

## 2015 Six-Year Plan – Part II

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### A. Institutional Mission – no planned changes

The Virginia Institute of Marine Science has a three-part mission of research, education and advisory service, each encompassed within an overarching goal of achieving and maintaining a national and international position as a premier coastal marine science institution. This mission involves making seminal advances to our understanding of marine systems through research and discovery, translating that knowledge into practical solutions to complex issues of societal importance, and providing new generations of researchers, educators, problem solvers, and managers with a marine science education of relevance and unsurpassed quality.

Meeting this mission requires that VIMS: (1) address cutting edge scientific questions, (2) develop and apply technologically-advanced approaches to these questions, (3) communicate research results and new technologies to both professional and public audiences, (4) provide consultative assistance to facilitate the application of new knowledge to practical problems, and (5) train future generations of young scientists to continue this tradition.

### B. Strategies

**Support Graduate Financial Aid.** This proposal requests \$325,000 in Higher Education Student Financial Assistance Fellowships given by the Commonwealth to support the graduate program of the School of Marine Science, including the highly successful GK-12 “scientist in residence” program at VIMS. This request might seem large at first glance; however, the standard funding formulas end up disadvantaging the Institute. For example, during the 2012-14 biennium, VIMS received \$3,000 out of \$1.8 million distributed for Graduate Financial Aid. Support of this request is consistent with numerous goals of the Statewide Strategic Plan and would strengthen the services VIMS provides to the Commonwealth. Without this financial commitment, VIMS will be far less competitive for top-tier students. It is critical to note that virtually all graduate programs in marine science with which VIMS competes for top students provide full financial assistance (tuition, stipend, and many also provide health insurance coverage). This is the norm in graduate level science education in the U.S. and is a model that has been widely emulated worldwide because it is a proven path to innovation and impact. It also ensures that top science students have access to graduate education without accruing significant debt or any at all.

The VIMS graduate program has awarded over 1,000 degrees since it was founded 75 years ago and is a top producer of marine science advanced degrees in the nation. VIMS alumni are leaders in areas such as aquaculture, fisheries management, storm surge modeling, water quality research, and environmental management and restoration approaches for coastal and estuarine environments. Our highly employable graduates serve in academia, federal and state agencies, K-12 education (formal and outreach), non-profits, and marine-related business opportunities with the private sector. The graduate program provides essential capacity in support of our research mission, including research mandated in

the *Code of Virginia*. Our successful competition for external funding, which expands our ability to address critical issues of importance to the Commonwealth, and brings jobs to Virginia, would be significantly compromised without a vibrant graduate program. The research of VIMS graduate students underpins much of our advisory service to state and regional management agencies and provides a foundation for policy development. Our graduate students provide essential support to our education mission by serving as Teaching Fellows and Teaching Assistants for W&M’s undergraduate marine science program, by helping to mentor the growing number of regional high school students and W&M undergraduates who conduct research at VIMS, as outreach educators working alongside our marine educators, and in regional classrooms as “scientists in residence.”

VIMS faculty currently provide at least \$2 of non-general funding from external grants and contracts for every \$1 of general funds used to provide direct support to graduate students. While VIMS faculty will continue to aggressively pursue external grants and contracts to assist in meeting the financial needs of graduate students, traditional fund sources are virtually saturated, and in some instances, being reduced. Increased state graduate financial aid of \$325,000 would allow the School of Marine Science to support up to a 20% enrollment growth for graduate students interested in STEM disciplines, would enhance competitiveness for the most highly-qualified applicants, improve retention of enrolled students, reduce “time to degree” that can be associated with gaps in financial aid that result from downturns in federal funding cycles, and provide support for the continuation of the GK-12 program, which supports enhanced STEM education among middle and high school students in regional schools.

The Virginia Institute of Marine Science’s [GK-12 PERFECT](#) (*Partnership between Educators and Researchers for Enhancing Classroom Teaching*) program is a unique and highly successful partnership program with the region’s middle and high school divisions, including schools in areas with traditionally underserved populations. Over the first five years, this proven program brought marine and environmental science to 5,500 middle and high school students in Tidewater Virginia, while growing the professional expertise of 16 teachers and 41 Graduate Teaching Fellows. It has yielded demonstrable improvements in STEM education centered on Virginia’s valuable marine and coastal resources, helping to cultivate a local populace of young people and future decision-makers who are scientifically literate and environmentally concerned. At the same time, it has effectively honed the communication skills of Virginia scientists and strengthened their commitment to public service. From its outset, GK-12 PERFECT deliberately sought to serve a diverse student audience, drawn from suburban to rural settings, both middle and high school, and including gifted students, economically disadvantaged students, minorities, and groups that have been underrepresented in science professions. Due to a change in federal funding priorities, the National Science Foundation funding for this program was halted in 2014. We are continuing the program for one more year with support from a private trust. The requested funding for support for 5 graduate student Fellows annually will allow this program to continue past the coming academic year.

As GK-12 Fellows, VIMS graduate students team with secondary education teachers and teach on average 280 hours per year in the classrooms in their role as ‘resident scientists’. They also contribute to

after-school activities such as field trips, Open Houses, Science Fairs, and Science/Ecology Clubs. VIMS faculty and staff contribute by organizing Fellow training courses and workshops, classroom observations, group meetings and teacher summer workshops. Using their broad scientific knowledge, real-life research experience and boundless creativity, Fellows develop new, innovative teaching materials that enhance the STEM curriculum, and serve as role models for our future generations of citizens, scientists and engineers. Participating teachers are empowered through learning new STEM content and teaching tools through interactions with real scientists; VIMS faculty and staff also have the opportunity to make a lasting impact on Virginia's K-12 education. This program has resulted in increased interest in our graduates in careers in the field of K-12 STEM education in the Commonwealth, and, overall, many participants indicate a greater interest in a career that involves a strong education component following their year as a Fellow.

***Create the Center for Sea Level Rise and Coastal Resiliency.*** VIMS, in partnership with the College of William & Mary's Virginia Coastal Policy Center (VCPC) and Old Dominion University (ODU), seeks to augment our collaborative work in research, policy mitigation and planning in sea level rise and coastal resiliency to create a Center for Sea Level Rise and Coastal Resiliency. The central purpose of this Center is to *provide a proactive means for adapting current coastal zone planning to sea level rise* as well as assuring prospective investors, businesses, and residents that coastal Virginia is a viable long-term location *for continued economic expansion.*

Hampton Roads is the second largest population center at risk in the United States from the impacts of sea level rise. Over the past year VIMS and the VCPC have partnered with ODU's Sea Level Rise Initiative on the Hampton Roads Intergovernmental Pilot project, which has received national attention for planning and coordinating regional coastal resilience. VIMS' expertise in research on sea level rise and state-of-the-art storm surge modeling, coupled with VCPC's expertise in legal and policy issues surrounding adaptation to sea level rise and ODU's expertise in modeling socioeconomic impacts of recurrent flooding, has created a synergy that is unique in the nation in addressing the complicated factors surrounding sea level rise and coastal resiliency. This initiative seeks to leverage our individual strengths to work towards establishing a Center for Sea Level Rise and Coastal Resiliency that can serve the needs of the Commonwealth, local governments, federal facilities, industry and citizens in Virginia's coastal communities to build resiliency and support economic growth in the face of sea level rise and recurrent flooding.

With the establishment of this center we propose to:

- 1) integrate federal, state and local data sources on sea level and land subsidence to create a robust monitoring, modeling and planning network related to sea level rise and coastal flooding;
- 2) provide state-of-the-art flooding predictions during storm events, and simulations for planning scenarios; and
- 3) utilize these integrated data and collaborative processes to develop model templates and toolkits in areas such as infrastructure, public policy, public health, land use, and more.

**Enhance Chesapeake Bay Water Quality Modeling and Monitoring.** The need to assess and verify the effectiveness of public fund expenditures to restore water quality in Chesapeake Bay is critically important. Currently, the Commonwealth is largely dependent upon the EPA Chesapeake Bay Program model and monitoring data to assess progress towards meeting Bay water quality goals. There is a clear need for enhanced water quality modeling and monitoring in Virginia’s tributaries to support efforts by the state and local governments to meet water quality goals. VIMS is uniquely positioned with its expertise, state-of-the-art modeling capabilities, advanced monitoring technologies and mandated role as the scientific advisor to the Commonwealth on marine and coastal natural resource issues to provide this critical need. The proposed program would build on these strengths to develop and utilize models that more accurately represent conditions in Virginia waters and to couple these models with real-time water quality data to provide a comprehensive, high-resolution view of water quality that far exceeds the spatial extent, temporal coverage, and accuracy of the current monitoring program. Such information would furnish decision makers with the information necessary to make more informed decisions related to Bay restoration and TMDL (Total Maximum Daily Load) implementation.

Monitoring can be most effectively established with a Commonwealth Chesapeake Bay Observing System comprised of a network of buoys that can remotely obtain water quality data and transmit it back to a central location for analysis. This system would expand and integrate VIMS’ current technologies to produce a unified, state-of-the-art system. The system would integrate water quality and weather to allow for near real-time responses in support of emergency management, such as storm forecasting and response, public health, such as harmful algal blooms and fishery impacts, and state wide tidal water quality assessments, all of which support both economic and natural resource needs. As an example, Virginia’s rapidly growing oyster aquaculture industry would benefit greatly from enhanced water quality monitoring and early warnings of harmful algal blooms.

**Systematic Survey of Virginia Seafloor for Energy and Mineral Resource Interests.** Offshore Virginia waters host a wealth of energy and mineral resources with enormous economic potential for the State’s future. Offshore activities such as the construction of wind farms, the mining of sand for beach renourishment and for heavy minerals, and future possible oil and gas exploration all have a common need to understand the surface and shallow underlying seafloor to assess potential sand resources and/or for environmentally sound management practices. Yet, despite this common need, no systematic mapping and characterization of the shallow seafloor offshore Virginia (state and federal) waters currently exists. This contrasts with neighboring states along the eastern seaboard (including our nearest neighbor North Carolina), which have conducted a thorough assessment from the coastline to the edge of the continental platform. We propose a center of excellence for seafloor mapping and analysis at VIMS that will systematically collect a suite of geophysical survey data and physical samples, with the goals of creating a complete picture of the shallow character and sand/mineral resource potential offshore Virginia and providing this information to the public and private sector as Virginia seeks to responsibly develop its offshore energy and mineral resources. The center would house a complete digital library of seafloor characteristics, including 3-D visualizations of surface and shallow subsurface attributes in a GIS database for easy public access. This information will also support future assessments

of fish and shellfish habitat that is of critical economic importance to the Commonwealth. This initiative is timely, not only because of the intense interest in offshore energy and mineral resources, but also because VIMS is currently in the process of acquiring a state-of-the-art research vessel that will be uniquely positioned to serve as a platform for the collection of these data. We have also expanded our fleet of Autonomous Underwater Vehicles that enhance our capacity for mapping and visualizing seafloor off Virginia's coast.

**Management of Marine Diseases.** Recent outbreaks of disease have damaged economically important and ecologically sensitive marine resources in the Commonwealth and nation. Examples include mycobacteriosis in striped bass, dermo and MSX in oysters, *Hematodinium* in blue crabs, and morbillivirus in dolphins, to name just a few. These outbreaks have resulted from an increase in environmental stressors such as increasing water temperature, fishing pressure, aquaculture activities, and other anthropogenic effects. Often the pathogens responsible for these outbreaks are not well known, their risks to marine life and risk of spread remain understudied, and their full ecological impacts have been difficult to assess. To meet the challenge of the increasing emergence and establishment of diseases in marine systems, we propose an initiative to provide science-based guidance on the management of existing and emerging disease threats to critical fishery and aquaculture resources in the marine and estuarine waters of the Commonwealth.

We propose to leverage our considerable expertise and long involvement in the study of diseases of marine organisms to establish the Management of Marine Diseases Initiative which would (1) establish state and regional surveillance and response protocols to facilitate identification, assessment, and prediction of emerging pathogens in important fisheries and aquaculture stocks, (2) serve as a clearinghouse for information to policy makers and industry to mitigate the effects of disease outbreaks in our marine resources, and (3) enhance graduate and public education related to the interactions between environmental health and marine animal health.

The VIMS strategic plan includes strategies to promote sustainable fisheries and aquaculture, enhance coastal economies, and advance our understanding of the effects of climate change on coastal and marine resources. Three examples show how the Management of Marine Diseases Initiative would advance these strategic goals. First, shellfish aquaculture is a rapidly expanding economic sector that relies heavily on certification of pathogen-free seed that is shipped regionally and nationally. We work closely with industry in this certification process, but the optimization and validation of newer molecular protocols is needed for rapid assessments, surveillance, and quality assurance required for continued growth in this industry. Second, despite improved management, blue crab stocks remain below historical levels and the effects of observed disease outbreaks in juvenile crabs remains unknown. Lastly, striped bass are susceptible to mycobacterial infections that show strong associations with increasing water temperature and estimates indicate a 16% increase in mortality due to mycobacterial infections alone. The increased mortality due to disease must be factored into management plans for crabs and striped bass. The health of marine resources such as these is fundamental to the growth of the Virginia seafood industry and the revitalization of coastal communities dependent upon this industry. This initiative will

provide guidance on the management and mitigation of existing and emerging disease threats to vital fishery and aquaculture resources in the Commonwealth.

**Monitoring Bay Grasses.** Submerged bay grasses are a critical living resource in Chesapeake Bay that supports valuable fish and crab resources. Because bay grasses are dependent on good water quality it is being used as a key indicator of water quality improvement in Chesapeake Bay by the Virginia Department of Environmental Quality (DEQ). VIMS has conducted a bay-wide annual survey of bay grasses since 1987, with considerable support from EPA, NOAA and the state of Maryland. That support has declined in recent years as costs have risen. We are seeking to establish a stable funding base for maintaining the Virginia portion of this valuable survey.

The results of the annual survey are important to the Commonwealth for a number of reasons. (1) Bay grass acreage is embodied in Virginia’s water quality standards; (2) The Virginia Secretary of Natural Resources must report annually to various Virginia House and Senate Committees on the status of bay grass abundance from the annual surveys (*Code of Virginia* §2.2-220); (3) bay grass acreage is an important component the blue crab fisheries management plan (*Code of Virginia* §28.2-203.1); (4) Bay Grass survey maps are used by the Virginia Marine Resources Commission (VMRC) in evaluating aquaculture lease applications; and (5) bay grass acreage is used as a metric for attainment of the restoration goals established by the Chesapeake Bay Program and its partners, including the Commonwealth of Virginia.

VIMS is uniquely qualified to provide this service, not only because of its experience in conducting the surveys, but because it has pioneered restoration techniques for bay grasses that are now used worldwide and is widely recognized for its scientific leadership in bay grass restoration.

**Develop and support new management and policy approaches at state and local government levels.**

Throughout its history VIMS has provided critical, science-based advice to aid state and local governments in managing vital coastal resources from resource-specific to system-level perspectives with a long-term vision that includes economic considerations. As coastal decision-makers in Virginia have become ever more dependent upon this advice, VIMS finds its support for this activity to be insufficient to meet demands. Enhanced support from the Commonwealth would permit us to meet the increasing demand for this critical assistance, and to do so in the most proactive manner possible.

**Implement a post-graduate Commonwealth Coastal and Marine Fellowship program in collaboration with the Virginia Sea Grant (VASG) program that has been housed at VIMS since 2008.**

This proposed program would be modeled after the highly successful national Sea Grant Knauss Marine Policy Fellowship and similar state fellowship programs operated by state Sea Grant programs in Washington and California. To start the program, four Commonwealth Fellows would be placed with host offices in relevant state coastal and marine resource agencies in Virginia, such as the VMRC and DEQ. The Commonwealth Fellowship would provide host offices with highly trained professionals to help advance the state agency mission, and would serve a workforce development and retention benefit. The program would provide Fellows with “on the job” experience in the integration of coastal and marine resource

science, policy and management. By building a network of current Fellows and alumni (after a couple years), the Commonwealth Fellowship program will cultivate Virginia’s network of scientists and resource managers, expand opportunities for state agencies to collaborate with universities, and improve our ability to address emerging coastal and marine resource issues and needs through innovative cross-institutional, multi-disciplinary responses.

VASG would conduct the recruitment and pre-screening of Fellows and host offices, fiscal management, matching procedures to link host offices with pre-qualified Fellows, and Fellow oversight and technical assistance throughout the year. Qualified candidates would apply through VASG and could come from any of our university partner institutions. The host office would develop and oversee the Fellow’s job tasks and activities, contribute modest funding toward the stipend to demonstrate commitment to the fellowship, and participate in the matching process.

***Expand Institutional Collaborations.*** VIMS also has numerous well-established collaborations with other institutions within the Commonwealth, across the nation and internationally. During the 2012-2014 biennium VIMS had active collaborations with ten other Virginia institutions of higher education (UVA, VA Tech, ODU, VCU, GMU, JMU, Liberty, Randolph Macon, Washington and Lee, VA Wesleyan), 78 other US colleges and universities, and 63 international universities and institutes. Some recent additions to these include collaborations with Old Dominion University on sea level rise adaptation in Hampton Roads, Virginia Commonwealth University on sturgeon restoration, NASA on remote sensing of harmful algal blooms, the William & Mary Virginia Coastal Policy Center on legal and policy issues affecting coastal resilience, and National Cheng Kung University in Taiwan addressing areas of shared interest in research and education.

In addition to the above, VIMS is currently exploring the potential to offer a joint degree program with the W&M Business School to provide the training professionals need in careers that support marine-resource based economic development within the state (e.g. aquaculture, fisheries, minerals). Also, through the Virginia Council of Graduate Schools, we are contributing to an effort to enhance the participation in graduate programs of students from under-represented racial and ethnic groups in all fields, but especially STEM, with the ultimate goal of increasing their access to careers in higher education and other advanced professions within the Commonwealth.

***Continue to operate as a year-round facility.*** As an independent state agency that is heavily involved in research and graduate education, VIMS also provides advisory service to the Commonwealth in the form of expert scientific advice on marine-related issues throughout Chesapeake Bay and the coastal ocean. All three of our missions, the graduate program, research and advisory programs, are heavily operational for the entire 12-month calendar year. Field research is most active between April and October, but most other activities occur equally throughout the year. For example, throughout calendar year 2014, VIMS offered a total of 407 outreach programs reaching more than 24,000 citizens. More than 200 of those programs were held on VIMS’ main campus. These were in the form of campus tours, after hours

lecture series, discovery labs, summer camps for children in grades 1-8, workshops, training programs, and more. VIMS always has been, and will continue to be, a year-round operation.

**C. Financial Aid – Not Applicable**

**D. Evaluation of Previous Six-Year Plan Strategies**

**Support Chesapeake Bay Fish Surveys.** During the 2015 General Assembly session, VIMS received \$500,000 in general funds in support of the multiple finfish and shellfish surveys it conducts. This initiative has been a top priority for VIMS for more than a decade and the significant investment made by the Commonwealth is much appreciated! This initiative has been removed from the 2016 Six Year Plan.

**Support Graduate Financial Aid.** Governor McDonnell’s outgoing budget in 2014 included \$355,000 in Graduate Financial Aid for VIMS. This support remained throughout nearly all of the 2014 General Assembly session until the entire budget crashed due to the inability of the legislature to agree on Medicare expansion. This was an enormous loss for VIMS. However, VIMS faculty continue to aggressively pursue grant support from federal agencies, the Administration has made internal resource reallocations to provide a modest level of financial support for graduate students, and this past academic year the William & Mary Provost gave the Associate Dean of Academic Studies the ability to issue up to six tuition waivers in order to attract top students and increase enrollment. While these efforts have helped to halt a trend of decreasing enrollment in our doctoral program, we must continue to pursue state support in order to maintain the viability of the graduate program at VIMS.

**Improve Longevity of Highly-Sophisticated Research Instrumentation.** VIMS has had this initiative on its Six Year Plan for several years, primarily because the Institute does not receive base adequacy funds to support such maintenance and operating requests. The Higher Education Equipment Trust Fund (HEETF) allocations to VIMS over the past five years have been approximately \$2.5 million – a significant investment by the Commonwealth. It is highly unfortunate that the associated service/maintenance contracts on these pieces of equipment cannot be purchased through the HEETF. Annual service contracts can range from \$2,000 to more than \$25,000 for certain pieces of equipment. Failure to maintain manufacturer dependent service compromises the full appreciation of the investment by the Commonwealth, increases expenses by having ad hoc service calls, and importantly, can extend the research downtime thus delaying grant and contract deliverables and advisory service responses to the Commonwealth and other state agencies.

This initiative has been removed from VIMS’ 2016 Six Year Plan in recognition that it is highly unlikely the Commonwealth will invest funds for this purpose. VIMS Administration has been utilizing indirect cost recoveries to fund maintenance contracts for targeted pieces of scientific equipment. While indirect cost recoveries are certainly appropriate to utilize for maintenance contracts on equipment purchased by external grants and contracts, we are convinced that the cost of this initiative to the Commonwealth would be easily offset by the benefits.

**Enhance High Performance Computing (HPC) Technology.** The need for HPC technology at VIMS has significantly increased with the addition of new faculty, and several current faculty, whose research requires high speed data transfer for real-time forecasting and generating prediction models for storm surge, or analyzing fish DNA data points, as examples. Given the significant increase in HPC needs and VIMS' lack of resources to support those needs, during the 2014-15 academic year VIMS entered into an MOU with W&M's IT department to provide support for VIMS researchers. Specifically, the HPC group at W&M assists the VIMS IT department in defining hardware specifications, installing said hardware, assisting with troubleshooting, and being consultative to ensure that VIMS has successful HPC capabilities that meet the needs of the researchers on its campus. Given this partnership, VIMS has removed the HPC initiative from the 2016 Six Year Plan.

#### **E. Capital Outlay**

VIMS has 10 proposed capital projects over the Six-Year Plan period; however, there are three projects that are the top priorities for VIMS in the upcoming biennium. They are (1) Relocate and Construct an Oyster Research Hatchery, (2) Construct an Administration and Education Complex at the Eastern Shore Campus, and (3) Expand and Renovate Watermen's Hall.

**Relocate and Construct an Oyster Research Hatchery.** The current hatchery is nearly four decades old and was originally designed as a production facility for planting large numbers of seed oysters in the Chesapeake Bay. The new hatchery will be 22,000 square feet and constructed on the north side of campus, out of the flood plain, and be specifically purposed for oyster restoration, industry and economic development, and educational and training space. This research hatchery supports the Statewide Strategic Plan Goals 3 and 4 and *TJ 21 Objectives E7, E8, E11, and E12*. VIMS' Aquaculture Genetics and Breeding Technology Center (ABC) will be housed in the new hatchery. The 1997 General Assembly established ABC in recognition of the role that genetic research and selective breeding play in aquaculture development. ABC is the first genetics program to focus on oysters and one of the first dedicated Centers for breeding marine species. ABC's mission is to continuously improve oyster aquaculture through the manipulation and control of the genetics and culture of the oyster. These improvements, through application of cutting edge research, have and will continue to have regional impact and worldwide application. Most importantly, aquaculture is one of the leading economic development opportunities for Chesapeake Bay. ABC addresses industry requirements for a more profitable enterprise by running a breeding and applied research program, which comprises a research hatchery, labs, and farms that are staffed with technicians, students, and trainees. ABC does not sell seed or larvae, but enables industry to meet this demand by providing the best available brood stock.

**Construct Eastern Shore Administration and Education Complex.** This project consists of constructing four new buildings and demolishing two outdated buildings at the Eastern Shore Laboratory (ESL) in Wachapreague that total 10,200 square feet. The buildings are 1) a new 3,500 square foot Education Center that will house classrooms with distance learning capabilities, convertible meeting rooms, and a teaching laboratory, 2) a replacement 3,500 square foot Administration building that will house staff offices and public outreach space, 3) a replacement 1,700 square foot maintenance shop that will have a

high bay and drive through access to properly support the work conducted on small vessels and trucks, and 4) a new 1,500 square foot storage building. In November 2010, VIMS lost Seaside Hall (the ESL Research building) due to fire. With insurance proceeds, VIMS replaced it with a new, modern facility. The proposed buildings will be designed to complement the new Seaside Hall architecturally and present a public face for the Laboratory.

The ESL serves as much more than a field station for VIMS. It also serves as an important site for undergraduate and graduate education, as well as public education and outreach to the K-12 community. Over two-dozen colleges and universities regularly use the ESL for educational activities, with more than half coming from Virginia schools. The ESL also serves as a site for providing summer classes for Virginia secondary school teachers and plays an important role in international educational exchange programs. With the establishment of an undergraduate minor in marine science at W&M, the educational programs at the ESL will require further expansion. Along with the educational program, the research and advisory roles of the ESL have expanded dramatically in recent years. The facility now regularly hosts meetings and conferences with state and federal regulatory agencies, as well as outreach programs for the local aquaculture industry and the public. The dramatic increase in use of the facility over the past few years has outpaced the infrastructure. This project supports the Statewide Strategic Plan Goals 2, 3 and 4 and *TJ 21 Objectives B, C, E6, E8, E10, and E12.*

***Expand and Renovate Watermen’s Hall.*** This project consists of expanding and renovating the 1984 vintage Watermen’s Hall. This renovation and expansion is critical to meeting the programmatic, technological, and instructional needs of graduate marine education and public outreach at VIMS. The project includes renovation of existing classrooms, and an 11,800 square foot addition for an educational center with classrooms, conference rooms, convertible meeting rooms, and an informal lounge.

Watermen’s Hall is a multipurpose building that houses the Institute’s administration, advisory services, main research library, classrooms, and an auditorium. Not only does Watermen’s Hall provide essential functions and act as the nerve center for the Institute’s faculty, staff, and students, but it is the main building where the Institute and the public interface. The building has been well maintained and improvements have included a handicapped accessibility project, re-roofing project, and partial face lift to the McHugh Auditorium, and mechanical equipment replacement as part of an energy performance contract. However, the building is 31 years old, has never been renovated, and is showing its age. Moreover, VIMS is unable to host regional and national conferences due to lack of proper facilities and class scheduling conflicts. The proposed addition would allow VIMS to hold workshops for 50-100 people with breakout rooms for small discussion groups and improve VIMS’ ability to provide advisory services to state and local governments and the general public through outreach training workshops. This project supports the Statewide Strategic Plan Goals 2, 3 and 4 and *TJ 21 Objectives B, E6, E8, and E10.*