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December 31, 2017
William F. Welch
Senate Clerk
24 Beacon Street
Room 335 – State House
Boston, MA 02133

Mr. Steven T. James
House Clerk
24 Beacon Street
Room 145 – State House
Boston, MA 02133

Dear Sirs:

Massachusetts Development Finance Agency (MassDevelopment) is pleased to submit this sixth annual report of the Advanced Manufacturing Futures Program (AMFP) as required by Chapter 238 of the Acts of 2012, An Act Relative to Infrastructure Investment, Enhanced Competitiveness and Economic Growth in the Commonwealth. This report summarizes the progress MassDevelopment has made with respect to the AMFP during fiscal year 2017. This year saw the continued success of the AMFP, which supports the Commonwealth's vibrant manufacturing sector through grants and programs that span several years.

CHARLES D. BAKER
Governor

KARYN E. POLITO
Lieutenant Governor

JAY ASH
Chairman

LAUREN A. LISS
President and CEO

In 2013, MassDevelopment received $9,375,000 of an expected $18.5 million from the Commonwealth's FY14 budget to capitalize the AMFP. MassDevelopment developed and manages the AMFP in consultation with the Secretary of the Executive Office of Housing and Economic Development, the Advanced Manufacturing Collaborative, and industry leaders. The initial capitalization from the Commonwealth has allowed the AMFP to accelerate the growth and competitiveness of Massachusetts manufacturers through grants, contracts, and loan guarantees that:

- Improve access to technical assistance for small- to mid-sized manufacturers.
- Encourage the adoption of new technologies and advanced manufacturing capabilities.
- Develop the manufacturing worker pipeline by creating educational programs about career opportunities.
- Facilitate education and skills training through individualized career pathway programs.
- Foster academic and industry collaboration.

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- Coordinate the activities of supporting agencies and partners.
- Improve access to capital.

Working with many partners, MassDevelopment has used the initial capitalization and MassDevelopment funds to develop the following programs, which enhance the economic environment for Massachusetts manufacturers.

Sincerely,

Lauren A. Liss

Lauren A. Liss

AMP it up!/Dream It. Do It.

AMP it up! launched in 2013 and continues to be a success to this day. AMP it up!, a Dream It. Do It. partner, is a campaign that encourages young people and students to pursue careers in manufacturing. Today's manufacturing boasts advanced technologies, state-of-the-art facilities, and fast-paced work environments. Still, many people harbor outdated impressions of manufacturing. Only 35 percent of parents say they would encourage their children to pursue careers in manufacturing despite the advanced skills and high pay characteristic of the industry. AMP it up! seeks to change the perception of the industry and inspire the next generation of manufacturing workers.

As part of AMP it up!, MassDevelopment provides matching grants to regional partnerships to create programs that connect students with manufacturing opportunities. These grant recipients – composed of employment and workforce investment boards, advanced manufacturers, chambers of commerce and development councils, community colleges, and youth organizations – offer activities such as facility tours, career workshops, information sessions, and manufacturer externships. The target audience includes students, veterans, and influencers such as parents, guidance counselors, and teachers.

In the first five rounds of grants, MassDevelopment provided more than $470,000 to 49 partnerships across the Commonwealth. Programs included internships, robotics competitions, and facility tours to educate students about manufacturing careers.

- In 2013, $92,736 to 10 partnerships.
- In 2014, $108,950 to 11 partnerships.
- In 2015, $88,633 to 9 partnerships.
- In 2016, $98,633 to 10 partnerships.
- In 2017, 81,410 to 10 partnerships.

Fiscal Year 2017 is the third year that AMP it up! sponsored the AMP it up! Video Challenge (Challenge). The Challenge invites students to research the inner workings of a Massachusetts manufacturing innovation and show in a three-minute video how it impacts the world around them. In 2017, students visited manufacturers such as Matouk Fine Linens, New Valence Robotics, Assembly Guidance Systems, U-Turn Audio, and Starrett Tools. Nearly 3,300 people voted on eight videos submitted by schools across the Commonwealth. Four entries received prizes: B.M.C. Durfee High School for its video featuring Matouk Fine Linens; Newton North High School for its video of New Valence Robotics; Shawsheen Valley Technical High School for its video of Assembly Guidance Systems; and Greater New Bedford Regional Vocational Technical School for its video featuring U-Turn Audio.

Fiscal Year 2017 is the second year that MassDevelopment co-hosted the annual Dream It. Do It. Making It Real: Girls & Manufacturing Summit, in Windsor, CT. About 170 middle and high school girls, with 75 from Massachusetts schools, attended this October 19, 2017 event to learn about careers in manufacturing. Participating schools included Chestnut Academy, Zanetti Montessori Magnet School, STEM Middle Academy, Southwick Regional School and Blackstone Valley Regional Technical High School.

Massachusetts Manufacturing Accelerator Network (MMAN) – In December 2016, the AMFP provided $300,000 to UMass Lowell Innovation Hub, UMass Dartmouth Center for Innovation & Entrepreneurship (CIE), and UMass Amherst Innovation Institute to fund the first year of a multi-year rollout of the Manufacturing Accelerator Network. This network will create and deploy a virtual center that supports small- to mid-sized (SME) advanced manufacturing companies throughout Massachusetts. The network includes programs, resources, facilities, equipment and collaborations around the UMass campuses to support increased innovation capacity at local manufacturing companies. MMAN has hosted a series of one-day workshops on advanced manufacturing, is planning a "Modeling and Simulation" and "Design for Manufacturing" workshop, has met with manufacturers statewide, and is aligning the capabilities of its advanced manufacturing facilities to fit the needs of the manufacturing community. The network expects to provide companies with the ability to work with new, advanced materials, enhance their capabilities to manufacture emerging flexible electronic systems, and integrate their advanced controls systems.

Valley Venture Mentors – In June 2016, AMFP provided $200,000 to Valley Venture Mentors (VVM) for year one of a three-year pilot program to create the Massachusetts Manufacturing Accelerator. The pilot selected eight original equipment manufacturers (OEMs) and 10 manufacturers from 41 applicants, and enrolled them in an executive training program. Manufacturers completed 10 class sessions and more than 140 hours of homework activities. Students could attend 44 guest speaking sessions and a "Shark Tank"-style event, during which veteran business executives challenged students to evaluate their business models and assumptions. Upon completion of the four-month boot camp, students reported – and attributed to this VVM program – a roughly $300,000 increase in revenue, $30,000 in new grant funding, and a 17 percent increase in the number of customers.

Mass Technology Leadership Council (MassTLC) with MassRobotics and MassMEP – In May 2016, the AMFP provided $128,000 to the Mass Technology Leadership Council (MassTLC) to address the lack of connections between the robotics and "Internet of Things" startup ecosystem to the local supply chain and manufacturers in Massachusetts. Working with MassRobotics and MassMEP, MassTLC surveyed the startup and manufacturing communities, provided one-on-one mentorship sessions, visited local manufacturers, and hosted events to bring together and match up these constituencies. The one-on-one sessions and the events revealed that startups and manufacturers need assistance to prepare and organize appropriate materials prior to meeting each other, and then benefit from a personal introduction that sets the foundation for building their long-term relationships. This program provided a third-party team to connect these groups and start building relationships, with the ultimate goal of ideas fostered in Massachusetts being produced in Massachusetts.

Manufacturing Month – Governor Charlie Baker proclaimed October 2017 "Manufacturing Month." MassDevelopment promoted Manufacturing Month through tours, discussions, speakers, and open houses on the MAmanufacturing.com website. The website listed 30 Massachusetts events, hosted by AccuRounds, Franklin Hampshire Regional Employment Board, MassMEP, North Easton Machine Company, Greentown Labs, Polaris, Quabbin Wire & Cable Company, Quinsigamond Community College and others.

Manufacturing Advancement Center Workforce Innovation Collaborative (MACWIC Program) – In 2016, MassDevelopment and MassMEP extended the MACWIC Program for a third year through December 31, 2017. This grant closes in Fiscal Year 2018, at which time MassDevelopment will be able to provide the final numbers for the program's progress. The original $747,160 MassDevelopment grant created the MACWIC as a two-year program to provide competency testing and certification to students at vocational schools and community colleges with advanced technology programs. MACWIC offers the only industry-recognized credentialing system included within the Massachusetts Department of Education vocational high school machine technology curriculum guidelines. During the 2016-2017 school years, 31 out of the 34 technical high schools with a Chapter 74 Machine Technology Program partnered with MACWIC to credential their students and co-op partners. Today, MACWIC has more than 225 member companies who combined represent more than 27,000 employees and more than 20 percent of all manufacturing revenue in Massachusetts.

Manufacturing Innovation Grants Program – In 2015, MassDevelopment authorized $1.5 million for a manufacturing innovation grants program that allows Massachusetts manufacturers with 100 or fewer employees to receive subsidized services at designated Innovation Centers. This grant closes in Fiscal Year 2018, at which time MassDevelopment will be able to provide the final numbers for the program's progress. Chosen for their technical expertise and experience working with manufacturing companies, the Centers – Algonquin Industries, Inc.; Boston Engineering Corporation; Connecticut Center for Advanced Technology, Inc.; and Worcester Polytechnic Institute – provide guidance and equipment for product development, prototyping, scale-up, and cost reduction. Through the grants program, MassDevelopment pays the lesser of $75,000 or 75 percent of a contract between a manufacturing company and its selected Innovation Center. The current grant highlights include:

- Algonquin Industries committed approximately $500,000 of its $590,000 grant to 10 companies.
- Boston Engineering committed $322,000 of its $350,000 grant to six companies.
- Connecticut Center for Advanced Technology, Inc. committed approximately $120,000 of its $350,000 grant to 11 companies.
- Worcester Polytechnic Institute committed close to $200,000 of its $210,000 grant to 11 companies.

In addition to the $1.5 million, the U.S. Office of Economic Adjustment provided another $300,000 for the four Massachusetts-based innovation centers in 2016 to support defense-related manufacturers, $300,000 of which was used by six companies.

Greentown Labs – MassDevelopment awarded Somerville-based clean-tech incubator Greentown Labs two grants totaling $362,500, one in October 2014 and another in May 2016, to connect clean-tech startups with Massachusetts manufacturing resources. Greentown seeks to keep successful startup companies in the Commonwealth by tying them to the local supply

chain and generating work for local vendors. As of Fiscal Year 2017 the grants have ended and in the final report, Greentown surveyed 73 startups and 86 manufacturers, held more than 500 office hours, signed 23 contracts, held 16 "lunch and learn" events, connected 85 manufacturers to work with startups, and assisted in getting 48 startups to work with manufacturers. The Greentown Labs Manufacturing Initiative has been able to continue its education and connection programs for Massachusetts-based startups and manufacturers with this MassDevelopment grant. The Initiative saw startups scale, assisted them as they developed supply chains in Massachusetts, watched manufacturers create new products, and connected manufacturers with startups.

Massachusetts Manufacturing Energy Collaborative (MassMEC) – In March 2014, MassDevelopment announced the formation of MassMEC, an ongoing initiative in Fiscal Year 2017 that helps lower the energy bills of commercial, industrial, and municipal entities by combining the energy usage of many companies into buying groups, then negotiating volume rates with the power supply companies. MassMEC is managed by Early Bird Power, a private energy consulting firm MassDevelopment chose after a highly competitive request for proposal process. Almost 180 companies are now members of MassMEC, and the initiative reports a high retention rate. MassMEC continues to promote its services through email campaigns, strategic partner meetings, and social media. Some examples of MassMEC estimated member savings are:

- Gregstrom Corporation, which saved $42,964 over a two-year term,
- Nameplates for Industry Inc., which saved $5,977 over a 22-month term, and
- Flexcon Corporation, which saved $130,376 over a three-year term.

Working Capital Loan Guarantees – In fiscal year 2013, MassDevelopment introduced a Working Capital Loan Guarantee product that allows banks to increase their working capital loans to manufacturers, providing a guarantee of up to 25 percent of the loan. MassDevelopment developed this product, recommended by the Advanced Manufacturing Collaborative, in response to the challenges many small- to mid-sized enterprises face when trying to access working capital. This program continued in Fiscal Year 2017. To date, four manufacturers have taken advantage of this product since its launch and received nearly $1.4 million in guarantees.

MAManufacturing.com – A new website devoted to the Commonwealth's manufacturing industry, MAmanufacturing.com, launched in June 2017. This one-stop site for Massachusetts manufacturers connects them to critical resources that support and grow manufacturing businesses, including financing solutions, business support and assistance, workforce building and training, and manufacturing news and events.

Advanced Manufacturing Collaborative – The Advanced Manufacturing Collaborative continued to meet in 2017 and develop the manufacturing strategy and plan for the Commonwealth.