NAVAL POSTGRADUATE SCHOOL

THE RIPPLE EFFECT
NPS AND ITS COMMUNITY
The Ripple Effect: NPS and the Community

Every educational and research institution impacts and is impacted by its community in a variety of ways. The Naval Postgraduate School (NPS), located in Monterey, California, enjoys a synergistic relationship with its community. Situated on the Monterey Peninsula, Monterey is a crossroads between the research and technology centers of San Jose and San Francisco to the north, the beauty of Pebble Beach and Carmel to the south, and the Salinas Valley, the “salad bowl of the world,” to the east.

What follows is a look at the interactions of NPS within its community – from the mutual economic impacts to the contributions of NPS personnel to the community to partnerships between NPS and other research, educational and government organizations within the area.
**Quick Facts**

**Students 2005**
Degree-Seeking Average on Board (AOB)................................................................. 2,103
  Full Time Resident.............................................................. 1,562
    United States .......................................................... 1,272
    International ......................................................... 290
  Distributed Learning .................................................. 541

Mobile Education Teams
  U.S ........................................................................... 41,000
  International .............................................................. 3,400

On-Campus Short Course .............................................................................. 1,032

**Faculty and Staff as of Fall 2005**
**Faculty** (Tenure/Tenure Track/Non-Tenure Track including Administrative) ........ 525

**Staff**
  Full Time ........................................................................ 347
  Part Time ......................................................................... 34

**Finances FY 2005**
Operating Budget ........................................................................... $374.1 million, including military salary
Direct Funds .................................................................................. $76.9 million without military salary
Reimbursable Funds ......................................................................... $146.8 million without military salary

**Academic Facilities**
Classrooms with media technology ................................................................. 96
Labs ............................................................................................ 140
Academic buildings ............................................................................ 18

**Local Economic Impact**
Over 10,000 jobs created through direct employment, contracts and local spending by NPS, its students and employees $80 million in program expenditures for sponsored programs in FY 2005

**Local Community Impact**
Partnerships throughout the Monterey Bay area are sustained for research, education, library and technical purposes.

On average, faculty and their families volunteer 21 hours each month to community organizations. Staff volunteer an average of 18 hours, students an average of 10 hours.
Contribution to the Community Economy

California has the largest and most robust economy of any state in the United States. California’s state economy ranks among the top ten economies in the world and is at the forefront of such diverse fields as high-technology research, aerospace, and agriculture. Within California, the Monterey Peninsula and the adjacent Monterey Bay crescent are hotbeds of innovation, both in technology and higher education. Around the bay are more than 20 institutions that deal with marine research, higher education, meteorology and oceanography. Nearby is Silicon Valley, the nexus of cyber-technology development, and a leading center of research in both the U.S. and the world.

This next section will reveal the unique economic environment that Monterey creates, and the Naval Postgraduate School’s integral part of that economy. How NPS contributes to the vitality of this area through its educational and research activities, and the role of NPS in one of the most distinctive communities in California will be explored.
ECONOMIC VITALITY

California leads the nation in research, accounting for one-fifth of the total research and development (R&D) efforts of the United States\(^1\). Figures published by the National Science Foundation showed California R&D expenditures in 2002 reached over $51 billion. California received 21\% of the Department of Defense R&D support, collected over 18\% of the funds from the top ten Federal funding agencies, and received more funds from NASA and the National Science Foundation (NSF) than any other state. Nearly 90\% of NSF’s California funds went to universities and colleges. With the opening of California State University Monterey Bay on the old Fort Ord property in 1995, the Monterey area moved from the traditional influence of the military presence, and stepped toward a future of increased research and higher education.

The Naval Postgraduate School contributes to California and the overall vitality of the Monterey area because it is a major recipient of research funds and grants. According to the National Science Foundation’s most recent national R&D Expenditures Survey, the Naval Postgraduate School ranked in the top 25\% of institutions in total R&D expenditures\(^2\). NPS also ranked within the top 30\% for national science and engineering obligations. This ranking reflects $61 million in separately-budgeted R&D expenditures in science and engineering\(^3\).

The Naval Postgraduate School not only contributes to California’s economic accomplishments, but also has tremendous impact on state-of-the-art defense technologies and management practices in the Navy. NPS develops cutting-edge technologies for numeric meteorological predictive sciences, oceanographic vehicles, and ultra-high complexity computer model simulations for Department of Defense (DoD) use.

The Naval Postgraduate School’s Strategic Plan, “A View to the Future,” outlines the framework for the support of the Department of the Navy’s strategies, as well as contributions to local and state economies and institutions. The NPS strategic plan calls for the university to be an institution whose programs are “not…replicable anywhere in the world.”\(^4\)

DIRECT ECONOMIC CONTRIBUTIONS

FEDERAL REVENUES

The Naval Postgraduate School is funded by the Department of the Navy primarily to provide masters and doctoral degree-level education. In fiscal 2005, NPS received nearly 100\% of its funds from the Departments of Defense and the Navy. Exceeding $370 million, this support comes as direct funding, client-sponsored research, and military salaries.

Employment

Over 1,400 civilian and military people are employed from within the city of Monterey and the surrounding communities. These include permanent faculty and staff, contractors, and other government personnel. In addition, an annual average of more than 1,500 students attending the university are paid their full military salaries. Roughly another 1,000 local military jobs, while not technically employees of NPS, are related to NPS activities, funneling that income into the surrounding community economies.

Spending

The Naval Postgraduate School further influences employment in the region by its direct spending on research and outside contracts. As a result of spending activities by the school and its employees, NPS directly channeled more than $184.6 million into the local economies of Monterey County in 2005.
Using a conservative estimate, it is calculated that every direct dollar spent by a research university generates in turn another dollar in industry activity. The direct dollars spent by NPS thus combine to push $369.2 million into the local economies. Using standard multipliers from the Bureau of Economic Analysis, approximately 49 jobs are created for every $1 million dollars spent in Monterey County; thus, NPS accounts for another 8,500 jobs in the Monterey Peninsula area.

**Taxes**

Sales and property taxes are generated by the students and military and civilian staff employed at the Naval Postgraduate School, further bolstering the economy of the local communities and schools. This money also contributes to the income of the U.S. Treasury, partially defraying the funds used to operate the school and its grounds. Further benefited is the state of California, which provides no funds for the operation of the school, but collects income taxes from the civilian personnel at NPS.

**NON-FEDERAL REVENUES**

International governments that send their students to NPS are one of the school’s few sources of non-federal revenues. With tuition paid by their respective governments, international students are sent to NPS, where they engage in studies that run the full gamut of available academic topics. International governments that send their students to NPS are one of the school’s few sources of non-federal revenues.

**RESEARCH AND DEVELOPMENT**

The Naval Postgraduate School has long been a breeding ground for the Navy’s most advanced research. A large portion of the technology that has made our military the most advanced in the world was developed on the Monterey campus. NPS continues to grow in providing cutting-edge research for the military and federal government, and is supported by government funds, private funding, the benefits of technology transfer, and university-corporate relationships. Due to its proven performance, campus-wide research funding has risen from just under $21 million in 1992 to $80.4 million in 2005.

**Technology Transfer**

The Naval Postgraduate School’s research mission is based on the transfer of technology. The main clients of NPS are the United States Department of the Navy and the United States Department of Defense. Findings are transferred to the client government activity, and that government activity either uses the results directly, or transfers the information to government contractors. As the Navy’s research university, NPS has unique opportunities to perform classified research as well. Products resulting from classified research might be used for years by authorized military contractors before being released to public corporations for use in commercial products, where they are re-cast as a “new” technology.

**University-Corporate Relationships**

Other funds come to NPS in the form of Cooperative Research and Development Agreements (CRADAs). These are mutually beneficial relationships between private industry and NPS, in which researchers at NPS are paired with industry experts to conduct specified research that advances the missions of both organizations.

**Naval Postgraduate School Foundation**

In 2003, the Naval Postgraduate School Foundation provided NPS with nearly $600,000 in additional support through private donations and funding. In 2003, the Foundation also procured a significant donation of funds and computer networking hardware from one of the NPS partner vendors. Contributions such as these continue to bolster the infrastructure of the NPS academic environment.
The spirit of volunteerism at the Naval Postgraduate School is strong and vital to its link to the community. Many of the staff and faculty regularly volunteer in the local area, and their contributions support a wide range of social, artistic, and educational services. The volunteer efforts of the students at NPS are equally impressive. While only here for a few years at most, NPS students find the time and energy for involvement in the community, thereby helping to make the Monterey Bay area a unique yet supportive environment in which to live.
California’s Registry of Charitable Trusts records 582 non-profit associations on the Monterey Peninsula and 311 in nearby Salinas. Hundreds of local opportunities for volunteer service and financial support exist for Naval Postgraduate School faculty, students, and staff. Of those responding to a recent poll, faculty reported an average of 9 volunteer hours a month personally, and 12 hours for other family members, for a total of 21 hours contributed by each participating NPS faculty household monthly. NPS staff and students reported contributing averages of 18 hours and ten hours of volunteerism per month, respectively.

Most of the volunteers donated their time in educational, religious, neighborhood, and/or children’s sports activities. Thirty-four percent of faculty and 36% of their family members reported participating in educational work in organizations such as the PTA, the Lyceum, school boards, or in the classroom as teachers’ aides. The Lyceum, an organization that provides after-school education enrichment opportunities for Monterey schoolchildren, was founded over thirty years ago by the spouse of an NPS faculty member. Since its founding, NPS faculty have been a major component of its organizational and teaching staff. Students at NPS have also been active, participating in school building maintenance projects, and in upgrading information technology facilities for K-12 schools. Forty-seven percent of responding students reported that family members contributed time each month to educational activities.

Religious institutions are also well supported by NPS personnel. Twenty-four percent of faculty, 19% of staff and 22% of students support a monthly religious activity such as singing in a choir or acting as administrative officers. Community watch groups, beach clean-up events, and other neighborhood activities involve 21% of faculty, 18% of staff, and 8% of students. The figures for volunteerism in school or extra-curricular sports as coaches or other supporters are 18% for faculty members, 15% for students, and 16% for staff.

Charitable organizations generally fall into two principal categories: social services and culture or arts, both of which rely heavily on volunteer time and financial support. Ten percent of faculty, 13% of their family members, 11% of staff members and 12% of their family members also contribute volunteer time to social service organizations such as Meals on Wheels, I-HELP (which provides nightly shelter at local churches and synagogues for working homeless men), the Discovery Shop (which supports cancer research), and The Salvation Army. Corresponding figures for volunteer participation in cultural or arts activities such as membership on symphony boards or work as museum or aquarium docents are 11% for faculty members, 23% for student family members, and 19% for family members of staff.

NPS faculty often use their professional backgrounds in their volunteer work, but that is not always the case. One prominent faculty member, for example, spends some of his volunteer time cleaning the windows of tanks in the Monterey Bay Aquarium. Others ring bells during the holidays for The Salvation Army. Many, of course, use their technical or administrative expertise and experience: an impressive 30% of NPS faculty reported that they currently serve as an officer (e.g., president, treasurer) of a local charitable organization.

NPS faculty, staff, students, and their families serve as volunteers in a wide variety of organizations that contribute to the quality of life on the Monterey Peninsula. In addition to the areas of service already mentioned are government (e.g., city council or commission), public safety (e.g., Red Cross, search-and-rescue, fire protection), health (e.g., hospital aide), environment (e.g., park docent), service clubs, and organizations that support active and retired members of the military services. In all these activities, NPS constituents work shoulder-to-shoulder with other members of the community who share their enthusiasm for volunteerism.
Shown above is a summary of the reasons behind these volunteer efforts among the NPS families. Among all three groups, “concern for others,” “a feeling of community,” and the “wish to give something back” were the most frequently cited motivations for volunteer participation. Despite their high level of volunteerism, most faculty, students, and staff reported that they would have raised that level if their work and family responsibilities were not so great.

The table at left summarizes the volunteer contributions of NPS faculty and their families, and includes corresponding data for NPS students and staff. Faculty students and staff volunteer, on average, 5 to 9 hours a month to local charitable organizations, and their average annual donations range from $600 to $2,900. Student contributions are particularly noteworthy. Although they are residents of the Monterey Peninsula for only a short while, students and their families make substantial contributions to local volunteer life. Altogether, NPS faculty, students, and staff play a vital role in the vibrant volunteerism that makes the Monterey Peninsula such a special place in which to live and work.
Riding the Rising Tide

Monterey Bay is a locus of activity for the oceanographic, meteorological and higher educational fields. The Naval Postgraduate School is therefore located in one of the most suitable areas to fulfill its unique mission of delivering military-related, high quality engineering, science and technical education at the graduate level.

The history of Naval Postgraduate School is rich with examples of the importance of its successful collaborations with neighboring institutions. Significant synergies are realized when institutions work together, because the number of ideas contributed, the intellectual challenges and solutions presented result in a stronger product. This section highlights those partnerships and collaborations.
The area adjacent to Monterey and the Monterey Bay is home to nearly 40 research and educational institutions. The development of many higher education and Department of Defense activities in the Monterey Bay area has provided invaluable opportunities for advanced joint research between NPS and these institutions, as well as the sharing of administrative knowledge, libraries, and information technology resources.

Most of the NPS faculty interactions with local research and educational institutions involve an exchange of students (40%), contact among organizational leaders (24%), joint support contracts (22%), utilizing common sites (18%), use of library facilities and tuition exchange (13% each), sharing faculty (11%) and facilities or equipment (10%), and joint research projects (9%). Ten to twenty percent of faculty reported interactions with other local agencies as an important part of NPS research and instructional work.

RESEARCH AND INSTRUCTION

The Meteorology and Oceanography degree programs at NPS benefit greatly from the proximity to civilian marine research institutions, the Monterey Bay Aquarium Research Institute and Moss Landing Marine Labs. NPS uses several research vessels owned by the University-National Oceanographic Laboratory System which are moored at Moss Landing. These vessels play a critical role in data collection and research in such NPS courses such as Operational Oceanography & Meteorology, Tactical Oceanography, Descriptive Physical Oceanography and Wave & Surf Forecasting.

The complex topography of the Monterey Bay area is ideal for the mesoscale weather system models which have been developed collectively by NPS faculty, Fleet Numerical Meteorology and Oceanography Center, Naval Research Laboratory and the National Weather Service researchers and scientists.

The Center for Interdisciplinary Remotely-Piloted Aircraft Studies was established in nearby Marina by the Office of Naval Research in 1996 providing Unmanned Air Vehicle (UAV) flight services for the research, development, testing and evaluation communities. The UAV capabilities prove critical to student and faculty research in Aeronautics, Engineering, and Information Sciences.

The Army’s Defense Language Institute Foreign Language Center (DLI) located in Monterey, trains both enlisted students and officers in a multitude of foreign languages. Currently, DLI and NPS multiply their benefit to the DoD by collaborating on instruction and research and by reducing costs by sharing some administrative support services. DLI students attend foreign geographic area courses offered at NPS, and NPS teaches courses at DLI for students in pursuit of bachelor’s degrees.

The Monterey Institute of International Studies houses the Center for Non-Proliferation Studies (CNS), the largest non-governmental organization in the U.S. that is devoted exclusively to research and training on nonproliferation issues. NPS faculty who developed the new Homeland Security Master’s Degree capitalized on proximity and faculty familiarity with CNS and tapped into CNS’ global knowledge and extensive research to enrich coursework for NPS Homeland Security students.

The Defense Personnel Security Research and Education Center (PERSEREC) was established in Monterey in 1986 to take advantage of the support offered by the Naval Postgraduate School and the Defense Manpower Data Center (DMDC). Today, the researchers of PERSEREC serve as guest lecturers at NPS, advisors to NPS students who are working on thesis projects and resources of specialized knowledge. Selected NPS faculty receive annual
research funding from PERSEREC while NPS lends its Information Technology department for internet, networking and infrastructure support to PERSEREC.

The newest and largest educational institution on the peninsula, California State University, Monterey Bay (CSUMB), and the Panetta Institute for Public Policy, also located on the CSUMB campus provide extensive opportunities for collaboration in oceanographic, marine, and business research and instruction.

LIBRARY AND INFORMATION TECHNOLOGY

Library

The NPS Dudley Knox Library broadens the resources available to NPS students via membership in the Monterey Bay Area Cooperative Library System (MOBAC), a consortium of twenty-four public, academic and special libraries on the central coast of California, within the counties of Monterey, San Benito and Santa Cruz. The purpose of MOBAC is to link libraries, resources and services in the region and to provide information that will support the lifelong educational, recreational, cultural and social needs of the people living within those diverse communities.

Information Technology

Since 1974, the NPS Information Technology Data Center has hosted the Defense Manpower Data Center’s mainframe. The NPS Data Center provides maintenance and management for the DMDC system and its databases – the largest of its kind in the Department of Defense – which has resulted in shared administrative expertise while providing critical cost-savings benefits for both institutions.

The NPS Information Technology and Communications Services (ITACS) group led the development of a high-speed local DoD Intranet that includes NPS, the Defense Language Institute, Fleet Numeric Meteorology and Oceanography Center, and the Naval Research Laboratory. ITACS has built connectivity to Internet2 via infrastructure sharing with the city of Monterey and California State University - Monterey Bay.

The ITACS group at NPS is one of the founding members of the Monterey Bay Regional Training Consortium - sponsored by the University of California Monterey Bay, Education Science and Technology Center – which provides information technology training to improve economies of scale and to elevate the level of education/training offered for workforce development.

The Monterey County Economic Development Commission (MCEDC) has identified research and education — together with agriculture and tourism — as the three foundations of future economic development in the region. As a long-standing member in the higher education community, NPS is a key member in the MCEDC’s research and education cluster.

The Monterey Peninsula’s many institutions of higher education and research both complement and challenge one another. The future success of NPS relies on its ability to build intellectual bridges and collaborative partnerships. As the world moves from the study of simple mechanical systems to the discovery of organic complexity, the need to integrate multiple perspectives, insights and conclusions has become an operational standard in academe. This rich conglomerate of higher education and research resources along the Monterey crescent is just beginning to realize its full potential. NPS stands well-poised for its scholars to take advantage of these close collaborative efforts to help focus research questions and to develop meaningful interpretations.
THE SCHOOLS OF THE NAVAL POSTGRADUATE SCHOOL

The **Graduate School of Business and Public Policy** (GSBPP) offers a unique defense-focused resident MBA program in addition to master’s degrees in five other DOD-relevant areas. Classes are taught by high-quality faculty at the Naval Postgraduate School in Monterey and other Navy and DOD locations around the world through video-teleconferencing and other distributed learning techniques. Faculty research, sponsored largely by Navy and DOD entities, brings current and relevant issues to the School, and returns solutions to the sponsors. Continuous entrepreneurial efforts by GSBPP faculty create exciting new educational and research opportunities.

The mission of the **Graduate School of Engineering and Applied Sciences** (GSEAS) is, first, to provide cutting-edge graduate technical education to military officers from all services, DOD civilians, and their counterparts from allied countries. Second, GSEAS performs relevant, high-quality applied and classified research in the fields of engineering and applied sciences. The Graduate School of Engineering and Applied Sciences offers nine resident curricula leading to traditional Master of Science, Engineer and Ph.D. degrees.

The mission of the **Graduate School of Operational and Information Science** (GSOIS) is to deliver graduate-level education and conduct cutting-edge research in response to the needs of naval and military customers. GSOIS focuses on non-traditional knowledge domains: Information Science and Technology, Military Computer Science, Military Operations Analysis and Research, and Special Operations and Related Defense Analyses. The Graduate School of Operational and Information Sciences includes graduate resident programs consisting of 16 technical curricula and awards Master of Science degrees and Ph.D. degrees across four academic departments.

The **School of International Graduate Studies** (SIGS) provides graduate-level education studies and research to U.S. and international students. The SIGS mission is to educate the next generation of U.S. and international leaders, to identify and meet security challenges, and to enhance and further bilateral defense relations and cooperation. SIGS offers innovative and first-ever educational programs, which promote the U.S. defense and foreign policy objectives of increasing access to critical decision makers in key countries, furthering civilian control of the military by assisting defense reform efforts, and enhancing coalition development and security cooperation.

The three institutes – the **Cebrowski Institute**, the **Meyer Institute**, and the **MOVES Institute for Defense Modeling and Simulation** conduct cutting-edge research, activity which is supported and enhanced by the surrounding Monterey community through its educational, research, physical and geographic resources. The institutes allow the Naval Postgraduate School to be one of the most flexible and rapidly adaptable research institutions in the nation, providing the Navy and Department of Defense a specialized research venue for top priority projects with a uniquely military perspective.
ENDNOTES

Contributing to the Community Economy
6 Bureau of Economic Analysis, RIMS II Regional Multipliers 1998 Annual Input-Output Accounts/2000 Regional Data for “Salinas, CA MSA.”
7 Information from the NPS Office of Institutional Advancement.

Giving Back to the Community
Information for this section was collected through an NPS survey. The survey was conducted by the Office of Institutional Research and respondents provided information on a volunteer basis. The period of data collection lasted from April to May of 2003. Information concerning the respondent population can be obtained through the Office of Institutional Research at the Naval Postgraduate School. Contact information is below.

Riding the Rising Tide
1 NPS Volunteerism Survey, May 2003, Office of Institutional Research, NPS.

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"The best and brightest military officers from the United States and around the world come to the Naval Postgraduate School in Monterey, California, to work with world-class faculty on real military and defense problems. At NPS, they gain both the intellectual know-how and the practical skills for improving defense technologies, systems and programs."

Former President of the United States,
George H.W. Bush
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