PACIFIC FLEET SUBMARINE MUSEUM
AT PEARL HARBOR
Expansion & Renovation Plan
Who We Are

The Pacific Fleet Submarine Museum, formerly known as the USS Bowfin Submarine Museum & Park, is the nation’s most popular submarine museum and one of the most visited maritime memorials in the world.

Founded in 1978, the Pacific Fleet Submarine Memorial Association (PFSMA) was formed with the mission of telling the stories of our Silent Service, the men and women that comprise the US submarine force. PFSMA is a 501(c)(3) nonprofit organization. A year later, the PFSMA acquired the USS Bowfin, a WWII submarine known as the “Pearl Harbor Avenger” and, in 1981, the USS Bowfin Submarine Museum & Park was opened to the public at Pearl Harbor.

Since our formation, over 9.5 million visitors have explored our campus and engaged with our history. Every year, over 400,000 ticketed visitors walk on the USS Bowfin and tour our museum. Our education programs have also reached thousands of students and our scholarship program, which provides academic scholarships to Hawaii-based submariners and their families, continues to grow every year. This year, we surpassed $1,000,000 in total scholarships awarded since the scholarship program was created in 1985.

The Pacific Fleet Submarine Museum honors our veterans, educates the public, connects us with our history, and inspires us with stories of bravery, innovation, and sacrifice.
Our Current Campus

In its current state, the Pacific Fleet Submarine Museum is comprised of:

- The USS Bowfin, a decommissioned WWII submarine that is moored in Pearl Harbor.
- A variety of outdoor exhibits including:
  - the Waterfront Memorial, which honors more than 3,500 submariners lost during WWII;
  - the Conning Tower of USS Parche (SS-384);
  - a Kaiten, one of the only remaining Japanese manned torpedoes in existence;
  - outside exhibits including a submarine rescue chamber, missiles, and torpedoes.
- Food court.
- Gift shop.
- Staff lounge and offices.
Our Reach

The Pacific Fleet Submarine Museum is one of the most popular tourist destinations in Hawaii, one of the most visited maritime museums in the country, and, without parallel, the most visited submarine museum in the world.

Pearl Harbor is the most popular tourist destination in Hawaii with over 2 million annual visitors. We are one of four museums at Pearl Harbor.

Our audience is local, national, and international and our visitors come from all walks of life. Whether a student is visiting the USS Bowfin during a fieldtrip, submarine veterans are sharing their history with their grandchildren, or a Japanese travel group is stopping by for pictures, every demographic is represented in our attendance.

Our attendance and reach grow every year. We anticipate that an updated museum campus will encourage more engagement and an increase in visitorship significantly.

400,000
ANNUAL VISITORS
buy a ticket to walk through our campus every year, making us one of the most popular attractions in Hawaii.

9.5 Million
VISITORS SINCE 1981
have set foot on the USS Bowfin.

2 Million
ANNUAL PEARL HARBOR VISITORS
engage with one of the Pearl Harbor Historic Sites.

55,000
ACTIVE DUTY SUBMARINERS
and over 100,000 veteran submariners will be honored, celebrated, and memorialized.
The US Submarine Force has long been known as The Silent Service. Due largely to the secretive nature of their missions and the cutting-edge technology employed in submarines, the stories of submariners have long been hidden from the public. The Pacific Fleet Submarine Museum was created with the mission of sharing these stories with the world.

The Pacific Fleet Submarine Museum will become a state-of-the-art museum and an interactive, living memorial. It will be a place for veteran submariners to take their families and share their history; a place to learn about the personal sacrifices made by servicemembers; a place for students to explore the technologies and engineering feats that make the US Submarine Force the best in the world; a place for our local community to embrace and share its own story…

The Pacific Fleet Submarine Museum will be a place for reflection and discovery - a place that honors, educates, connects, and inspires.
Scheduled to open in late summer 2020, the upgraded campus will be a state-of-the-art facility that honors, educates, connects, and inspires. The expanded, 13,000-square-foot Pacific Fleet Submarine Museum will contain multimedia experiences, hands-on science exhibits, and a powerful narrative that explores the past, present, and future of submarine warfare.

In addition to the major museum renovations, additional exterior renovations will make our campus a safer, more accessible place and will include:

- Construction of indoor and outdoor classrooms.
- Upgrading the entire site to be ADA Compliant;
- Complete renovation of the Gift Shop and Support Facilities;
- Construction of a children’s play area, overlooking the USS Bowfin;
- Preservation and construction of a shelter for the Kaiten, a rare Japanese manned torpedo;
- Installation of a 43-foot diameter hull ring, representing the new Columbia-class SSBN, at the campus entrance;
- Preservation and rearrangement of missiles, torpedoes, and other outdoor exhibits; and,

The visitor experience will begin as guests walk through a submarine hull ring at the campus entrance. They will then enter the museum and begin their experience in the first of three main museum galleries.
Our Plan – Museum Lobby

The museum experience will begin in the museum lobby.

The museum lobby links the museum’s three main galleries. This space will serve as both an entry and an exit for visitors.

As the first and last place that museum visitors will encounter, this room will encourage reflection and engagement. We want to create a space that is intimate and personal, priming visitors for their experience and allowing them to connect with veterans’ stories.

The museum lobby contains three important areas:

- The Interior Campaign Donor Wall, which will display the names of capital campaign donors that have made a significant financial contribution to the project. This wall will forever live prominently in this entryway as a thank you to our generous supporters.

- The Freedom Isn’t Free Mural, which is a sixteen-foot photo mosaic comprised of the faces of the over 4,200 submariners that lost their lives while serving. This dramatic mural will serve as a permanent reminder of the sacrifices and heroism of servicemembers.

- The On Eternal Patrol Kiosk, which will be an interactive, searchable database of submariners lost in service. The kiosk will be located next to the mural. This database, which is maintained by the Pacific Fleet Submarine Memorial Association, contains pictures and histories of all men lost during active duty.
The first room that visitors will enter is the WWII Gallery.

Due to our location at Pearl Harbor and the USS Bowfin’s history as a WWII submarine, the WWII Gallery will be the natural focal point of the newly-designed museum.

The WWII Gallery will contain artifacts, models, interactive displays, and exhibits that focus on the role that submarines played in WWII. As this will be the first room that visitors will enter, there will also be exhibits that provide visitors with basic knowledge about how submarines operate. Planned exhibits include:

• A cutaway model of the USS Bowfin that displays her interior;

• An educational Exploration Zone for younger visitors;

• Video testimonials from WWII submariners; and,

• A variety of STEM-focused interactives, including:

  • *Aiming a Torpedo*: A WWII torpedo was a relatively simple design that was, in practice, extremely difficult to operate. Before firing, an operator would adjust the speed and direction of the torpedo to align with its target. Hitting a moving target, however, requires the use of mathematical equations. This interactive exhibit will put visitors in the shoes of a torpedo operator. Using physical dials and a simulated radar screen, visitors will be tasked with adjusting speed and direction to hit a moving target. The exhibit will explain the basic mathematical calculations needed and will guide the user through the process. Additional materials will explain how this process evolved as torpedo technologies advanced.

  • *Using Radar and Electromagnetic Spectrum*: Radar, an acronym for Radio Detecting and Ranging, is an object-detection tool that was developed during WWII. Radar requires a transmitter, which pulses, and a receiver to receive the pulse after they have traveled to an object and back. This interactive exhibit will ask visitors to locate an enemy ship using radar. Additional materials will explain how this radar is used on land, air, and sea today to detect incoming missiles and enemy craft.
The second room that visitors will enter is the Cold War Gallery.

As visitors exit the WWII Gallery, they will immediately be transported to the Cold War era, where they will learn about the role that submarines played during this time. This section will focus on the technological developments and secrecy that defined this era.

The Cold War Gallery will contain artifacts, models, interactive displays, and exhibits that highlight the technological innovations and progress made in the post-WWII era. Planned exhibits include:

- Complete control station for a nuclear submarine’s engine room, including a reactor plant control panel, electric plant control panel, and steam plant control panel;
- Models and dynamic videos highlighting the evolution of nuclear submarines and the technologies behind nuclear power;
- A variety of STEM-focused interactives, including:
  - Using Sonar, Echolocation, and Hydroacoustics: Sonar, an acronym for Sound Navigation and Ranging, is a sound propagation method used to navigate and detect enemy ships. This exhibit will explore different types of sonar and how these technologies have evolved.
  - Inertial Navigation: Inertial navigation systems use gyroscopes, computers, accelerometers, and magnetometers to find the direction and speed of an object. On submarines, inertial navigation is used to navigate underwater. This exhibit will connect these complex tools to Newton’s laws of motion.
- Interactive exhibits about declassified missions:
  - USS Sculpin: A Skipjack-class submarine that trailed a trawler running arms and ammunition to the Vietcong across the South China Sea.
  - USS Guardfish: A Permit-class submarine that tracked a Soviet Echo-2 class submarine for 28 days.
The third and final room in the new museum will be the Modern Gallery.

The Modern Gallery will represent a forward-looking view of the submarine industry. Future technologies and the evolution of the US Submarine Force will be the core focus of this room.

The Modern Gallery will contain artifacts, models, interactive displays, and exhibits that represent the present and future of submarines. Beginning with Operation Desert Storm, this gallery will bring visitors to the present day and explore the future of submarine technology. Planned exhibits include:

- A full-scale unmanned undersea vehicle (UUV) and an exploration of the technologies that make modern UUV program possible;
- Video testimonials from some of the first women to serve on submarines and women that have held leadership roles on submarines;
- Rotating displays highlighting new and exciting technologies; and,
- A variety of STEM-focused interactives, including:
  - *Robotics:* Robotic technology is, in many ways, the future of the submarine force. Today, we are developing complex robots that can do everything from deep-sea exploration to underwater maintenance. Interactive exhibits will highlight these technologies and explain the fundamental sciences behind their operation.
  - *Mapping the Oceans:* Advances in unmanned underwater vehicles have accelerated our ability to map the ocean. This interactive exhibit will show visitors how to interpret the data that these exploration units provide. By analyzing topographic maps and heat signatures, visitors will be able to identify underwater cliffs, ocean currents, and even whales. Additional materials will explain the myriad ways that UUVs can be used for exploration.
Our Renewed Focus

Through this renovation, the Pacific Fleet Submarine Museum will become a more effective teacher, a more impactful community partner, and a better steward of submarine history.

We are rededicating ourselves to our mission and renewing our focus on three key elements:

**STEM EDUCATION**

The museum will be more hands-on and engaging, with a renewed focus on Science, Technology, Engineering, and Math (STEM). STEM connections will be reflected in everything that we do, from the interactive exhibits that we create to the take-home materials that we produce for students.

**COMMUNITY**

We are putting a renewed focus on our local community and creating materials and programs for local students and schools. While we have an international reach, our home is Hawaii and we are creating the new museum with our local community in mind.

**BUSINESS AND INNOVATION**

We are an ambassador for submarines and submarine technology. More people learn about submarines at our museum than anywhere in the nation. We want to give a complete picture of the submarine industry, highlighting the manufacturers and those that are creating the future.
STEM Education

Submarines are a perfect example of how Science, Technology, Engineering, and Math (STEM) disciplines can be applied in the real world. How do submarines submerge? How do torpedoes fire? How do submariners breathe underwater? From their design and construction to their operation and maintenance, STEM disciplines are essential to the submarine force.

By relating submarines to STEM themes, we can inspire students to pursue careers in STEM fields. We want to be a catalyst that encourages students to engage with subjects like science, technology, engineering, and math.

Our new museum has been designed to focus on STEM subjects as they relate to submarines. This is reflected in our exhibit design, our student materials, and our curriculum for classroom visits.

Examples of STEM-related improvements include:

• Interactive, hands-on exhibits, including:
  • How Radar Works;
  • How Nuclear Reactors Power a Submarine;
  • How Submarines Navigate Underwater;
  • How Unmanned Undersea Vehicles (UUVs) Operate;
  • How Periscopes Work;
  • How Torpedoes Aim at Moving Targets; and,
  • Other STEM-focused exhibits.

• STEM-certified student materials, including:
  • Post-visit quizzes for partner school students;
  • A new curriculum for our educators to use during school visits; and,
  • Take-home materials for all visitors.

• Two new classrooms:
  • An outdoor classroom for visiting schools; and,
  • An indoor learning space for hands-on projects and temporary displays.
Our Renewed Focus

Community

The Pacific Fleet Submarine Museum is investing heavily in our community through education initiatives and local programming.

Pearl Harbor is central to the history and industry of Hawaii. Our shared story, from the attack to present day, will be an important part of the museum narrative. While Pearl Harbor has an international reach, we can make our greatest impact with the people of Hawaii.

We already invest heavily in our community through our USS Bowfin Memorial Scholarship, which awards scholarships annually to Hawaii-based submariners and their families. Since 1985, we have awarded over $1,000,000. We have also funded a scholarship endowment with the Pauahi Foundation, which will support Native Hawaiian students studying engineering or business.

We also host schools onsite and make visits to classrooms all over Hawaii. Our full-time education staff regularly provides tours for students, Make-A-Wish participants, and local community groups.

Through this renovation, we are redoubling our efforts to engage with the local community. We are developing a new student curriculum that highlights the roles of native Hawaiians in submarine history. We are building educational programs that will allow us to visit more schools and community groups. We are connecting our shared history to the STEM jobs of the future. We are giving our children a new place to learn and be inspired.

This project is also a direct financial investment in our local community. It will create new jobs, it will attract more visitors to Pearl Harbor, and it will beautify and enhance this historic site.
Our Renewed Focus

Business & Innovation

More people learn about submarines at our museum than anywhere else in the world. We are the most visited submarine museum in the nation and, every year, over 400,000 visitors look at submarines through our eyes.

With this influence comes a great responsibility to adequately represent submariners and the submarine industry. We will celebrate the people who serve on submarines, the people who design and manufacture submarines, and all of the people, corporations, and government entities that support submarines in a variety of ways. We are a public ambassador for the submarine industry and our museum will reflect this mission.

The museum will provide visitors with an inspiring, forward-looking view of the submarine industry. Visitors will leave our museum with a basic knowledge of submarine history, a basic understanding of submarine technologies, and an appreciation for the submarine industry. We will also highlight the contributions of corporations that are responsible for the technological and engineering contributions since WWII.

We will inspire young people to engage with submarines and pursue careers in science, technology, engineering, and math. By highlighting the connection between STEM subjects and submarine-related career paths, we can inspire a new generation of scientists, engineers, and submariners.
The Pacific Fleet Submarine Memorial Association began formal discussions and initial planning in the summer of 2013 when we hired MIG-Portico, the architecture firm that designed the USS Arizona Memorial Visitor’s Center, and began developing our vision for the Pacific Fleet Submarine Museum.

In the fall of 2018, we received approval to proceed from the U.S. Navy.

We broke ground on Phase I (grounds and facilities) on January 14, 2019.

Financing for Phase II (museum and exhibits) was obtained and we commenced on August 19, 2019.

We anticipate that the new museum will open in the summer of 2020, prior to the 75th commemoration of the end of WWII on September 2, 2020 here at Pearl Harbor onboard USS Missouri.

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<th>Summer 2020</th>
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<td>Construction – Phase I</td>
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<tr>
<td>Construction – Phase II</td>
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## Project Financials

### Project Costs

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### Project Funding

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Financing to complete the entire renovation is in place. Now is the time to get onboard and share in promoting our submarine heritage and legacy for future generations.
Together, we are working to create a facility that honors, educates, connects, and inspires.

Together, we are giving a voice to The Silent Service.

Captain Charles Merkel, USN (Ret)
Executive Director
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