

State Maritime Academies

Educating the future maritime workforce.

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Key to a vibrant merchant marine is the role the state maritime academies (SMAs) play in educating and training future maritime professionals. These six academies—located in Maine, Massachusetts, New York, Texas, California, and Michigan—produce more than 70 percent of the new U.S. officers licensed to operate vessels of unlimited tonnage and any horsepower each year. Another 25 percent come from the (federal) U.S. Merchant Marine Academy at Kings Point, New York. The remainder work their way up as unlicensed seafarers.

In no other profession do just seven colleges produce the bulk of licensed professionals. As such, over the past decade, the marine academies have enjoyed extremely high enrollment and post-graduation employment rates for licensed

graduates. Even though the number of U.S.-flagged ships in international trade has decreased, there is an increased demand for U.S. licensed mariners, primarily due to an aging maritime workforce.

For example, the U.S. Departments of Labor, Education, and Transportation released a report in August 2015 that identified the need for an additional 40,000 U.S. licensed mariners over the next decade.¹ This shortage of licensed officers is not confined to the U.S. merchant marine. In May 2016, the five-year Baltic and International Maritime Council/International Chamber of Shipping manpower report forecast a serious future shortage in the supply of seafarers, specifically identifying the need for an additional 147,500 officers by 2025 to service the world merchant fleet.²

Gen Z: The Next Generation of Mariners

A new generation is now enrolled in our academies. Our students were born in the late 1990s and are commonly referred to as to “Generation Z (Gen Z).” More than a quarter of the U.S. population belongs to this generation, which differs significantly from its millennial predecessors. They are the first generation to have internet connectivity available at a young age, so they are technologically savvy and use this skill to learn. This will be especially important as technology evolves for “smart ships,” where more of the functions that were traditionally performed at sea are transferred ashore.

Gen Z is also a much more diverse and inclusive generation. Gender roles and norms are blurring from traditional constructs of previous generations, which will change the face and culture of the maritime workforce. Our students are collaborative team



Generation Z is more diverse than past generations. This provides a unique opportunity for state maritime academies to increase diversity, which will inevitably transfer into a more diverse maritime workforce. All photos courtesy of SUNY Maritime College.

Merchant Marine Officer Training Academies

The United States has one federal and six state academies dedicated to the training of merchant marine officers:

United States Merchant Marine Academy (federal)
<https://www.usmma.edu/>

California State University Maritime Academy
<https://www.csum.edu/>

Great Lakes Maritime Academy at
Northwestern Michigan College
<https://www.nmc.edu/maritime/>

Maine Maritime Academy
<http://mainemaritime.edu/>

Massachusetts Maritime Academy
<https://www.maritime.edu/>

State University of New York Maritime College
<http://www.sunymaritime.edu/>

Texas A&M Maritime Academy
<http://www.tamug.edu/corps/>



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players who work together to find solutions to problems. This will bode well for the maritime industry, which relies upon teamwork and a shared concern for shipmates.

In addition, driven by high post-graduation employment rates and earning potential, the SMAs are enjoying unprecedented high demand for enrollment, leading to increased selectivity in the students offered admission. Thus, the Gen Z students entering (and graduating from) the state maritime academies are of higher caliber intellectually, more capable of working in an inclusive team environment, more comfortable with technology, and more capable of adapting to changes in technology. These skills will be especially important, as success will depend on one's ability to learn continuously and to meet the challenges associated with constant change.

Outreach

Like all educational institutions, the maritime academies are seeking to become more diverse, which will inevitably transfer into a more diverse workforce. This will also expand opportunities to work in the maritime industry

to a greater number of people and help fill the anticipated workforce gap. One way we do this is through outreach to maritime/marine K-12 schools and technology schools in urban port areas.

There are more than 45 maritime and marine science high schools across the country now, with more opening each year.³ These students have already been exposed to the

maritime environment, so they are a natural source of interest for maritime training schools, colleges, and industry apprenticeships.

Even so, these schools alone will not solve the anticipated shortages within the maritime workforce. We must work together to better educate K-12 students

about the ladders of opportunity within the maritime industry. While most Americans have almost daily contact with

“... we need individuals who have a holistic understanding of how systems are integrated and whose thinking is data-driven.” —Christopher Wiernicki
ABS Chairman, President, and CEO





Given the cyclical nature of the maritime industry, students must prepare for a variety of careers.

the trucking and airline industries, readily understanding their importance, the maritime industry is less noticeable.

Potential Solutions

To better reach these potential students, several of the maritime academies host summer science, technology, engineering, and math and leadership programs to engage with youth, especially those from urban areas. Funding for such programs comes from grants and industry partners. Many companies also have community outreach programs. But there needs to be a greater industry-wide effort to bring all segments together to educate students and teachers about the maritime industry and the opportunities available.

Veterans are another valuable source of energetic, mature employees, so we need to educate them about maritime workforce opportunities, as well. Additionally, we need to make it less onerous for veterans to translate their military experience into the training and assessment requirements necessary for a Coast Guard merchant mariner license meeting the requirements of the International Convention on Standards for Training, Certification and Watchkeeping for Seafarers (STCW). While some progress has been made in this regard, there needs to be greater urgency and cooperation to remove the obstacles hindering a smooth transition for veterans.

Challenges

In addition to recruiting a more diverse workforce that is able to keep pace with rapid changes in the maritime industry, the maritime academies are faced with several other

challenges when it comes to educating the future workforce.

For example, state maritime academies have many masters. First, as institutions of higher education, the state maritime academies must meet stringent accreditation standards for academic programs. In addition, they must also abide by state university policies if they are part of a wider university system. Second, the maritime academies must comply with U.S. Maritime Administration (MARAD) regulations that are derived from federal law. Third, their USCG license programs must adhere to STCW requirements. Further, these various requirements and policies can sometimes conflict with one another, potentially hindering the pace at which the SMAs are able to make curricular changes or changes to their approved licensing programs.

Although programs associated with the unlimited tonnage and horsepower mariner credentials are the most popular programs, given the cyclical nature of the maritime industry, we also focus on the wider maritime industry to prepare our students for a variety of careers ashore. Our license and non-license programs must ensure that students are industry-aware, as the majority of maritime academy graduates sail on their licenses for less than seven years before coming ashore. Today's students need the knowledge and skills to facilitate their progression within various sectors of the maritime industry.

“If you never see anything, how can you dream about it? How can you reach for something that you don't even know is there?”

—U.S. Congressman Elijah Cummings

Another challenge the state maritime academies face is keeping up with the rapid pace of change in the maritime industry driven by technology and/or regulatory changes. In many cases, industry has been willing to assist the SMAs by providing expertise through industry expert lectures; supporting

and sponsoring faculty positions; and donating state-of-the-art equipment such as simulators, modern diesel engines, and deck and engine simulators and labs. The more support we receive from industry and our alumni, the better our students will be prepared to enter the maritime industry.

Additionally, if industry wants to ensure that cadets have special qualifications or endorsements (such as dynamic positioning or liquefied natural gas propulsion), it would be mutually beneficial for the industry to support the academies financially to enable our students to complete these qualifications prior to graduation.

An Aging Fleet

One of the most urgent challenges the state maritime academies face is the age of our training fleet. MARAD owns these ships, as federal law and regulations specifically authorize the Department of Transportation to provide the SMAs suitable ships, but with an average age of 37 years, the SMA training vessels are aging out. The oldest is SUNY Maritime's USTS *Empire State VI*, which is 55 years old and nearing the end of its service life.⁴ SUNY Maritime is the largest of the six state maritime academies, and the potential loss of its ship would ripple throughout the entire American maritime industry, as there is not enough capacity on the remaining SMA training ships to accommodate all our cadets.

Further, these ships are used for more than training future maritime professionals. The SMA vessels are also essential for federal humanitarian and disaster relief efforts. For example, the Massachusetts Maritime Academy and SUNY Maritime College ships housed disaster relief workers for an extended period during the Hurricane Sandy clean-up effort. These vessels have also been used for international humanitarian missions and to support Department of Defense missions.⁵ This relieves U.S. Navy ships of missions that would further impact their heavy operational and personnel tempo.

In the past, the Maritime Administration converted training ships from the ready reserve force, funded by congressional earmarks that are no longer available. All SMA training ships will need to be replaced over the next decade, and MARAD is working on a proactive programmatic approach to recapitalize these aging national assets with the national security multi-mission vessel (NSMV) fleet. These vessels will be designed as multi-mission assets—for humanitarian/disaster relief and as state maritime academy training ships. NSMV construction will also help maintain U.S. shipbuilding capacity and the associated skilled workforce critical to national defense and our economy.

The Most Important Ship — Partnership

Maritime workforce issues cannot be solved without strong partnerships among government, industry, and educational institutions. The SMAs will continue to work closely with the Coast Guard and MARAD to ensure new training requirements are practical, reasonable, and can be streamlined into existing academy programs. Concurrently, we need to work with maritime industry leaders to fully understand their future needs regarding personnel, training, and new



Partnerships and donations from the maritime industry are key to ensuring students are exposed to the latest technology and workforce ready. Pictured here is the Bouchard Transportation Company Tug and Barge Center simulator at SUNY Maritime College.

technology. It takes four years for our cadets to earn their degrees and licenses. As the pace of technological change increases, we need to examine our processes to ensure we can adjust our curricula and obtain the necessary approvals from government agencies to make sure our graduates are workforce ready.

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Captain Mark Woolley, USN (Ret.), serves as the chief of staff at the State University of New York Maritime College.

Endnotes:

- ¹ U.S. Department of Education, U.S. Department of Transportation, and U.S. Department of Labor, *Strengthening Skills Training and Career Pathways Across the Transportation Industry: Data Report on Future Transportation Workforce Needs*, 2015.
- ² BIMCO, "BIMCO/ICS Manpower Report Predicts Potential Shortage of Almost 150,000 Officers by 2025," 2016.
- ³ Maritime for Primary and Secondary Education Coalition, *Primary and Secondary Schools With Maritime and/or Marine Science/Technology Programs*, found at www.mpsecoalition.org.
- ⁴ The State of the U.S. Maritime Industry: The Federal Role: Hearings before the Committee on Commerce, Science and Transportation Subcommittee on Surface Transportation, and Merchant Marine Infrastructure, Safety, and Security, Senate, 114th Cong. 6 (2016) (testimony of Paul N. Jaenichen). Retrieved from <http://testimony.ost.dot.gov/test/jaenichen1.pdf>.
- ⁵ United States Congressional House Committee on Armed Services, Subcommittee on Seapower and Projection Forces. *Hearing on Logistics and Sealift Force Requirements and Force Structure Assessment*, July 30, 2014.

