

# SHIPBUILDING AND REPAIR THE WORKFORCE IMPERATIVE

A 2018 Funding Proposal for the Development and Implementation of a National Workforce System for the Shipbuilding and Ship Repair Industry

This publication was produced by the National Maritime Education Council (NMEC) and officially endorsed by the Shipbuilders Council of America (SCA).

## A Maritime Nation: A Talent Imperative

The United States is truly a maritime nation, one that is "tied to the ocean and its international and domestic waterways militarily, economically, and politically."<sup>2</sup> Protected by the largest Naval fleet in the world and the 12th largest Coast Guard Fleet and the "primary driver of trade in one of the world's largest economies,"<sup>3</sup> the industry is segmented into three markets--military, commercial, and consumer, with the military market segment accounting for 69% of ship production and repair. According to a

"We continue to look at our workforce development too, which is arguably our single biggest challenge."<sup>1</sup>

Matt Paxton, President, Shipbuilders Council of America US Shipbuilding: The Road Ahead MarineLink (October, 2017)

report published by the Maritime Administration, total economic activity associated with the shipbuilding and repair industry in 2013 accounted for 399,420 jobs, 25.1 billion in labor income, and over \$37.3 billion in GDP,<sup>4</sup> making it a "dominant engine for some local and regional economies."<sup>5</sup> Each direct job in the shipbuilding and repairing industry leads to another 2.7 jobs nationally. Each dollar of direct labor income leads to another \$2.03 in labor income in other parts of the economy. Each dollar of GDP leads to another \$2.66 in other GDP.<sup>4</sup>

The domestic shipbuilding and repairing industry delivers about 1,500 vessels annually--from tugs and towboats, to commercial and fishing vessels, to offshore supply and support vessels, to inland barges.<sup>4</sup> Whether for military or commercial use, building and maintaining these vessels take a skilled workforce.<sup>5</sup> However, not unlike other industry sectors, the industry is facing some daunting workforce challenges. Georgetown University's Center on Education and the Workforce projects that by 2020, 65% of US jobs will require postsecondary education or training. Yet, the Center also projects significant shortages in the number of workers with the necessary training to fill those jobs. In fact, the Center projects shortages of 3 million workers with associates degrees or higher and 5 million workers with technical certificates and credentials.<sup>6</sup> Compounding these challenges are image issues that discourage the 21st Century workforce from pursuing careers in shipbuilding and ship repairing.

**Endorsed by the Shipbuilders Council of America (SCA)**, this proposal reviews the current state of the shipbuilding and ship repair workforce, outlines the National Maritime Education Council's vision for a national workforce system, and examines how NMEC leverages the experience and success of the NCCER model to accelerate its efforts to recruit and train the next generation workforce, to address skills gaps in the incumbent workforce, and to change the perceptions of the industry as they relate to employment and long-term careers.

## The Shipbuilding and Ship Repair Workforce - Current State of Affairs

#### **An Industry Perspective**

From a workforce development perspective, the shipbuilding and ship repair industry is facing a number of challenges including an aging labor pool, a lack of technically skilled workers to replace those retiring, high turnover due to the cyclical nature of the industry, and a reduced number of candidates to fill management positions. Competition from industry sectors scrambling to recruit the same workers for jobs that require similar skill sets exacerbates these

"There are well-established training and education policies and procedures within the yards ... for continuous improvement an industry-wide skills and qualifications requirement matrix should be considered."<sup>11</sup>

> 2014 US Naval Shipbuilding and Repair Industry Benchmarking. Part 1: Shipbuilding (March, 2016)

challenges.

Adding to these challenges is the fact that the shipbuilding and ship repair industry lacks a national, cohesive brand and platform to expand its marketing reach and to grow the talent pipeline. Moreover, the industry has an image problem. Today's younger generations do not view shipbuilding and repair as "the place to be in today's markets"<sup>3</sup> (p. 19).

Additionally, employers incur costs related to recruiting, assessing candidates' skill levels, and providing necessary training to get them deck-plate ready. According to the 2016 *Human Capital Benchmarking Report* published by the Society for Human Resource Management (SHRM),

"The large and mid-tier shipyards reported difficulties in recruiting skilled and experienced personnel in all areas of production. In particular, unskilled workers are recruited and trade specific training is provided by the shipyards" (p. 35).<sup>11</sup>

> 2014 US Naval Shipbuilding and Repair Industry Benchmarking. Part 1: Shipbuilding March, 2016

the cost-per-hire on average is \$4,129.<sup>14</sup> Others would argue that the cost is much higher. The lack of industry-driven, standardized curricula and portable credentials and a means to assess pre-hire qualifications and incumbent workers' knowledge and skills—which would allow for more targeted remediation based on assessment results—increase these costs and impact the affordability of the ships produced.

#### **The Navy Perspective**

From a Navy perspective, all of these issues are intensified by calls for the modernization and expansion of the Navy's fleet, and the lack of contract stability resulting in "disruptive hiring and layoff cycles," contributing to a transient workforce (p. 22).<sup>5</sup> In fact, the Congressional Budget Office projects that the shipbuilding industry will need to increase its workforce 40 percent over the next 10 years to meet the Navy's goal of a 355-ship fleet. Sub builders, according to CBO projections would need to increase even more.<sup>7</sup> Matt Paxton, president of the Shipbuilders Council of America, predicts that "The shipbuilding industry will need to add between 18,000 and 25,000 jobs to build to a 350-ship Navy. Including indirect jobs like suppliers, the ramp-up may require a boost of 50,000 workers." <sup>1</sup>

## A Critical Shortage of Skilled Talent

Recent research suggests that our public education system is not preparing students to transition from school to the labor market. In the 2013 report, *The Complete Breakdown in the High School-to-Work Transition of Young, Non-College Enrolled High School Graduates in the U.S.: The Need for an Immediate National Policy Response*, researchers found that in 2012, the full-time employment rate of high school graduates in October following their graduation was 19%, the lowest rate since data were collected, which was 1959.<sup>8</sup>

On the other end of the workforce spectrum, "Retiring Baby Boomers are vacating jobs faster than young workers can replace them, especially in skilled trades and manufacturing," this according to a 2016 report published by the Conference Board.<sup>9</sup> The organization predicts 15 years of labor shortages for the U.S. economy as a result of this fact, a low unemployment rate, and other factors. When one considers the competition among other industry sectors for the same skilled workers and calls for increased production and modernization for the US Naval fleet, finding skilled talent will become increasingly more difficult.

## **Perception is Reality**

Despite offering competitive incomes and rewarding career opportunities, the shipbuilding and repair industry, like the manufacturing sector in general, has an image problem. In a recent national survey conducted by the *Manufacturing Institute*<sup>10</sup> findings revealed that 83% of Americans believe manufacturing is very important to the country's economic prosperity; 81% believe that it is very important to our standard of living, and 62% felt that it was important to maintaining America's national security and yet only 24% of respondents believe that school systems encourage students to pursue careers in manufacturing and 70% do not believe the industry offers strong career



Deloitte and Manufacturing Institute. (2017). A Look Ahead: How Modern Manufacturers Can Create Positive Perceptions with the US Public.<sup>10</sup>

paths. The results of the survey were not all bad. Respondents recognize the value of certifications. In fact, 77% view certification as a way to attract talent. Findings also indicate that positive perceptions increase with industry familiarity. In fact, manufacturing ranked 1<sup>st</sup> as a career choice among those familiar with manufacturing. Moreover, these respondents were twice as likely to encourage a child to pursue a career in manufacturing.





The industry has a number of challenges in terms of workforce development and the talent pipeline, one that will only worsen and one that can't be solved by one shipyard alone. But, what if there was a comprehensive solution to address these challenges?

**WHAT IF** there was a system of **career awareness and recruiting** that would allow the industry to speak with one voice and deliver a consistent message to students, student influencers, the underemployed, returning military, and other key audiences and stakeholders?

**WHAT IF** there was a process in place to convene groups of **Subject Matter Experts (SMEs)** from shipyards across the country to identify the knowledge and skills necessary to perform on the job--from entry-level to the journey-level craft professional--and to use the data collected to inform curriculum and assessment development activities?

**WHAT IF** there was a **world-class curriculum**, one that was standardized, flexible, performance-based, included written and performance evaluations, and met apprenticeship standards that could be used (1) externally by high schools, community colleges, and other training providers around the country leveraging an infrastructure that was already in place and (2) internally by employers to supplement existing programs or to create new in-house training programs for incumbent craft professionals?

WHAT IF there was a proven process to assess the knowledge and skills of individuals and provide them with **portable**, **stackable credentials**, one that would assure employers that they know and can do what they say they can and reduce onboarding training time?

**WHAT IF** there was a system to train and certify instructors, one that would teach skilled craft professionals how to transfer their knowledge effectively in a learning environment?

**WHAT IF** there was a **process to accredit training programs** to ensure that learning environments met industry standards and an infrastructure that already included 3,300+ accredited education and training providers in all 50 states?

**WHAT IF** there was a way to **assess incumbent craft professionals to identify skills gaps**, one that resulted in a training prescription that tied back to the curriculum so that employers could quickly offer task-specific training, reduce training time, improve productivity and reduce rework?

**WHAT IF** there was a **national database** to track an individual's training credentials and certifications, one that would allow employers to check qualifications of new hires and to track qualifications of incumbent craft professionals?

WHAT IF there was an opportunity to leverage an existing workforce development system, 20+ years experience perfecting the model, and a \$100+ million investment to produce a similar system for the shipbuilding and ship repair industry?

## The National Maritime Education Council (NMEC): A National Vision for Workforce Development and Performance Improvement



According to the Society of Human Resource Management (SHRM), "The skills shortage in the U.S. is a growing problem and will take innovative efforts of government, educational institutions, and employers." <sup>14</sup>

Established in 2012, NMEC is a multi-regional, industry-driven, member-based trade organization working to address many of the workforce challenges discussed in

this proposal. Partnering with NCCER, a non-profit educational foundation with a proven model for success, NMEC and its member companies are working to build the skilled talent pipeline by generating awareness for careers in shipbuilding and repairing, to shorten the time it takes to get new hires to the deck plate, and to develop a means to identify and address skills gaps among incumbent workers.

The collaborative system includes standardized, modularized, task-based curricula developed with input from subject matter experts from NMEC member yards. Stackable, portable skills credentials validate the skill level of workers, and assessments measure the skills level of pre-hires and identify skills gaps in the incumbent workforce. Processes to certify instructors and accredit facilities along with a career awareness and recruitment campaign are a part of this comprehensive system. NMEC's vision for this system is illustrated on the following page.

#### Leveraging a Proven System and a \$100+ Million Investment

Over its 21-year history, NCCER has invested over \$100 million developing and perfecting its system for the construction industry and has evolved into the premiere workforce development organization for that industry sector. NCCER now offers curricula and assessments in more than 70 craft areas--including shipbuilding and ship repair--that lead to portable, stackable credentials, in over 3,300 NCCER accredited training and assessment locations across the United States, NMEC leverages NCCER's proven system and resources to accelerate efforts to develop and implement a national workforce system for the shipbuilding and repairing industry. NMEC's comprehensive workforce system, in partnership with NCCER, is summarized on page 10.

## **NMEC Member Shipyards & Trade Associations**



## THE NMEC VISION FOR A NATIONAL SHIPBUILDING AND SHIP REPAIR WORKFORCE SYSTEM



## NCCER: An Educational Foundation With a Mission: A Safe, Productive Workforce



NCCER, a not-for-profit 501(c)(3) education foundation and NMEC's partner, was established in 1996 with the support of more than 125 CEOs from the construction industry, various associations, and academic leaders looking for workforce development solutions for many of the same challenges shipbuilding and ship repair employers face today.

#### Standardization and Flexibility are Key

In addition to being industry-driven, hallmarks of the NCCER model and the national shipbuilding and ship repair workforce system NMEC is working to develop and implement, are its standardization and flexibility. Because the curricula is driven by industry, employers can be confident that pre-hires can demonstrate the skills they have and shorten the time it takes to get them to the deck plate. The system can be used by industry in internal craft, task, or apprenticeship training since it aligns with national apprenticeship standards. Assessments are tied to the curricula and provide a prescription for training. For incumbent workers, this gives employers the ability to identify skills gaps and remediate at task level.

High schools, community colleges, and other training providers can rest assured that they are teaching to national industry standards required by industry and equipping their students with the skills and credentials needed to compete for meaningful, rewarding careers in shipbuilding and ship repair.

#### **Standardized Curriculum and Assessment Process**

NCCER utilizes a DACUM (Developing a Curriculum) process, a job analysis tool that incorporates the use of focus groups made of subject matter experts (SMEs) in a facilitated storyboarding activity. The results is a detailed DACUM chart outlining the duties and tasks workers need to be able to perform a particular job. Through this process, enablers are identified. Enablers are the knowledge, skills, tools, and behaviors needed for the worker to be able to perform the duties and tasks of the job.

# **NCCER ... BY THE NUMBERS**



**1996** Year established



# 100,000,000+

Investment in program development



Craft areas craft titles/assessments







States utilizing NCCER training



**3,300** Schools/training locations in the US



**250,0000** Credentials issued annually Throughout the DACUM process, subject matter experts (SMEs) provided by NMEC's member shipyards play an integral role. The first step in the process involves SMEs working with NCCER program managers to identify the minimum standards required of a particular craft. As the curriculum is being developed, SMEs review the content for accuracy and participate in scheduled review and upgrade sessions as needed. Once a craft program is complete, SMEs provide input into the development and validation of craft assessments, which includes pilot testing prior to release. Below is an illustration of the role SME's play in these processes.

#### The Subject Matter Expert: A Vital Link



#### Sponsored Craft Training: A National Infrastructure



The U.S. needs to develop and maintain systems of skill certification and credentialing in order for young people to signal their work qualifications effectively. Credentials should be awarded for completion of well-defined, sequenced work and learning experiences. Credentials should be "stackable" which means designing them in coherent combinations or sequences.<sup>12</sup>

Creating Pathways to Prosperity: A Blueprint for Action Harvard University June 2014

## **The Value of Certifications**

According to the Manufacturing Institute<sup>12</sup>, companies have documented significant measurable results when recognizing industry certifications, including:

**More job-ready candidates.** Applicants with certifications have demonstrated an ability to be productive faster than those hired without the certifications.

**Shorter training time.** Certified workers come to the company ready to work and learn. They have a basic understanding of the

work environment, terminology, and common processes and ready to apply them in their new environment.

**Improved safety and quality.** Manufacturers report fewer accidents and improved safety ratings. Certified workers understand the importance of safety and quality and are sensitive to the critical role in production.

**Reduced turnover.** Employers have reported as much as a 50% reduction in turnover resulting from hiring certified workers.

**Better promotion decisions.** Certified workers are better candidates for promotion. Some employers use certifications as criteria for employees requesting a promotion to management or to identify those most qualified for future training.

**Increased productivity.** Reduced overtime and scrap rate, additional new business, and an overall increase in production capacity keep production lead times below the industry standard.



#### A Sustained Career Awareness, Industry Image, and Recruitment Initiative

Build Your Future or BYF is NCCER's premiere awareness, recruiting, and retention initiative. With career paths and resources specifically designed for students; student influencers such as parents, teachers and counselors; returning military; and women; the program is fully customizable based on the industry sector, including shipbuilding and ship repair.

#### Modularized, Industry-Driven, Task-Based, Standardized Curricula

Industry-driven, standards-based curricula insures a consistent instructional process that offers employers certainty in what a new-hire brings to the table, as well as an opportunity to identify skills gaps among the incumbent workforce. The NCCER maritime curricula is developed and revised by Subject Matter Experts (SMEs) from NMEC's membership base, which insures that the content developed meets or exceeds national industry standards. Each task-oriented module can be used inhouse for specific task training and remediation or as part of larger courses of study such as those offered by high school CTE programs, community colleges, registered apprenticeships, and other training providers.

#### Portable, Stackable Skills Credentials

Industry-recognized credentials provide students and production craft professionals with national, portable credentials. A full set of NCCER credentials includes a certificate of completion, wallet card, and transcript.

#### A Proven System to Train and Certify Instructors

The Instructor Certification Training Program (ICTP) ensures the uniform and consistent delivery of training. Through this program, NCCER certifies the Master Trainer, who in turn certifies the local Craft Instructor. This network of certified instructors assures that training programs meet the standards of instruction set by the industry.

#### A Proven System of Accreditation to Ensure Quality

Several types of Accreditation are available including Accredited Training Sponsor (ATS), Accredited Training and Education Facility (ATEF), and Accredited Assessment Center (AAC).

#### A Proven System to Certify Individuals through Validated Knowledge and Skill Assessments

NCCER's National Craft Assessment and Certification Program (NCACP) allows employers and other organizations to use assessments to help them determine the skill levels of their workers. NCCER offers two levels of certification--Knowledge Verified and Performance Verified. Knowledge verified credentials are awarded to craft professionals who pass a written assessment. Performance verified assessment are used to determine hands-on skills qualifications. A Craft Worker who passes both assessments are awarded a Certified Plus credential.

Maritime Craft workers who take an assessment receive a "targeted, " task-specific training prescription that outlines strengths and deficiencies, which they can use to upgrade their competency levels. Training prescriptions allow shipyards to offer task-specific module-based training to elevate the competency level of their workers.

#### **A National Registry**

NCCER's National Registry System, a secure database, maintains training and assessment transcripts on individuals who successfully complete an NCCER standardized training program conducted by an accredited organization or an assessment. The Registry System is accessible online and gives individuals immediate access to their personal training history. Shipyard personnel can access the system to confirm training and assessment activities for new hires as well as the training and development needs of their incumbent workforce.

"Industry certifications validate what workers know and are able to do. They take the guesswork out of hiring and promotion, and help reduce costs and minimize risks."

Developing Skilled Workers: A Toolkit for Manufacturers on Recruiting and Training a Quality Workforce The Manufacturing Institute

### **NMEC's Progress to Date**

Through the support of its member yards and its partner, NCCER, NMEC has been working to develop and implement the comprehensive, national workforce system envisioned by the organization. However, efforts to date have been funded solely through member dues and in-kind services provided by NCCER, a model that restricts NMEC's ability to move forward with the organization's development goals as quickly as needed and to fully implement the system.

To date, NMEC has invested \$325,000 to produce and publish the following titles:

- Introduction to the Maritime Industry module, the companion to NCCER's Core curriculum and the prerequisite for all Level 1 maritime titles
- Maritime Structural Fitter, a three-level program and its journey-level assessment
- Maritime Pipefitting--the first two levels of the four-level program

#### **Moving Forward Despite Funding Challenges**

In an effort to continue moving forward with development activities, despite the organization's funding challenges, subject matter experts (SMEs) from NMEC's member yards reviewed NCCER's existing Welding and Electrical curricula to determine what content is relevant to similar crafts in shipbuilding and ship repair.

NCCER conducted DACUMs (Developing a Curriculum) for both crafts with the SMEs and completed the Welding DACUM in March 2017; the Electrical DACUM was completed in November 2017. In addition to identifying the relevant modules, the process allows NCCER, with SME input, to identify the enablers (i.e., knowledge, skills, tools, and behaviors) that are unique to the shipbuilding and ship repair industry and are needed for a worker to be able to perform the duties and task of the job.

As funds become available, the maritime specific content will be developed and the Welding and Electrical curricula will be modified to include images and the newly developed content, so that the texts better represent the two crafts. In the meantime and to meet training demands, the Maritime Welding and Maritime Electrical titles will be published under an NCCER/NMEC cover and can be supplemented with content unique to the industry.







## Need for an Industry-Wide Skills and Qualifications Matrix

The US Naval Shipbuilding Benchmarking report (March 2016)--participants included three mid-tier and five large shipyards--revealed that even though "a high proportion of the workforce has met shipyard standards, there is no industry-wide standard for role qualifications." The report suggested that the establishment of an "industry-wide skills and qualifications requirements matrix" be considered to ensure continuous improvement. (p.33)<sup>11</sup>

## **Funding Request**

NMEC is proposing a three-year project to develop and deliver the world-class system of workforce development system outlined in this proposal to the shipbuilding and ship repair industry. An investment of \$2.7 million over three years would allow NMEC to accelerate curriculum and assessment development activities and to fund and expand operations to allow for continued development and implementation of the system as well as outreach and technical assistance services.

Member dues have funded NMEC's curricula and assessment development efforts to date. However, progress has been hindered significantly due to lack of funding. Beginning in January 2017, with member approval, NMEC operations were funded on a limited scale with member dues. Prior to that, operations were unfunded.

The table below provides an overview of the proposed budget. A budget narrative follows.

#### **Proposed Budget**

	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	
	Project	Project	Project	Total Project
	Budget	Budget	Budget	Budget
NMEC/Program Management Contract	\$300,000	\$300,000	\$300,000	\$900,000
Contractual Services: Curricula/Assessment				
Development*				
Maritime Pipefitting Curriculum-Levels 3 & 4				
Maritime Pipefitting Journey-Level Assessment	\$175,000			\$175,000
Maritime Welding Curriculum-Three Level Program				
Aluminum Welding-One Level Program				
Maritime Welding Journey-Level Assessment	\$225,000			\$225,000
Maritime Electrical Curriculum-Four-Level Program				
Maritime Electrical Journey-Level Assessment		\$300,000		\$300,000
Maritime Painting & Coatings Curriculum				
Journey-level Assessment			\$200,000	\$200,000
Maritime Sheet Metal Curriculum				
Journey-level Assessment		\$175,000		\$175,000
Maritime Outside Machinist Curriculum				
Journey-level Assessment			\$175,000	\$175,000
Contractual Services: Build Your Future - Career				
Awareness, Recruiting, and Retention Campaign				
Development (Y1) and Enhancement (Y2 and Y3)	\$50,000	\$20,000	\$20,000	\$90,000
Travel	\$36,000	\$36,000	\$36,000	\$108,000
Marketing/Growth	\$60,000	\$60,000	\$60,000	\$180,000
Training and Assessment Accreditation Support				
Services	\$50,000	\$50,000	\$50,000	\$150,000
TOTAL	\$896,000	\$941,000	\$841,000	\$2,678,000

#### **Budget Narrative**

NMEC/Program Management. Program management includes staffing and indirect costs. Staffing will consist of

- an executive director, who will provide outreach services to key stakeholders to generate awareness of and promote the use of the workforce system across the country by presenting at relevant state, regional, and national industry trade association meetings and workforce development and education conferences.
- a program director, who will provide daily oversight for the program, serve as the liaison between industry and NCCER to facilitate curriculum and assessment development activities, work with industry to develop regional career pathways, and provide technical assistance and auditing services for employers and training providers interested in training program and/or assessment accreditation through NCCER. The program director will also explore funding opportunities and other revenue streams that support NMEC's mission to offset the cost of operations at the end of the three-year project.
- an outreach director, who—in collaboration with industry—will coordinate public relations and marketing activities
  to heighten awareness for careers in shipbuilding and ship repair and to enhance the image of the industry among
  students and student influencers, women, and veterans; oversee and facilitate the development of a branded career
  awareness website and customizable collaterals for intended audiences and the production of informational videos; and
  develop and implement a formal plan to include email blasts, social media posts, and news releases to communicate
  the benefits of a career in shipbuilding and ship repair in an effort to build the talent pool. The outreach director will
  also be responsible for membership growth to help fund future operations and program activities once this three-year
  project ends.
- an assistant to provide clerical support for all project activities and to proctor assessments.

Curriculum and Assessment Development. Curriculum and assessment development activities include

- The completion of the final two levels of Maritime Pipefitting and its journey-level assessment.
- The development of five additional maritime titles and their corresponding assessments including Welding, Electrical, Painting and Coatings, Sheet Metal, and Outside Machinist.

The remaining three titles—Machinist, Rigger, and Insulator—are slated for development in year four of NMEC's strategic plan.

Costs included in the contractual services for curricula/assessment development are technical writer fees, editor fees, staff travel, meeting expenses, project management, and production.

**Travel.** Travel includes costs associated with presenting at industry trade association meetings and relevant workforce development and education conferences.

"The more involved you get and the more investment you make, the better your return's going to be."

Huntington Ingalls Industries' Workforce Development Strategy: Engage in the Process Upstream Mike Petters, President and CEO Huntington Ingalls Industries and Recipient of the Committee for Economic Development's Owen B. Butler Education Excellence Award **Marketing/Growth.** Marketing/Growth includes contractual services related to the development of a branded career website leveraging NCCER's *Build Your Future* platform, the production of informational videos, and customizable collaterals for intended audiences.

**Training and Assessment Accreditation Support Services.** Training and Assessment Accreditation Support Services include costs and activities associated with assisting companies' wanting to become authorized Training Units and/ or Assessment Sites under NMEC's sponsorship, including, but not limited to, oversight, training and certification of instructors and staff, administrative services, and periodic audits.

## **Project Deliverables**

- 1. Develop and publish of the last two levels of the Maritime Pipefitting program and its journey-level assessment.
- 2. Develop and publish full programs and journey-level assessments for Maritime Welding, Electrical, Painting and Coatings, Sheet Metal and Outside Machinist.
- 3. Create and maintain a branded, career awareness website, social media sites, and downloadable resources to communicate a consistent, cohesive message that shipyards can share with local high schools, community colleges, women's and veterans' groups and other key stakeholders.
- 4. Develop a formal plan to communicate the benefits of careers in shipbuilding and ship repair to intended audiences including email blasts, newsletters, social media posts, and news releases.
- 5. Work collaboratively with shipyards to create regional career pathways for production crafts for shipyards to share with local high schools, community colleges, and other audiences interested in pursuing a career in shipbuilding and ship repair.
- 6. Conduct outreach activities to promote the use of the workforce system to key stakeholders.
- 7. Provide technical assistance and consulting services to assist shipyards and other stakeholders interested in training and assessment accreditation.
- 8. Serve as an NCCER sponsor for small shipyards and/or as an incubator for larger companies interested in becoming authorized Training Units and/or Assessment Sites, including training and certification of instructors, performance evaluators, and coordinators; administrative support for submission of trainee records and test completions, and periodic audits as required by NCCER.

"We don't have the right to complain about what we are getting from education unless we're willing to get off the sidelines, roll up our sleeves and help solve the problem."<sup>11</sup>

Creating Pathways to Prosperity: A Blueprint for Action The Pathways to Prosperity Project and The Achievement Gap Initiative at Harvard University Timm Boettcher, President and CEO RealityWorks

#### **Open Source: An Unsustainable Model**

To deliver to the shipbuilding and ship repair industry a comprehensive system of workforce development that includes the components discussed in this proposal takes time, money, and experience. With 20+ years spent perfecting a model that has been used successfully in other industry sectors, over \$100 million in investments, and a highly qualified team of professionals, NCCER is the natural choice to partner with to complete this task. NCCER is committed to producing world-class curricula and funds regularly scheduled updates to its published titles to ensure that the content remains current. For this reason, NCCER maintains the intellectual property on all titles published by the organization and does not accept funding for curriculum development from sources that have open-source stipulations. Many federal and state grants come with open-source stipulations and, therefore, cannot be utilized.

#### The Future is Now

The shipbuilding and ship repair industry is at a tipping point in terms of workforce development. The challenges facing the industry--aging craftspeople and a lack of technically skilled workers to replace them, calls for a 355-ship Navy, high turnover, increasing competition among industry sectors scrambling to recruit the same workers for jobs that require similar skill sets, among others--threaten the industry's ability to build and deliver ships in a timely, cost-effective manner. Public perception of the industry in terms of providing viable career paths only exacerbate these challenges.

In conjunction with our member yards and through our partnership with NCCER, NMEC has been working since its formation in 2012 to address these issues; the only stumbling block impeding our progress is the capital needed to move forward. With industry support and collaboration, persistence, and an investment of \$2.7 million over three years, we have an opportunity to work together to develop and deliver a world-class, comprehensive, industry-driven, and standardized workforce system to alleviate the workforce challenges that plague the industry--challenges that will continue to grow if not addressed.



## References

<sup>1</sup>Trauthwein, Greg. (2017, October 18). US Shipbuilding: The Road Ahead. *MarineLink*. Retrieved October 31, 2017 from https://www.marinelink.com/news/shipbuilding-ahead-road430460?utm\_source=MT-ENews-2017-10-18&utm\_medi-um=email&utm\_campaign=MT-ENews

<sup>2</sup>Navy League of the United States. (2017). *Ensuring Strong Sea Services for a Maritime Nation: 2017-2018 Maritime Policy*. Retrieved April 13, 2017, from https://navyleague.org/files/legislativeaffairs/maritime-policy-statement.pdf.

<sup>3</sup>Navy League of the United States. *America's Maritime Industry: The Foundation of American Seapower*. Retrieved April 20, 2017, from http://studylib.net/doc/8789693/america-s-maritime-industry--the-foundation-of-american-s....

<sup>4</sup>Maritime Administration (MARAD). (November, 2015). *The Economic Importance of the U.S. Shipbuilding and Repairing Industry*. Retrieved April 21, 2017 from https://www.marad.dot.gov/wp-content/uploads/pdf/MARAD\_Econ\_Study\_Final\_Report\_2015.pdf.

<sup>5</sup>Industry Study Final Report Shipbuilding. (Spring 2015). The Dwight D. Eisenhower School for National Security and Resource Strategy. National Defense University. Retrieved April 12, 2017 from http://es.ndu.edu/Portals/75/Documents/industry-study/reports/2015/es-is-report-shipbuilding-2015.pdf

<sup>6</sup>Carnevale, A. P., Smith, N. and Strohl, J. (June, 2013). *Recovery: Job Growth and Education Requirements through 2020*. Georgetown University, Georgetown Public Policy Institute, Center of Education and the Workforce. Retrieved May 5, 2017, from https://cew.georgetown.edu/wp-content/uploads/2014/11/Recovery2020.FR\_.Web\_.pdf

<sup>7</sup>Freedberg Jr., S. J. (April 25, 2017). 355-Ship Navy Takes at Least 18 Years: CBO. Breaking Defense. Retrieved May 8, 2017 from http://breakingdefense.com/2017/04/355-ship-navy-takes-at-least-18-years-cbo/

<sup>8</sup>Sum, A., Khatiwada, I., McHugh, W. (October, 2013). The Complete Breakdown in the High School-to-Work Transition of Young, Non-College Enrolled High School Graduates in the U.S.; The Need for an Immediate National Policy Response Center for Labor Market Studies, Northeastern University. Retrieved May 12, 2017 from https://repository. library.northeastern.edu/downloads/neu:m039m833g?datastream\_id=content

<sup>9</sup>Hartman, M. (2016, April 19). *15 Years of Labor Shortages Predicted for the U.S. Economy*. Retrieved May 2, 2017, from https://www.marketplace.org/2016/04/19/world/15-years-labor-shortages-predicted-us-economy

<sup>10</sup>Deloitte, Manufacturing Institute, and National Association of Manufacturers. (2017). *A look ahead: How modern manufacturers can create positive perceptions with the US public*. Retrieved December 5, 2017, from http://www.themanufacturinginstitute.org/Research/Public-Perception-of-Manufacturing/~/media/9607397D3AFC423A-B68133505EE2C348.ashx

<sup>11</sup>First Marine International (FMI). (March 18, 2016). *2014 US Naval Shipbuilding and Repair Industry Benchmarking. Part 1: Shipbuilding*. Retrieved May 10, 2017 from http://www.nsrp.org/wp-content/uploads/2016/03/Report\_FMI-Benchmarking\_-9Y1755-2014-industry-report-final-revision-3-Public-Distro.pdf

<sup>12</sup>Harvard Graduate School of Education. (June 2014). *Creating Pathways to Prosperity: A Blueprint for Action*. Retrieved June 1, 2017 from http://www.agi.harvard.edu/pathways/CreatingPathwaystoProsperityReport2014

<sup>13</sup>Manufacturing Institute. *Developing Skilled Workers. A Toolkit for Manufacturers on Recruiting and Training a Quality Workforce*. Retrieved December 1, 2017 from http://www.themanufacturinginstitute.org/~/media/B210D3B1E97D-475FB21EF92F35778063/Employer\_Toolkit\_1\_0.pdf

<sup>14</sup>Society for Human Resource Management. (2016). Human Capital Benchmarking Report. Retrieved November 21, 2017, from https://www.shrm.org/hr-today/trends-and-forecasting/research-and-surveys/Documents/2016-Human-Capital-Report.pdf

<sup>15</sup>Klimas, Jaqueline. (2017, June 14). *Growing Shipbuilding Workforce Seen as Major Challenge for Trump's Navy Buildup*, Politico.





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