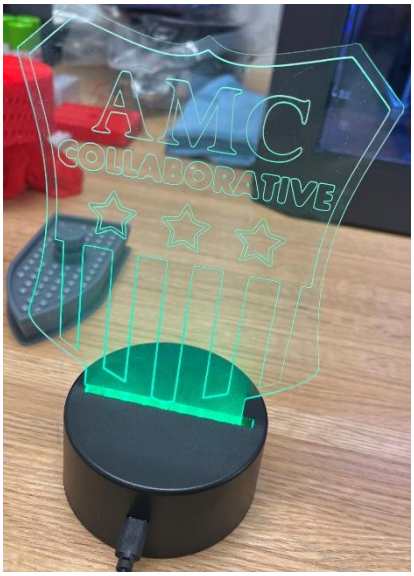
The American Manufacturing Communities Collaborative



AMCC ROADSHOW REPORT

Hampton Roads Virginia Co-Hosted by ODU's Virginia Digital Marine Center in August, 2023

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Contents

About the American Manufacturing Communities Collaborative (AMCC): AMCC's mission is to create and strengthen an alliance of communities within sustainability through economic growth, improved environmental performance, and inclusive well-paid job creation supporting initiatives to create new opportunities and equity within a revitalized American manufacturing base. AMCC communities are part of a national network of manufacturing communities in states across the nation; a collaboration network that for years has been and continues to meet on a weekly basis. AMCC's national network was recently recognized in 2022 as the nation's manufacturing Community of Practice by the Economic Development Administration, enabling it to further leverage regional insights to help address the challenges of manufacturing communities across the country. As part of AMCC's collaborative partnership with the U.S. EDA, our regional visits or "roadshows" aim to help manufacturers, educators, economic development professionals, state agencies and other key manufacturing community stakeholders more quickly identify and implement evidence-based sustainable development innovation and growth strategies in priority manufacturing industries that will strengthen the American project.

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Introduction:

In August 2023, AMCC was invited to co-host a Roadshow visit with manufacturing stakeholders in the Hampton Roads region by the Virginia Digital Marine Center (VDMC), formerly the Virginia Maritime Industrial Base Ecosystem, and affiliated with Old Dominion University. VDMC is a leading organization in the implementation of the Department of Defense's Defense Manufacturing Community Support Program (DMCSP), and outside of DMCSP activities, plays a convening role in bringing together relevant stakeholders in the region.

AMCC collaborated with VDMC to organize a Roadshow focusing on the workforce ecosystem supporting maritime and related defense manufacturing industries in the Hampton Roads region, which comprises the Virginia Beach, Norfolk and Newport News metropolitan area and surrounds. VDMC and its partners brought together relevant local organizations, alongside state and national stakeholders, on a journey highlighting outcomes and ongoing efforts to build a robust talent pipeline in the region to meet the needs of its industry clusters. Throughout the two-day roadshow, participants visited with youth advanced manufacturing engagement programs such as those out of Norview Community Center and the Brooks Crossing Innovation Center, high school programs at the VMASC Digital Ships lab and the New Horizons Training Center, and young adult and incumbent worker trainings provided by Tidewater Community College, QED Systems Inc, and the Maritime Center. Altogether, the roadshow meetings demonstrated the intentional work that has been done in the region to convene and align workforce stakeholders and shows how those efforts have resulted in more consistent exposure to advanced manufacturing careers across all education levels and greater participation and buy-in from local manufacturers and shipyards.

AMCC thanks its hosts and all participating organizations for their time and engagement with this roadshow, with special thanks to VDMC's Mark Whitney and Robert-Allen Baker for connecting with AMCC and leading regional roadshow planning efforts. AMCC also thanks the valuable participation of Thomas Crabbs, Military Liaison for VA's Secretary of Veterans and Defense Affairs, for his insights into state priorities and support, and to Larry Horne, Workforce Specialist at Newport News Shipbuilding, a division of Huntington Ingalls Industries, for providing a necessary industry perspective on how the Hampton Roads workforce ecosystem can best support its manufacturers' success. A final thanks to Economic Development Representative for Virginia, Lauren Stuhldreher, and Pete Langlois, Policy Advisor, Office of Innovation and Entrepreneurship at EDA for joining in-person to share a federal perspective on the region's economic development.

Day One: Virginia Modeling, Analysis & Simulation Center (VMASC) Meeting Kickoff

The Roadshow began with a meeting hosted at ODU's Virginia Modeling, Analysis & Simulation Center (VMASC) featuring speakers from the Virginia Digital Marine Center (VDMC) and VMASC researchers. The participant list is available in Appendix B.

VDMC's new Executive Director and retired Navy Rear Admiral, Mark Whitney, opened the discussion with an overview of the VMASC facility, describing it as an "applied center of centers" that serves as a hub of advanced maritime technology demonstrations and research, as well as servicing sister programs at ODU such as the Institute for Spaceflight & Autonomy and the Center for Secure and Intelligent Critical Systems (CSICS). Whitney shared the background of VDMC, which was founded in 2018 to meet the emerging needs of new shipbuilding and repair/modernization in the region, providing research, workforce development and ecosystem coordination to support its local shipyards. VDMC had originally received funding from the DoD Office of Economic Adjustment (OEA) in 2019, and now works as a lead partner on the region's Defense Manufacturing Community Support Program (DMCSP) grant provided by DoD OEA, which was renamed in FY21 to the Office of Local Defense Community Cooperation (OLDCC).

Whitney described VMASC researchers as embodying the ethos of "go out and do it" with the local community, citing student fairs and summer camps, industry-informed curricula, and talent pipeline development as necessary applied activities to carry out the Center's mission. Speaking to all stakeholders, Whitney shared his hope for the outcomes of AMCC's Roadshow, stating that "I want this visit to be a tipping point for this region's [long-term] collaboration." More on the Virginia Digital Maritime Center and their DMCSP initiative can be found in the DMCSP Consortium Meeting section of this report.

VMASC then presented on four program areas related to AI and cybersecurity in critical systems, risk analysis metrics for regional manufacturing, simulation, robotics, and automation work supportive of Navy maritime needs, and the Center's approach to training and education in the region.

Pete Foytik, Project Scientist at the Center for Secure and Intelligent Critical Systems (CSICS), presented his work on several key areas, including trustworthy AI, critical infrastructure resilience metrics, and secure next-generation technologies. Foytik shared his research on understanding and investigating strategies to inhibit critical system attack vectors through AI training and integrating systems-level networks of large operations, such as hospitals or shipyards. As one example, Foytik is currently working on a medical lab simulation to test configurations of 5G solutions and user equipment to define and address surprise network attacks. He described an expression of his work with a hypothetical. In the case of a network attack at a hospital or other emergency, an AI-driven system would be able to allocate bandwidth to critical systems or to act as a barrier to inhibit further penetration of the cyber-attack. Conversely, Foytik explains the importance of training AI systems in such a way as to avoid cyber-related attacks that attempt to trick the AI into activating protocols against the safety interests of the system. Through this work, Foytik collaborates with VDMC to understand

specific compliance issues in next-gen communication on large shipyards to develop applied solutions for manufacturers and DoD uses.

Next was Barry Ezell, Deputy Executive Director of VMASC, who described the over 15 years of work by the Center to provide risk analysis frameworks for investigating threat vectors, technology adoption rates in maritime industries and other risk and performance indicators tools supportive of the Hampton Roads defense industrial base. VMASC has developed key risk and performance indicators, including standards adopted by NIST, which are integral to risk analysis, encompassing risk, vulnerability, and consequences. This work extends to aid the development of the Commonwealth's defense manufacturing strategy, with frameworks produced to assess the manufacturing base in Hampton Roads and other state regions to gauge their relative performance in areas like tech adoption and workforce development.

Attendees then heard from Yiannis Papelis, Chief Technology Officer at VMASC, who shared cutting-edge simulation work underway that stands to save significant time and costs for live testing of autonomous maritime vessels. This project involves testing maritime autonomy to support the Navy's retrofitting of vehicles to become autonomous and crewless. Conventional practices to testing these vehicles can be particularly challenging due to the extensive and expensive testing scenarios required to assess how autonomous boats perform amidst factors like jet skis, maritime traffic, commercial vessels, or against adversary vessels. Papelis explained further that the costs for "simple" tests still require the manpower, time and resources required to evaluate how multiple autonomous vehicles interact with each other in open water. Through VMASC's simulations and modeling, Papelis shared how large portions of these conventional tests can be performed virtually, saving time and costs. Papelis described one sample project now underway for the US Navy's Naval Surface Warfare Center (NSWC), having secured $2 million in funding to support NSWC Carderock and NSWC Dahlgren. The project's focus is on simulation-based testing of maritime autonomy, aiming to reduce costs and enhance confidence in testing results by conducting simulations that inform actions and adjustments before real-world testing.

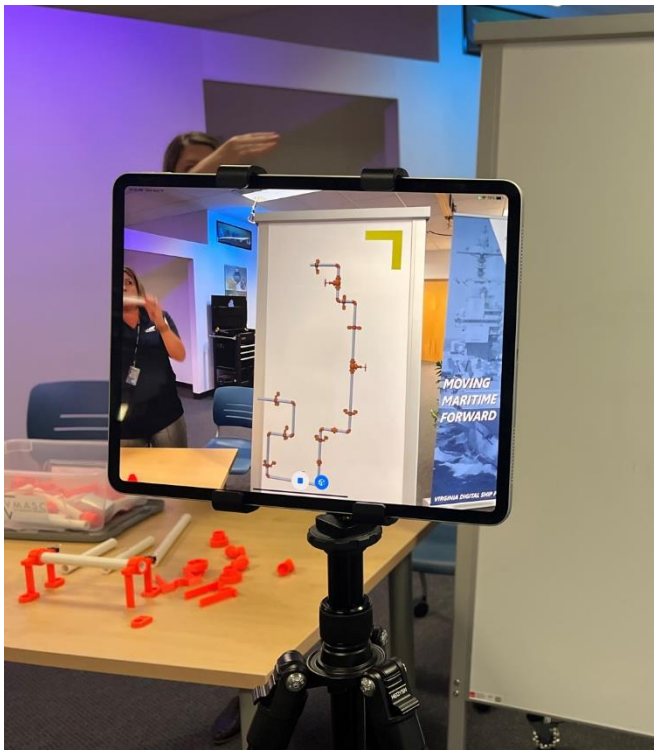
Dr. Ginger Watson, Director, Technology-Enhanced Learning & Performance Laboratory at VMASC gave the final presentation of the morning on her lab's innovative work to integrate AI/AR into curricula development and research applications. Her research centers on the use of AI in developing stronger training programs, exploring its potential to enhance the design and development of new AI-driven intelligent tools that produce adaptive, individualized instruction for virtual learners. Dr. Watson described one project in collaboration with UVA where over 1000 hours of 3rd/4th grade classroom instruction was recorded and fed through an AI visual-learning model to assess the behavior of the learners using eye tracking and voice intonation. The model then provided recommendations to educators to improve classroom time management and related techniques to improve the outcomes for students. This research has been applied in other scenarios, such as the training of physicians. Students in this program were shown a variety of scenarios with computer-generated patients and treatments options and outcomes, with the AI-model recording the visual cues to highlight areas of implicit bias among trainees. This work will soon expand to include audio recording and evaluation to advance Dr. Watson's goal of

producing an AI-powered model to support the effective education of students across the spectrum of courses offered at ODU, as well as into other regional and statewide training efforts.

VMASC Digital Ships Demonstration Lab Tour

Meeting attendees were then led on a guided-tour of the VMASC Digital Ships Lab to learn about several programs produced by the Center, to include primary research such as development of a supply chain cybersecurity project, as well as student-oriented training modules including a pipefitting simulation and maritime digital twin AR demonstration. Several stations were set up around the room for participants to learn about each program, with VMASC personnel providing additional information, to include Assistant Director of Digital Shipbuilding Russell Czack, Research Assistant Professor and Director of STEM Partnerships Jessica Johnson, Research Assistant Professor Katie Smith and Digital Shipbuilding Curriculum Coordinator Jennifer Renne.

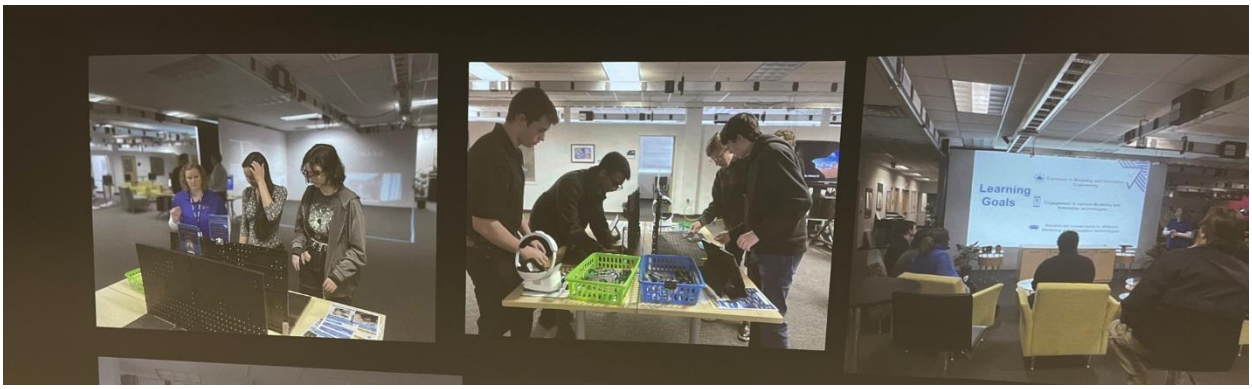
The first station provided an overview of a research project recently funded by the Coastal Virginia Center for Cybersecurity Innovation (COVA CCI), titled "Machine Learning-Enabled Dependency Network Analysis for Quantifying Risks and Ripple Effects Stemming from Cybersecurity Non-Compliance Issues". The project aims to support improved risk assessment and trade-off analysis for supply chain management personnel at shipyards. Smith described the challenge they seek to address through the project, such as the disruptions that a system failure or supply challenge would have on other systems at a large shipyard, with their work able to model delays and provide simulated risk outcomes to aid stakeholder decision-making. Smith says that this model will be readily applied to supply chain resiliency problems to help shipyards and other defense industries understand lag times and trade-off options resulting from supply chain disruptions.



VMASC Pipefitting VR Tool

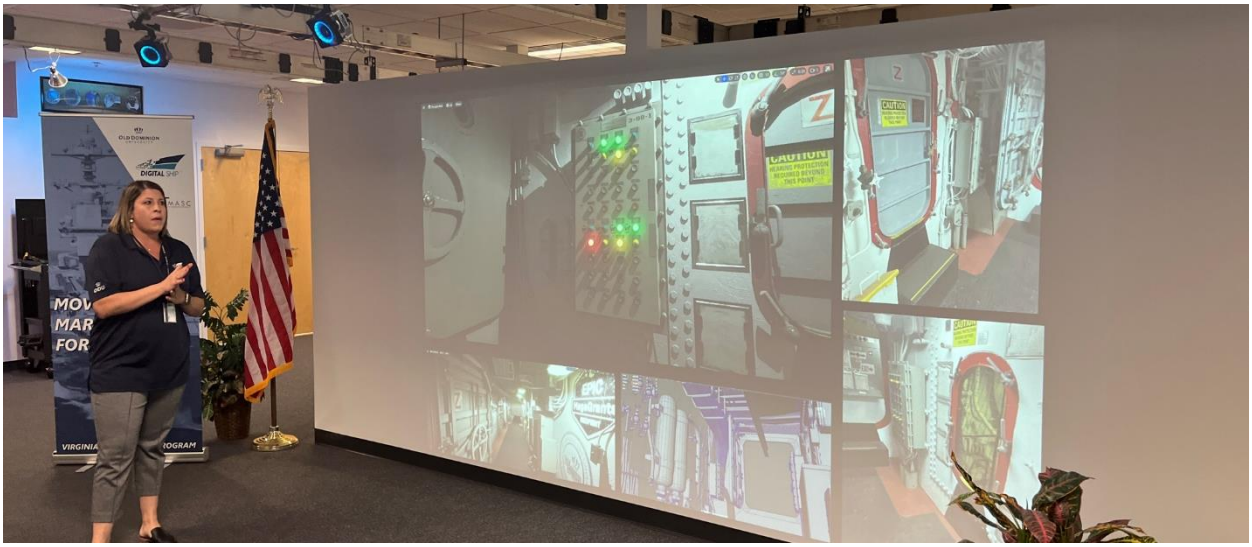
Following, the tour's attention shifted to workforce development strategies and new curricula developed by VMASC. Jessica Johnson shared one of the more popular K-12 engagement simulations; a pipefitting program that connects to maritime pipefitting training curriculum. The program's focus is to help students visualize and comprehend complex 3D spatial relationships in blueprints. This is achieved using 3D scanning technology, which digitizes parts and enables students to interact with 2D blueprints in a 3D space using an augmented reality (AR) app on iPads. Students engage in practical exercises using PVC pipe models, gaining insights into pipefitting processes

without any physical cutting or welding. An AR welding headset acts as an inspection tool to allow students to build exact blueprint diagrams in virtual space. The simulation is offered to students at local schools and community colleges, with input provided by subject matter experts in 3D modeling, scanning, and experienced pipefitting instructors. VMASC seeks to expand the capabilities of the AR software to automate proficiency assessment that meets industry standards, allowing for real-time feedback provided by the software to students while relieving instructors from manual grading.



Students engage in VMASC projects and simulations.

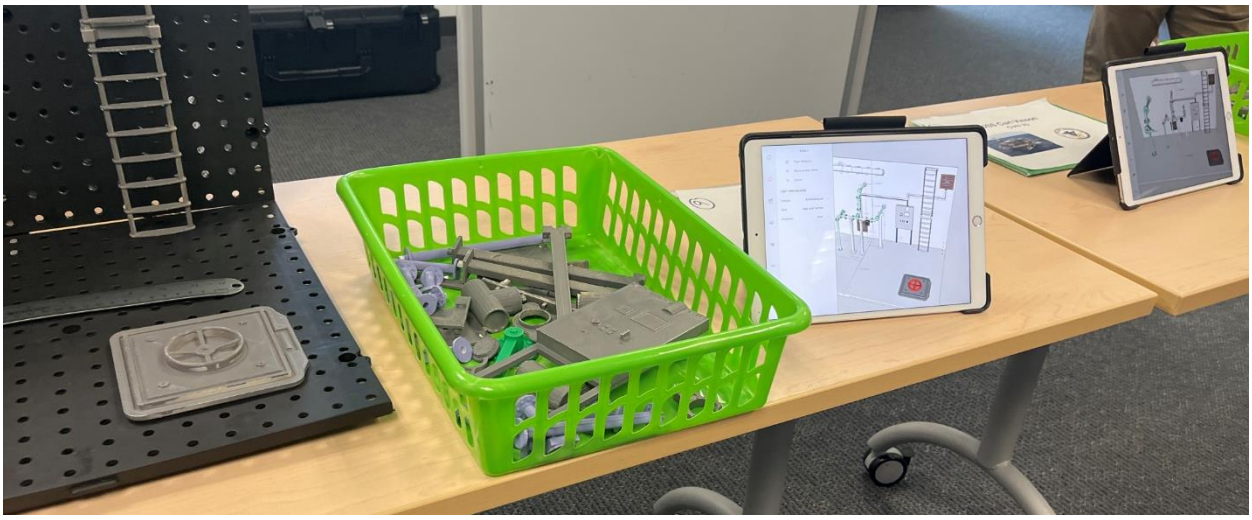
Johnson then shared VMASC's Digital Ship virtual twin; a 3d-rendered virtual ship interior that is used to simulate repair and maintenance scenarios for use in training programs. The overarching aim is to provide students with a shipyard experience within a virtual setting. The virtual twin was developed by ODU's video game production students who boarded a real vessel and scanned all its components to create a near 1:1 replica of the ship's interior. Students can use a VR headset and engage in different scenarios prompted by the training software, such as identifying a faulty part aboard a ship and acting out the steps necessary to fix it.



VMASC's Jessica Johnson shows videos of the Digital Ship simulation.

Johnson explained the educational concept of cognitive architecture, meaning the interaction between education, memory, and the associated environment, as a key strength of programs like the ship digital twin. Instead of reading directly from a textbook, students can maneuver through the 3D space and highlight objects that display information on what they are, what they do, and how they relate to the specific training. By couching learning in a simulated environment of the actual space, she asserts that students have better training outcomes and can more rapidly apply what they learned into practice.

Johnson then described an Incredible Bulk Student Workshop that VMASC had supported which brought in middle-school aged students to explore an aircraft carrier's bulkhead in VR. Students were challenged to create physical replicas of the bulkhead, including printing replica pipes, to learn about the advanced manufacturing and STEM skills needed in maritime careers. VMASC is now exploring the proliferation of this program and its applicability to high school students. In this and all programs, Johnson says that having industry participation is key. Students in the workshop had the chance to work with a technical advisor from private industry who could mentor the students and communicate the applicability of their learnings.



3D printed pipes and other parts for use in student projects.

The final program discussed on the tour was VMASC's leadership in the Maritime Trades Magnet Program; a VA Department of Education initiative to provide career and technical education (CTE) training to give students the ability to explore advanced manufacturing technologies and associated careers. VMASC researchers aim to support the training proficiency of regional CTE providers by developing lesson plans and projects in areas like 3D modeling, additive manufacturing, engineering drawing and design, robotics, and other maritime-relevant skills. These lesson plans are then packaged for off-the-shelf use by regional CTE providers as one strategy to align training outcomes in the region. The program is focused on supporting 10th-12th grade students, with roughly 300 students having completed projects thus far, and another 100 CTE providers who have accessed and implemented one or more of the lesson plans. All the projects and associated software needs are provided free, with thirteen schools in the area able to purchase the necessary equipment to carry out all parts of the projects in-house. VMASC is now

considering how to align this program with the goals of the statewide GO TEC program. More on the GO TEC program can be found in the Brooks Crossing Center section of this report.

Larry Horne, Workforce Specialist at Newport News Shipbuilding, shared that projects like Maritime Trades Magnet were exactly what large employers need in the region to be successful meeting their workforce needs. Horne shared that he expects to hire 15,000 people over a five-year period and that one of the biggest obstacles for in-house training is education on basic CTE skills. He estimates that ~1/3rd of training costs involve these basic skills and that, should the workforce ecosystem be able to provide this type of training, he would be able to save significant costs and likely improve retention rates of new hires. Horne and other participants continued the discussion of how workforce stakeholders could better align the talent pipeline throughout the rest of the day's activities.

Hampton Roads Workforce Council Meeting

Next up was a visit with the Hampton Roads Workforce Council (HRWC); a WIOA-funded workforce development outfit that serves as a system-wide convener for regional workforce stakeholders. HRWC recently secured designation as an EDA Good Jobs Challenge grant recipient related to its proposal to expand its Regional Workforce Training System. HRWC President & CEO, Shawn Avery, reported on their effectiveness in securing workforce funding for the region and attracting businesses, educators, and training providers to coordinate more intentionally on workforce priorities.

HRWC's strategy stands on three investment pillars centered on the blue green economy and supporting industry sectors in 1) boat/shipbuilding and ship repair, 2) the emerging offshore wind industry cluster, and 3) infrastructure construction. These investment pillars mirror the Hampton Roads Comprehensive Economic Development Strategy (CEDS), of which HRWC served as one of the authors. The CEDS document identifies seven industry clusters with highest need for job creation and firm diversity, including 1) port operations, logistics and warehousing, 2) advanced manufacturing, 3) cybersecurity and data analytics, 4) shipbuilding and ship repair, 5) water technologies, 6) unmanned systems and aerospace, and 7) clean energy, especially offshore wind. Importantly, Avery states, the intention is to increase the total number of new workers achieving training that could enter these identified clusters so that no one cluster is overly competing with another for the same pool of workers.

The mood in the meeting was optimistic. Avery reflected on the progress that HRWC and its partners had made in attracting federal and state funding to the region, which began with a grant received from the Virginia Initiative for Growth & Opportunity (GOVirginia). Their original grant allowed HRWC to implement the U.S. Chamber of Commerce Foundation's Talent Pipeline Management (TPM) framework in the Hampton Roads area. This initiative enabled HRWC to form public-private partnerships and build the blueprints for the Regional Workforce Training System. At the time of the meeting, Avery connected these preparations to their successful designation in the Good Jobs Challenge and subsequent award of over $11M, which HWRC leveraged to secure additional funding to include $1.1M from the VA Governor's Office and another $2.5M from the VA General Assembly. Job types to be supported by GJC and

associated funding include Maritime Welder, Structural Fitter, Sheet Metal Fabricator, Electrical Technician, Maritime Coating, Outside Machinist, Wind Turbine Technician, Commercial Driver, and Cybersecurity positions. HRWC also serves as a regional lead in a $29M initiative with the Navy's Submarine Industrial Base (SIB) and BlueForge Alliance to further maritime workforce development. All told, HWRC anticipates bringing $56M in workforce development dollars to Hampton Roads in 2024.

A leading challenge for Avery now is to invest these dollars in regional capacity building, expanding training centers like QED Systems and the Tidewater Community College Skill Center, and marketing available opportunities to community members.

On regional capacity building, HWRC has endeavored to support the alignment of educators and training providers, having brought together 25 such educational institutions, including K-12 and two local HBCUs. Identifying a contingent of businesses and workers over the North Carolina border has led HWRC to expand its outreach efforts to those stakeholders, forming a sort of "hub-and-spoke" model to their regional workforce ecosystem. HWRC is deploying 25 full-time talent navigators to serve as additional human infrastructure to improve regional connectivity and worker training placements. From this alignment work, HWRC attracted a council of regional business leaders who worked with the education institutions to produce training requirements in six high-demand skills that educators/trainers could use to improve training outcomes and career opportunities for students. The successful implementation of the business council's recommendations has led to increased buy-in from those businesses, and others, to take active roles in the regional workforce training ecosystem. As one example, both Newport News Shipbuilding and the Virginia Ship Repair Association have hired full-time staff liaisons to work with HRWC and other workforce ecosystem partners. And, supporting the region's ability to deliver demand driven worker trainings, HWRC has been pragmatic in securing hiring commitments from its key business partners, equipping workforce ecosystem stakeholders with the ability to communicate the scale of need and better plan capacity-expanding investments. In total, HWRC coordinates with 60 partners to operate its Regional Workforce Training System, and as of AMCC's visit, has trained 950 jobseekers.

Business Commitment to Hire: 11,000+			
AMP United, LLC	50	KBR Inc.	25
Auxiliary Systems	50	Newport News Shipbuilding	10,000
Bay Metals and Fabrication	2	Peregrine	10
Bayliss Boatworks	12+	Prisim Maritime	35
Carter Machinery	350+	QED Systems	25-40
Delphinus Engineering Inc.	100+	Regulator Marine	50
East Coast Repair and Fabrication	40	sS23 Holdings	50-100
Fairlead	100-300	SCIPP International	80
Glotech	10-15	Thermcor	10-15
Huntington Ingalls Technical Solutions	206		
Business Commitment TBD during Program Design			
Avangrid/Kitty Hawk Wind	TBD	NCDOT Ferry Division	TBD
Dominion Energy	TBD	Oceaneering	TBD
General Dynamics NASSCO - Norfolk	TBD	Port of Virginia	TBD
Global Technical Systems (GTS)	TBD	Siemens Gamesa	TBD

Business commitments to hire obtained by HRWC.

While stakeholders at the meeting expressed satisfaction with early outcomes of the Regional Workforce Training System, HWRC staff were quick to point out the significant gap that remained in certain high-demand skill areas. Certification rates related to maritime coating were cited as an example, where a HWRC workforce analysis revealed that annual rate of workers receiving this type of training in the region only accounted for 1/10th the annual need for local businesses. As one solution, HWRC is supporting the financing of training facility expansion for several of its partners, including Virginia Peninsula Community College, Camp Community College, and New Horizons Training Center. HWRC is also developing new outreach partners to engage the region's Black population more equitably through collaboration with the Urban League of Hampton Roads and the Urban League of Central Carolinas who serve an important role in outreach and recruitment of new trainees. HWRC and its partner collaborate under the marketing banner of the workforce system, called Waves of Opportunity. Throughout the meeting, Avery emphasized that their work requires an intentional focus on communicating the myriad opportunities available in maritime and adjacent industry clusters to improve community socialization and awareness. In this way, the workforce system seeks to decrease the gap between individuals in the community and the nearby shipyards, opening new pathways for young people and incumbent workers to pursue local career opportunities.

At the end of the meeting, participants discussed the challenges facing SMMs in the region that pursue Navy and other military contracts. Participants described the fixed-price contracting framework employed by the Navy as a difficult hurdle for SMMs to overcome and build long-term investments in their workforce. As the fixed-price contract sets predetermined value for goods and services provided, many SMMS find it impossible to effectively weave together contracts to maintain consistent employment, instead relying on short-term work and surge hiring to meet the immediate demands of a contract. This creates a negative outcome for employers who are not able to retain their skilled workers between contracts, and as an added inefficiency, the surge hiring practices lead to new workers receiving abridged trainings or requiring higher startup time and cost to the employer to get staffed and trained up. Meeting participants shared that this dynamic is especially critical for ship repair businesses that must rely on temporary labor as they transition from contract to contract.

QED Systems Tour and Discussion

Afternoon meetings began with a tour and discussion with QED Systems Inc., an engineering and technical services firm providing much-needed training and certifications in welding and other areas related to maritime careers in Tidewater. One notable advantage for the training provider is that, on top of their AWS certification programs, their NAVSEA certification enables trainees to achieve certification to work on Navy-related projects. This is a critically important certification in the region to support the bevy of shipbuilding and fleet repair employers that will often hire out of QED programs, knowing that they have avoided the additional training cost and hours normally required to get a worker certified to work on Navy contracts.

Director of Production and Workforce Development, Scott Kelley, led participants on a tour of the "proving grounds" as he described it; an indoor simulated environment designed to mimic the conditions of the interior of a ship. Kelley described the space as an important aspect of a

worker's training program, with their most approachable program – a 90-day welding certificate course transitioning trainees from instruction, to simulated training to museum ship repair – creating an on-the-job training environment to minimize onboarding time for the trainees' eventual employers. Kelley calls it a "no-consequence space" that helps trainees understand their responsibilities in maritime welding positions.

QED Systems training space designed to mimic ship conditions for trainees.

QED Systems has invested in its own capacity to connect and collaborate with the region's workforce ecosystem, including HRWC and VDMC, to better advertise its services. Kelley shared that the business made an initial financial investment in performing this outreach, and has since seen returns from engagement, to include WIOA-backed funding that allows them to provide low-cost and free programs for low-income individuals. Kelley bemoans the difficulty they have had in advertising these free programs, stating that they are having a tough time getting students in the door and have capacity available to train dozens more each month. Kelley was hopeful that this would be one outcome from working more closely with regional stakeholders and pointed to their developing work with United Way of South Hampton Roads as one avenue for finding more students.

During the discussion, Kelley again brought up the difficulty he has seen and experienced related to DoD certification requirements and Navy contracting challenges. To certify a worker for projects related to DoD contracts, employers either need to provide this training or have a partner like QED Systems offer a program. This additional cost and time to train is exacerbated when coupled with the difficulties SMMs experience jumping from DoD contract to contract, creating a situation where SMMs experience high initial costs to train and low ability to retain trained workers long-term. This challenge concerns Kelley as he expresses pride in his ability to serve DoD and warfighter needs. A veteran himself, Kelley makes it his mission to demonstrate to his staff and to trainees in his program the importance of the work they are doing, connecting the trainings and job requirements to the critical nature of their work to support the U.S. Navy and national security.

Tidewater Community College Skilled Trades Academy

The events of the first day concluded with a meeting at Tidewater Community College's (TCC) Skilled Trades Academy, led by VP of Workforce Solutions, Laura Hanson. Hanson provided an insightful overview of the institution's recent growth and its evolving approach to collaborating within their regional workforce development ecosystem. She attributes a large portion of their recent successes to deepening collaborations with public partners like HRWC and private partners like Newport News Shipbuilding. She described the recent collaboration between TCC, Newport News Shipbuilding and the Virginia Ship Repair Association as an important step that has been driving broader coordination since. In that initial collaboration, the three organizations worked on aligning skill competency needs from employers with the curricula currently used by the community college. This work has benefited TCC's flagship maritime program, which involves an intensive 120-hour welding class completed in three weeks, as well as a broader curriculum that includes between 80 to 250 training hours. In the 2022-2023 school year alone, the college trained 828 students in advanced manufacturing-related certifications, with coursework emphasizing practical skills directly applicable to their future careers.

Employers have expressed a strong preference for co-located training facilities, which TCC has responded to by securing funding for the new location. HRWC supports the community college's Skilled Trades Facility and funds the lease of the facility. TCC expanded its facility this year to provide all its 69 courses (soon to be 98 courses in 2023) in one location. This way, the Skilled Trades Facility can serve as an important physical location for nearby incumbent worker training and new student training alike. This move allows for greater interaction among different levels of courses, such as combining level 2 and level 3 students under two instructors.

Collaboration has been central to TCC's strategy, especially in understanding the needs of regional employers. One outcome from their assessment found that smaller shipyards have a need for professional skills training and safety requirements to help reduce on-the-job training of new employees. Similarly, many SMMs and trainees have requested wraparound service support for individuals completing coursework and looking for employment, to include childcare and transportation, among other needs. The community college also caters to the needs of incumbent workers, particularly through dedicated training programs for the Port of Virginia employees, conducted off-site.

Roadshow participants learn about the Skilled Trades Academy from TCC's Laura Hanson.

Funding for these programs comes from various sources, including the Virginia FastForward initiative, which focuses on expanding industry-recognized credentials with high demand. Additionally, the Virginia G3 Tuition Assistance for Community College Programs and WIOA funding administered through Hampton Roads Workforce Council provide crucial support. Further, Tidewater Community College is receiving funding from HRWC's Good Jobs Challenge grant to provide wraparound services for its trainees.

In the past two years, the college has made significant strides providing training services, having secured state funding and private sponsorship from Dominion Energy for fifteen additional welding stations. These developments have allowed the TCC to expand the number of students it could train, with 764 registrations and over 52,000 contact hours documented in 2023; a testament to the partnerships that have been integral to TCC's strategy.

Feedback and Reflection

Participants regrouped at the end of the day to discuss themes and takeaways important to advancing the manufacturing ecosystem of support in Hampton Roads. Tom Crabbs, Military Liaison for the Secretary of Veterans and Defense Affairs, identified several areas requiring further discussion including 1) pressure felt by SMMs to finance production line digitization to remain competitive and bring down costs, 2) the current reality of slow and cumbersome federal contracting that makes it difficult for SMMs to achieve stability, 3) labor requirements and credentials for working on naval vessels adding cost to and slowing down training efforts, and 4) lack of clarity for manufacturers wishing to implement I4.0 technologies who are unsure if federal contracting would accept certain parts and/or processes. To Crabbs there is good benefit in tying VA's regions together within the state and in neighboring areas like North Carolina. In this space, Crabbs believes that the state government can play an increasingly meaningful role and called for greater organization of regional leaders in Virginia organized in a way to communicate and support state and federal representatives and agencies.

Larry Horne, Workforce Development Specialist at Newport News Shipbuilding (NNS), shared his perspective when reflecting on the learnings of the day. Horne was persistent in expressing the scale of need that a major employer like NNS has for its workforce. Horne states that NNS hires 3,000 individuals each year, with the majority requiring basic training and certifications to succeed on the shipyard. Their current timeline of a 12-week onboarding process is significantly reduced when hiring from local training programs, and those individuals have higher rates of retention, but the volume of trained workers remains insufficient. Horne identified wraparound services as a major obstacle for his new hires, relaying the story of an individual who brought their two-year old child to their first day of training due to lack of services. "We have three welding shifts each day. Where are you going to drop your kid off at 5 a.m.?" Larry spoke as well of the reluctance that he has seen in the local community working at shipyards. He reflected on the drop in regional industry and job availability in the '80s and '90s and makes the connection that the people who felt those financial consequences most acutely are now the parents of the kids that the assembled stakeholders seek to train. He believes that much more work is required to demonstrate to the local community that the shipyards and manufacturing sites they see on their daily drives offer meaningful opportunities.

AMCC was thankful to have the participation of Lauren Stuhldreher, Economic Development Representative for Virginia with the U.S. EDA, who responded to Horne's reflections. She shared her work coordinating with her EDA colleagues and other agencies relevant to the state to communicate challenges like those Horne described. Specifically in wraparound services, Stuhldreher described how federal agencies are approaching this need, citing the inclusion of childcare support in CHIPS and Science Act funding, as well as the opportunity for EDA Good Jobs Challenge funding to support wraparound services. Further Stuhldreher shared information on the state's Manufacturing Extension Partnership (MEP) Center, GENEDGE, and the online training services that it has (provided by ToolingU) to work on the capacity issue and train more individuals at scale.

The feedback session ended on a high note, with VDMC's Robert-Allen Baker describing their efforts to learn from other regional consortia with similar characteristics to Hampton Roads. Baker described his work meeting with other recipients of DoD's Defense Manufacturing Community Support Program in Mississippi, Connecticut, and other jurisdictions. Baker and his colleagues also look to other maritime centers around the country in Rhode Island, Florida and Texas for inspiration and broader coordination with peers. These learnings have been leveraged by VDMC to deliver insightful recommendations and specific success stories that the regional ecosystem could emulate to drive greater outcomes. Baker too described a shifting of the tides in Hampton Roads, with nonprofit organizations, trainers, academia, and private business coming together more intentionally than ever before to build a better-connected workforce development ecosystem.

Day Two: Virginia DMCSP Consortium Meeting: Defense Manufacturing Strategy

The second day began with AMCC attending a consortium meeting of Virginia's Defense Manufacturing Community Support Program (DMCSP), funded by DoD's Office of Local Defense Community Cooperation (OLDCC) to engage in strategic coordination discussions to expand the impact of the DMCSP initiative across the state. The Virginia DMCSP consortium includes 32 member organizations organized in 2020 and securing designation in 2021. Priorities of the VA DMCSP include the expansion of the K-12 talent pipeline and integration with new and existing community college, trade school and university pathway programs. Additionally, the consortium's Old Dominion University Virginia Digital Marine Center (VDMC) works in collaboration with Virginia's Institute for Advanced Learning and Research (IALR) on the production of a manufacturing engineering technology degree program.

The meeting began with a review of deliverables completed and underway required for the successful execution of the consortium's DMCSP award. The primary thrust of award activities involved the integration of the Great Opportunities in Technology and Engineering Careers (GO TEC), administered by IALR, to middle and high schools in the Hampton Roads region. VDMC representatives described the timeline challenges slowing integration efforts, citing significant outreach and socialization efforts to drive adoption of GO TEC curricula and resources in local school systems, particularly at the high school level. These timeline challenges led the consortium to apply for and receive a one-year extension to their DMCSP activities, and the consensus at the meeting was that they would hit their targets by the end of the extension period,

scheduled for Q3, 2024. VDMC's Robert-Allen Baker commended efforts to increase the pace of GO TEC adoption, recognizing the potential for the program to better unify statewide efforts to engage K-12 students. He described efforts at VDMC to transition oversight of GO TEC to ODU's College of Education to create more connections between university and K-12 educators to further refine program curricula. This activity represents a tactic to generate greater alignment between the University and regional school systems. More on the GO TEC program can be found in the Brooks Crossing Center section of this report.

Following Todd Yeatts and Amanda Hylton of IALR gave a summary of their activities under the DMCSP program, beginning with a description of their efforts to establish ODU's Manufacturing Engineering Technology four-year degree program in Danville. The new degree is a result of the consortium's outreach to statewide manufacturers, including BWX Technologies, Intertape Polymer Group, PRESS GLASS and others who joined an advisory panel of manufacturers to provide insights and suggestions producing two- and four-year degree programs that connect with K-12 talent development pathways. The four-year program is housed in ODU's Batten College of Engineering, with undergraduates spending their first two years learning at ODU, followed by third- and fourth-year coursework at IALR's advanced manufacturing lab space. Complementing this program, several community colleges in Southern Virginia have launched associate degrees in manufacturing engineering technology that will serve as a pipeline to the 4-year program, with students offered similar opportunities to learn and make in IALR's lab space. Yeatts relayed that IALR was within reach of meeting all grant deliverables and was optimistic about the outcomes of the DMCSP award by the end of the extension period.

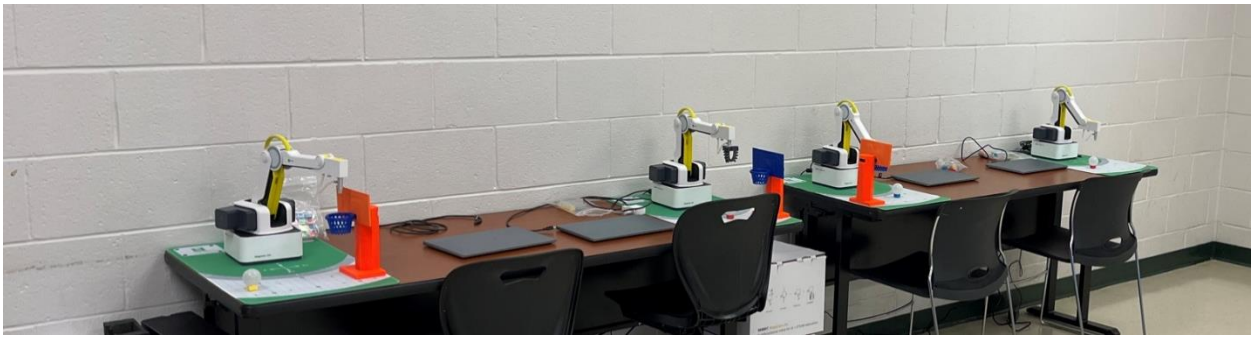
Mark Whitney and Todd Yeatts then discussed outreach efforts driving community awareness of these grant activities. Consortium members were chiefly interested in developing new strategies to reach K-8th graders and their parents, as well as having stronger channels for connecting with underserved and rural communities. The consortium has a strategic marketer who is helping to organize these efforts, with past events held at the ODU campus and in Petersburg. Beyond initial efforts, meeting attendees discussed new ways that the consortium could deepen its collaboration by developing consistent messaging across all partners.

The discussion then shifted to future planning, especially concerning strategies to maintain and deepen collaborative activities among consortium members beyond the end of DMCSP program funding. Thomas Crabbs, Military Liaison to the Secretary of Veterans and Defense Affairs, reflected on the state's priorities that include capitalizing on reshoring trends and attracting new defense-related manufacturing firms to the state, growing prosperity and interconnectivity between the defense industrial base and other industry cluster such as high-tech and cybersecurity firms in Northern VA. Crabbs also reported on progress made in advancing a statewide defense strategy that he described as "industry-driven, state-supported, federally-shared". The defense strategy, which is in development between the Office of the Secretary of Veterans and Defense Affairs, state agencies like Labor, Commerce and Transportation, ODU's VDMC and other stakeholders, intends to set an action plan aligning the state's advanced manufacturing, workforce development and supply chain diversification priorities while driving local cooperation to deepen regional relationships.

The consortium meeting wrapped with two final topics, first Baker recommitted to collaborating closely with the state's Manufacturing Extension Partnership (MEP) Center, GENEDGE. GENEDGE President & Executive Director, Bill Donohue, shared digital twin proficiencies the center had been developing to support technology adoption among their clients. Donohue explained the role GENEDGE can play in the ecosystem, serving as a point of communication with SMMs, and informing the production of workforce and supply chain materials/best practices that could be employed by the DMCSP consortium or in the statewide defense strategy. Then, attendees discussed strategies to improve communication among consortium members. The group considered increasing the frequency of meetings to monthly, as opposed to the current quarterly cadence, citing that more conversation was needed to have the group best prepared to pivot by the end of the grant period.

Norview Community Center

Roadshow participants traveled to the Norview Community Center to see how K-6th graders were being introduced to advanced manufacturing practices. Operated by the Norfolk Department of Parks and Recreation, the Community Center partners within the workforce development ecosystems to provide youth socialization opportunities in the form of camps and special classes. Roadshow participants were shown a training room that included a CNC machine, a basic 3d printer and Chromebooks equipped with 3D-design software so that students could learn how the different machines function. Students participating in the courses attend over two-week periods, rotating among the different stations to learn about the various machines and processes.



Students learn the basics of automation by a training robot arm to dunk a basketball.

A group of students then joined the tour to showcase their robotics project that involved coding a robot to drive over a ramp, pick up a small block, and deposit the block underneath the ramp before returning to its initial position. The students all pointed to the robot as being the coolest station, and described an earlier project where they printed a holder for their phone that attached to the robot, allowing them to Facetime to their phone while remotely piloting the robot around the Community Center.

Manufacturing workforce stakeholders often describe the challenge of bringing the conversation "to the kitchen table" when talking about getting youth interested in manufacturing from an early age. Parents often serve as strong influencers on their kids, and therefore workforce stakeholders understand that manufacturing career opportunities need to be socialized to parents as well as

kids through many different channels. Roadshow participants heard anecdotal evidence supporting this theory, in that several kids cited their moms as the reason they even heard of the Community Center program. One student jokingly suspected that she was signed up for the program because her mom wanted to get her out of the house. She had since come to enjoy her project that involved programming a robotic arm to dunk a basketball. When asked what they wanted to be when they got older, that same student said that she wanted to be a WNBA player. Other responses from the class included athletic trainer, mechanical or electrical engineer, gas engineer, cosmetologist, and chemical engineer.

Students demonstrate their newest automation project.

New Horizons' Training Center

Continuing the workforce ecosystem tour, Roadshow participants next visited New Horizons' Butler Farm CTE Campus, one of seven New Horizon training centers in the region that provides career and technical education (CTE) for high schoolers and adults. In a meeting with Butler Farm CTE Principal, Dewey Ray, participants heard about the large demand for training programs from students and adults alike.

New Horizons provides 23 regional school districts with opportunities for high schoolers to attend training that puts them on the path to success in manufacturing careers. Of 1500 students who take advantage of these programs annually, 1100 of them go through the center's CTE training program. Approximately 600 11-12th grade students are training at any given time throughout the school year, with Ray reporting that the demand for courses exceeds New Horizons' current capacity. According to Ray, they received 2100 applications for CTE from high schoolers in the region for the past calendar year and accepted roughly half of all applicants.

Ray also expressed the need to grow capacity to meet the demand for welding certifications. Currently, the training provider can service 80 high schoolers each year through AWS certification and must turn away another 60-70 students annually due to space constraints. He explained that they have been coordinating with representatives from the Navy to fund the doubling of welder training capacity at their training centers. At the mention of the number of students who are turned away from the program, Larry Horne remarked that Newport News Shipbuilding needs to hire 60-70 welders per month. Horne's comment underscores the potential that may exist here for an ecosystem convener, such as VDMC or HRWC, to connect individuals

with interest in New Horizons' programs with other readily available training service providers in the region, such as QED Systems which had cited lack of interest as a challenge to maxing out their classroom capacity.

New Horizons also services adult learners through afternoon and night classes, training ~900 adults annually in manufacturing, construction, medical and human services. Welding training is a large draw to this population, with 180 adults receiving their AWS certification each year. Ray described their efforts to provide employment commitments from a network of 35 employers in the region. For highschoolers who complete New Horizons programs, they are offered job offers contingent on finishing high school, completing employment paperwork, and passing a drug screening. Adult learning receives similar support to find and apply for jobs following the completion of their programs.

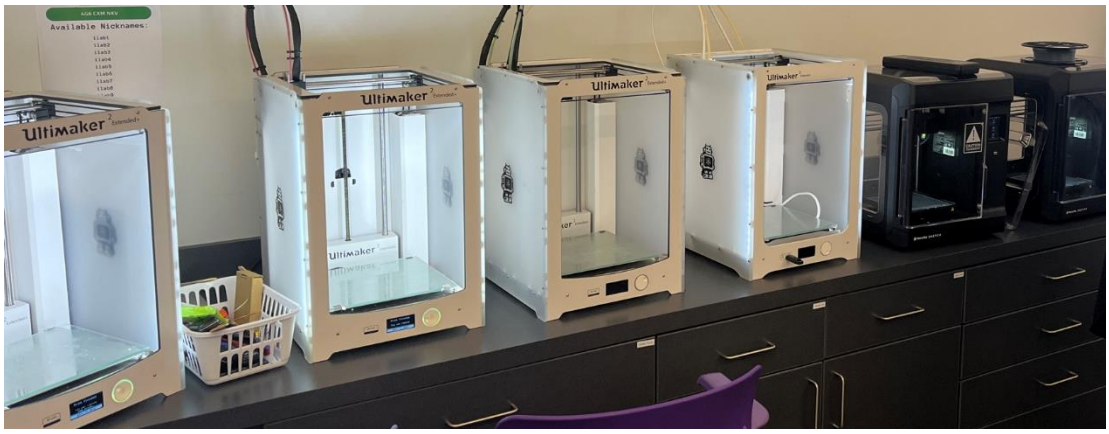
Ray explains this strategy as a competitive advantage that delivers well-trained workers and high retention rates to local employers. New Horizons conducts assessments of job placement rates for their trainees throughout the year after completing a course. This assessment puts the retention rate of their trainees at 80% through their first year of employment; a significantly higher mark than the industry average for the 18-24yr demographic.

To Ray, this is a clear indicator for employers in the region to invest in their local training partners. He explains that, now that students have undergone basic training and know what to expect, that the onboarding time for a large employer like Newport News Shipbuilding reduces from 13 weeks to three, and that the employer can feel comfortable accelerating their new hires through training because they know the quality being produced by New Horizons. To this point, Horne agreed, stating that the retention of new hires from the program is "crazy and exceptional and saves us money."

Brooks Crossing Innovation + Opportunity Center and GO TEC

Participants then convened at the Brooks Crossing Innovation and Opportunity Center (BCIOC) to learn about programs housed in the new facility, including ODU's expansion of the state's Great Opportunities in Technology and Engineering Careers (GO TEC™) initiative. The new facility is the result of collaboration between ODU, Newport News Shipbuilding, and the City of Newport News, and offers youth and incumbent shipyard workers STEM workforce development opportunities, equipment available for professional development, engagement and outreach programs, community nights and more. The Brooks Crossing Center also partners with local community colleges, including Tidewater, Peninsula, and Camp, to further connect into the workforce development ecosystem.

The Center is located in such a way as to drive greater community engagement, especially connecting individuals to the opportunities and activities of the local shipyards. Participants learned about plans for the center originating from earlier collaborations between Newport News Shipbuilding and the City of Newport News to come up with strategies to engage residents. The surrounding neighborhoods are undergoing a wave of development following a recent rezoning that has brought new services into the area, yet many still live around the poverty level locally.



3D printers on display at the GO TEC Demonstration Lab

While the Center offers many programs and services, Roadshow participants chiefly discussed the GO TEC Demonstration Lab which is housed inside the center. GO TEC is a workforce development initiative geared to introduce elementary and middle school-aged students to advanced manufacturing practices, such as precision machining or automation and robotics.

In February 2023, ODU received $3.4M in state funding in GO Virginia grants, with another $2.4M matched by private partners, to expand the GO TEC program to the Hampton Roads region. Through that funding, ODU has established the GO TEC Demonstration Lab which serves not only as a place for young people to learn about advanced manufacturing careers, but for teachers to do the same as well. The Demonstration Lab is specifically oriented to help educators and workforce developers learn how to better communicate careers in manufacturing to their students. Teachers that train at the Lab then will go on to teach the GO TEC educational framework at their own schools and Career Connections labs in the area.

Virginia Beach Advanced Technology Center

Roadshow participants ventured to the Virginia Beach Advanced Technology Center, which provides STEM education opportunities for high school students through a partnership between Virginia Beach City Public Schools (VBCPS), the City of Virginia Beach and Tidewater Community College (TCC). The Center offers a “university-like” experience for students in grades 9-12 to complete half days at their high school followed by afternoon courses at the Center. Several students are eligible for this program throughout all four years of their high school experience, beginning in year 1 with basic skills, before moving into year 2 learning engineering processes and computer-aided design, and finishing with two years of guided application of their learning into long-term engineering projects. As one example, a group of graduates had recently completed a full portfolio project that involved producing a mass production line capable of producing unique nameplates connected to a subtractive manufacturing process to create packaging for their nameplates. Students in the program can expect to leave with three to five certifications, from OSHA-10 to additive manufacturing certifications and others.

AMCC’s tour guide, Director of Technical & Career Education Sara Lockett, described the importance of connecting the Center to businesses for several reasons. First, the Center receives

sponsorships from several private firms to support equipment procurement and expansion, with the Center committed to building a flexible space that allows for continuous improvement of equipment to keep pace with shifting industry demands. Second, the Center provides opportunities for its students to demonstrate their projects and skills directly to industry experts and business recruiters to support their career advancement.

Roadshow participants learn about student projects and tour the Advanced Training Center makerspace.

Third, as part of the Virginia Beach Public School System, the Center works to connect businesses more broadly with students through open houses and events held at high schools in the area. Lockett reported this as a challenging task, as the Center has a lot of interest from businesses to hire students right out of courses, but that interest does not always extend to visiting other schools in the area. She views this as an important area to develop as more business leaders and trainers going into high school classrooms will lead to more effective communication of manufacturing career opportunities, leading to more interest from students to take advantage of training resources.

Lockett shared that 40 students are admitted to the Center's advanced manufacturing program out of approximately 150 applications per year. The Center offers general courses to students that are not admitted to specific programs, which include manufacturing, computer sciences, and digital design. The Virginia Beach public school system has a secondary facility, the Technical and Career Education Center, that supports a broader population of student trainees in the 11-12th grade. This facility is more frequently used by students that do not plan to go directly to college after high school, offering more career-focused skills training courses.

Maritime Institute

The second day's events ended with a meeting and tour of the Maritime Institute's training center in Norfolk. The Maritime Institute is a for-profit maritime training company that offers over 100 U.S. Coast Guard, U.S. Navy and GWO approved courses focused on skills trades, to include basic welding, HVAC training and more, with training centers located in California, Washington, and Hawaii.

Roadshow participants met with Maritime Institute President, John Stauffer, who described two recently complete bootcamp programs that trained a total of 30 individuals who were all immediately hired at the end of their coursework. The bootcamp involved coursework over a two-month period where students would obtain their Transportation Worker's Identification Credential (TWIC), US Merchant Mariner Credential (MMC), along with basic and career skills training. Stauffer commended the Hampton Roads Workforce Council for providing WIOA funding that powered the two bootcamps and has led the Maritime Institute to invest in a new shipyard bootcamp to complement their maritime courses. As of AMCC's visit, the Institute was busy purchasing equipment and building two docks on their property to provide hands-on opportunities for its new bootcamp. Stauffer anticipates that individuals in the new bootcamp will emerge with American Boat and Yacht Club (ABYC) certifications, as well as HVAC training, pumps and engine training, and relevant EPA certifications (such as 608).

Stauffer described additional activities for the Institute, including expanding out to provide AWS certification, and working with ODU to support the designation of a Center of Excellence for Domestic Maritime Workforce Training and Education.

Maritime Institute's simulated ship bridge.

Attendees then toured the on-site bridge and engine simulations rooms that the Institute uses for training. Stauffer demonstrated that the two rooms could synchronize during training, with a bridge team and engine room team needing to work together to overcome challenges thrown at them by the simulator, such as navigating a heavy wind farm in heavy fog.

Conclusion:

The Roadshow, co-hosted by AMCC and the Virginia Digital Marine Center (VDMC), marked a significant touchpoint in developing trust and broader collaboration among workforce ecosystem stakeholders in the Hampton Roads region. This collaborative set of events, which involved local, state, and national stakeholders, showcased a concerted effort towards building a robust talent pipeline to support the maritime and related defense manufacturing industries in the area. Activities over the two-day period successfully highlighted the interconnectivity of various

programs implemented in the region to capture the full spectrum of training from youth engagement to adult skill-building. Each visit reinforced the region's commitment to providing consistent exposure to advanced manufacturing careers at all educational levels.

Nevertheless, the feedback sessions during the roadshow illustrated that work is still required to provide more trainings at larger scale to meet the needs of regional manufacturers, and to organize statewide ecosystems more effectively in their support. Insights from Larry Horne highlighted Newport News Shipbuilding's dedication to engaging with the workforce ecosystem in a mutually beneficial manner. Their approach is aimed at benefiting from regionally-aligned, industry-informed training programs, which would concurrently reduce training costs for the shipyard and enhance employee retention rates. However, Horne also identified a prevailing gap between the abundant opportunities in Hampton Roads' manufacturing sector and the local residents' perception of these as attainable, long-term career paths.

Through direct observation and stakeholder feedback, AMCC discerned that access to these opportunities is often bifurcated along geographical lines, with certain training providers appearing to exclusively serve specific areas. Moreover, the roadshow participants encountered significant traffic congestion due to ongoing construction aimed at expanding roads and tunnels interlinking the diverse localities within Hampton Roads. The realities of the region’s geography and resultant infrastructure underscores a challenge for low-income individuals and those with familial responsibilities, as the transportation time investment to these dispersed training centers could disincentivize prospective trainees from taking advantage of low-cost programs.

At the state level, it was promising to hear Thomas Crabbs share about ongoing efforts by different state agencies, including Veterans and Defense Affairs, Transportation, Education and Commerce to come together more systematically to support regional industry clusters. The Hampton Roads consortium seeks to continue this trend, with hopes to more deeply connect with Northern VA high tech and cybersecurity stakeholders to produce stronger statewide strategies to tie together its business assets in more meaningful ways. The Hampton Roads workforce ecosystem efforts signal a shift towards a more integrated and effective approach in Virginia, bridging diverse regional strengths to forge a cohesive statewide strategy for industrial and economic development.

AMCC thanks VDMC for inviting its participation at the conference, and to all organizations who participated in putting on a successful AMCC roadshow in Hampton Roads.

Appendix A: AMCC VA Roadshow Itinerary

AMCC 2023 Roadshow

Virginia Maritime Industrial Base Consortium

Hampton Roads ***August 14 – 15, 2023***

Schedule as of Wednesday, 9 August 2023

Day One: Monday, August 14

0800 – Continental Breakfast Reception at VMASC – 1030 University Blvd. Suffolk VA

0830 – **VMIBC Challenge and Collaborative Strategy**: Maritime Manufacturing Baseline

Participants: MIBE core and select VA maritime industry stakeholders; AMCC principals and federal guests

Location: VMASC Room 1201

0930 – **VMASC:** Data Analytics for Learning Engineering, Cybersecurity and Unmanned Systems Technologies

Participants: Select VMASC Applied Research Centers principals; MIBE core, AMCC cohort

Location: VMASC Room 1201

1000 – **Digital Ship On-Site**: Learning Engineering Application to Maritime Learning and Training

Participants: Digital Ship principals and collateral persons/materials; MIBE core, AMCC cohort

Location: VMASC Sea-Lab

1130 – **AMCC Weekly National Call**

Location: VMASC Room 2203

1230 – **Hampton Roads Workforce Council On-Site**: Pipeline Oversight and Good Jobs Challenge *light lunch*

Participants: HRWC principals and collateral persons/materials; MIBE core, AMCC cohort

Location: HRWC – 999 Waterside Drive #1314 Norfolk VA

1330 – **QED Systems On-Site**: Advanced Trades Training with Maritime Site Replication

Participants: QED principals and collateral persons/materials; MIBE core, AMCC cohort

Location: QED Training Center – 3487 Inventors Road Norfolk VA

1500 – **Tidewater Community College On-Site**: Skilled Trades Academy Training Vortex

Participants: TCC STA principals and collateral persons/materials; MIBE core, AMCC cohort

Location: TCC Skilled Trades Academy – 3303 Airline Blvd. Portsmouth VA

1630 – ***What Did We See Today? AMCC Cohort Feedback***

Participants: MIBE core and select maritime stakeholders; AMCC principals and federal guests

Location: VMASC Room 1201

Day Two: Tuesday, August 15

0800 – **Virginia Commonwealth Challenge**: Defense Action Plan and Defense Manufacturing Strategy

Participants: MIBE core and select VA maritime industry stakeholders; AMCC principals and federal guests

Location: VMASC – 1030 University Blvd. Suffolk VA

0930 – **Norview Center Maritime Trades Magnet On-Site:** Introducing High Schoolers to Manufacturing Technology

Participants: Norfolk Schools MTM principals and collateral persons/materials; MIBE core, AMCC cohort

Location: 6380 Sewells Point Road Norfolk VA

1045 – **New Horizons Regional Education Centers:** Advanced manufacturing training for a K – 12 participant pool

Participants: New Horizons core; MIBE core, AMCC cohort

Location: Butler Farm CTE Campus - 520 Butler Farm Road, Hampton VA

1200 – **Brooks Crossing GO TEC On-Site**: Introducing Middle Schoolers to Industry 4.0 Technology

Participants: Brooks Crossing I-Lab principals and collateral persons/materials; MIBE core, AMCC cohort

Location: 550 30th Street Newport News VA *light lunch*

1330 – **Virginia Beach CTE Mechatronics Lab On-Site:** Optimizing Trainee/Employer Interface

Participants: VB CTE lead and pipeline Advisory Council; MIBE core, AMCC cohort

Location: 1800 College Crescent, Virginia Beach VA

1500 – **US Maritime Institute On-Site**: Closing Pipeline Gap from Training to Employment

Participants: Maritime Institute principals and collateral persons/materials; MIBE core, AMCC cohort

Location: 5301 Robin Hood Road #100 Norfolk VA

1630 – ***What Did We Learn on This Roadshow? AMCC Cohort Feedback***

Participants: MIBE core and select maritime stakeholders; AMCC principals and federal guests

Location: VMASC – 1030 University Blvd. Suffolk VA

VMIBC's service area includes Metro Statistical Areas (MSAs) across a broad Virginia swath. This service area comprises contiguous Growth & Opportunity (GO) Virginia regions 2-6 – an industrial Virginia corridor dominated by shipbuilding and sustainment, and advanced manufacturing. Between public and private shipyards, OEMs, and suppliers, all Navy surface ship classes are built, repaired, or sustained within the Consortium's service area.

Appendix B: VMASC Stakeholder Kick-off Meeting Participants

Name	Title	Affiliation
Thomas Crabbs	Military Liaison	Office of the Secretary of Veterans and Defense Affairs
Lauren Stuhldreher	Economic Development Representative for Virginia	Department of Commerce EDA
Dr. Ginger Watson	Director, Technology-Enhanced Learning & Performance Laboratory	ODU Virginia Modeling, Analysis & Simulation Center (VMASC)
Elspeth McMahon	Associate Vice President for Maritime Initiatives	Old Dominion University
Jessica Johnson	Research Assistant Professor and Director, STEM & Educational Partnerships	ODU Virginia Modeling, Analysis & Simulation Center (VMASC): Virginia Digital Ship Program
Jennifer Renne	Curriculum Coordinator, Digital Ship	ODU Virginia Modeling, Analysis & Simulation Center (VMASC): Virginia Digital Ship Program
Pete Foytik	Project Scientist	ODU Center for Secure and Intelligent Critical Systems (CSICS)
Yiannis Papelis	Chief Technology Officer	ODU Virginia Modeling, Analysis & Simulation Center (VMASC)
Katie Smith	Research Assistant Professor	ODU Virginia Modeling, Analysis & Simulation Center (VMASC): Virginia Digital Ship Program
Scott Kelley	Director of Production and Workforce Development	QED Systems Inc
Sean Avery	President & CEO	Hampton Roads Workforce Council
Whitney Lester	Senior Director, Talent Development	Hampton Roads Workforce Council
Amanda Slosson	Sr. Director, Hampton Roads Regional Training System	Hampton Roads Workforce Council
Todd Nichols	Deputy Executive Director	Hampton Roads Military and Federal Facilities Alliance
Karen Sanzo	Director	Brooks Crossing Innovation Lab
Laura Hanson	Associate Vice President for Corporate Solutions	Tidewater Community College
Nancy Grden	President & CEO	Reinvent Hampton Roads
Stacey Shepherd	Director	Association of Defense Communities
Kim Humphrey	President & CEO	Association for Manufacturing Excellence
Larry Horne	Workforce Specialist	Newport News Shipbuilding, a Division of Huntington Ingalls Industries
Mark Whitney	Executive Director	Virginia Digital Maritime Center, affiliated with ODU
Robert-Allen Baker	Strategic Planning Lead	Virginia Digital Maritime Center, affiliated with ODU
Dr. Michael Robinson	Chief Operations Officer	ODU's Office of Enterprise Research and Innovation
John Snell	Sr. Program Manager	Virginia Digital Maritime Center, affiliated with ODU
Russell Czack	Assistant Director of Digital Shipbuilding	ODU Virginia Modeling, Analysis & Simulation Center (VMASC): Virginia Digital Ship Program
Jason Dudley	Talent Pipeline Training Coordinator	Virginia Digital Maritime Center, affiliated with ODU
Seth Isenberg	Project Manager	DoD Office of Local Defense Community Cooperation (OLDCC)
Pete Langlois	Policy Advisor, Office of Innovation and Entrepreneurship (OIE)	Department of Commerce EDA
Matt Bogoshian	Executive Director	AMCC
David Van Siclen	Project Operations Director	AMCC