Investing in a healthy ocean and SF Bay through research and education today
Executive Summary

The mission of San Francisco State University’s Romberg Tiburon Center for Environmental Studies (RTC) is to illuminate the vital connections between science, society, and the sea. Our vision is to ensure healthy and resilient marine ecosystems for future generations. This strategic plan maps out our dreams for the future of the Center and describes a pathway forward. We hope to inspire all of our stakeholders to join us in developing and delivering the programs and facilities that will support the research and education activities essential for effective stewardship of San Francisco Bay and coastal ecosystems around the world.

RTC is a unique asset for the SF State, the region and the nation. RTC is the only academic marine research laboratory on the shore of San Francisco Bay. As such we offer unique access to the Bay for scientific study, and are a critical node in the nation’s network of environmental observatories, comprised of marine laboratories and field stations. As an interdisciplinary research center on marine and coastal ecosystems, we are also a repository of regional natural history and historical ecology, and an educational center for the community and the region.

We have specialized facilities for marine science including research vessels and a small boat fleet, flow-through bay water system to indoor and outdoor aquaria and water tables, including a bayside greenhouse, an eelgrass nursery, and mesocosm arrays for ecological experiments. We have a shared molecular genetics laboratory, as well as shared facilities to study planktonic organisms that form the base of coastal and marine food webs. We provide laboratories for SF State marine science faculty and research scientists, wet and dry classrooms for university courses, a guest house with seven bedrooms available for rent to short-term visiting students and scientists, working at the Center. We also have the Bay Conference Center, which is available for meetings, public outreach events and larger gatherings. The rooms in the Bay Conference Center are also available for rental by governmental agencies, community groups, and non-profit organizations.

In addition, some of our buildings and artifacts at the site have historical significance to the development of the Bay area, and the influence of human activities on marine and coastal environments. The site used to be used as a cod packing plant, a Navy coaling station, a site of assembly for Golden Gate Bridge suspension cables, and as a Navy depot for manufacture of submarine nets for US ports and harbors during WWII. There are rich opportunities for community education about the historical ecology of the region, the most recent research on coastal and marine environments, possibilities for conservation and restoration, new discoveries, and engagement in citizen science projects that have not yet been fully realized at the Center.

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To create a modern, interdisciplinary marine and coastal research center on the shore of SF Bay, one that works for the citizens and students of the greater SF Bay Area, we strive to work in collaboration with all our partners and stakeholders. In this strategic plan for RTC we lay out our guiding principles, core research themes and aspirational goals for research, education and public engagement. We embrace and echo the themes of SF State University’s strategic plan\(^2\) in our guiding principles of courage, life of the mind, equity, community and resilience. Our core themes reflect our vision for addressing the grand challenges facing marine and coastal environments. Through our research, education and public programs we strive to enhance understanding and protection of ecosystem health, especially in response to environmental change, contribute to the restoration and conservation of San Francisco Bay, train creative, next generation scientists and help translate science to increase community awareness of new findings and understanding of coastal and marine environments, and their influence on human well-being. Our overarching goals are to:

1. Position RTC as a recognized leader in marine and estuarine research in the Bay Area and beyond;
2. Become a recognized center of academic excellence in university-level, marine and estuarine environmental education; and
3. Become a valued resource for raising community awareness about marine and estuarine environments and informing solutions to complex environmental problems

We hope you are inspired by our vision for the future of the Center. We invite your partnership in supporting healthy and resilient marine ecosystems for future generations by building a sustainable future for San Francisco State University’s Romberg Tiburon Center for Environmental Studies.

\(^2\) [http://president.sfsu.edu/strategic-plan](http://president.sfsu.edu/strategic-plan)
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Updated: October 8, 2015
Overview and History of Center

The Romberg Tiburon Center for Environmental Studies (RTC) is an interdisciplinary center for marine and coastal research within the College of Science and Engineering (CoSE) at San Francisco State University. The director, Dr. Karina Nielsen, works in collaboration with SF state faculty, administrators, staff and students to define and refine the mission and vision for the Center, is responsible for administration of RTC programs (including space allocation, budget and administrative staff), and works with University advancement and development staff on community outreach and fundraising in support of the Center (see organization chart, Appendix 1). The RTC director reports to Dr. Keith Bowman, the Dean of CoSE, Dr. Sue V. Rosser, Provost and Dr. Leslie E. Wong, President of SF State.

The Center is located on a bayside property of 51 acres (including approximately 11 acres of submerged ‘tide lots’) is located on the Tiburon Peninsula, in Marin County, 20 miles north of the San Francisco State University campus (see map, Appendix 2). RTC is the only marine laboratory located on San Francisco Bay and provides unique research and educational access to the Bay and nearby coastal environments.

There are currently 25 PhD level scientists who work at RTC, including 4 postdoctoral scholars. Eight are tenured SF State faculty members, affiliated with the departments of Biology, Geography & the Environment, Chemistry & Biochemistry, and Physics & Astronomy, whose laboratories are based at the Center. We look forward to welcoming a new tenure track colleague in fall of 2016, as the outcome of a joint search with the Department of Earth & Climate Sciences for an RTC-based position. We also have four research faculty affiliated with the Department of Biology based full-time at RTC; two of them also have part-time teaching assignments in Biology. We have two PhD scientists affiliated with the SF Bay National Estuarine Research Reserve, two from the Smithsonian Environmental Research Center and one from Taxon Bioscience all affiliated with the Center; four of them are based here full-time and three are affiliated with Department of Biology. We also have four PhD level research scientists affiliated with the Center (and academic departments at SF State) who work in various laboratory groups here, but are not based full-time at the Center.

More than 180 people work at Center on a regular basis. The many independent research programs at RTC led by these marine scientists typically include a combination of undergraduate and graduate students, postdoctoral scholars, research staff and interns. Environmental research is conducted in San Francisco Bay, along the California Coast, in the Pacific Ocean and around the world. RTC research projects address some of the most pressing scientific and environmental problems confronting marine ecosystems in the region. In addition, each semester approximately 50-75 students attend marine science classes taught at RTC by SF State

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3 RTC is one of several research and service organizations (RSOs) at SF State. See http://research.sfsu.edu/rso_policy for SF State’s RSO policy guidelines.
faculty. Collaborations among the different groups in research, education and outreach activities are common. Marine and coastal research projects are funded through competitively awarded state and federal grants and contracts, private foundations and individual donors, and help support the center’s hands-on training of the next generation of scientists in a variety of disciplines. Scientists and students are supported by research technicians, administrative and facilities staff, and the Bay Conference Center, which is available for rental to educational and nonprofit groups. An active public outreach program shares important discoveries and concepts, and brings leading marine scientists to the Center to meet and talk with students, teachers, scientists and the general public.

**History of the Site**

The Center was established in 1978 through a 30-year federal lease to SF State of 36 acres and six buildings of what had once been a Navy facility. The Center is named after Paul Romberg, the former President of SF State (and a botanist) who spearheaded the acquisition of the property to establish the Center and support environmental research. In 2003, the San Francisco Bay National Estuarine Research Reserve (NERR) was designated by the National Oceanographic and Atmospheric Administration (NOAA) and established at RTC with SF State serving as their state host and administrative partner. At the end of the 30-year federal lease in 2008, the property and buildings were transferred to SF State. In the same year, the U.S. Department of Commerce also deeded the balance of the federal property interspersed within and adjacent to the original lease site to SF State (16 acres including submerged tidelands and 13 additional buildings).

The site has a fascinating history connecting the location to the many cultural, economic, environmental and historic changes that have transformed the Bay Area since Europeans arrived. Prior to the arrival of Europeans, the Tiburon Peninsula was inhabited by the Coast Miwok. The first European ship known to enter San Francisco Bay was led Juan Manuel de Ayala of the Spanish Navy in 1775. It was then that Tiburon Peninsula was named Punta de Tíburón (or Shark Point), possibly because of the abundance of leopard sharks in the area. The Spanish soldiers who later guarded the entrance to San Francisco Bay used to cut wood for the presidio or fort on the Tiburon Peninsula and nearby areas that are now part of Marin County. This area was called **Corte Madera del Presidio**, (meaning where wood is cut for the presidio).

In 1822, Spain lost its hold on the area to Mexico in its war of independence and the Tiburon Peninsula was eventually included in a land grant from Mexico to John Thomas Reed of Dublin. John Reed arrived in California after sailing around Cape Horn with his uncle at the age of 15. The Mexican land grant designated the property as **Rancho (de) Corte Madera del Presidio**. It was used as a cattle and dairy ranch. The lands were eventually claimed by the United States at the end of the US-Mexican War in 1848, but the designation still appears on the Marin County surveyor’s maps of the region, including the RTC property.

In 1877, the waterfront site where the Center is located was used as a fish-packing plant by Lynde and Hough, and was one of the largest cod-drying and curing, and packing plants on the West Coast. The cod packing plant was one of several in the area used to process the salted codfish brought to California from the Alaskan cod fishery; it was eventually shipped throughout
the world. Lynde and Hough eventually merged with another company to become the Union Fish Company, which still exists today.

The Navy purchased the Tiburon property in 1905 for use as a Navy ship coaling station. ‘Black diamonds,’ as the coal was called then, was the sole source of power for Navy ships. It would take several days to load the ship with enough coal for a two-week journey to the next port, and then the entire ship had to be cleaned of coal dust. Teddy Roosevelt’s Great White Fleet visited the coaling station in Tiburon as part of the first around-the-world cruise by a fleet of coal-burning, steam-powered, black smoke spewing, steel battleships. The 43,000 mile, 14-month circumnavigation visited 20 port calls on six continents and was considered one of the greatest peacetime achievements of the US Navy.

During construction of the Golden Gate Bridge in the 1930’s, the Roebling and Sons Company used the warehouse near the north dock to wind and reel steel wire, that was then barged to the Gate to be spun into cables. The cables were used to suspend the roadway of the Golden Gate Bridge.

From 1931 to 1940, the Navy loaned the base to the state of California, which established its first nautical training school (later to become the California Maritime Academy). With the outbreak of World War II, the U.S. Government re-appropriated the site for use by the Navy, and the Maritime Academy relocated to its present site near Vallejo.

During World War II, the Tiburon Naval facility was used for the construction of anti-submarine and anti-torpedo nets. These nets were shipped to Navy bases all along the West Coast and across the Pacific. The biggest job faced by Navy Net Depot personnel during this time was the laying of an anti-submarine net seven miles long and 6,000 tons in weight across the entrance to San Francisco Bay. This net was in place by December 7, 1941.

The Navy Net Depot was active through the Korean War until 1958 when its operation was terminated and the property was transferred from the Navy to the Department of Interior, and subsequently to the Department of Commerce. In the 1960’s, the future National Marine Fisheries Service’s Southwest Fisheries Center (NMFS) established the Tiburon Marine Laboratory in the former Navy facility, alongside the Minerals Management Technology Center, which was investigated ocean mining of minerals. In 1973, after the Minerals Management Technology Center closed, NMFS consolidated its operations at the site and the remaining 35 acres was declared surplus federal property and made available for sale through a federal long-term lease and eventual land transfer. In 1977 SF State submitted a proposal to develop a field station and marine laboratory dedicated to the study of San Francisco Bay, and the Romberg Tiburon Center was established on the remaining 35 acres through a 30-year lease and for the purchase price of a dollar.

Buildings and Facilities

The primary research laboratory and administration office building is located in Building 36 on RTC’s lower campus (see map, Appendix 2). The entire building has been retrofitted for seismic stability, and about 2/3 of it has been renovated, providing ADA accessible offices for faculty and
staff (including NERR staff), renovated research laboratories, a common area for meals and informal gatherings, a wet lab classroom, a computer lab, and two small conference rooms. The renovation and seismic retrofitting work was accomplished in two phases through a combination of funding sources including SF State, NOAA, foundation and individual donors. The remaining third of the building still needs to be renovated, and is urgently needed to help support the growing number of students and scientists that RTC supports, as well as existing students, scientists and staff who are working in antiquated facilities. Three research labs, including the shared gene lab facility are currently housed in the older, un-renovated portion of the building. Building 36 also has a shared aquarium room with flow-through bay water and a culture room. Shared equipment purchased with external grants include equipment for the gene lab to support genetic analyses, and an inverted microscope and flow cytometer for research on plankton. Along the seawall in front of Building 36 is pump house that delivers bay water to Buildings 86 and 54 as well as to tanks, tables and aquaria inside and adjacent to a simple greenhouse structure, dating from the 1980s. There is also a small boat ramp that supports marine operations and training along the southern portion of the seawall. The Center provides some maintenance and limited technical staff support for the shared facilities.

Building 39 on RTC’s upper campus provides additional (non-ADA compliant) space for teaching and outreach activities, and houses administrative offices for the San Francisco Bay NERR headquarters. Building 53 also on the upper campus houses the Bay Conference Center (BCC) on the top floor and a residential apartment on the lower level of the building, currently rented by the center’s Director.

Building 49, one of two former barracks buildings, houses the facilities’ shop, marine operations, and a wet research laboratory. RTC provides the top floor of Building 49 as art studio spaces for SF State’s MFA program’s graduate students. Building 50, the second barrack building, is used by RTC for storage, and the top floor was allocated by SF State to the Department of Anthropology’s NAGPRA program for storage of artifacts. Neither of these buildings is ADA accessible, due to their age and historic function as military barracks.

The former Navy commander’s house, Building 20, renamed the Ohrenschall Guest House in honor of private donors who augmented a National Science Foundation (NSF) Field Stations and Marine Laboratories facilities improvement grant awarded to RTC to renovate the building, provides lodging for visiting scientists, students and BCC clients and includes one fully accessible bedroom.

Additional occupied buildings include: Building 54, the old Navy theater, which now houses the physiology, biogeochemical, elemental analysis and bay water monitoring laboratories, on the ground floor. The laboratories in this building should be re-located to new laboratory spaces in Building 36, as soon as possible.

Building 30 on the mid-level portion of the campus is licensed to two entities: The Smithsonian Environmental Research Center (SERC) and Taxon Biosciences, Inc. SERC is an important research and academic partner for RTC. Taxon Bioscience’s lead scientist is also an RTC PI and occasionally serves on graduate student committees. Both licenses provide important revenue that support
Center operations.

Additional buildings and facilities include: Building 74A - office space; Building 74 – facilities offices and boat/vehicle storage; Building 21 - storage; Building 22 – is licensed by Southern Marin Fire Protection District for training; and Building 40 is used by the SF State Department of Art for storing supplies used in ceramics classes held at RTC and to support a large soda fire kiln the Art department’s ceramics program maintains on the property. In addition, they use approximately 1/3 of an acre on the north dock for: eight shipping containers, including classroom space, a storage area for propane tanks and an open space area for raku fire pits, all maintained by the Art department.

Building 86 is a University owned and maintained storage building but the National Oceanic and Atmospheric Administration (NOAA) retains exclusive use of the building for storage, through a permanent license. Five other buildings on the RTC campus, Buildings 11, 27, 33, 37, and 79 are in various states of disrepair, and cannot be occupied.

RTC owns several boats essential to supporting our research and educational on marine and estuarine environments including: 1) a 38’ aluminum hulled vessel, the R/V Questuary, docked at Paradise Cay approximately 4 miles to the north along Paradise Dr.; 2) a 21’ C-Dory, the Salty Dog; 4) a 19’ Boston Whaler; 5) a 15’ Boston Whaler and 6) a skiff. In addition the center owns three field vehicles, a Ford 150 truck, a GMC truck and a Suburban and leases a Chevy Colorado Truck from the California State Garage, all essential for trailering small boats and field gear.
Mission & Vision Statements

Our mission is to illuminate the vital connections between science, society, and the sea. Our vision is to ensure healthy and resilient marine ecosystems for future generations.

Our vision to address the grand challenges facing marine and coastal environments

Planet Earth, mostly covered by ocean, is changing in unprecedented ways. The impacts of climate change, historical overfishing, industrialization, global trade and human population growth continue to challenge coastal and marine ecosystems worldwide, including San Francisco Bay. Estuaries, where rivers meet the sea are strongly influenced by human activities and decisions. The reverse is also true, and increasingly obvious in the face of climate change. Investing in healthy and resilient marine ecosystems has benefits for both nature and human societies. Natural processes and resources in coastal communities support human health and quality of life, sustain our diverse cultural heritage, and enable economic prosperity. Reversing the downward spiral and loss of essential ecosystem resources, services and functioning requires a well-informed public, knowledgeable resource managers, and an ongoing commitment to learning how to cultivate and bolster nature’s resilience. We embrace our role as a regionally important environmental observatory for San Francisco Bay and a key member of the nation’s network of marine laboratories and field stations. The innovative research and inspiring educational opportunities we provide in collaboration with San Francisco State University are the powerful catalysts we need to fuel productive civic engagement, and ensure the well-being of future generations and nature’s legacy.

Our vision is to develop and deliver programs that will provide the research and education essential for effective stewardship of San Francisco Bay, central to the vitality of the Bay Area, and coastal ecosystems around the world. We are an interdisciplinary center for research on coastal ecosystems, a repository of natural history, and a unique, educational asset for the local community. We will recruit students and researchers from the fields of natural and social sciences, economics and engineering to create new understanding and solutions to the complex environmental problems confronting coasts and oceans. Successful solutions to coastal environmental problems emerge from creative thinking that transcends disciplinary boundaries. As San Francisco’s only marine laboratory on the Bay, the Romberg Tiburon Center has a long and dedicated history of regional research and education. We observe, interpret, predict and collaborate to develop successful approaches to adaptation, mitigation and conservation in response to a changing ocean and Bay. Together with our students we work closely with government agencies, non-profit organizations and policy makers. SF State faculty, students and staff work in collaboration with our on-site partners, the San Francisco Bay National Estuarine Research Reserve and the Smithsonian Environmental Research Center’s Marine Invasions Laboratory (and as a MarineGEO initiative partner), and other Bay Area educational and research institutions to achieve an integrated understanding of marine and coastal ecosystems.

Updated: October 8, 2015
Core Themes

- **Understanding and Protecting Ecosystem Health.** We will develop clear and useful evidence-based recommendations for protecting and enhancing the valued and threatened systems of the San Francisco Estuary, California’s coast, and the world’s oceans. We already actively investigate how human activities influence marine ecosystems. The extraordinary natural complexity of these systems demands sophisticated and integrative research and educational training of future generations. Resource managers, policy makers, social and natural scientists need to work collaboratively with a variety of stakeholders.

- **Responding to Environmental Change.** We already work to understand impacts of global and local change such as pollution, demand for water, endangered and invasive species, ocean acidification, and climate change. Our approaches are integrated across scales from molecules to organisms to ecosystems. We aim to integrate further, across traditional disciplinary boundaries, to generate transformational insights about the responses of microbes, plants, and animals to their changing environment, and a deeper understanding of marine ecosystems.

- **Restoring and Conserving San Francisco Bay.** To address the long history of environmental degradation of San Francisco Bay, we will apply our strong scientific capacity in a unique research center on the Bay’s shore to improve and focus the practice of conservation and restoration of critical habitats. We will apply our skills in experimentation and cutting-edge analysis to restore and foster healthy and vital ecosystems in the Bay and move the field of restoration ecology beyond trial and error approaches. We will link our strengths in biological, physical, and chemical science to solve the complex problems of sustaining the resilience of natural communities over the long term.

- **Training Creative, Next Generation Scientists.** The environmental problems besetting future generations will differ from those of today. We will continue to prepare future generations of scientists to be innovative problem solvers; managers who can understand new research insights and respond to changing conditions; and teachers equipped to educate the future’s citizens to understand how science and evidence inform effective public policies. We will serve a student body that reflects the ethnic, cultural, and socioeconomic diversity of San Francisco’s Bay Area communities through an inspiring learning environment that links classroom teaching and hands-on experiences with effective mentoring.

- **Translating Science into Community Awareness.** We believe a society that values and appreciates the natural world will ensure prosperity for future generations. We will model environmental stewardship and engage in community partnerships to sustainably develop and manage our own lands and physical infrastructure. Through educational programs, professional development for teachers, and public programs for the community, we strive to cultivate scientific thinking about the natural world and raise awareness of solutions to pressing environmental problems in San Francisco Bay and other marine environments. We will facilitate exploration of scientific ideas and ways of thinking through lively public events that capture the scientific spirit of creativity, curiosity, collaboration and discovery.

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Guiding Principles

Our guiding principles inform everything we do. We are a proud part of San Francisco State University and the network of marine laboratories and field stations that form Planet Earth’s environmental observatory. The Romberg Tiburon Center for Environmental Studies, in partnership with other marine laboratories and field stations, is a critical part of the nation’s scientific infrastructure, bringing the basic tools of science into the field and connecting scientists, educators, students and communities to their nearby marine and coastal environments. The 2014 National Academy of Sciences report on marine laboratories and field stations highlighted their important role in “...fostering cross-disciplinary research communities” and stimulating “…convergence among the various branches of science as well as engineering, humanities, and arts” to help address pressing scientific and societal challenges⁴. San Francisco State’s long-standing history of commitment to excellence in teaching, promoting community learning and social justice are important principles we also embrace. Thus we adopt the five themes of SF State’s strategic plan as the guiding principles that shape how we pursue the Romberg Tiburon Center’s mission and vision.

Courage

We inspire courageous action in research, learning and civic engagement.

Life of the mind

We stimulate intellectual engagement and critical thinking.

Equity

We embrace human diversity and social justice.

Community

We translate, connect and interpret research to benefit society.

We value teamwork among students, researchers, staff and our partners.

Resilience

We foster resilience in our communities, and in marine and coastal ecosystems.

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**Goals, Objectives & Strategies**

**Introduction**

Our mission and vision are inherently interdisciplinary. We are committed to broadening our disciplinary engagement to enhance our understanding of marine and estuarine ecosystems, and addressing some of the most pressing marine science research questions identified by the National Research Council’s 2015-2025 Decadal Survey of Ocean Sciences. We remain committed to the spirit of discovery, the practice of scientific understanding and the development of evidence based solutions to environmental problems. In this strategic plan we identify overarching goals for three primary, overlapping, programmatic areas: research, education and community engagement that are informed by our guiding principles. We also recognize the complementary nature, aligned missions, intellectual capital and excellence of the three on-site research and educational institutions that anchor the Romberg Tiburon Center: San Francisco State University (SF State), the Smithsonian Environmental Research Center (SERC) and the San Francisco Bay National Estuarine Research Reserve (NERR). We are committed to strengthening the opportunities for partnership and productive collaboration among these three institutions as part of our vision for the future of the Center.

*Position RTC as a recognized leader in marine and estuarine research in the Bay Area and beyond*

*Become a recognized center of academic excellence in university-level, marine and estuarine environmental education*

*Become a valued resource for raising community awareness about marine and estuarine environments and informing solutions to complex environmental problems*

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Research Goal

*Position RTC as a recognized leader in marine and estuarine research in the Bay Area and beyond*

**Objectives**

- Grow and diversify the faculty to support innovation and creative leadership in research and education
- Create tiered research mentoring opportunities with postdoctoral scholars
- Enhance on-site and regional partnerships with academic institutions, agencies and research organizations to build strength and recognition
- Create modern, flexible laboratory and research facilities to support collaborative, interdisciplinary projects for RTC and visiting researchers
- Strengthen marine operations to support field research and education unique to marine and coastal environments
- Become a repository of regional environmental research, observations, natural history and historical ecology

**Strategies**

- Improve and define the optimum approaches and structures for RTC to support tenure track hiring and successful faculty careers based at the Center
  - Tenure track partner planning with departments, CoSE and other SF State Colleges
  - Research faculty (including evaluation for retention and promotion)
- Identity and fill gaps in expertise to support our programmatic vision
  - Raise funds for endowed faculty positions and postdoctoral scholars
  - Create an institutional postdoctoral scholars program
  - Advocate and submit proposals for a cluster hire
- Continue and enhance existing opportunities for scientific communication
  - E.g., Rosenberg Seminar Series, Public Forums, Bay Science Collaborative
- Provide criteria-based access to research facilities for visiting scholars
  - Visiting scholar housing
- Raise funds for new and upgraded research facilities to support our mission and vision
  - State-of-the-art research, conservation and restoration center with aquaria/mesocosms, greenhouses, laboratories, native oyster hatchery, flume, etc.
    - Plan for supporting shared facilities (technical staff, maintenance, administration)
  - Enhance environmental monitoring capability (e.g., CeNCOOS, WAML network)
  - Laboratories for new faculty and upgrades to older laboratories
  - Acquisition of new and replacement shared research equipment
  - Upgrade Marine Operations
    - Research vessels, small boat fleet
    - Pier & wave attenuator, floating docks
    - Small boat launch

Updated: October 8, 2015
Education Goal

Become a recognized center of academic excellence in university-level, marine and estuarine environmental education

Objectives

- Re-design our undergraduate and graduate marine science curricula through a lens of inclusivity and breadth
- Prepare students for a variety of career paths related to marine and coastal environments, and other science, technology, engineering and math (STEM) related disciplines
- Capitalize on our waterfront location to provide hands-on marine science experiences and trainings
- Increase participation by SF State undergraduate and graduate students in RTC-based academic programs, research experiences and classes
- Support technologically advanced instructional spaces to enhance learning within and beyond the University

Strategies

- Revise the MS program in Marine Science
  - Expand interdisciplinary curriculum
  - Prepare students for both academic and non-academic careers that involve coastal and marine environmental science directly or indirectly (e.g., policy, education, etc.)
  - Develop a recruitment plan that enhances diversity of graduate students
  - Work with SF State’s Science Education Partnership and Assessment Laboratory (SEPAL) and Center for Science and Math Education (CSME) programs to enhance teaching and learning effectiveness.
- Become an academic department or program to facilitate academic program planning and connectivity with SF State
  - Pursue most appropriate option(s) in consultation with CoSE Dean, Provost and academic colleagues
- Raise funds for competitive graduate student support programs to recruit, support and mentoring the most talented students, with emphasis on increasing participation of underrepresented groups (racial and ethnic minorities, first generation students, economically disadvantaged).
  - Fellowships
  - Teaching and research assistantships
  - Public program docent stipends
  - Fee waivers
- Increase graduate teaching assistantships available for RTC courses
- Increase the number of SF State students in RTC-based classes through improved access
  - Create new course structures: technology-based, summer session, etc.
  - Expand on-site/nearby housing or dormitory options
  - Develop and support transportation options
  - Increase classroom space
  - Enhance advertising and recruitment on campus
• Enhance our teaching facilities
  o Assess our current facilities and determine needs
  o Improve existing classrooms, build capacity
  o Provide spaces appropriate for visiting school groups and teacher professional development
• Develop courses focused on providing hands-on and field experiences for undergraduate and graduates students.
  o Support courses in practical skills related to marine and coastal research (diving, boating, specialized field research methods, specialized research instruments, biology of marine and coastal organisms, etc.)
  o Develop support for specialized field or hands-on laboratory experiences that integrate with the educational objectives of non-RTC based courses at SF State.
• Continue to support summer REU and STAR research experiences
• Grow offerings of professional development opportunities through collaboration with SF State, SF Bay NERR, SERC and other regional partners.
  o Courses, workshops and summer intensives
  o Teacher training, continuing education credits
  o Wetlands Science and other professional programs
  o Science communications workshops
Public Engagement Goal

*Become a valued resource for raising community awareness about marine and estuarine environments and informing solutions to complex environmental problems*

Objectives

- Offer high-quality, hands-on marine and estuarine science education opportunities to a diverse community of participants.
- Communicate through a diversity of media about environmental issues affecting San Francisco Bay and nearby coastal environments.
- Realize the full potential of being located on the shore of San Francisco Bay to enhance community participation and awareness.
- Provide comprehensive natural history and physical observations and data on San Francisco Bay.
- Be a ‘go-to’ source of information on San Francisco Bay for decision makers.
- Provide a menu of activities that faculty can access to adaptively plug-in new content and research findings to help them meet outreach goals (e.g. NSF Broader Impacts).
- Develop a public engagement business model that is self-sustaining and also catalyzes investment in the university level research and educational mission of the center.

Strategies

- Continue to enhance and deliver high quality Rosenberg Institute public forums and Discovery Day
- Create a flexible and adaptable walking tour program (offered weekly)
  - Develop several versions aimed at different audiences: community members, school groups, etc.
  - Integrate regional and site specific human and environmental history
  - Highlight, interpret and communicate current research from the Center
  - Graduate student training in effective communication strategies
- Develop the Art of Science public program
  - Work with SF State and local artists to communicate about coastal and marine environments, organisms, science, etc.
- Become a recognized source of environmental and ecological data on SF Bay and nearby coastal environments
  - Promote and build our experts/expertise
  - Work with environmental policy and decision makers
  - Collaborate in citizen science programs and partnerships (e.g., SERC, NERR, and others)
    - Involve and educate local community members in the process of science
  - Enhance regional data collection capacity
  - Develop a landscape stewardship program for the Center
    - A model of best practices of water conservation, erosion and runoff control, reducing invasive, non-native species, creating habitat for native plants, insects and wildlife.
    - Engages community members through a volunteer program
- Deliver an informative and effective social media program
  - Enhance the reputation and recognition of the Center as a source of reliable coastal and marine environmental information.
  - Communicate and translate our environmental research activities and findings, as well as those important to the region.
  - Develop specific communications strategy for facebook, twitter, etc.
  - Targets and tailors information to specific audiences and their needs (e.g., schools, community members, policy makers, academics, graduate students, etc.)
  - Natural history blog with focus on the Tiburon peninsula and nearby coastal environments with contributions from faculty, partners, graduate students, etc.
- Create outstanding professional development program for local school teachers
  - Collaborate with science educators at SF State, SF Bay NERR, SERC and others.
- Develop a high quality high school internship program
  - Recruit from a diversity of local public schools
  - Collaborate with RTC faculty in developing the program and internship opportunities
  - Develop selection criteria and schedule that is predictable and synchronizes with both SF State and high school schedules
- Facilitate and support visits by graduate students and faculty to local schools for special environmental science programs
Appendix 1: Organizational Chart
Appendix 3: Strategic Planning Timeline

- **February 4, 2015 Advisory Board Meeting** Presentation of draft strategic plan
- **March 15, 2015 PI Strategic Planning Retreat I**
- **June 22, 2015 PI Strategic Planning Retreat II**: Refine & edit strategic plan draft
- **July 22, 2015 PI Strategic Planning Retreat III**: Refine & focus draft strategic plan
  - **Facilitator**: Meg Burke, Director of Science Integration and Operations, California Academy of Sciences and RTC Advisory Board
  - **Special Guest**: Keith Bowman, Dean, College of Science and Engineering
- **Fall 2015, Present Draft Strategic Plan to key stakeholders for input & feedback**
  - President Wong, Vice President for University Advancement, Robert Nava, Provost Sue Rosser and CoSE Dean Keith Bowman
  - **September 11, 2015 Staff Strategic Planning Retreat**: Present, discuss & provide input
    - **Facilitator**: Heidi Nutters, Coastal Training Program Coordinator, San Francisco Bay National Estuarine Research Reserve
    - **Special Guest**: John Kern, RTC Volunteer and Advisory Board member
  - **Fall 2015, Present Draft Strategic Plan to CoSE Science Council**: Extended discussion and input
  - **September/October 2015: Postdoc Input on Draft Strategic Plan**: Director, Associate Director and postdocs discuss and provide input
  - **September/October 2015, Student Strategic Planning Retreat**: Director, Associate Director and RTC graduate students discuss and provide input
  - **November 5, 2015, Present Draft Strategic Plan to RTC Advisory Board**: Extended discussion & input; Discuss options for implementation; prioritize and rank for fundraising
  - **November/December 2015**, Solicit feedback from other key community and SF State stakeholders, TBD
- **January 2016 Final Version of the Strategic Plan**
  - Produce outward facing summary booklet, web page, etc.
  - Complete list of key performance indicators (=metrics)
- **Spring 2016 Semester Additional Planning Activities**
  - Initiate facilities planning and prioritization
  - Create a business plan
    - Budget alignment and priorities
    - Identify key staffing needs, organizational plan
    - Fundraising goals and alignment
  - Produce a portfolio of case statements for prospective donors
  - Create a governance plan

Updated: October 8, 2015
Appendix 4: DRAFT Key Performance Indicators

- Number of students enrolled in the MS program; Number of MS students graduated in 3 years or less
- Number of classes offered at RTC
- Number of SF State-based classes that use RTC facilities for a lab or field trip
- Number of undergraduate research experiences
- Number of peer-reviewed publications by faculty and students
- Number of popular press articles about our work
- Number of grants and amount of funding awarded
- Number of new tenure-track and research faculty
- Diversity of MS students
- Diversity of research expertise related to marine and coastal environments
- Has walking tour program been initiated? Frequency of walking tours; Number of participants in walking tours
- Number of RI public forum guests; Number of Discovery Day visitors
- Number of teachers participating in professional development
- Number of faculty and PIs working with decision makers
- Number of undergraduate students taking classes at RTC
- Number of MS student fellowships
- Number of postdoctoral scholars
- Number of ‘hits’ on social media postings (likes, retweets, followers, etc.)
- Number of summer research students
- Number of regional collaborations
- Number of sq. ft. of new or renovated laboratory space
- Replacement for R/V Questuary acquired?
- Has the small boat fleet been upgraded?
- Do we have a new small boat launch on the north dock?
- Do we have floating docks to support marine ops, research and education needs?
- Progress towards rebuilding the pier? Dollars raised, percent completed
- Do we have a new dive safety officer position?
- How many students are being trained in MOTC and research diving?
- Have we made progress in finding/creating a process for academic planning that will allow us to support the academic mission and vision for the Center?
- How many classes, either RTC-based or SF State-based, make use of technology to enhance student participation, enrollment and access to RTC resources?
- Number of affordable housing options for students studying or engaged in research experiences at RTC.
- Number of new, affordable, low carbon foot-print transportation options for commuting to RTC.
- Other ideas?
Appendix 5: Governance Plan (Spring 2016)

Appendix 6: Business Plan (Spring 2016)

Appendix 7: Facilities Plan (Spring 2016)
Glossary

**Action Plan**

An action plan is an organization-wide plan of specific strategies to accomplish long term goals. Individuals have identified roles and portions of the plan that they are responsible for executing. The action plan provides a framework for development personal objectives and responsibilities for staff and faculty members that support achieving short and long-term institutional goals and objectives. The action plan also identifies timelines for organizational and individual reflection on progress and re-evaluation, allowing for adjustments and adaptations.

**Business Plan**

A plan describing how to achieve an organization’s objectives, viewed from a financial perspective. It includes an overall budget, current and projected sources of revenue, and projected expenses associated with the strategic plan’s objectives. It also incorporates a fundraising plan.

**Facilities Plan**

A plan that describes the building(s), research facilities and overall physical structures that are needed to support our strategic goals.

**Gap analysis**

A gap analysis identifies the difference(s) between the desired state and the current state.

**Goal**

A goal is a desired end result. It is a broad, overarching statement. Goals help an organization achieve their end state or vision.

**Governance Plan**

A plan that describes a set of roles, responsibilities and processes that an organization will put into place to gather stakeholder input and make decisions.

**Interdisciplinary**

An adjective describing something that analyzes, synthesizes and harmonizes links between disciplines into a coordinated and coherent whole. See also: multidisciplinary, transdisciplinary

**KPIs**

Key Performance Indicators: Key performance tools or information used to measure results and ensure accountability in achieving objectives. These are metrics such as raw numbers, progress (% complete), or change over time. In order to track KPIs you need to identify the metric, the
source of data and the frequency of measurement or assessment that will allow you to see progress toward objectives.

**Mission statement**

A mission statement is a one sentence statement describing the reason an organization exists and used to help guide decisions about priorities, actions, and responsibilities. It should be clear and simple; avoid elaborate language and buzz words; be easily explained by others; not be confused with a vision statement; and be recognizably yours. Good mission statements should be clear, memorable and concise.

**Examples**

- TED: Spreading Ideas.
- Smithsonian: The increase and diffusion of knowledge.
- The California Academy of Sciences is a renowned scientific and educational institution dedicated to exploring, explaining, and sustaining life on Earth.
- Monterey Bay Aquarium: The mission of the non-profit Monterey Bay Aquarium is to inspire conservation of the oceans.
- Creative Commons develops, supports, and stewards legal and technical infrastructure that maximizes digital creativity, sharing, and innovation.
- Audubon: To conserve and restore natural ecosystems, focusing on birds, other wildlife, and their habitats for the benefit of humanity and the earth’s biological diversity.
- Scripps: The Scripps mission is to seek, teach, and communicate scientific understanding of the oceans, atmosphere, Earth, and other planets for the benefit of society and the environment.
- The Bren School of Environmental Science and Management (UCSB): The mission of the Bren School is to play a leading role in researching environmental issues, identifying and solving environmental problems, and training research scientists and environmental-management professionals.
- Mote Marine Laboratory & Aquarium: we conduct research on six of the world's seven continents. Our education programs engage students in science and learning locally, nationally and internationally. We are continuously helping to create a more ocean literate society.
- Bodega Marine Laboratory: Through innovative research programs and teaching initiatives, the Bodega Marine Laboratory will lead the way to the multi-disciplinary scientific understanding required to solve complex environmental problems on the marine and terrestrial sides of the tideline in northern California.
- The Coastal and Marine Sciences Institute (CMSI) (1) coordinates and promotes the diverse research activities of the marine science and policy community at UC Davis, (2) educates future scientists and leaders who will make coastal sustainability a priority and reality; and (3) fosters innovative partnerships for discovering, understanding and communicating science for effective stewardship of coastal environments in California and beyond.
**Multidisciplinary**

An adjective describing something that draws on knowledge from different disciplines while staying within disciplinary boundaries. See also: interdisciplinary, transdisciplinary

**Objectives**

Objectives are specific and measurable targets for accomplishing goals. Objectives cascade down to organizational units and to people via strategies or an action plan.

**SMART**

SMART: Specific, Measurable, Actionable, Realistic/Responsible and Time-bound

**Strategic plan**

A strategic plan starts with an articulated plan that includes a mission, vision, goals and objectives; it becomes strategic when it describes the pathway or means (strategies) by which to achieve a long-term vision. The strategy should be based on an analysis of internal and external data or information, to understand the organization’s strengths, weaknesses, opportunities and threats (called a SWOT analysis). A strategic plan clearly engages everyone in the organization with specific roles and responsibilities to drive transformation. Transformation is made through shifts in behavior and choices that are guided by the strategic plan. A strategic plan should be communicated, talked about regularly and revisited to assess progress. It should be modified and adapted to changing circumstances, to keep the organization on a clear pathway to achieving the long-term vision. Identifying and tracking key performance indicators (KPIs) can help assess progress toward the long-term vision, goals and objectives. A strategic plan sets direction and priorities; gets everyone on the same page; simplifies decision making; drives alignment; and communicates the message.

**Examples**

- Mote Marine Laboratory & Aquarium: https://issuu.com/motemarinelab/docs/stratplan2.0_ffweb/38?e=10726382/11171653

**Strategies**

Organizational strategies describe the means by which we get from where we are now to where we want to be in our future state in the most effective, impactful and straight-forward way. Strategies as defined in this document are meant to be described by the acronym SMART.
Vision statement

A vision statement is a one sentence statement describing the clear and inspirational long-term change, resulting from your work. It identifies the desired end state. It should clear and simple; avoid elaborate language and buzz words; be easily explained by those involved; and not be confused with a mission statement. Answers the question of where your organization is going.

Examples

- Oxfam: A just world without poverty
- Oceana seeks to make our oceans as rich, healthy and abundant as they once were.
- The Nature Conservancy: Our vision is to leave a sustainable world for future generations.
- Smithsonian: Shaping the future by preserving our heritage, discovering new knowledge, and sharing our resources with the world
- Ducks Unlimited is wetlands sufficient to fill the skies with waterfowl today, tomorrow and forever.
- Creative Commons: Our vision is nothing less than realizing the full potential of the Internet — universal access to research and education, full participation in culture — to drive a new era of development, growth, and productivity.
- Mote Marine Laboratory will be a leader in nationally and internationally respected research programs that are relevant to the conservation and sustainable use of marine biodiversity, healthy habitats and natural resources. Mote Marine Laboratory's research programs will positively impact diverse public policy challenges through strong connections to public outreach and education.
- The Coastal and Marine Sciences Institute, (CMSI) at UC Davis will be a world-leading interdisciplinary research and educational institute, focusing on the economic, ecological and social challenges of rapidly changing and increasingly crowded coastal and ocean environments.

Stakeholder

Stakeholders are people or groups with a vested interest in the outcome of a project or plan.

SWOT analysis

An abbreviation used to denote analysis of an organization’s internal Strengths and Weaknesses and external Opportunities and Threats; also called an “internal/external assessment.” It uses data and information to determine where an organization is now.

Transdisciplinary

An adjective describing the creation of new conceptual, theoretical, methodological, and translational innovations that integrate and move beyond discipline-specific approaches, to address a common problem. See also: interdisciplinary, multidisciplinary