Public Policy Associates, Incorporated is a public policy research, development, and evaluation firm headquartered in Lansing, Michigan. We serve clients in the public, private, and nonprofit sectors at the national, state, and local levels by conducting research, analysis, and evaluation that supports informed strategic decision-making.

119 Pere Marquette Drive, Suite 1C, Lansing, MI 48912-1231, (517) 485-4477, Fax 485-4488, www.publicpolicy.com

This workforce product was funded by a grant award by the U.S. Department of Labor’s Employment and Training Administration. The product was created by the grantee and does not necessarily reflect the official position of the U.S. Department of Labor. The U.S. Department of Labor makes no guarantees, warranties, or assurances of any kind, express or implied, with respect to such information, including any information in linked sites and including, but not limited to, accuracy of the information or its completeness, timeliness, usefulness, adequacy, continued availability, or ownership. This product is copyrighted by the institution that created it. Internal use by an organization and/or personal use by an individual for non-commercial purposes are permissible. All other uses require the prior authorization of the copyright owner.
# Table of Contents

**Acknowledgements** ................................................................. 5

**Executive Summary** ............................................................ 6
  - Overview of the MPI ................................................................. 6
  - Key Findings ........................................................................... 7
  - Key Lessons and Recommendations ........................................ 8

**Introduction** ........................................................................... 10
  - The Manufacturing Pipeline Initiative ....................................... 12
  - Overview of the Evaluation ....................................................... 12

**Implementation Findings** ....................................................... 14
  - Partner and Employer Engagement ........................................... 14
  - Consistent and Continuous Coordination ................................... 16
  - The Dual Customer Focus of the Pipeline ................................. 18

**Preliminary Outcome Findings** ............................................... 28

**Lessons and Recommendations** ............................................ 30
  - Responsiveness of the System .................................................. 30
  - Lessons .................................................................................... 30
  - Recommendations ..................................................................... 31

**Appendices** ............................................................................
  - Methodology ........................................................................... 32
  - Research Questions .................................................................. 33
  - Pipeline Participant Flow Chart ............................................... 34
  - Participant Characteristics ....................................................... 35
Acknowledgements

This initial report of the evaluation of the Manufacturing Pipeline Initiative Workforce Innovation Fund (WIF) project owes thanks foremost to the Eastern Connecticut Workforce Investment Board (EWIB) WIF Leadership Team, including John Beauregard, Carol Labelle, Mark Hill, Virginia Sampietro, and Guy Sapori-to, staff members Sheila Taurianen and Rachel Kohanski, and consultant Michael Nogelo. We also acknowledge the contributions of EWIB Case Managers Ann Garrity and David Kennedy, and Connecticut Department of Labor staff Jennifer Proulx and Tony Santiago whose comments helped to inform the evaluation.

Appreciation is also extended to focus group participants from Windham and Grasso Technical High Schools, and to the members of EWIB’s Manufacturing Pipeline Sub-Committee. We also wish to thank staff at the Connecticut Department of Labor who have readily communicated with our research team and made themselves accessible for questions. We thank these individuals and their organizations for their cooperation with the evaluation.

Integral to the evaluation of this project and to the preparation of this report are the individuals who make up the evaluation team: David McConnell, Colleen Graber, Lori Corteville, Karissa Propson, and Stephanie Price.

Sincerely,

Michael J. Polzin
Evaluation Project Manager
Executive Summary

The Manufacturing Pipeline Initiative (MPI) was established by the Eastern Connecticut Workforce Investment Board (EWIB), in partnership with manufacturing employers, community colleges, technical high schools, and workforce development partners, to respond to large-scale employer demand for skilled manufacturing workers. It is funded by a Workforce Innovation Fund (WIF) Round Three grant from the U.S. Department of Labor (USDOL) awarded to the Connecticut Department of Labor (CTDOL). Two overarching goals undergird the MPI:

1. Enhance strategic collaboration and alignment of workforce development and partner programs by ensuring that workforce development activities target the identified needs of regional employers through customized training, aligning training and employment services with available jobs, and expanding employer commitments to hire program completers.

2. Strengthen the quality of American Job Center (AJC) services by increasing the use of high-quality skills assessment tools and case management methods, and by working directly with employers to identify training needs in growing industry sectors.¹

Applications of the demand-driven workforce development concept are not new², though implementation at the scale of the MPI is rare. In implementing the MPI, the experience of EWIB and its partners will ultimately provide important insights and lessons on the challenges involved in creating and maintaining a just-in-time system that effectively responds to large-scale employer needs for skilled workers. These lessons may offer considerable value to workforce system planners and practitioners, especially in regions facing major shortages of skilled workers in critical occupations or trained in skills needed for large-scale upgrades to infrastructure.

Overview of the MPI

The MPI was developed in response to the urgent and ongoing need for skilled workers by Electric Boat, businesses in its supply chain, and other manufacturers in the region. Though EWIB and its partners in the Eastern Advanced Manufacturing Alliance (EAMA) had been working for several years on efforts to align the workforce system to more effectively respond to employer demand, the impetus for the MPI project came when the largest EAMA member, Electric Boat, was awarded significant contracts with the U.S. Navy. Electric Boat’s contracts require adding several thousand new and replacement employees over the next 10–15 years, with over 500 new and replacement workers to be hired annually, in order to grow its current workforce from approximately 13,000 employees to 18,000 workers.

¹. Connecticut Department of Labor, Grant application to the U.S. Department of Labor, Workforce Innovation Fund, December 7, 2015.
by 2030. The MPI builds on program components previously in place and supported by various funding streams, such as a Regional Innovation Grant, a “STEM Opportunities in the Workforce System” grant, and an H-1B grant—all funded by the U.S. Department of Labor—and represents the next step in the process of building a comprehensive system to respond to employer demand.

The design of the MPI responds to two critical and overlapping needs:

1. A shortage of workers in the region with the advanced manufacturing skills needed by Electric Boat, its suppliers, and other manufacturers in the region, exacerbated by a falling unemployment rate and tightening labor market in the region.

2. A lack of short-term training programs in advanced manufacturing that accommodate the needs and limited resources of unemployed and underemployed adults and are able to nimbly respond in a just-in-time fashion to the production needs of Electric Boat and other employers.

To address these issues, partners in the MPI designed an accelerated, customized, and agile labor preparation system to serve the needs of both employers and job-seekers. This approach has required extensive collaboration to recalibrate the recruitment, assessment, and training processes.

**Key Findings**

Relationships between EWIB, manufacturing employers, and education and training providers—developed through successfully planning and implementing grant-funded projects over a period of several years—have been key to maintaining the coordination and collaboration needed for effective implementation of the MPI in its first 14 months of operation.

Deep employer engagement in program design and curriculum development has helped to ensure that MPI participants complete their short-term, intensive training with the foundational knowledge and skills needed to prepare them for on-the-job training and success on the job.

Workforce education and training providers’ willingness to respond with agility and flexibility to fluctuations in employers’ production schedules enables the MPI to have participants trained and available for work on a just-in-time basis to meet employer demand.

The five stages of the Pipeline have been very effective in efficiently bringing participants into the program and exiting them to employment. The MPI is on track to meet or exceed all performance targets associated with the project, while the surplus of candidates not yet served helps to supply a labor exchange involving employers that are not participants in the MPI.

“I think it’s that we’re all pulling together. Collaborating and working together to achieve the goal, even with competitors.”

---

The MPI is on track to meet or exceed all performance targets.
Employer satisfaction with the short-term, intensive training MPI participants receive is very high as is evidenced by the higher-than-anticipated number of occupational skills training completers that they employed, as well as the aggressive schedule of classes to date (ahead of pace) and the curriculum expansion to new trades.

Participants report that their satisfaction with the preparation they receive for employment is very high while also reporting that the training supports, especially mileage reimbursement and training stipends, were critical for their retention in and completion of the short-term training.

The basic skills and job-readiness refresher course is effective at preparing those whose math and reading scores fall short of the level required to succeed in occupational skills training and employment.

Key Lessons and Recommendations

Lessons

Effective implementation of the demand-driven MPI requires the dedication and commitment of all partners and a willingness to develop plans that place the needs of employers before their own.

Effectively responding to employer demand, especially at the scale and pace of the MPI, is not a static process and requires ongoing communication, problem-solving, and negotiation with employers and partners to ensure steady progress.

Well-crafted short-term occupational skills training courses, along with focused supports, including stipends, help with retention and completion for unemployed and underemployed adult workers.

With significant employer involvement in curriculum development, participants can learn much of what they need to know and be able to do as new hires, as long as manufacturing employers commit to providing the remainder of the training needed on the job.

Workers with little or no previous manufacturing experience, but who meet or exceed the minimum math and reading levels required for the job, and who possess determination and self-discipline, can successfully complete occupational skills training and obtain employment in manufacturing.

Recommendations

• MPI leadership, including employers, would benefit from continuing to find ways to address what each partner needs from participating in the MPI in order to ensure continuing collaboration and the involvement of all partners.

• Maintain the practice of continuing communication to closely monitor fluctuations in employer production needs and obtain feedback on the effectiveness of program elements in preparing participants.

• Financial support (mileage reimbursement, training stipend) will likely continue to be needed to help ensure participant retention and completion in courses that are essentially full-time over several weeks.
• As the pool of MPI candidates becomes “greener”—that is, with less work experience overall—partners in the
MPI may need to provide increased case management and additional supports to ensure participant reten-
tion and completion of occupational skills courses.

• Employers will need to continue to work with training providers to modify and fine-tune existing occu-
pational skills courses, as needed, and to identify the foundational knowledge and skills needed for new
courses to be developed to meet their hiring needs.

While the Pipeline Initiative is designed to address an immediate need for skilled workers expressed by a
major employer, the program model has far-reaching implications. The scale of this project and the speed
with which response to employer demand is required create unique challenges for all partners. Lessons
learned from the implementation process will be especially valuable to any workforce boards interested in
replicating or adapting the approach.
Introduction

The Manufacturing Pipeline Initiative (MPI) taking place in Connecticut, under the leadership of the Connecticut Department of Labor (CTDOL) and the Eastern Connecticut Workforce Investment Board (EWIB), is noteworthy for its scale and pace of activity. The MPI grew out of a pressing need in the region to fill jobs at Electric Boat—a major supplier of submarines to the U.S. Navy—and other manufacturers in the area. Electric Boat was looking for approximately 5,000 new and replacement employees in the next 10-15 years in order to fulfill major contracts with the U.S. Navy, with about 500 workers hired annually3. This demand presented the workforce system with a significant challenge: to attract and train enough job-seekers to the standards of the employers would require additional, quick-turnaround training programs and an efficient system for screening and employment4.

EWIB, as the local workforce board in the region where these job openings exist, manages the implementation of the MPI and has been working closely with CTDOL, the Eastern Advanced Manufacturing Alliance (EAMA), and partners across the region over approximately seven years to become more responsive to the needs of the industry. Prior efforts have included a Regional Innovation Grant strategic planning process

Connecticut's Workforce Development Boards

---

4. CTDOL, WIF grant application, Letter of Interest, revised, December 7, 2015, 1.
(completed in 2010), the CT STEM Jobs initiative (2009-2012), the STEM OJT Initiative (2012-2016), and an H1-B grant to put long-term unemployed workers on STEM career paths and into employment. In 2015, EWIB convened partners to create a plan to address the training gaps in the region. Partners included Electric Boat, EAMA, EWIB, CTDOL, and several technical high schools and higher education institutions.

The $6,000,000 Workforce Innovation Fund (WIF) grant CTDOL received from the U.S. Department of Labor (USDOL) provided the additional funding needed to prepare the system to meet the demand, beginning in October 2015. The goals of the MPI under the grant are to:

1. Enhance strategic collaboration and alignment of workforce development and partner programs by ensuring that workforce development activities target the identified needs of regional employers through customized training, aligning training and employment services with available jobs, and expanding employer commitments to hire program completers.

2. Strengthen the quality of American Job Center services by increasing the use of high-quality skills assessment tools and case management methods, and working directly with employers to identify training needs in growing industry sectors.

### Eastern Connecticut Manufacturing Pipeline Initiative

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1:</td>
<td>Recruitment and Assessment</td>
</tr>
<tr>
<td>Stage 2:</td>
<td>Basic Skills and Work Readiness Training</td>
</tr>
<tr>
<td>Stage 3:</td>
<td>Customized Occupational Training</td>
</tr>
<tr>
<td>Stage 4:</td>
<td>Supportive Services (offered concurrently during Stage 3 activities)</td>
</tr>
<tr>
<td>Stage 5:</td>
<td>On-the-Job Training</td>
</tr>
</tbody>
</table>

The demand-driven design of the Pipeline Initiative was also informed by several assumptions:

- In order to respond effectively to employer demand as it occurs, the labor-preparation process must be aligned to quickly, nimbly, and efficiently produce a supply of qualified individuals in a just-in-time fashion.
- The urgent, high-priority need for skilled workers by Electric Boat, in particular, (as detailed in their internal manpower staffing needs) calls for a recalibration of the speed and the scale at which the recruitment, assessment, training, and support mechanisms that comprise the labor-preparation process take place, and requires extensive collaboration among the partners.
- Existing training options are not scheduled or structured to respond to the just-in-time employment needs of Electric Boat and other manufacturers.
- Most adult job-seekers cannot commit to long-term training, conducted in semester-based courses over several semesters, due to immediate financial obligations and the likelihood of exhausting unemployment benefits.
- The most successful workforce programs are those that effectively align the labor supply (preparation) side with the employer demand side—that is, prepare workers to fill jobs for which there are known vacancies.

---

5. Ibid, 5-6.
6. Ibid, 1.
10. Ibid.
The Manufacturing Pipeline Initiative

The Manufacturing Pipeline Initiative is a demand-driven labor preparation process created to respond to employers’ need for skilled workers, trained in the knowledge and skills required of new hires. The MPI is calibrated to move program participants through the preparation process on a just-in-time, as-needed basis in response to the pull created by employer production needs. The MPI includes five stages to bring job-seekers into the program and exit them to employment.

EWIB recognized that, given the sheer number of workers needed, many of the applicants to the program would be new to manufacturing. This understanding helped to inform the design of the MPI and is reflected in the registration, assessment, and remediation services provided in the early stages of the Pipeline.

Electric Boat has committed to hiring and providing on-the-job training to 350 program participants that complete occupational skills training and meet all Electric Boat hiring requirements (e.g., security clearance, drug test). Other EAMA employers plan to hire and provide any needed training on the job to 50 participants through the MPI. Hires are expected to receive livable wages from the outset and can progress into higher salaries with competitive benefit packages during their employment12. Electric Boat covers the cost of on-the-job training provided during the fifth stage of the program for those hired at the company. Any on-the-job training needed for MPI participants hired by other employers are supported by funds from other sources that are administered by EWIB.

Overview of the Evaluation

Workforce Innovation Fund grantees are required to procure an independent third-party evaluator to conduct a rigorous study of the funded programs. Studies of WIF-funded programs are intended to produce evidence that speaks to the efficacy of innovative workforce development approaches and build on the corpus of knowledge about programs that meet the needs of job-seekers and employers alike.

There are three components to the MPI evaluation, as designed by Public Policy Associates, Inc. (PPA): an implementation study, an outcomes study, and a cost study. The implementation analysis is focused on the degree to which the program was implemented as planned, the contributions of partners, challenges

---

12. CTDOL, WIF grant application, Abstract, revised, page 1.
to implementation and how they were addressed, and participant and stakeholder satisfaction with the process. The outcomes analysis includes an assessment of achieved outcomes compared with program goals, the degree of satisfaction with job preparation and readiness held by participants, and the degree of satisfaction employers had with those whom they hired. The cost study examines both the cost-allocation and cost-effectiveness of the program.

A description of the evaluation activities that provided the information summarized in this report can be found in Appendix A.

**Research Questions**

Each of the components of the MPI evaluation is guided by a set of research questions. The questions are designed to provide a firm understanding of how the program was implemented, what changes were needed along the way, the outcomes realized by participants and other stakeholders, and the cost effectiveness of the MPI approach in terms of employment and job retention. The following are the research questions covered in this report. The complete list of research questions is provided in Appendix B.

- Was the MPI implemented as planned? What variations were needed and why?
- What changes were made within the workforce system to deliver the customized occupational training at the necessary scale?
- How were partners and employers involved in the development and implementation of the MPI?
- What were the overall lessons learned?
- Who was served by the MPI program?
- To what extent did the program adequately train and prepare participants for employment at Electric Boat and other EAMA employers?

**Report Focus**

This first interim evaluation report presents early findings from the implementation study and provides lessons learned to date and recommendations. The report includes the extent to which the MPI has rolled out as planned, the challenges that have been encountered, and how those challenges have been addressed. The report also presents initial data from the first three waves of participant surveys about their satisfaction with the various stages of the MPI program.
Implementation Findings

The Manufacturing Pipeline Initiative (MPI) is an application of a demand-driven approach to the delivery of workforce services brought to scale. It is supported by strong relationships between workforce (including education and training providers) and manufacturing organizations in Eastern Connecticut who have been working together for many years to rebuild capabilities and increase capacity to support advanced manufacturing in the region. When it became apparent that Electric Boat, a major employer in the region, was to be awarded several large-scale contracts to replace aging submarines, MPI partners acknowledged that meeting Electric Boat’s anticipated need for skilled workers would likely require recruiting, assessing, and training unemployed and underemployed adults with little or no manufacturing experience. The established relationships between MPI partners helped them to collectively determine the amount of preparation needed to prepare that population for employment and additional training with Electric Boat and other manufacturers in its supply chain.

Early implementation of the MPI owes its effectiveness to three primary factors that are made possible by these relationships:

- Consistent and collaborative partner and employer engagement
- Continuous coordination of partner assets to respond nimbly to fluctuating employer needs for skilled workers on a just-in-time basis
- A solid program design that addresses the needs of employers and acknowledges the needs and constraints of adult job-seekers.

Findings pertaining to implementation of the program overall as well as each of the five program stages are described below.

Partner and Employer Engagement

Partnerships Make the MPI Possible

The Manufacturing Pipeline Sub-Committee, a sub-committee of the Eastern Connecticut Workforce Investment Board’s (EWIB’s) standing committee on Performance, Accountability, and Planning, has been in place since 2012. Its long-standing focus has been to rebuild the region’s capability to prepare individuals for employment in manufacturing that was lost before, during, and following the economic downturn of 2008-2009. During this time, EWIB applied for and received funds from the U.S. Department of Labor (USDOL) for other initiatives that contributed to the development of manufacturing capabilities in the region. In 2011, the region began

“EWIB had the vision for 5 years. EAMA grew into a big group with the same focus, no longer competing but aligning to make things happen. Then educators listen to what manufacturers want and create a curriculum to meet their needs . . . the vision of EWIB and the manufacturers to form a coalition with one voice and the educators to make it happen is important.”
to experience an upswing in manufacturing employment, which served as the catalyst to form the Pipeline Sub-Committee.

“I attend a lot of meetings and am involved in a lot of planning processes, and to see high-level people from community colleges, workforce boards, and especially employers really getting into the nitty gritty: cohort starting, curriculum ready, instructor recruitment, train the trainer... all the people coming together and that many players actually doing it is pretty remarkable.”

Key to the creation of the MPI was the hard work that went in to building the partnership that made it possible. EWIB cultivated the vision that led to the creation of the MPI over a period of several years, engaging employers and education providers throughout that time to work together to support their individual and collective goals. The MPI’s partnership was challenged, at times, by its own iterative process of assessing and responding to partner and employer needs. However, the ability of EWIB and employers to form an alliance that speaks with one voice, and the ability of local education providers to create and deliver curricula on a just-in-time basis, has been essential to applying the demand-driven concept at the scale required by Electric Boat and employers in its supply chain.

A detailed project plan guides the implementation of the initiative and communications among stakeholders are open, consistent, and effective. During a recent site visit, many of the key informants identified the collaboration and “coming together” of so many different stakeholders acting on a common goal as one of the major successes of the MPI to date. The team often uses the phrase “a unity of purpose” to describe their collaborative working relationships.

**MPI Employer Partners Are Deeply Engaged in Implementation**

Employers are the driving force behind this initiative. They are deeply engaged in the implementation of the MPI, are committed to its success, and provide input and insight on all levels of the program—from the larger regional strategy to how many class sessions are required for each occupational skills curriculum. Examples of employer engagement include the following:

- Employer feedback helped identify the math, reading, and work-readiness skill levels required for participants to be successful in the occupational skills training and on the job.

- Hands-on involvement with community colleges in curriculum development to ensure that the knowledge and skills participants learn are consistent with what will be expected of them on the job.

- Employer representatives monitor new occupational training courses when they are introduced to make sure that the curriculum and quality of instruction is consistent with their needs.

- Employers provide information about their internal production and hiring schedules to help shape the timing and delivery of occupational skills training and guide recruiting efforts.

- Helping to identify instructors to provide the occupational skills training.
• Regular attendance at and participation in MPI Sub-Committee meetings.

• Participation in telephone calls and conferences to discuss and make final arrangements for upcoming training sessions.

• Ongoing communication with EWIB and other partners for project management purposes.

• Promoting MPI training on the EB and EAMA websites.

• Electric Boat requiring inexperienced welders to successfully complete MPI training.

**Consistent and Continuous Coordination**

**Multiple Partners Contribute to the MPI**

The contributions of multiple partners are coordinated through bi-monthly meetings of the Manufacturing Pipeline Sub-Committee and other sub-committees convened as needed for specific tasks, such as revising the assessment process and developing new curricula. Below is a list of partners involved in the MPI, as well as their roles in the initiative.

• Community colleges coordinate recruitment and preparation of a pool of on-call instructors, drawn from the ranks of current as well as retired instructors and skilled-trades workers.

• The region’s technical high schools, with their well-equipped machine shops, provide some of the facilities needed for the occupational skills training—usually after normal school hours, which is more convenient for most participants and much easier to schedule.

• The two community colleges also collaborate with employers to develop and fine-tune customized curricula for short-term, intensive, competency-based occupational skills training courses and provide some of the training facilities used in the MPI.

• The Employment and Training Institute developed and implements a dedicated portal that provides a streamlined virtual access point for applicants to the Pipeline, and oversees the candidate assessment process.

• A regional educational service center, EASTCONN, prepares participants in need of math or reading remediation for success in occupational skills training and employment through a 35-hour program that integrates work-readiness skills development with contextualized basic reading and math skills instruction.

• Career development specialists from the Connecticut Department of Labor (CTDOL) coordinate candidate outreach and initial screening to supply individuals to the Pipeline, and ensure participant eligibility as stipulated by the grant.

---

13. The Manufacturing Pipeline Sub-Committee is a sub-committee of the EWIB Performance, Accountability, and Planning Committee—a standing committee of the Eastern Connecticut Workforce Investment Board.
Electric Boat and other Eastern Advanced Manufacturing Alliance (EAMA) manufacturers communicate their hiring needs regularly to EWIB staff who coordinate with project staff assigned by CTDOL to ensure that a sufficient number of participants are enrolled in order to fill the available training positions.

Case managers at the regional American Job Centers work with enrolled participants to make service plans and discuss needs they might have for program supports. EWIB’s executive management team and staff and MPI leaders meet and confer regularly with all partners to ensure that all maintain a shared understanding of program needs and potential problems or challenges, and to provide each other feedback on the degree to which each of the Pipeline components is working as planned. Moreover, all of this is done on a just-in-time basis in response to fluctuations in the “pull” for trained workers that emanates from Electric Boat.

The MPI Benefits from Capable Facilitation and Coordination

The effectiveness of the program will ultimately be determined by the degree to which employer needs are met, and that hinges on the flexibility of workforce and training partners to adapt quickly to a training schedule that fluctuates often. The MPI benefits from the capable facilitation and coordination provided by EWIB and MPI leadership as well as from service providers and employers who have a clear understanding of the role each plays in keeping the MPI moving forward and on plan.

This degree of coordination was not achieved overnight. Many of the partners in the MPI have worked together over a period of nine years, beginning with a Regional Innovation Grant funded by USDOL to address the region’s science, technology, engineering, and math (STEM) needs. Consequently, when Electric Boat’s contracts with the U.S. Navy were ensured, the MPI partners were able to roll up their sleeves and develop a comprehensive plan to help meet Electric Boat’s hiring needs.

Being Employer Responsive and Staying Within Budget Is Challenging

The production schedule of Electric Boat is very dynamic. In addition to fulfilling requirements of existing contracts for new submarines, the company is constantly bidding on additional work involving ships that are currently in service. When the company is awarded a contract to do additional work, it totally changes what they, and their suppliers, need from the MPI in terms of workers. For example, in the first year of the Workforce Innovation Fund (WIF) grant, there was a greater need for welders than anticipated when the grant application was submitted. The training needed for welders involved in ship construction, maintenance, and/or repair takes longer and is more expensive than some of the other occupational skills training courses. EWIB and MPI leaders were tasked with making adjustments to the grant-funded budget in order to be able to train the desired number of participants to meet the project’s performance goals.
The Dual Customer Focus of the Pipeline

The Pipeline is designed to funnel a supply of qualified candidates into occupational skills training and employment on a just-in-time basis. Once participants are recruited into the Pipeline, they complete an assessment that determines whether they will receive basic skills and work-readiness remediation or enroll in occupational skills training. While in training, participants are eligible to receive support services at the American Job Centers. Once the occupational skills training is complete, participants enter on-the-job training at either Electric Boat or another EAMA employer.

The rate at which candidates are pulled through the Pipeline is determined by the hiring needs of Electric Boat and other participating employers – the Pipeline only trains people for jobs that are immediately available. The design of the MPI is sensitive to the time and financial constraints that limit participation in long-term training by unemployed and underemployed adult workers. Candidates not able to be served through the Pipeline are offered the opportunity to be included in job development efforts conducted by EWIB’s Business Services staff.

A visual presentation of participant flow along the Pipeline can be found in Appendix C.

Stage One: Recruitment and Assessment

Candidates are recruited to the MPI in a number of ways, including outreach materials posted in AJCs, employer referrals, and links on employer partner websites (e.g., Electric Boat, EAMA) that inform job-seekers of training and employment opportunities in the Pipeline program. Candidates register their interest on the web-based MPI Portal located on the EWIB website. The Kenexa ProveIt skills inventory is used to assess work history and manufacturing experience as well as the level of math and reading skills needed to be successful in occupational skills training and employment. Those that achieve the minimum score required to enroll in occupational skills training (Stage 3) are placed in a pool to await the next available class that matches their interest. Those whose scores are within 30 points of the minimum score are offered the chance to improve their score by enrolling in the Basic Skills and Work Readiness Remediation class (Stage 2). Those whose scores do not meet this lower level are referred for other services through the AJC.

Most Participants Learned About the MPI Through Workforce-Related Outreach Sources

Seventy-five percent of those who have responded to participant surveys to date indicated that they learned about the MPI from Electric Boat or when visiting an American Job Center. Eighteen percent obtained the information from a friend or relative while 9% learned of the opportunity when they visited EWIB’s website. Posters (2.3%), radio announcements (0.8%), and other media (3.8%) were mentioned far less frequently as the source of initial awareness about the MPI.
The ManufacturingPipeline Initiative Portal is an Efficient and Effective Tool for Creating a Pool to Supply the Pipeline

The web-based MPI Portal has proven to be a highly effective, streamlined, and accessible mechanism for quickly registering interested candidates from which to supply the Pipeline. In its first 15 months of operation, over 3,800 applicants registered on the Portal—almost three times the number anticipated over the entire grant period. An automated response mechanism managed by the Employment and Training Institute reassures candidates that their application to the Pipeline has been received and provides them with information about their responsibilities in progressing further along the Pipeline. In the first few months of operation, the existence of the Portal also helped Electric Boat to fill its urgent need for skilled workers. Portal registrants with extensive manufacturing experience, and for whom additional pre-employment training was not necessary, were pulled directly from the Portal and hired by EB without going through the Pipeline.

MPI Participants Are Motivated by the Opportunity to Obtain a Good Job

Participants’ survey responses, as well as comments from focus group attendees, suggest that the prospect of a long-term, full-time job with benefits and advancement opportunities is a primary motivator for many participants to enroll in the MPI. The absence of significant prior manufacturing experience does not seem to be a deterrent, as over 50% of survey respondents reported beginner skill level and only 17% reported considering themselves to be an advanced beginner.

<table>
<thead>
<tr>
<th>Responses</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>To train for a new career</td>
<td>89</td>
<td>67.9%</td>
</tr>
<tr>
<td>To gain additional manufacturing skills</td>
<td>19</td>
<td>14.5%</td>
</tr>
<tr>
<td>To obtain assistance finding a new job</td>
<td>17</td>
<td>13.0%</td>
</tr>
<tr>
<td>Required by Electric Boat</td>
<td>3</td>
<td>2.3%</td>
</tr>
<tr>
<td>Other miscellaneous</td>
<td>3</td>
<td>2.3%</td>
</tr>
</tbody>
</table>

Employer Involvement in Identifying Knowledge and Skill Needs Contributes to Assessment Effectiveness

Employer involvement in determining the skills to be measured by the ProveIt assessment portfolio, and proficiency levels required for progressing along the Pipeline, is a key factor in contributing to the assessment’s effectiveness as a tool for screening and recommending placement of candidates in the appropriate activity. To date, 97% of those that scored at or above the threshold for advancing to Stage 3 completed the occupational skills training successfully. Eighty-eight percent of those that completed the basic skills and work-readiness refresher course (Stage 2) raised their scores to a level sufficient to enroll in occupational skills training.

Number of Candidates Completing Assessment

- Goal to date: 450
- Actual to date: 552
A Surplus of Assessed Candidates Creates an Unexpected Opportunity for Expansion of EWIB’s Labor Exchange

Portal and assessment data captured from the unexpectedly high volume of registrants has provided EWIB’s Business Services staff with information about the qualifications and job readiness of individuals that can be matched against a wide range of employers’ needs for workers. This enables EWIB to serve the many hundreds of Portal registrants for whom grant-funded training opportunities will not be available in the short-term. It also has the potential to enhance employer perceptions of EWIB as the go-to labor exchange in the region. Comments provided by EWIB staff indicate that employers—even in industries other than manufacturing—are beginning to recognize the potential this has for helping to address their hiring needs.

Stage Two: Basic Skills and Work Readiness (BSWR) Training

Candidates whose math, reading, spatial reasoning, and work-readiness skills are not at the levels required for enrollment in occupational skills training are offered the opportunity to enroll in a BSWR refresher course or are referred out of the Pipeline to other services provided by the AJCs. The BSWR is a 35-hour contextualized program provided over a two-week period. Upon completion of this course, participants re-take the ProveIt assessment and, if their scores reach or exceed the required proficiency level, they are included in the pool of candidates that are awaiting an upcoming occupational skills training. Those whose scores remain below the minimum level required are referred to other AJC services and encouraged to take advantage of programs that can help to raise math, reading, and work-readiness skills.

The BSWR Curriculum Demonstrates Initial Success in Preparing Participants to Advance Along the Pipeline

Extensive coordination between EWIB, MPI education and training partners, and employers, especially Electric Boat, has helped to ensure that the remediation instruction provided by EASTCONN is congruent with items included in the ProveIt assessment which are, in turn, consistent with the skills employers require of their new hires. To date, the MPI is on target to provide basic skills and work-readiness refresher training to the number of participants anticipated. Moreover, 90% of BSWR participants have successfully raised their assessment score to qualify for enrollment in occupational skills training.

There Are Early Indications that BSWR Participants Are Satisfied with the Instruction They Received

Though the number of BSWR participants that responded to survey questions is small (N=8), most reported improvement in all content areas as well as high satisfaction with the preparation for occupational skills training they received as a result of completing the course.
Stage Three: Short-Term Occupational Skills Training

The core element of the MPI is short-term, intensive occupational skills training. Classes are held in one of the technical high schools or community colleges in the region, usually in the late afternoon and evening, when the facilities are not in use by traditional high school or college students. Classes meet for five to ten weeks, depending on the trade, for 30 hours per week. To date, courses have been offered for Outside Machinists, Welders, Pipefitters, and a more general Introduction to Manufacturing course designed to prepare workers for a variety of skilled positions at area manufacturing concerns. Courses for Designers and Electricians are currently in the planning stage. Fifteen cohorts of participants had completed training by mid-June 2017.

The MPI Is on Pace to Achieve Its Goals for Enrollment and Completion of Occupational Skills Training

At this stage of program implementation, the goals set forth in the grant application should be approximately 40% complete. It was anticipated that 450 individuals would enroll in occupational skills training throughout the life of the grant. By the end of May 2017, the MPI was well ahead of schedule with 56%, or 253 individuals, having been enrolled. It was also projected that 425 individuals would complete the occupational skills training. Forty percent of that goal had been met at the end of May 2017. Furthermore, an additional 52 individuals were currently attending classes as of May 2017.

Curricula Consistency Ensures Quality and Employer Confidence

Curricula for each of the occupational skills courses were developed by community college staff with extensive involvement from Electric Boat and other employers. New courses are developed and added as needed in response to Electric Boat’s production scheduling and need for workers. Course manuals with detailed lesson plans developed by community college staff, in conjunction with Electric Boat hiring managers, specified the competencies to be achieved by participants for successful course completion. These manuals were used to guide instruction each time a particular occupational skills course was taught, regardless of location or who taught the course. This practice has helped to ensure consistency and has given employers confidence that those completing a course, regardless of location or instructors, had the same knowledge and skills that they needed in new hires.

An Initial Challenge in Recruiting Instructors Has Had Positive Outcomes

Instructors were recruited from the ranks of current and retired instructors and skilled-trades workers from the participating community colleges, technical high schools, Electric Boat, and EAMA employers. However, identifying instructors to conduct an entire class proved difficult, as most had commitments or responsibilities that limited their availability over the duration of an entire five- or ten-week course. In response, EWIB and MPI partners developed plans to use several instructors per
course, if necessary, with coordination handled by community college staff. In addition, the opportunity was offered to skilled-trades workers, current or retired, who had deep experience but little or no teaching experience. These individuals completed a train-the-trainer program, offered by experienced community college faculty, where they learned to apply adult learning principles and practices.

The use of several instructors over the course of a class appears to have provided an unexpected dimension to the training experience of participants. Several focus group participants expressed appreciation for the wider range of knowledge, experience, and perspectives on what employers would like to see in new hires than they might get from a single instructor. Using a group of instructors to teach parts of a course did not seem to dampen the quality of instruction, as 96% of survey respondents agreed or strongly agreed that instructors were knowledgeable, and many commented on their helpfulness.

Flexible Scheduling Accommodates Both Employers and Participants

Through the cooperation and collaboration of training providers, the MPI is able to adapt to fluctuations in Electric Boat’s production schedule fairly quickly. Courses are scheduled and training facilities are lined up as far in advance as practicable to give MPI partners and staff adequate time to enroll and prepare a supply of participants to fill the courses. However, at times an unanticipated development results in last-minute efforts to fill a class. For this reason, EWIB maintains a small pool of participants, who have completed pre-training requirements, to fill classes. However, participants that need to make work, child care, transportation, or other arrangements before committing to a five or ten week course may not be able to respond on short notice and have to defer their enrollment to a later date.

Occupational skills courses are offered at times when education and training provider facilities are not typically in use (late afternoon and evenings), which facilitates scheduling as well as attendance by participants. Most participants (75.4%) reported that classes were conducted at a convenient time, while some (10.5%) disagreed or strongly disagreed with that statement. Several focus group participants indicated that they continued to engage in some form of paid employment to support themselves and their families while they were in training, which made the time classes were offered an important factor in their overall experience.

Short-Term, Intensive Courses Help with Participant Retention and Completion While Meeting Employer Needs

The length of the training courses is determined by balancing two factors: the minimum amount of time participants need to be able to demonstrate the knowledge and skills that Electric Boat requires of new hires; and the maximum amount of time that job-seekers could manage to engage in non-income-producing training. The trainings are designed to be as short as possible while still providing people with the skills needed to start strong at Electric Boat. Through the grant, EWIB provides training stipends that are designed to provide some financial support to participants to help them complete the training. Keeping the trainings as short as possible also minimizes the funding needed for the stipends.
MPI partners anticipated that short-term, intensive occupational skills classes would be more advantageous for adult workers’ retention and completion, and employers agreed that a sufficient amount of the knowledge and skills they required in new hires could be taught and learned within that time. Most survey respondents indicated that the length of the course they attended was appropriate, though several commented that the training time was too short for what they were expected to learn.

**Absence of Manufacturing Experience not a Barrier to Progressing along Pipeline**

When registering on the Portal, most MPI participants indicated little or no prior experience in manufacturing. The absence of prior manufacturing experience has not proved to be an insurmountable barrier to successfully complete occupational skills training and get a job in manufacturing. Electric Boat hiring managers and other employers have indicated through their comments to EWIB staff that the short-term, intensive training, which had been developed in close collaboration with the employers to be served, has been sufficient to provide the knowledge and skills required of new hires. It is important to note, however, that the MPI program design calls for additional training provided to newly hired participants on the job.

**Even Short-Term Training Presents Challenges for Some Participants**

Adult students, whether employed, unemployed, or underemployed, are often challenged to balance work and/or family responsibilities with the time needed for education and training. Participating in the MPI, even to attend a five-week training program, has been challenging for some.

<table>
<thead>
<tr>
<th>MANUFACTURING SKILL LEVEL PRIOR TO TRAINING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responses (N= 128)</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Beginner</td>
</tr>
<tr>
<td>71</td>
</tr>
<tr>
<td>53.0%</td>
</tr>
<tr>
<td>Advanced Beginner</td>
</tr>
<tr>
<td>23</td>
</tr>
<tr>
<td>17.2%</td>
</tr>
<tr>
<td>Intermediate</td>
</tr>
<tr>
<td>22</td>
</tr>
<tr>
<td>16.4%</td>
</tr>
<tr>
<td>Advanced</td>
</tr>
<tr>
<td>12</td>
</tr>
<tr>
<td>9.0%</td>
</tr>
<tr>
<td>Expert</td>
</tr>
<tr>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EMPLOYMENT STATUS OF MPI SURVEY RESPONDENTS AT ENROLLMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responses (N= 131)</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Employed full-time</td>
</tr>
<tr>
<td>27</td>
</tr>
<tr>
<td>20.7%</td>
</tr>
<tr>
<td>Employed part-time</td>
</tr>
<tr>
<td>38</td>
</tr>
<tr>
<td>29.0%</td>
</tr>
<tr>
<td>Self-employed</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>2.3%</td>
</tr>
<tr>
<td>Unemployed</td>
</tr>
<tr>
<td>63</td>
</tr>
<tr>
<td>48.1%</td>
</tr>
</tbody>
</table>

A number of focus group participants commented on difficulties relating to the amount of travel required, having to quit or not being able to maintain a job while in training, adjusting work schedules to accommodate the training, and not receiving stipends in a timely manner. However, most participants responding to the survey (78.4%) indicated that the financial support they received while in training was helpful and 76.4% indicated that the support services they received helped them to attend the job skills training. Though one cannot infer causality from the survey data, in spite of the careful attention given to
recruitment, assessment, scheduling, and the availability of supports, about 11.5% of those that enrolled in occupational skills training dropped out before completion.

Participants Are Highly Satisfied with Occupational Skills Training

A sizable majority of survey respondents (82.8%) reported that they were satisfied or highly satisfied with the occupational skills training they received, while only 6.7% indicated that they were not satisfied. Fewer respondents agreed that the training time and location were convenient for them, with 75.4% and 68.7% agreeing or strongly agreeing, respectively. 87.3% indicated that they learned new skills, 91.8% agreed that the instructors were knowledgeable, 82.1% reported that the training materials were easy to understand, and 77.6% said that the pace of training worked for them. Given the nature of the work for which participants were being prepared, and a greater awareness of what else could be learned, only 65.6% believed that the length of their training was appropriate.

### TABLE 2: PARTICIPANT SATISFACTION WITH OCCUPATIONAL SKILLS TRAINING

<table>
<thead>
<tr>
<th>Level of satisfaction with occupational skills training</th>
<th>Satisfied or Highly Satisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training was offered at a time that was convenient for me.</td>
<td>75.4%</td>
</tr>
<tr>
<td>Training was offered at a location that was convenient for me.</td>
<td>68.7%</td>
</tr>
<tr>
<td>I learned new skills.</td>
<td>87.3%</td>
</tr>
<tr>
<td>Instructors were knowledgeable.</td>
<td>91.8%</td>
</tr>
<tr>
<td>Training materials were easy to understand.</td>
<td>82.1%</td>
</tr>
<tr>
<td>The pace of the training worked for me.</td>
<td>77.6%</td>
</tr>
<tr>
<td>The length of training was appropriate.</td>
<td>65.6%</td>
</tr>
</tbody>
</table>

“With my sales background, having taken the class has opened more opportunities that I did not consider.”

Stage Four: Supports

Prior to beginning occupational skills training, case managers work with participants to develop personal service plans, identify specific needs or challenges that might constrain their attendance and participation in training, and connect them with support services to help ensure their training completion. Services offered include: mileage reimbursement, child care assistance, modest stipends, tools, work boots, and clothing. Supports are provided only to those enrolled in Stage Three occupational skills training. Stage Four is described as a separate stage to highlight its importance to training retention and completion, though it functions concurrently with Stage Three.

Some Support Services Widely Used though Satisfaction Is Mixed

A sizable majority (78.4%) of survey respondents reported that all of the supports they received, particularly the mileage reimbursement and stipends, were key factors contributing to their ability to attend (76.8%)
and complete (77.6%) their respective training programs. Similarly, 74.6% of survey respondents indicated that the case manager provided resources or services that met their needs. Only a small percentage of respondents (7.5%) indicated that the case manager was not always available when needed and only 5.9% disagreed with a statement that the case manager helped them to focus on their goals.

**Stage Five: On-the-Job Training**

On-the-job training (OJT) completes the labor preparation needed for sustained employment with Electric Boat or an EAMA manufacturer. Once an individual is hired, Electric Boat and other EAMA employers supplement the WIF-funded training with in-house training programs, necessary given the nuances of nuclear submarine manufacturing. Electric Boat pays for this training, which varies from one to four weeks, depending on the occupation for which a participant was hired. Electric Boat estimates that MPI new hires receive two weeks, or about 80 hours, of additional training on the job; though it is spread out over a period of weeks or months depending on the job and production needs. OJT contracts for Pipeline participants hired by EAMA or other employers are funded through sources other than those provided through the WIF grant.

**Participants Are Mostly Satisfied with Training Experiences on the Job**

It is reasonable that one might expect a certain amount of uncertainty when starting a new job, especially in a new field, and that may affect how one views their experiences on the job. There was opportunity for that to occur within the MPI, especially for those enrolled in training that could lead to employment in one of several job classifications. Among those who found employment through the MPI and responded to a participant survey, 71.8% agreed that the training they received from their employer on the job prepared them well to perform the job they have now while 7.5% indicated that it did not; the remainder (19.6%) neither agreed nor disagreed. A slightly higher percentage (76.1%) agreed or strongly agreed that they were satisfied with the job they obtained as a result of participating in the MPI, while 8.7% disagreed or strongly disagreed, and 13% neither agreed nor disagreed that they were satisfied with the job they obtained. This low level of participant dissatisfaction may partly be explained by the fact that over half of MPI participants had no previous manufacturing experience and may not have been sure about what to expect. Moreover, some focus group participants indicated that their goal was to use employment at Electric Boat, regardless of the position, as a platform from which to move into a job that suited their interests more closely.

<table>
<thead>
<tr>
<th>Support Service</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mileage reimbursement</td>
<td>118</td>
<td>88.1%</td>
</tr>
<tr>
<td>Help with childcare expenses</td>
<td>6</td>
<td>4.5%</td>
</tr>
<tr>
<td>Training stipend</td>
<td>116</td>
<td>86.6%</td>
</tr>
<tr>
<td>Other: vehicle repairs</td>
<td>6</td>
<td>4.5%</td>
</tr>
<tr>
<td>Work-clothing, boots and related items</td>
<td>5</td>
<td>3.5%</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>1</td>
<td>0.7%</td>
</tr>
</tbody>
</table>
MPI’s Labor Preparation Process Serves Employers and Participants

The design of the MPI is predicated on observations by the region’s education and training providers that “foundational skills, general operations skills, and manufacturing work skills comprise 80% of the skills required by a given occupational cluster, while 20% are company-specific skills that must be learned on the job”.

Consistent and continuous coordination among EWIB, education providers, and employers has been very effective in preparing individuals for employment. Electric Boat’s hiring managers have reported to EWIB staff that they are very satisfied with the preparation that new hires have received in their training courses.

Most participants (69.5%) that completed the occupational skills training and went on to employment at Electric Boat or other EAMA employment reported, through their survey responses, that the Pipeline training prepared them well for the additional training and their work responsibilities on their new jobs. While this is perhaps lower than desired, responses may relate less to the preparation they received and more to the fact that fewer (52.2%) reported having a good idea of what they ultimately will be doing when employed after MPI. Some focus group participants indicated that they were most interested in “getting their foot in the door” at Electric Boat and planned to take advantage of opportunities to transfer to other jobs within the company once employed.

Security Clearance Sometimes Delays Employment at Electric Boat

Because Electric Boat is a defense contractor, security clearance is required for employment. Though most participants complete the security clearance application when they begin occupational skills training, the security clearance review process often takes longer than the training, delaying the beginning of employment at Electric Boat. In order to minimize time between training and employment, Electric Boat often hires Pipeline graduates to perform jobs for which full security clearance is not required, on a temporary basis, until security clearance is provided.

Participant Satisfaction with Their MPI Experience Overall Is High, But Improvements Could Be Made

Overall, participants’ satisfaction with their experiences in the MPI, as indicated from their survey responses, is very high as shown in Table 4. Moreover, 87% of participants indicated that they were likely or very likely to recommend to someone else that they enroll in MPI, while only 2% indicated that they were not likely to do so.

Survey responses did, however, include a number of suggestions to make the program stronger, though several participants commented that they thought the program “was perfect.”

---

Suggestions for program improvement included the following:

• Better organization of class and lab time, and more time for hands-on applications.

• More time practicing use of tools.

• Make stronger connections, in class, between training curriculum and actual jobs on which those skills would be performed.

• Have current employees of manufacturers visit class and describe what they do.

• Organize class enrollment by skill level so that those in need of more assistance could receive it and those with more experience could take on more complex projects.

• Reduce student-instructor ratio, especially for cohorts with little manufacturing experience.

• Extend length of classes.

• Provide or make math tutoring available.

87% of survey respondents indicated that they were likely or very likely to recommend the MPI to others, while only 2% indicated that they were not likely to do so.

<table>
<thead>
<tr>
<th>TABLE 4: PARTICIPANT SATISFACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responses</td>
</tr>
<tr>
<td>--------</td>
</tr>
<tr>
<td>ProveIt assessment</td>
</tr>
<tr>
<td>Group orientation</td>
</tr>
<tr>
<td>Training enrollment process</td>
</tr>
<tr>
<td>Initial meeting with case manager</td>
</tr>
<tr>
<td>Basic skills and work readiness training</td>
</tr>
<tr>
<td>Occupational skills training</td>
</tr>
<tr>
<td>The job I obtained as a result of MPI</td>
</tr>
<tr>
<td>Overall employment experience</td>
</tr>
</tbody>
</table>

| % Agree or Strongly Agree         |
|--------|-----------------|
| Likely to recommend this program to others | 87.0% |
Preliminary Outcome Findings

At this preliminary point of processing the data (May 31, 2017), MPI is 14 months into its 30-month grant-funded activity timeline. This means that metrics should be 47% fulfilled at this time. The MPI has already exceeded its three-year target goal for applications via the Pipeline Portal by 282% (Figure 1).

The MPI is somewhat behind on the expected target for basic skills training, but not by much (Table 5). The numbers for assessment completion, enrollment in occupational skills training, and Electric Boat application completion are ahead of expected targets.

There are many people still “in process” at the time of reporting for longer-term outcomes, such as completion of occupational skills training and entered on-the-job training at Electric Boat. Therefore, these metrics look smaller because the expected number of participants to have reached this point in the process is smaller. Despite this, the target for on-the-job training placement at other employers has already exceeded its three-year target goal.

It is too soon to report on metrics for employment retention and wages after six months.
<table>
<thead>
<tr>
<th>Data Elements</th>
<th>Participant Targets For Grant Period</th>
<th>Number to Date</th>
<th>% Target Met</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applied via the Pipeline Portal</td>
<td>1,350</td>
<td>3,809</td>
<td>282%</td>
</tr>
<tr>
<td>Completed the Prove It! assessment</td>
<td>1,350</td>
<td>552</td>
<td>41%</td>
</tr>
<tr>
<td>Enrolled in basic skills and job-readiness program</td>
<td>150</td>
<td>56</td>
<td>37%</td>
</tr>
<tr>
<td>Completed basic skills and job-readiness program</td>
<td>130</td>
<td>45</td>
<td>35%</td>
</tr>
<tr>
<td>Enrolled in customized occupational training/ received case management</td>
<td>450</td>
<td>253</td>
<td>56%</td>
</tr>
<tr>
<td>Completed customized occupational training/earned industry-recognized credential</td>
<td>425</td>
<td>172*</td>
<td>40%</td>
</tr>
<tr>
<td>Received support services</td>
<td>428</td>
<td>324</td>
<td>76%</td>
</tr>
<tr>
<td>Received training stipends</td>
<td>428</td>
<td>253</td>
<td>59%</td>
</tr>
<tr>
<td>Completed Electric Boat online job application</td>
<td>1,013</td>
<td>1,728</td>
<td>171%</td>
</tr>
<tr>
<td>Entered on-the-job training at Electric Boat</td>
<td>350</td>
<td>120**</td>
<td>34%</td>
</tr>
<tr>
<td>Entered employment at an EAMA or other employer</td>
<td>50</td>
<td>59</td>
<td>118%</td>
</tr>
<tr>
<td>Retained in employment at Electric Boat or another EAMA employer six months after exit from occupational training</td>
<td>324</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Wages six months after exit from occupational training</td>
<td>$38,000 or $18.27/hr.</td>
<td>n/a</td>
<td>n/a</td>
</tr>
</tbody>
</table>

* An additional 52 are still in process.

** An additional 49 have offers pending.
Lessons and Recommendations

Responsiveness of the System

Aligning partners to coordinate their efforts to deliver workforce programs that respond to employer demand while also taking job-seekers’ needs into consideration is ambitious. Doing so at the scale required by Electric Boat and Eastern Advanced Manufacturing Alliance (EAMA) employers is exacting. Nonetheless, the Manufacturing Pipeline Initiative (MPI) is on track to exceed the performance goals projected by the Connecticut Department of Labor and Eastern Connecticut Workforce Investment Board (EWIB) in their application for Workforce Innovation Fund (WIF) Round Three funds from the U.S. Department of Labor. The engagement and collaboration of employers and partners, the continuous coordination provided by EWIB and MPI leadership, and a program design that responds to employer needs and job-seeker constraints are the primary factors that make this possible.

Fluctuation in Electric Boat’s production needs has been accepted as a factor to accommodate rather than a barrier to performance. The unexpected swell of registrants to the Portal has come to be seen as an opportunity to enhance the perception of the workforce system as the go-to labor exchange for employers from multiple industries and sectors. The dynamic nature of the initiative has enabled all partners to discover new ways to fulfill their missions through collaboration with each other. Moreover, the experience of partners and employers in the MPI is providing the workforce development profession with a deeper understanding of the factors appropriate to and necessary for developing and implementing demand-driven responses to large-scale employer needs.

That which has been accomplished by way of the MPI to date would not be possible without the strong foundation of collaboration, communication, and cooperation developed in the months and years prior to award of the WIF grant. Responding on a just-in-time basis to fluctuating employer needs for workers at this scale without stockpiling participants waiting for employment is necessary for an effective demand-driven process, but is not easy. Those involved in the MPI—employers, workforce, education, and other partners—are well positioned to continue to meet program goals while also providing examples and lessons for the field.

Lessons

Effective implementation of the demand-driven MPI requires the dedication and commitment of all partners and a willingness to participate in a process that places the needs of employers before those of the agency they represent. Responding to employer demand, especially at the scale and pace of the MPI, is not a static process and requires ongoing communication, problem-solving, and negotiation with employers and partners to ensure steady progress. EWIB and MPI partners have worked together over a period of years to develop and implement grant-funded initiatives that helped to develop the relationships needed to coalesce around common goals and achieve the efficiencies needed to implement a project of this nature and scale.

Deep employer engagement with education and training providers is needed to ensure that the labor preparation process is consistent with and driven by the knowledge and skill requirements employers have for their new hires. Through extensive communication, employers and education providers were able to differentiate those work-readiness skills that could be provided through intensive, short-term occupational skills training and those that were best provided on the job. This enabled participants to be sufficiently prepared to take on additional training once employed by Electric Boat or other employers.
Workers with little or no previous manufacturing experience can be prepared through intensive, short-term training with much of what they need to know and be able to do as a new manufacturing hire, though additional training usually needs to be provided by employers on the job. In spite of the short-term nature of the training, the availability of support services, including mileage reimbursement, training stipends, child care support, work boots and clothes, seems to be helpful for training retention and completion.

The virtual MPI Portal is a very efficient means to begin the process of fueling a talent pipeline, especially when work history and relevant experience are collected and math, reading, and work-readiness skills are assessed. The ease with which unemployed and underemployed adults could register their interest in employment on the Portal contributed to the higher-than-anticipated number of candidates in the Portal’s pool. This, in turn, contributed to the enhancement of EWIB’s labor exchange process and ability to connect candidates with a wider range of employers that were not involved in the MPI.

Short-term, intensive, contextualized math, reading, and soft skills training can be effective in lifting the requisite skill levels of training and employment candidates whose capabilities in these areas are in need of improvement. Employer involvement is a key factor in identifying the skill levels required for various job classifications to be filled by Pipeline candidates so that assessments and remediation curricula are aligned to ensure efficiency and candidate success.

Some participants require more than a few days notice before committing to daily attendance in a five- or ten-week course in order to arrange for child care or transportation or change work schedules. While this type of situation is infrequent, MPI candidates might be informed of this possibility, and encouraged to make plans to address their family or work responsibilities ahead of time so that they will be ready to take advantage of the opportunity to begin occupational skills training when it is presented.

**Recommendations**

- MPI leadership, including employers, may need to continue to find ways to address what each partner needs from participating in the MPI in order to ensure their continuing collaboration and involvement.

- Members of the Manufacturing Pipeline Sub-Committee would do well to continue to meet regularly as a committee and to assign tasks to subcommittees for recommendation and resolution.

- EWIB leaders and staff and employers may need to maintain regular communication to closely monitor fluctuations in employer production needs and obtain feedback on the effectiveness of program elements in preparing participants.

- Financial support (mileage reimbursement, training stipend) will likely continue to be needed to help ensure participant retention and completion in courses that are essentially full time over several weeks.

- As the pool of MPI candidates becomes “greener”—that is, with less work experience overall—partners in the MPI may need to provide increased case management and additional supports to ensure participant retention and completion of occupational skills courses.

- Employers will need to continue to work with training providers to modify and fine-tune existing occupational skills courses, as needed, and to identify the foundational knowledge and skills needed for new courses to be developed to meet their hiring needs.
Appendix A: Methodology

Information summarized in this report was obtained through the following evaluation activities. Details that pertain to how evaluation activities were carried out can be obtained by referring to the Evaluation Design Report for this project.

- Review of administrative documents
- Monthly telephone conference calls with leaders of the Eastern Connecticut Workforce Investment Board
- Participation by phone in bi-monthly Manufacturing Pipeline Sub-Committee meetings
- Kick-off site visit in January 2016 that included key informant interviews and a roundtable with EWIB staff
- Site visit in August-September 2016 that included key informant interviews and attendance at a Manufacturing Pipeline Sub-Committee meeting
- Site visit in April 2017 that included key informant interviews, attendance at a Manufacturing Pipeline Sub-Committee meeting, and two focus groups with MPI participants
- Participant survey data collection – February 2017
- Participant survey data collection – April 2017
- Participant survey data collection – June 2017
Appendix B: Research Questions

### Implementation Study

<table>
<thead>
<tr>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>What were the primary elements of the Pipeline Initiative? What were the participant eligibility requirements?</td>
</tr>
<tr>
<td>How was outreach conducted? Who was targeted?</td>
</tr>
<tr>
<td>What were the characteristics of those that expressed interest in the MPI by completing an online application through the Pipeline Portal? How many of those who completed the online application through the Pipeline Portal were directly hired by EB (rather than going through the MPI training)?</td>
</tr>
<tr>
<td>How were services delivered and tracked? Who delivered the program elements?</td>
</tr>
<tr>
<td>Was the initiative carried out as planned, according to the proposed timeline? What variations were necessary and why? How was the project managed?</td>
</tr>
<tr>
<td>What changes needed to be made within the workforce system to deliver the customized occupational training at the necessary scale? What were the biggest challenges and how were these overcome?</td>
</tr>
<tr>
<td>How many of the trained participants were hired by EB? How many by other EAMA employers? How were these hires facilitated by the Pipeline Initiative team?</td>
</tr>
<tr>
<td>What supportive services did participants utilize during their training?</td>
</tr>
<tr>
<td>What partners were involved in program delivery? How were these partners involved?</td>
</tr>
<tr>
<td>Were partners, employers, and participants satisfied with the Pipeline Initiative results and processes?</td>
</tr>
<tr>
<td>What role did the partners and employers play in program and curriculum development?</td>
</tr>
<tr>
<td>What were the overall lessons learned from this project? How were these lessons shared with state and national audiences?</td>
</tr>
<tr>
<td>Is the project positioned for sustainability, and does it have potential for replication?</td>
</tr>
</tbody>
</table>

### Outcomes Study

<table>
<thead>
<tr>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who was served by the project? To what extent did the participant group reflect the population demographics of the EWIB service area? What characteristics contribute to successful participant outcomes?</td>
</tr>
<tr>
<td>How many participants scored in the medium range (40-69) on the Prove It! assessment and were required to complete Stage 2 - basic skills and work readiness training? In what ways were participants taking Stage 2 of the training similar to participants that scored in the high range (70-100) on the Prove It! assessment and went directly into Stages 3 and 4? In what ways were they different? How did credential, employment, and wage outcomes for participants completing Stage 2 compare to participants who were not required to go through Stage 2?</td>
</tr>
<tr>
<td>What gains in basic skills and work readiness were observed at the end of the Stage 2 - basic skills and work readiness training (as measured by Prove It!)? Following Stage 2 - basic skills and work readiness training, did this group receive Prove It! assessment scores comparable to the Prove It! assessment scores of the participants who were not required to complete Stage 2?</td>
</tr>
<tr>
<td>What credentials were earned by participants as a result of Stage 3 (customized and occupational skills training)? How many credentials were earned?</td>
</tr>
<tr>
<td>To what extent did all MPI program participants retain employment (OJT plus ongoing employment, nine months after enrolling in Stage 3)? As a subset of the total MPI participant population, what were the employment outcomes for participants that completed Stage 2?</td>
</tr>
</tbody>
</table>

### Cost Study

<table>
<thead>
<tr>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>What was the cost per participant of this initiative? What was the per service unit cost?</td>
</tr>
<tr>
<td>How cost effective was the program in terms of employment, credential-earning, and job-retention outcomes?</td>
</tr>
</tbody>
</table>
Appendix C: MPI Participant Flow Diagram
Appendix D: Participant Characteristics

MPI participants tend to be younger. Almost 60% of participants are between the ages of 17 and 34. Another third are between the ages of 35 and 54.

Most of the participants are male (88%).

Over half of the participants are white, but there is a large proportion of participants where race is unknown. 12% of participants are Hispanic.

Forty percent of participants have a high school diploma or GED. Seventeen percent have some higher education, 16% have some certification, and 25% have a degree (Associates, Bachelors, or higher).