New Jersey Manufacturing Extension Program, Inc.

January 12, 2017

NIST-MEP
100 Bureau Drive – Stop 4800
Gaithersburg, MD 20899

To: Carroll Thomas – Director of NIST-MEP

Re: MEP Competitive Awards Program RFI Responses

Dear Carroll,

As per your letter to all Center Directors, and the subsequent RFI to support the upcoming Notice of Federal Funding (NOFO) that will be released later in 2017. In order to properly respond to this request; NJMEP went back to the 138 Small Manufacturers that we worked with in 2016 and asked them each question listed in the RFI.

This included those that:

- Completed a Project with NJMEP
- Allowed NJMEP to perform a Corporate Assessment & Report
- Attended a Small Business Workshop or Short-Term Program

  Note: NJMEP uses 30 employees & less as the base number as many smaller firms can change often and rapidly based on any seasonal efforts.

Industry Sectors Include:

• Fabricated Metal Products	28
• Food & Beverage	24
• Plastics & Rubber	17
• Bio/Pharma/Life Sciences	14
• Medical Device	11
• Chemical	11
	105

These contacts were made (both) in person and in e-mail as a follow-up to secure responses, and the 105 respondees are captured in this document along with the top 3 answers to each of the 5 questions when applicable.

1.) **What are the key problems and issues facing small U.S. Manufacturers and their competitiveness and opportunties for growth in the near-term (1-2 years), mid-term (3-5 years) and/or long-term (>5 years)?**

The answers to this question generally focused on the shorter term, because the issues facing them 'today' are the ones that can reduce or remove their futures.

- 97 firms / 92% - Unavailability of trained workers at all levels, but especially in Engineering, Production Staff (machinist, CNC, welders), Supply Chain, and Technical Sales.
- 78 firms / 74% - mentioned Governmental (State & Federal) (FSMA, Environmental, etc.), and Industry-Based (Lean/Six Sigma, ISO, etc.) Requirements that become the 'gate keeps' to growth.
- 66 firms / 63% - a general lack of sales reduces the ability to grow, and this includes changing markets, overseas competition, sequestration, and lack of an internal sales structure.
- 61 firms / 58% - mention that available funding through banks, SBA loans is lacking and is the cause for the inability to expand markets through new technology and machinery.

2.) **What advanced manufacturing technologies are/will be needed by small U.S. manufacturers for the companies to be competitive and grow in the global marketplace in the near-term (1-2 years), mid-term (3-5 years) and/or long-term (>5 years)?**

The overall abiding concern was based on the fact that, even labor intensive finish work, the lack of trained individuals would lead to a higher requirement of CNC and Robotic or Manipulator-Assisted support to reduce the need for actual staff. In fact, 84 firms / 80% cited this in some similar format.

This is a short-term problem that is precluding their longer term outlooks.

Ceratinly everyone is aware of 3-D Printing, but the firms that we interacted with commonly stated that it was a tool that could be used to reduce time for fast-prototyping and jig set up, but was not (yet) practical for production uses, and metal manufacturing was not readily available.

a.) **What would be the appropriate Manufacturing Readiness Level or Technology Readiness Level for those technolgies in order for small U.S. manufacturres to consider adoption?**

This was a question that received inputs all across the board, as many (91 / 87%) have already begun adopting those technolgies (Mastercam, CNC Machines, ERP Systems, etc) to various levels already. However, the conversations then fell back into the available and trained workforce and the accesibility to capital funding.

Simply, many already moved into a more advanced position, and will do so again when they need to do so.

b.) What information will be required for small U.S. manufacturers to understand a technology or related group of technologies and the risks and opportunities associated with making or not making an investment in any given technology?

The format of this question was not readily accepted by the smaller firms we interacted with as many took it as an affront, because the Owners and C-Suite personnel believe that size does not preclude knowledge on this issue. In fact, most (75%) surmise that they know more about the technologies because they are forced to overcome production situations every day, and that larger companies can sometimes 'throw people at a problem' or rely more on their supply chain in times of overload.

The overwhelming concern always came back to the cost of the technology and the available training or people to run the new machines. One of these two were mentioned by 100% of the firms contacted by NJMEP.

c.) How is information about advanced manufacturing technolgies best delivered to small U.S manufcaturers and/or MEP Centers that support those small U.S. manufactures?

The best option to deliver this information to the firms is their MEP Center, and that has been proven time and again through our metrics, and through the continued interaction with the manufacturing industry as a whole.

The methodologies for bringing this to the MEP Centers are broad…

- MEP Center Technical Staff
- NIST-MEP
- Other MEP Centers
- Our Clients
- Trade Associations
- Universities/Community Colleges/Vocational Schools

3.) **What technologies and/or business models are important to small U.S. manufacturers as they choose and participate in any particular supply chain?**

What feedback we received was based on the fact that the supply chain for each company had 2 moving parts…incoming and outgoing, and while they are certainly related…they are handled (many times) in different ways. So, we address them separately as follows:

- Incoming – each company would prefer to use an affordable, easy to implement, effective and expandable ERP system to support its Supply Chain, but this is a difficult task. There have been many over the years, but as they evolve they are (either) bought up by a larger firm or become more expensive.

  Too many smaller manufacturers are using hybrid systems of their own creation by using Excel, etc., and while they help…there is no interrelations between components that allow for significant time savings or accuracy.

- Outgoing – as many smaller firms are truly the foundation of the Supply Chain throughout the nation, it is how they are connected that has many of them concerned. Here is some of the input…

  - 81 / 77% - believe that many larger firms look only at the price and not the quality of the item.

  - 78 / 74% - see the RFQ requests as 'efforts in futility' as they are (what is termed) as 'check quotes', and/or expect too much from smaller firms in regards to capabilities. Many provide singular components and are expected to provide complete products or full assemblies.

  - 73 / 70% - feel that contractual or corporate 'pass-thru requirements" (Insurance, ISO, Lean, FSMA, ERP Systems) are put in place to allow the larger companies to skirt 'Buy American' efforts, and purchase soley on price.

4.) **What complementary business services, including information services, are and/or will be needed by small U.S. Manufacturers to take full advantage of advanced manufacturing technologies at the company or the supply chain level?**

As more advanced technolgies become more and more prevalent overall in STEM and Manufacturing, there is a growing need to expand IT capabilities and

(subsequently) the control of the security risks that come with these progressions. This includes the ability to understand the ownership issues that come with some cloud-based systems.

Secondarily, as machines develop further, the realities of operation and maintainance become larger problems to the smaller firms as they cannot afford the downtime, nor errors/waste that comes with non-comformance.

5.) Are there any other critical issue that NIST-MEP should consider in its strategic planning for future investments that are not covered by the first four questions?

Throughout this process the NJMEP Team made an effort to listen, not only to the direct responses to the questions, but to the 'side bar' comments that opened up a different view into the needs of our small to mid-sized manufacturing firms. The following is a listing of some take-aways from these conversations, as the capture comments made multiple times by our clients.

- Process Needs – what we learned is that most every company is looking to increase their capaibilities and their staff education levels. So, access to available funding (whether cash reserves or more formal banking sources) are keys to said expansion. Therefore, the value of standard MEP offerings like Lean/Six Sigma, Continuous Improvement, and ISO are not lost upon the owners and senior managers of these businesses.

  The ability to reinvest into one's firm still is founded in improving processes and saving money and time (which is also money). That sets up a company for future success, as new machinery does not overcome poor procedures. The MEP Centers cannot overlook the basics and go directly to technology.

- Workforce Development (WFD) and Certificates/Credentials – these remain critical to all companies, and a role that can only be filled 'structurally' by an MEP Center, and this should be exploited state by state; and that would include NIST-MEP branded or co-branded certifications/credentials.

- FSMA – every food company we work w/ in NJ (there are over 1,100 who make food, additives, packaging, etc.) – including the 24 that responded to us here are concerned about FSMA and how it will affect their ability to grow and to automate. We are currently in year 2 of the the 3 year roll-out, and this one will not go away. MEP has to be ahead of the pack on this one.

- Supply Chain – we speak a great deal about this area, but mostly on a company by company basis. NJMEP and our small to mid-sized manufacturers are of the opinion that creating a state-wide Supply Chain would be helpful on many levels, but especially for the smaller entities. In fact, the development of a hand-held application would allow real-time searches for supply chain partners.

Please note that the ability to bring any of these efforts to bear nationally is a very difficult task, but expanding past the “State by State’ appriach is a must to gain significant ground. Therefore, I strongly suggest that employing our MEP Regions as a proving grounds would be extremely efficient and beneficial.

That is the NJMEP response to this RFI, and I/we hope that our approach was acceptable and applicable to your needs in regards to connecting small U.S. manufacturers with opportunities to expand into more high tech, advanced programs.

Please feel free to contact me directly with any questions or comments.

Regards,

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Chief Executive Officer

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