Dollars in millions

Category	Spending	Direct support or administrative spending
Cooperative agreement awards to MEP centers	$471.0	Direct support
Competitive grant awards to MEP centers	23.6	Direct support
NIST contracts	45.9	Mix of direct support and administrative
NIST staff salaries and benefits	32.1	Mix of direct support and administrative
NIST overhead charges	30.6	Administrative
Travel, training, performance awards, and other items	5.1	Administrative
Total	**$608.3**	

Source: GAO analysis of NIST data.

NIST's Cooperative Agreement Award Spending Is Inconsistent with Beneficiary Equity

NIST's spending on cooperative agreement awards is based on the historical amount awarded to each center when it was established. This took into account each center's identification of target manufacturing firms in its service area—including characteristics such as business size, industry types, product mix, and technology requirements—and its costs of providing services to those manufacturing firms. However, because NIST made the awards on an incremental basis to individual centers serving different areas over a period of more than 15 years, NIST's awards to individual centers did not take into account variations across different service areas in the demand for program services—a function of the number and characteristics of target manufacturing firms—or variations across different service areas in costs of providing services. NIST's cooperative agreement award spending is, therefore, inconsistent with the beneficiary equity standard.[15] This standard—which is commonly used in social science research to design and evaluate funding formulas—calls for funds to be distributed in a way that takes these variations into account so that centers can provide the same level of services to each target manufacturing firm, according to its needs. Because NIST did not account for these variations across service areas, NIST's cooperative agreement award spending may not allow centers to provide the same level of services to target manufacturing firms, according to their needs. NIST officials told us that an analysis they recently conducted showed a wide variation across centers in the relationship between their cooperative agreement award amounts and the number of target manufacturing firms in their service areas. NIST officials told us they are exploring ways to revise NIST's cooperative agreement

[15]The beneficiary equity standard is commonly used in social science research to design and evaluate funding formulas. See, for example, GAO, *Medicaid: Alternative Measures Could Be Used to Allocate Funding More Equitably,* GAO-13-434 (Washington, D.C.: May 10, 2013); GAO, *Trade Adjustment Assistance: Commerce Program Has Helped Manufacturing and Services Firms, but Measures, Data, and Funding Formula Could Improve*, GAO-12-930 (Washington, D.C.: Sept. 13, 2012);GAO, *Vocational Rehabilitation Funding Formula: Options for Improving Equity in State Grants and Considerations for Performance Incentives*, GAO-09-798 (Washington, D.C.: Sept. 30, 2009); GAO, *Maternal and Child Health: Block Grant Funds Should Be Distributed More Equitably*, GAO/HRD-92-5 (Washington, D.C.: Apr. 2, 1992); RAND Corporation, *Review and Evaluation of the Substance Abuse and Mental Health Services Block Grant Allotment Formula*, MR-533-HHS/DPRC, 1997; National Research Council, *Statistical Issues in Allocating Funds by Formula, Panel on Formula Allocations*, Thomas A. Louis, Thomas B. Jabine, and Marisa A. Gerstein, ed., Committee on National Statistics, (Washington, D.C.: 2003).

award spending to take into account variations across service areas in the number of target manufacturing firms, among other factors.

NIST's Cooperative Agreement Award Spending Is Based on Historical Practice

NIST's spending on cooperative agreement awards is based on the historical amount awarded to each center when it was established. Most of the currently operating centers were established between 1989 and 1996, according to our analysis of NIST data estimating the establishment dates of current centers.[16] When the centers were established, their original award amounts were based on the proposals that they submitted in response to NIST's federal funding opportunity announcements. For all but the first federal funding opportunity announcement, NIST specified that it would evaluate proposals by assigning scores to the following equally weighted criteria:[17]

- *Identification of target firms in the proposed region.* The proposals had to demonstrate an understanding of the service area's manufacturing base, including concentration of industry, business size, industry types, product mix, and technology requirements, among other things.
- *Technology resources.* The proposals had to assure strength in technical personnel and programmatic resources, full-time staff, facilities, equipment, and linkages to external sources of technology, among other things.
- *Technology delivery mechanisms.* The proposals had to define an effective methodology for delivering advanced manufacturing technology to manufacturing firms, among other things.
- *Management and financial plan.* The proposals had to define a management structure and assure management personnel to carry out development and operation of an effective center, among other things.
- *Budget.* The proposals had to contain a detailed 1-year budget and budget outline for subsequent years, among other things.

[16]NIST could not provide us with documentation to substantiate its estimates of when most centers' received their original cooperative agreement awards. NIST officials stated that NIST's record retention requirements do not require it to maintain files for cooperative agreements awarded in the early to mid-1990s.

[17]Prior to April 2013, the prospective center's budget was evaluated as part of the fourth criterion, management and financial plan, rather than as a separate, equally weighted fifth criterion.

For funding opportunity announcements that NIST published after it issued its 2008 strategic plan, these criteria were to be discussed in the context of the proposer's ability to align the proposal with the program's strategic objectives. The announcements stated that, after scoring the proposals, NIST would select award recipients based upon their score ranking and other factors such as availability of federal funds and the need to assure appropriate regional distribution.

After centers were established, their subsequent cooperative agreement awards have remained at the historical amount when they were renewed each year.[18] According to NIST officials, in some instances, centers' cooperative agreements are not renewed and are instead opened to recompetition; during fiscal years 2009 to 2013, eight cooperative agreements were opened to recompetition.[19] NIST officials told us that recompetitions typically occur because the existing center has voluntarily closed or the organization has decided its mission no longer supports running a MEP center. According to NIST's funding opportunity announcements, NIST used the same evaluation criteria discussed above to select new centers and establish their awards. Unlike renewed cooperative agreement awards, which remain at the historical amount each year, recompeted awards are based on, but can be greater than, the historical amount. NIST officials told us that they use the historical

[18]Renewals are contingent upon positive performance evaluations in accordance with 15 C.F.R. § 290.8, taking into account various factors including, as of 2012, whether the center meets the following five qualitative metrics related to the program's strategic plan: (1) the center has an actionable and measurable strategy that is built with purposeful alignment to the MEP program's strategic plan; (2) the center maintains an appropriately balanced portfolio of products and services that address all strategic areas; (3) the center is able and willing to experiment with and adopt new products and services, and has adopted a culture of continuous learning and development; (4) the center works with proactive clients and restarts reactive clients, and creates a sense of urgency that transitions reactive clients to proactive; and (5) the center is willing and able to write success stories that reflect a mix of the strategic plan areas regularly and on-time.

[19]During fiscal years 2009 to 2013, NIST officials told us the following centers' cooperative agreements were opened to recompetition: the MEP center serving Arizona in fiscal years 2009 and 2012, the centers serving the Chicago region of Illinois and central Pennsylvania in fiscal year 2010, the centers serving Rhode Island, Maryland, and Kentucky in fiscal year 2012, and the center serving Nebraska in fiscal year 2013. In five of these eight instances, the existing centers faced financial difficulties that made them unviable and caused them to voluntarily shut down. In the other three instances, the centers decided that their respective organizational missions no longer supported the operation of a MEP center and, as a result, each of these organizations voluntarily ended their respective MEP cooperative agreement.

amounts as a baseline in establishing the recompeted award amounts, but they may make additional funding available for the recompetitions. This was the case for all but one of the eight recompetitions that took place during fiscal years 2009 to 2013. According to NIST officials, during these years, NIST reserved additional funds for seven of the recompetitions to accommodate compelling proposals such as those that identified increased matching funds or broadened the work historically done in the service area. All but one of those seven recompetitions led to award amounts greater than the historical amount.

In addition to renewing existing awards and recompeting awards when a center has closed, NIST officials told us that NIST recently added a new center to the nationwide system and based the new award on the historical amount awarded for the area. Specifically, in 2012, a new center was added in South Dakota. Previously, the MEP center located in North Dakota served both North and South Dakota and received separate cooperative agreement awards for each. Serving both states proved to be difficult for the center, however, and most of its activity was focused in North Dakota. According to NIST officials, the state of South Dakota suggested to NIST the addition of a new South Dakota center. Through a competitive process, the new South Dakota center received an award equal in amount to the award that the North Dakota center previously received to serve South Dakota. The North Dakota center received an award equal in amount to the award it previously received to serve North Dakota.

NIST's Cooperative Agreement Award Spending Does Not Take into Account Variations in Demand for Program Services or in Centers' Costs of Providing Services across Service Areas

NIST's spending on cooperative agreement awards to MEP centers does not account for variations across centers' service areas in terms of the demand for program services, which is a function of the number and characteristics of target manufacturing firms. As a result, NIST's cooperative agreement award spending falls short of a component of beneficiary equity—a standard commonly used to design and evaluate funding formulas— that calls for funds to be distributed in a way that takes into account these variations so that each center can provide the same level of services to each target manufacturing firm, according to its needs. The original awards were made in part on the basis of each center's identification of target manufacturing firms in its service area, including characteristics such as business size, industry types, product mix, and technology requirements, among other things. NIST's funding opportunity announcements published in June 1995, May 1996, July 2000, March 2001, and March 2003 specified that award amounts should be directly related to the level of activity of the center, which is a function

of the number of manufacturing firms in the designated service area. Because most of the current MEP center cooperative agreements were made on an incremental basis over a period of more than 15 years, they did not take into account the distribution of demand for program services across service areas. NIST officials told us they recognize that, as a result of the incremental addition of centers, wide variations emerged across centers in the relationship between their cooperative agreement award amounts and the number of target manufacturing firms in their service areas. Specifically, NIST officials told us that an analysis they recently conducted of current cooperative agreement award amounts per target manufacturing firm across service areas showed a mean of $333 per target manufacturing firm and a range of $82 to $972, with 75 percent of centers falling between $179 and $487. As a result, centers may not be able to provide the same level of services to each target manufacturing firm, according to its needs.

NIST's spending on cooperative agreement awards also does not take into account variations in MEP centers' costs of providing services to target manufacturing firms. As a result, NIST's cooperative agreement award spending falls short of another component of beneficiary equity. Under the beneficiary equity standard, funds should be distributed in a way that accounts for variations in the cost of providing services in each area, so that target manufacturing firms across MEP center service areas may receive the same level of assistance, according to their needs. The costs of operating the centers to provide assistance to manufacturing firms affect the amount of funding that centers have available for direct assistance to firms. According to NIST's funding opportunity announcements, costs—as presented by the centers' budgets—were considered in making the original awards, but these costs were presented on an incremental basis over a period of more than 15 years and, therefore, NIST's consideration of these costs did not account for variations across service areas. By not accounting for these variations, NIST's cooperative agreement award spending may further call into question centers' ability to provide the same level of services to each target manufacturing firm, according to its needs.

NIST Is Undertaking Efforts to Revise Its Cooperative Agreement Award Spending

NIST officials told us they are exploring ways to revise cooperative agreement award spending to take into account variations across service areas in the number of target manufacturing firms, among other factors. The officials discussed various options they are considering, but they did not identify an option they had agreed to implement or a timeline for decision making and implementation. They stated that one option they

are considering is to provide increased awards to those centers that are currently underfunded relative to the mean relationship between centers' cooperative agreement award amounts and the number of manufacturing firms in their service areas. They told us that doing so would result in a greater benefit in terms of manufacturing firms served than providing additional funds to centers that are overfunded relative to the mean. NIST estimates that if it were to increase cooperative agreement award amounts for the underfunded centers, the program would see up to a 20 percent increase in the number of manufacturing firms served in these service areas over a 3-year period.

NIST officials told us that they face at least two impediments in revising cooperative agreement award spending. First, they stated that revising cooperative agreement award spending within the current level of funding would likely mean taking funds from some centers to give to others, and NIST is concerned about the effect this disruption might have on the impact of the program. The officials told us that they would like to increase NIST's total cooperative agreement award spending and that they are exploring options to do so. They said they are examining their spending on direct support contracts to determine whether cost savings can be realized and redirected to cooperative agreement awards. They also said that they are considering making any changes over a multiyear period. Our prior work has shown that phasing in changes to funding levels gradually over a number of years minimizes disruptions to funding recipients by providing them time to adjust.[20]

The second impediment that the officials identified is the requirement in the MEP program's authorizing legislation that federal cooperative agreement funds provided to MEP centers after their sixth year of operation not exceed one-third of their capital and annual operating and maintenance costs. This requirement leaves the centers responsible for raising the remaining two-thirds of matching funds from other sources. NIST officials told us that many centers already face difficulties raising the required two-thirds of matching funds and may not be able to raise the additional funds needed to access an increased cooperative agreement award.

[20]See GAO-09-798.

Conclusions

Manufacturing plays a key role in the U.S. economy, and NIST has established a nationwide system of MEP centers dedicated to supporting and strengthening the U.S. manufacturing base. However, because NIST's cooperative agreement award spending does not take into account variations across service areas in the demand for program services—a function of the number and characteristics of target manufacturing firms—or variations in MEP centers' costs of providing services, centers may not be able to provide the same level of services to each target manufacturing firm, according to its needs. NIST officials told us they are exploring ways to revise cooperative agreement award spending to take into account variations across service areas in the number of target manufacturing firms, among other factors. Revising NIST's cooperative agreement award spending poses challenges because it could result in award decreases for some centers, along with increases for others. However, there are ways to ease the transition, such as phasing in changes gradually to minimize disruption to centers and the manufacturing firms they serve.

Recommendation for Executive Action

To ensure that NIST's spending on cooperative agreement awards to MEP centers is more equitable to manufacturing firms in different service areas, we recommend that the Secretary of Commerce revise the program's cooperative agreement award spending to account for variations across service areas in:

- the demand for program services—a function of the number and characteristics of target manufacturing firms—and
- MEP centers' costs of providing services.

Agency Comments

We provided a draft of this report to the Department of Commerce's NIST for review and comment. In its written comments, reproduced in appendix II, NIST generally agreed with our findings and recommendation. In commenting on our recommendation, NIST stated that information in our report could help NIST continue to efficiently operate the MEP program.

NIST also provided technical comments, which we incorporated into the report as appropriate.

We are sending a copy of this report to the Secretary of Commerce, the appropriate congressional committees, and other interested parties. In addition, the report is available at no charge on the GAO website at http://www.gao.gov.

If you or your staff members have any questions about this report, please contact me at (202) 512-3841 or ruscof@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made key contributions to this report are listed in appendix III.

Frank Rusco
Director, Natural Resources and Environment

Appendix I: List of Manufacturing Extension Partnership Centers, 2013

State	City	Name
AK	Anchorage	Alaska Manufacturing Extension Partnership[a]
AL	Birmingham	Alabama Technology Network
AR	Little Rock	Arkansas Manufacturing Solutions
AZ	Phoenix	Arizona Commerce Authority
CA	Torrance	California Manufacturing Technology Consulting
CA	San Ramon	Corporation for Manufacturing Excellence
CO	Denver	Colorado Association for Manufacturing and Technology
CT	Rocky Hill	Connecticut State Technology Extension Program
DE	Newark	Delaware Manufacturing Extension Partnership
FL	Celebration	Florida Manufacturing Extension Partnership[b]
GA	Atlanta	Georgia Manufacturing Extension Partnership
HI	Honolulu	INNOVATE Hawaii
IA	Ames	Iowa Center for Industrial Research and Services
ID	Boise	Idaho TechHelp
IL	Park Ridge	Illinois Manufacturing Excellence Center-Chicago Region
IL	Peoria	Illinois Manufacturing Excellence Center-Downstate
IN	Indianapolis	Purdue Technical Assistance Program
KS	Overland Park	Mid-America Manufacturing Technology Center
KY	Bowling Green	Advantage Kentucky Alliance
LA	Lafayette	Manufacturing Extension Partnership of Louisiana
MA	Worcester	Massachusetts Manufacturing Extension Partnership
MD	Columbia	Maryland MEP[c]
ME	Augusta	Maine Manufacturing Extension Partnership
MI	Plymouth	Michigan Manufacturing Technology Center
MN	Minneapolis	Enterprise Minnesota
MO	Rolla	Missouri Enterprise
MS	Ridgeland	InnovateMEP Mississippi
MT	Bozeman	Montana Manufacturing Extension Center
NC	Raleigh	North Carolina Industrial Extension Service
ND	Bismarck	North Dakota Manufacturing Extension Partnership
NE	Lincoln	Nebraska Manufacturing Extension Partnership
NH	Concord	New Hampshire Manufacturing Extension Partnership
NJ	Morris Plains	New Jersey Manufacturing Extension Partnership
NM	Albuquerque	New Mexico Manufacturing Extension Partnership
NV	Reno	Nevada Industry Excellence
NY	Albany	Empire State Development's Division of Science, Technology and Innovation (NYSTAR)
OH	Columbus	Ohio Manufacturing Extension Partnership

State	City	Name
OK	Tulsa	Oklahoma Manufacturing Alliance
OR	Portland	Oregon Manufacturing Extension Partnership
PA	Pittsburgh	Catalyst Connection
PA	Philadelphia	Delaware Valley Industrial Resource Center
PA	Williamsport	Innovative Manufacturers' Center
PA	York	MANTEC
PA	Bethlehem	Manufacturers Resource Center
PA	Hanover Township	Northeastern Pennsylvania Industrial Resource Center
PA	Erie	Northwest Pennsylvania Industrial Resource Center
PR	Hato Rey	Puerto Rico Manufacturing Extension
RI	Providence	Rhode Island Manufacturing Extension Services[d]
SC	Columbia	South Carolina Manufacturing Extension Partnership
SD	Sioux Falls	South Dakota Manufacturing and Technology Solutions[e]
TN	Nashville	University of Tennessee Center for Industrial Services
TX	Austin	Texas Manufacturing Assistance Center
UT	Orem	Utah Manufacturing Extension Partnership
VA	Martinsville	GENEDGE ALLIANCE
VT	Randolph Center	Vermont Manufacturing Extension Center
WA	Mukilteo	Impact Washington
WI	Menomie	Northwest Wisconsin Manufacturing Outreach Center
WI	Madison	Wisconsin Manufacturing Extension Partnership
WV	Morgantown	West Virginia Manufacturing Extension Partnership
WY	Laramie	Manufacturing-Works

Source: GAO analysis of National Institute of Standards and Technology (NIST) information.

[a]According to NIST officials, the Alaska Manufacturing Extension Partnership closed in September 2013.

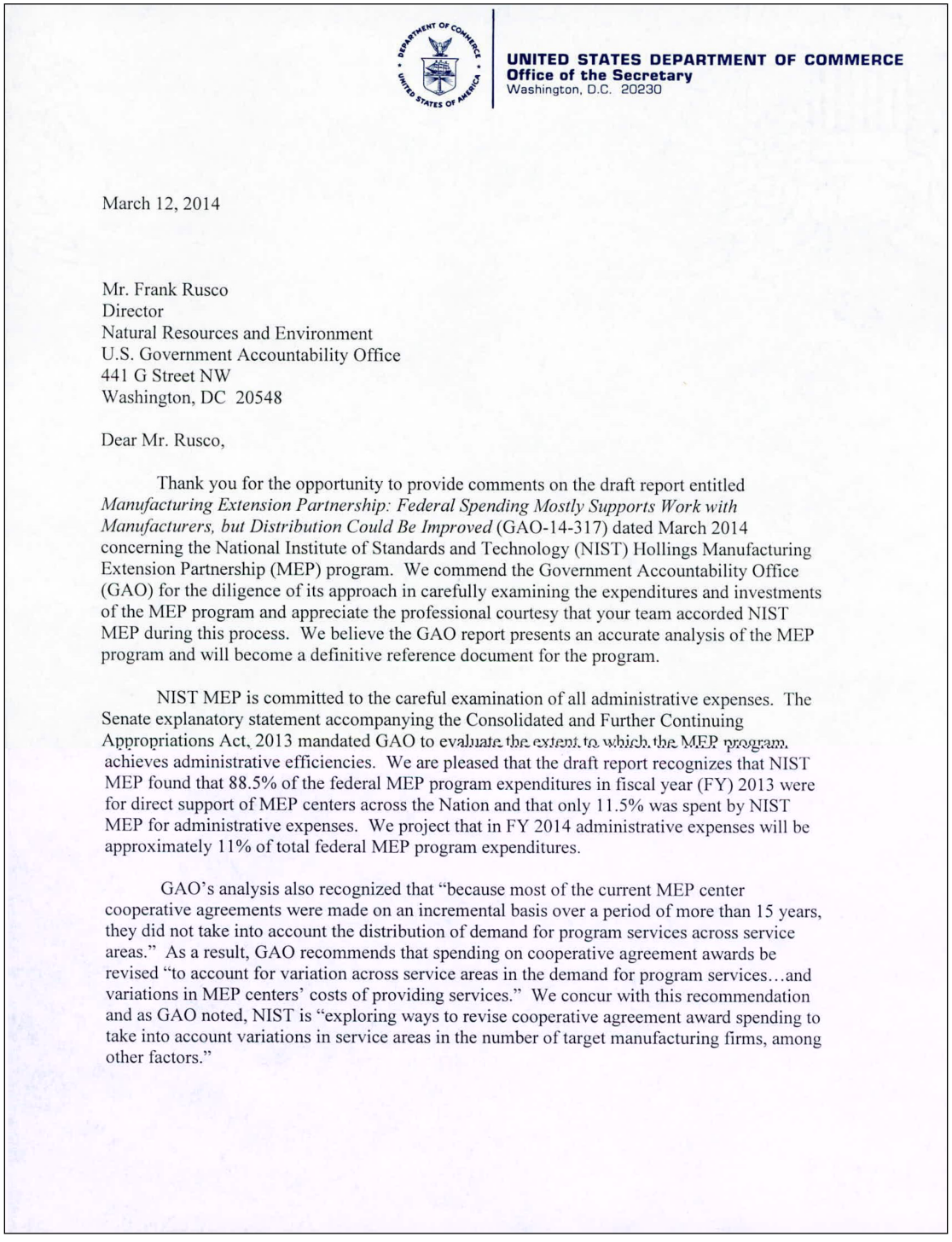
[b]According to NIST officials, the Florida Manufacturing Extension Partnership is expected to close by March 2014.

[c]According to NIST officials, the Maryland MEP was established in July 2013.

[d]According to NIST officials, Rhode Island Manufacturing Extension Services was established in February 2013.

[e]According to NIST officials, South Dakota Manufacturing and Technology Solutions was established in January 2013.

Appendix II: Comments from the Department of Commerce



UNITED STATES DEPARTMENT OF COMMERCE
Office of the Secretary
Washington, D.C. 20230

March 12, 2014

Mr. Frank Rusco
Director
Natural Resources and Environment
U.S. Government Accountability Office
441 G Street NW
Washington, DC 20548

Dear Mr. Rusco,

Thank you for the opportunity to provide comments on the draft report entitled *Manufacturing Extension Partnership: Federal Spending Mostly Supports Work with Manufacturers, but Distribution Could Be Improved* (GAO-14-317) dated March 2014 concerning the National Institute of Standards and Technology (NIST) Hollings Manufacturing Extension Partnership (MEP) program. We commend the Government Accountability Office (GAO) for the diligence of its approach in carefully examining the expenditures and investments of the MEP program and appreciate the professional courtesy that your team accorded NIST MEP during this process. We believe the GAO report presents an accurate analysis of the MEP program and will become a definitive reference document for the program.

NIST MEP is committed to the careful examination of all administrative expenses. The Senate explanatory statement accompanying the Consolidated and Further Continuing Appropriations Act, 2013 mandated GAO to evaluate the extent to which the MEP program achieves administrative efficiencies. We are pleased that the draft report recognizes that NIST MEP found that 88.5% of the federal MEP program expenditures in fiscal year (FY) 2013 were for direct support of MEP centers across the Nation and that only 11.5% was spent by NIST MEP for administrative expenses. We project that in FY 2014 administrative expenses will be approximately 11% of total federal MEP program expenditures.

GAO's analysis also recognized that "because most of the current MEP center cooperative agreements were made on an incremental basis over a period of more than 15 years, they did not take into account the distribution of demand for program services across service areas." As a result, GAO recommends that spending on cooperative agreement awards be revised "to account for variation across service areas in the demand for program services…and variations in MEP centers' costs of providing services." We concur with this recommendation and as GAO noted, NIST is "exploring ways to revise cooperative agreement award spending to take into account variations in service areas in the number of target manufacturing firms, among other factors."

We appreciate your recognition that any such revision to funding agreements should take place over a number of years to minimize disruption to funding recipients, and that NIST MEP found that the two-thirds matching fund requirement limits the ability of many centers to access an increased cooperative agreement award.

Once again, we thank you for your efforts in examining the expenditures and investments of the MEP program and for allowing NIST MEP the opportunity to provide comments. The findings and recommendations developed as a result of GAO's work will allow NIST to continue to efficiently execute and operate the MEP program so that the nationwide system of MEP centers can continue to enhance the productivity, innovation, and competitiveness of domestic small and medium-sized manufacturing firms.

If you have any questions regarding our response, please contact Phillip Singerman, Acting Director, MEP, at (301) 975-4676.

Sincerely,

Patrick Gallagher
NIST Director Performing the
Duties of the Deputy Secretary

Appendix III: GAO Contact and Staff Acknowledgments

GAO Contact

Frank Rusco, (202) 512-3841 or ruscof@gao.gov

Staff Acknowledgments

In addition to the individual named above, Susan Quinlan (Assistant Director), Greg Dybalski, Kim Frankena, Cindy Gilbert, Mark M. Glickman, Paul Kinney, Cynthia Norris, Marietta Mayfield Revesz, Emmy Rhine Paule, William B. Shear, Barbara Timmerman, and Jack Wang made key contributions to this report.