RESEARCH AT THE NAVAL POSTGRADUATE SCHOOL

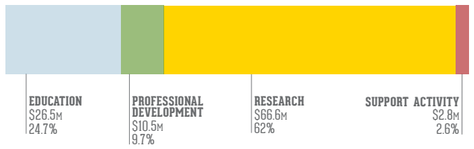
Reimbursable Programs at NPS

In the execution of its unique mission of graduate education, the Naval Postgraduate School executes a robust reimbursable research and education portfolio in accordance with federal statute*. Research programs at the university directly support the NPS mission by providing militarily relevant thesis topics that address issues from the current needs of the Fleet and Joint Force, as well as the science and technology required to sustain long-term superiority of the DON/DOD. Research varies from the fundamental to the applied and covers all levels of classification. [* U.S. Code, Title 10, Sec. 8541]

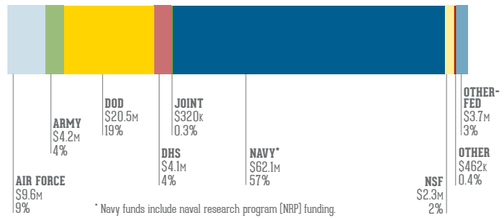
SPONSORED PROGRAM EXPENDITURES : 1 OCT 2020-30 SEP 2021

Total Expenditures: $107M

BY TYPE OF ACTIVITY



BY SPONSOR



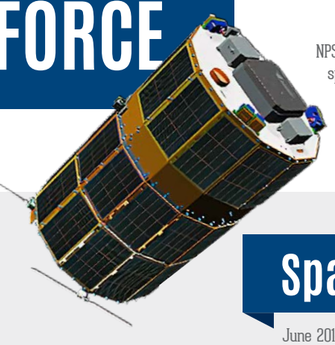
* Navy funds include naval research program (NRP) funding.

Research Programs

NPS Research Programs are comprised of:

- Sponsored Research Programs
  - *Basic and Applied Research*
  - *Individual and Group Projects*
  - *Fleet Support*
  - *Cooperative Research and Development Agreements with Non-Federal Entities*
  - *Cooperative Research with Eligible Non-Federal Entities*
  - *Naval Research Program (NRP)*
- Institutionally-Funded Research Programs
  - *Develop New Research Thrusts*
  - *Complement Existing Sponsored Programs*
  - *Support Institute for Joint Warfare Analysis*
  - *Support Post-Doctoral Programs*
  - *Sponsor Research Initiation Programs for New Faculty*
  - *Recapitalize Major Scientific Equipment*
- Integrated Graduate Education and Research Programs
  - *Space Systems*
  - *Total Ship Systems Engineering*
  - *Combat Systems*

REIMBURSABLE RESEARCH at NPS advances the effectiveness of the FLEET ★★★ and FORCE

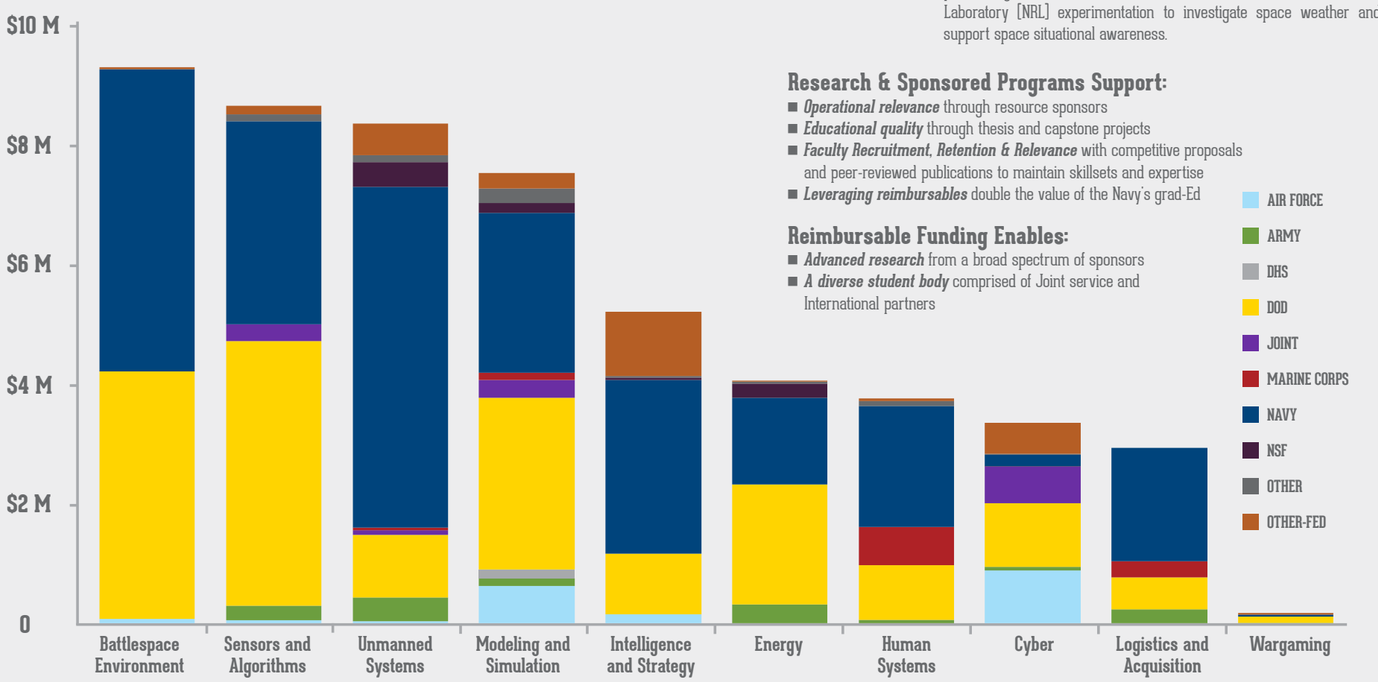


Counter Swarm

NPS professors Isaac Kaminer and Abe Clark emerged as national leaders in the development of a counter-swarm analysis toolbox. Both professors had already spent years studying the analytical foundation for swarm-on-swarm engagements. Kaminer and Clark used optimization protocols to build a playbook of tactics adapting mathematical theory of optimal control to allow room for unknown variables while providing feedback to officers for decision-making. With support from the Office of Naval Research, Kaminer and Clark applied their work to provide a countermeasure against drone swarms.

Research Thrusts

Research at NPS is intently focused on critical issues within the Departments of the Navy and Defense. Annually, the top 10 focal areas of NPS research are directly aligned to key operational problems detailed by Naval leadership in fleet and force strategies.



Research & Sponsored Programs Support:

- ***Operational relevance*** through resource sponsors
- ***Educational quality*** through thesis and capstone projects
- ***Faculty Recruitment, Retention & Relevance*** with competitive proposals and peer-reviewed publications to maintain skillsets and expertise
- ***Leveraging reimbursables*** double the value of the Navy's grad-Ed

Reimbursable Funding Enables:

- ***Advanced research*** from a broad spectrum of sponsors
- ***A diverse student body*** comprised of Joint service and International partners

Space Systems

June 2019 the NPSAT-1 satellite was launched on a SpaceX Falcon Heavy from Kennedy Space Center. Over the course of the craft's development, NPSAT-1 supported well over 40 student theses, with countless more students contributing via directed study. And it's a functioning satellite performing technical, secure research, such as Naval Research Laboratory (NRL) experimentation to investigate space weather and support space situational awareness.

Central Budget

- Resources for staff and academic departments to execute core mission
- Direct and Reimbursable Funding Pots
  - *Direct*
  - *Indirect (Reimbursable)*
  - *Tuition (Resident, FMT — Reimbursable)*
- Centralized budgeting and oversight: decentralized execution

Research Portfolio

- Reimbursable Research
  - *DON, DOD, Non-DOD, Civilian (non-federal)*
- Direct Research
  - *Naval Research Program (NRP)*
  - *Gift Fund (Foundation)*
- Centralized proposal review and approval and funds receipt and acceptance: decentralized execution

Classified Research

Marine Corps Maj. Michael Wade leveraged his NPS education and classified research in radar systems to apply it to development of the USMC, Ground/Air Task Oriented Radar (G/ATOR) program.

Fighting at Light Speed

U.S. Navy Lt. Cmdr. Austin West West's thesis examined the atmospheric effects of the maritime environment on the Navy's High Energy Laser Weapons System (HELWS), and how adaptive optics could compensate for those effects making the futuristic weapons system more effective. He received the Rear Admiral William S. Parsons Award for Scientific and Technical Progress, from the Navy League.

Research Centers

Research and education each temper the other's steel at NPS—together they forge innovative solutions and intellectual prowess to create the cutting edge of decisive capability. Research Centers are established at NPS under the auspices of the Dean of Research as per NPSINST 3900.2B. A Research Center is a group of faculty/staff with a significant concentration of expertise in a particular area normally with an emphasis on applications. [Research centers receive no funding from the Navy mission budget: they serve to organize and promote interdisciplinary experts around a common theme.] Every Research Center supports the NPS educational mission and displays a clear benefit to NPS, the Department of the Navy and/or DoD. For more see: nps.edu/web/research

- Aerodynamic Decelerator Systems Center [ADSC]
- Center for Additive Manufacturing
- Center for Autonomous Vehicle Research [CAVR]
- Center for Cyber Warfare
- Center for Cybersecurity and Cyber Operations [C3O]
- Center for Infrastructure Defense [CID]
- Center for Joint Services Electronic Warfare
- Center for Materials Research [CMR]
- Center for Multi-INT Studies [CMIS]
- Center for Network Innovation & Experimentation [CENETIX]
- Center on Combating Hybrid Threats [CCHT]
- Center on Contemporary Conflict
- Common Operational Research Environment [CORE] Lab
- DOD Information Strategy Research Center
- Littoral Operations Center [LOC]
- Remote Sensing Center [RSC]
- SEED Center for Data Farming
- Spacecraft Research & Design Center [SRDC]
- TurboPropulsion Laboratory

Complementary Co-Located Programs

Complementing NPS research efforts are teams, groups and programs that include NPS stakeholders, sponsors and communities of interest. These co-located entities are essential to the value proposition of NPS as they contribute to learning, studies, problem solving and applied research without additional cost.

- Acquisition Research Program [ARP]
- Adaptive Optics Center of Excellence for National Security [AOCOE]
- Crew Endurance Program
- Center for Executive Education [CEE]
- Center for Homeland Defense and Security [CHDS]
- Center for Information Warfare & Innovation [CIWI]
- Center for Intelligent Systems Education and Research [CISER]
- Climate Security Network
- Consortium for Robotics and Unmanned Systems Education and Research [CRUSER]
- Data Science and Analytics Group
- Defense Resources Management Institute [DRMI]
- Energy Academic Group
- Joint Interagency Field Experimentation [JIFX]
- NavalX Central Coast Tech Bridge
- Sea Land Air Military Research Lab [SLAMR]

Naval Warfare Studies Institute (NWSI)

NWSI serves as a front door for the Fleet and US Marine Corps to working with NPS. It was established in 2020 to coordinate NPS interdisciplinary research and educational response to Naval warfighting needs. Enabling teamwork and collaboration with the NPS ecosystem, NWSI informs, coordinates, integrates, advocates and communicates in support of USN N7 and USMC CD&I requirements. For more see: nps.edu/web/nwsi

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