



NATIONAL COAST GUARD MUSEUM ASSOCIATION, INC.

National Coast Guard Museum Overview

The future National Coast Guard Museum is anticipating opening to the public in 2022 at the estimated cost of \$100 million. The \$50 million of private philanthropic contributions will greatly leverage the State of Connecticut's commitment of up to \$20 million and the anticipated Federal contribution of \$30 million.

Since 1790, the brave men and women of the United States Coast Guard have been standing the watch for our great Nation. Night and day, in good weather and bad, its dedicated members have been the first responders when disaster strikes. For more than 225 years, the Coast Guard has tirelessly answered the call to duty, saving lives, enforcing maritime law, combating terrorism, and protecting the environment.

Remarkably, the Coast Guard is the only branch of the Armed Services without a national museum. We are designing and building a National Coast Guard Museum, which will give the U.S. Coast Guard a world-class venue to showcase its rich and notable history, while educating current and future generations through a robust STEM program. As a significant destination in the Museum, the proposed STEM Learning Center will excite, entertain, and challenge aspiring scientists, engineers and mathematicians. An estimated 250,000 visitors will come to the National Coast Guard Museum each year.

Plans are being developed to construct a new 70,000 sq. ft. facility in downtown New London, Connecticut on the historic Thames River waterfront, and it will be free to the public. The Coast Guard has celebrated a presence in New London since 1791, and the nearby Coast Guard Academy and USCG Research and Development Center will be incorporated into the Museum's experience. Additionally, "America's Tall Ship", the Coast Guard Barque EAGLE will adorn the waterfront while homeported at the New London City Pier adjacent to the Museum. The Museum will allow the Coast Guard to display its vast collection of artifacts while affording engaging exhibits, a variety of education programs, and highly interactive experiences to help bring the Coast Guard's history to life.

The Museum design will include:

- State-of-the-Art exhibition galleries
- World-class audio-visual theater and auditorium
- STEM Learning Center with interactive experiences and education programs
- Waterfront marina and watercraft exhibits



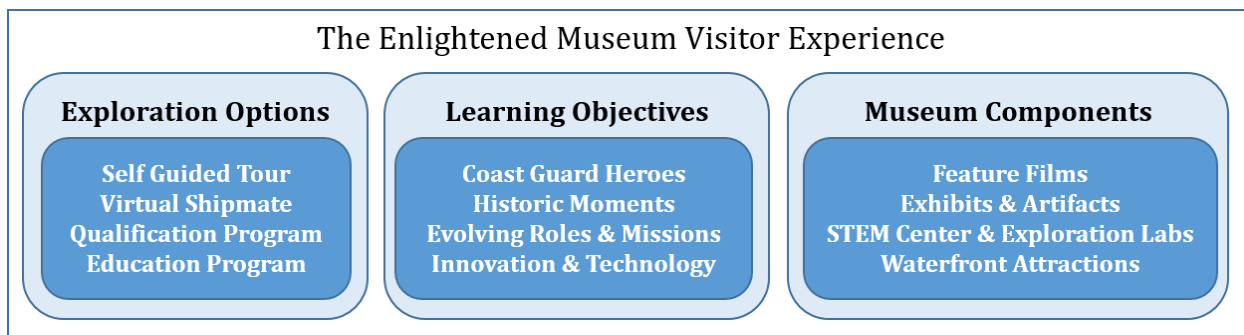
Museum Education Initiative - Project Overview

With the exceptional generosity of the Richard Lounsbery Foundation, we are commencing the Museum Education Initiative (MEI) which will provide the blueprint for an *enlightened museum visitor experience* by defining the STEM learning objectives and associated exhibits and experiential museum components that are to be integrated into the museum building and exhibit design.

A quote from the future:

"I became interested in engineering and public service while visiting the National Coast Guard Museum when I was 12 years old. After walking through several thought-provoking wing areas on lifesaving and safety, my interest was captured when I was able to participate in a team challenge in aeronautics with my Middle School classmates. We listened to an introductory lecture on lift and drag, and after some discussion our team was able to design an aeronautic wing in the Exploration Laboratory. Returning again the next summer with my family, I learned more about the maritime history of our Nation, and even qualified as a simulated Coast Guard aviator. Although no one else in my family ever pursued engineering, I realized that "I can do this." I can't thank the National Coast Guard Museum enough for sparking my interest in science and history; it was the gateway to my academic success and my current career."

Shawn Creighton, Phd.
NASA Project Manager, Mars Mission



The MEI will focus on the visitor experience and offer one of three exploration options: choosing a Coast Guard Virtual Shipmate for a guided tour; completing a challenging simulated Coast Guard Qualification; or participating as a member of a school sponsored field trip or museum sponsored extended camp program. The primary goal is to provide a complete immersion with a blended and highly engaging learning experience for every visitor.

1. **Virtual Shipmate Program:** Although a visitor may tour the Museum on their own or with a live docent guide, a visitor may choose a Virtual Shipmate to be their guide. With the aid of technology, an iPad or possibly holograms, visitors may select their shipmate by their own selection criteria which may include operational interest, which will enhance their experience and guide their learning. The program design will entice visitors to the STEM Center to further experience Coast Guard life. Additionally, we want to explore how the Virtual Shipmate can stay connected to the visitor through

email or social media once leaving the Museum.

2. **Individual pursuit of a simulated Coast Guard Qualification:** The visitor may also choose to pursue a simulated Coast Guard Qualification. NCGMA envisions a condensed program that mirrors a real-life Coast Guard qualification, to include:
 - Knowledge based prerequisites that will direct the visitor through the Museum Exhibits
 - Educational requirements that will be accomplished primarily in the Classroom
 - Hands-on demonstrations that will be accomplished in the exploratory laboratories
 - Culminating experiences in the simulator or gaming areas

Those who complete a Qualification will receive a certificate and Qualification Insignia, and have their achievements recorded in our database. Follow-on virtual exercises and on-site educational programs can be offered to maintain interest and increase proficiency.

3. **Primary or Secondary school experience:** NCGMA will partner with K-12 school districts and local Magnet Schools to leverage STEM programming by complementing traditional school learning with experts, discussions, operational platforms, hands-on museum exhibits, exploration laboratories, interactive experiences, virtual technologies and simulations.

The Museum envisions the following visitor experiential and educational outcomes:

1. **Engage and Inspire:** Create an enjoyable and stimulating learning environment that promotes social interaction and heightens visitor interest, curiosity, and confidence in continued learning
2. **Support Learning:** Develop a continuum of learning experiences that increase in complexity and provide opportunities for students to improve knowledge and understanding of concepts.
3. **Empower Careers:** Inspire increased understanding and interest in careers, to include potential careers in the maritime, aeronautics, and in the United States Coast Guard.

STEM Focus

While Museum program planners are in the design phase, critical local partnerships are being formed with the Coast Guard Academy, the Coast Guard Research and Development Center, Non-Profit Educators, Professional Experts, and Public School officials to begin identifying STEM programming and interactive experiences for the future National Coast Guard Museum.

Program planners have a strong desire to engage short-term (daily visitor), longer-term (multi-day with overnight visitor), virtual, and sustained (interactions between visits) visitors. Examples of STEM learning programs may include:

- A Search and Rescue exhibit where, with the use of virtual reality glasses, the visitor defines a search area for a missing person, and then looks for person in the water in an area the size of Rhode Island
- Field trips or programs that serve a consistent group of enrolled participants and have a particular focus or set of learning goals
- Camps that occur over summer and during school breaks that are focused on science, math, engineering, and/or technology activities, and enroll youth for multi-day sequence of activities
- Exploration experiences in which youth create their own investigations through longer-term opportunities over the course of a school year
- Interactive gaming or problem solving activities that promote youth-driven playing, making or tinkering
- Downloadable online activities and experiments that can be conducted at home that can simply engage the inquisitive mind or act as follow-up activity to support the Qualification Program experience

Planners for the National Coast Guard Museum also have a strong desire to connect and add to the rich museum fabric that already exists across America and around the globe. Museum designers plan to include advanced technologies for live streaming and virtual collaboration. By extending the museum's reach beyond the building walls, the National Coast Guard Museum aims to advance the important missions and the challenging issues that face our Coast Guard and our nation.

STEM Learning Center

To enhance the student learning experience; current Museum plans call for a STEM Learning Center comprised of a dedicated STEM Classroom, Exploration Laboratories, and Interactive Simulators.

The classroom within the STEM Learning Center will entertain and inspire families, schools, team challenges, CAMP-ins, K-12 programming, special needs visitors, and homeschoolers. Engaging classroom sessions will be designed to include relevant Coast Guard topics which may include, but not be limited to:

- Global Maritime Environment
- Weather
- Nautical Science
- Maneuvering Boards/Relative Motion and Physics
- Buoyancy and Stability
- Survival at Sea (health science)
- Aviation Principles

To support the classroom programs, Exploration Laboratories will host student groups for instructor-led programs. Combining classroom lectures with a hands-on exploration laboratory is a proven method to reinforce STEM subject material. Using the topic of Buoyancy and Stability as an example, following a classroom presentation on the impact of weight on ships at sea, students will transition to an exploration laboratory with a water tank. Visitors will estimate the weight of the vessel (Archimedes principles), and then add and shift weight,

including experiencing sea conditions, to see the impact of stability and buoyancy on ships at sea. This experience could be a requirement for a Coast Guard Engineer Qualification at the Museum.

In addition to the classroom and exploration laboratories and the STEM Learning Center will include an Interactive Simulator Center, which manages and controls an aircraft cockpit, a ship's bridge, a small boat coxswain steering station, and a rescue coordination center. An exciting example of these highly interactive spaces is the Rescue Coordination Center simulator. Teams of students will be challenged to work together to coordinate a response to typical Coast Guard cases such as a major rescue at sea, a marine pollution incident, or a maritime law enforcement response.

Throughout the entire STEM Learning Center, key experiences will be enhanced with hands-on Coast Guard opportunities to include communications, optics and lighting, engineering, seamanship, damage control, marine science, and navigation. An example is an interactive marine science fisheries experience, which not only explains the need for regulations, but permits the visitors to determine proper catch by using Coast Guard procedures and equipment.

The STEM Learning Center will be fully integrated in the museum experience. All components will be available to all visitors, with the exception of the interactive operational simulators, which will be focused on the visitors choosing to attain a simulated Coast Guard Qualification Program and school groups.

As an example of the impact of the STEM Learning Center on those choosing the simulated Coast Guard Qualification Program, consider a 9-year-old's experience qualifying as a junior aviator. After completing her prerequisites to visit all relevant exhibits, she would proceed to the STEM Learning Center where she partakes in aviation classroom discussions and exploration laboratories to include lift and drag experiments. Upon completion, she will enter a command center to operate radios, set up flight patterns, and develop her flight plan. This culminates in the aircraft simulator where she conducts a test flight and completes a Coast Guard mission. The proud pre-teen will receive a certificate and qualification insignia, and with future trips can upgrade her status. Interestingly, her parents could also complete a more demanding senior certification. The possibilities are endless and exciting; and will be defined by the MEI.

Museum Education Committee

As the MEI is a major research and development project, the NCGMA intends to designate a project manager and create a Museum Education Committee to complete the project in a collaborative fashion through a series of workshops, expert panels, and community forums. The Museum Education Committee will be comprised of a Core Team and three Sub-Committees that will each focus on one of the three primary deliverables during the concept phase: Student Learning Objectives (Classroom Education), Coast Guard Qualifications, and the Virtual Shipmate Program. An executive *Guidance Team* will be formed to advise and approve the work of the museum education committee.

While specific committee members have yet to be identified, the following stakeholders and subject matter experts will be targeted as members of the *Museum Education Committee* and the three respective sub-committees:

Guidance Team Members

1. NCGMA MEI Project Facilitator
2. Museum Design Expert
3. Coast Guard Representative
4. Industry/Engineering Representative
5. Education Representative
6. Team Leads

Classroom Education Team

1. Regional STEM Educators (Science, Technology, Engineering and Math)
2. Coast Guard Mission and Training Specialists

Qualification Program Team

1. Coast Guard Mission and Training Specialists

Virtual Shipmate Team

1. Coast Guard Historians
2. Coast Guard Mission and Training Specialists
3. Coast Guard Work Force Representatives

A key component to this project will be engagement of the Museum Design Expert. We envision an outside contractor will support the MEI by coordinating with the Museum and the selected educators as we develop the Student Grade Learning Objectives and Core Curriculum. These objectives and curriculum will be developed by the Museum staff through researching State Standards of Learning and highlighting the number of areas that fit well within the museum's mission and subject matter (history, geography, sciences, etc.). Once the Design Expert receives the final approved list of learning objectives and core curriculum, we will explore the implications for the museum exhibit program.

Project Scope, Timeline and Major Deliverables

In an effort to meet our experiential and educational outcomes to encourage curiosity, to be an educational partner and resource and to make STEM careers accessible we have an aggressive timeline to accomplish this critical piece of the museum project. The projected timeframe for the MEI is 6 months and will be conducted in two phases with seven major deliverables.

PHASE I –Learning Objectives

- Student Primary and Secondary Core Learning Objectives to include the core STEM education topics, Coast Guard connections, and the key student learning objectives for primary and secondary grade levels
- Coast Guard Qualifications to include the Coast Guard specialties, mastery levels, and associated key student learning objectives

- Virtual Shipmate Roster to include the name and background of heroic figures to be included in the virtual shipmate database

PHASE II – Museum Requirements

- STEM Learning Center and Exploration Lab Requirements to include interior space considerations, materials, furnishings, fixtures, equipment, and computer information technologies
- Considerations for Exhibits, Objects, Artifacts, Simulations and Educational Technologies
- Considerations for Waterfront Attractions and Operational Platforms
- Considerations for Museum Staffing, Educator Resources and Strategic Partnerships



Conclusion

With the support provided by the Richard Lounsbery Foundation, the MEI will inform the physical design of the interior space and exhibits, and provide the blueprint for the Museum's experiential and educational focus. This will have a deep and long-lasting impact on the Museum's importance and ultimate contribution to our community, our Coast Guard, and our Nation.