

FY2010 National Defense Authorization Act
Federal Authorization Requests
Senator Charles E. Schumer

Project Authorizations

Advanced Cancer Genome Institute

Roswell Park Cancer Institute, Buffalo, NY; \$2,500,000

The project would seek to develop an Advanced Cancer Genome Institute: a world-class program for the early detection, prognosis and treatment of cancer and other diseases through the establishment and use of cutting-edge genomics instruments and techniques that identify new cancer-related genes and that develop new anti-cancer drugs.

Through an affiliation with the Department of Defense-funded National Functional Genomics Consortium (NFGC), which fosters high-level collaborations in cancer genomics and proteomics, the research would benefit cancer sufferers throughout New York State and the U.S. The initiative would enhance the ability to discover new cancer-related or disease-related gene targets; identify diseases in very early stages; predict which patients will likely progress to disease malignancy; identify people with increased risk of cancer; and develop novel rationally-designed drugs that target cancer-specific or disease-specific pathways.

Advanced Composite Nickel-Manganese-Cobalt Lithium Ion Battery

Primet Precision Materials, Inc., Ithaca, NY; \$3,000,000

The project aims to produce smaller, lighter batteries with higher energy storage, higher power, longer lifetime, greater temperature tolerance, and improved safety. The project would develop advanced composite nickel-manganese-cobalt lithium ion battery by using a patented crystal-scission process to produce complex, uniform electrode materials for maximum electrode performance. In Phase I of the project, the funding would allow the company to screen materials, identify target compositions, produce 50g samples of 5-10 testing candidates, develop its slurry/casting production process, and test cathodes to confirm integration into conventional manufacturing processes while demonstrating desired improvements in electrical performance.

Troops today carry many products which use batteries. This project would make those batteries lighter, safer, and more powerful—a significant benefit to our men and women in uniform.

Advanced Steam Turbine

Dresser-Rand, Wellsville, NY; Painted Post, NY; Olean, NY; \$7,500,000

Currently, only one qualified manufacturer of steam turbines for the Navy's submarine fleet exists. This project is to develop a more advanced steam turbine, which would employ an improved magnetic bearing system.

This new equipment would produce significant cost savings to the Navy by providing for competitive procurement and increasing performance and efficiency of the turbine. The Advanced Steam Turbine (AST) is estimated to reduce the cost the Navy is paying today by as much as 40 percent.

Army MQ-8B Fire Scout

Northrop Grumman Corporation, Elmira, NY; \$14,900,000

The funding would enable the early fielding of four additional Fire Scout UAV systems to the Army for the System Design and Development (SDD) stage. Fire Scout is the Army's UAV program of record for the Future Combat Systems.

Unmanned aerial reconnaissance is a critical need in combat environments. The Army chose Northrop's product through a competitive process; this project would help the Army and Northrop to complete testing of the product sooner, so it can be delivered to soldiers in the field.

Automated Portable Field System for Rapid Detection & Diagnosis of Endemic Diseases & Other Pathogens

Integrated Nano-Technologies, LLC, Henrietta, NY; \$3,500,000

The project would complete the engineering development phase of a medical diagnostic device for the Army that can detect diverse existing and emerging diseases, including diseases that are highly infectious and devastating to populations (e.g., malaria, HIV/AIDS, flu, and SARS). The small, portable device uses disposable cartridges that contain programmable sensors which could eventually detect scores of pathogens with a single test.

This device would be valuable to medical staff in field situations, forward deployments, and for rapid response to potential disease outbreaks. Emerging and contagious diseases are a major risk to soldiers and to the continuity of operations.

Automated Sample Preparation (ASP) for Biological Detection

CUBRC, Buffalo, NY; \$6,000,000

The project would further development of an automated sample preparation (ASP) technology for both environmental and medical biological samples. The project would deliver a fast, reliable, and easy-to-field method for preparing biological samples. Once prepared, samples could be tested on any one of a wide array of diagnostic systems, including either nucleic acid and/or immunoassay equipment. Funding would be utilized to advance the development and testing of a prototype ASP system and expand the list of biological agents that can be detected.

This capability would help troops to detect and identify hundreds of potential targets simultaneously, within a single analysis on a single detection platform. Automated sample preparation will dramatically cut down on the time and expertise it takes to complete tests, and is ideal for forward-deployed situations.

Biowaste-to-Bioenergy Center

**State University of New York College of Agriculture and Technology, Cobleskill, NY;
\$3,500,000**

The project is developing clean liquid and gas fuels from animal waste and municipal solid waste. The project also includes development of mobile technology for military application in the field. Work is currently funded by a Defense Department grant; this funding would allow work to continue on the unfunded portion of the effort.

Clean energy is a critical component of energy security and independence. Mobile sources to generate fuel from waste would help reduce bases' logistical problems, including the problems of removing waste and importing fuel.

Cyber Attack and Security Environment (CASE)

ITT Advanced Engineering and Sciences and Clarkson University, Rome, NY; \$5,000,000

The project would conceptualize and demonstrate the technologies necessary to systematically coordinate, plan, and execute active defensive cyber campaigns; determine effects associated with an offensive cyber weapon; monitor and evaluate events that occur in cyberspace; and ultimately achieve situational awareness of cyberspace with an overall goal of achieving dominance within that critical realm. Alpha and beta testing throughout the lifecycle of this project would occur at a secure Air Force installation in upstate New York. The project would be a partnership between the company and a major university in the area, whose engineering and science faculty would provide subject matter expertise while expanding their involvement in cybersecurity research.

Recent incursions into the computer networks of the Pentagon, the Senate, and the U.S. electric grid have shown that America is vulnerable to cyber attack. This project would make significant strides toward enhancing our country's cybersecurity.

Drug and Vaccine Development for Force Protection

State University of New York, Upstate Medical University, Syracuse, NY; \$840,000

The project would support focused research that provides for protection of military personnel against endemic infectious diseases in regions where they may be deployed. Funding will protect troops from infection and sustain operating by preventing hospitalizations and evacuations for the theater of operations. Work in this project would be performed by the Walter Reed Army Institute of Research (WRAIR), Silver Spring, MD, and its overseas laboratories, in coordination with the core facilities at the university that have the capacity and potential to screen new drugs and vaccines against these diseases. The project would help to develop methods to improve the

accuracy and timeliness of drug and vaccine development by replacing early-stage animal testing with more accurate predictors of a drug's efficacy in human trials.

This project aims to reduce the time and cost of developing medicines and vaccines—making health care more responsive and economical for the military and the wider public.

**Hydroacoustic Low Frequency (HLF) Sources for Trident and Virginia Class Submarines
Hydroacoustics, Henrietta, NY; \$3,200,000**

The Pacific fleet of submarines uses Hydroacoustic Low Frequency (HLF) systems to muffle the sound of their engines. Because submarines are detected primarily by sonar, this is an important part of protecting submarines from detection. The Navy plans to equip its Atlantic fleet with similar equipment in the future, but does not currently have the funding. This request would enable the Navy to equip the Atlantic fleet now.

Hydroacoustic Low Frequency sources are important for protecting submarines and their crew.

**Intelligence Collaboration and Exploitation Tool
PAR Government Technologies, Rome, NY; \$2,500,000**

New Intelligence, Surveillance, and Reconnaissance (ISR) collection assets, specifically video-based sensors, are flooding operational decision makers with complex information. Collaboration and exploitation tools must now be developed and deployed that provide real-time decision support for urban and remote mission objectives.

These tools would improve situational awareness and communications in urban environments, which would improve the safety and effectiveness of military operations in urban terrain (MOUT).

**NanoSensor StageGate Accelerator (NSSA)
State University of New York, Albany, College of Nanoscale Science & Engineering,
Albany, NY; \$6,000,000**

The NanoSensor StageGate Accelerator (NSSA) supports the development and commercialization of nanotechnology-enabled products to transform the U.S. Army into a lighter, more agile force. The mission of the NSSA is to accelerate research, pilot-prototyping, scale-up production, and commercialization of nanomaterial and nanosystem innovations. The center significantly reduces the cost to deliver critical nano-technologies to the warfighter. It would achieve this by leveraging resources from university, government, and industry to provide a unique integration of nanotechnology processing capability.

The project would enable faster, lower-cost delivery of nanotechnology to the warfighter. Current research is improving the energy consumption of unmanned systems, such as perimeter sensors and satellites. By making these systems more energy efficient, they become more reliable and effective for the Defense Department.

Nanotechnology for Next Generation Portable Power
State University of New York, Stony Brook, and Farmingdale State College, Stony Brook, NY, and Farmingdale, NY; \$3,000,000

The program will develop technology to deliver “wireless beamed power” to wireless devices. This would allow the Defense Department to power its electronic devices without needing to return to base in order to recharge their batteries.

This technology would enable the use of wireless beamed power to remotely recharge fixed or mobile distributed power storage systems. This technology could be used by the military for mounted or dismounted soldiers; for unmanned ground systems; and for unmanned aerial vehicles.

Naval Sea Cadet Corps

Naval Sea Cadet Corps operates 387 units in 48 states; \$650,000

The program is focused upon development of youth ages 11-17, serving almost 9,000 Sea Cadets and adult volunteers in 387 units country-wide. It promotes interest and skill in seamanship and aviation and instills qualities that mold strong moral character in an anti-drug and anti-gang environment. Summer training onboard Navy and Coast Guard ships and shore stations is a challenging training ground for developing self-confidence and self-discipline, promotion of high standards of conduct and performance and a sense of teamwork.

In addition to its important work developing youth, NSCC is a vital recruitment tool for the Navy and Coast Guard: a significant percent of Cadets join the Armed Services, often receiving accelerated advancement, or obtain commissions. The program has significance in assisting to promote the Navy and Coast Guard, particularly in those areas of the U.S where these Services have little presence.

Nightingale

WelchAllyn Blue Highway, Skaneateles Falls, NY; \$5,000,000

The project would advance the development of a tool to monitor the health status of a soldier remotely. Funding would allow further development of technology to sense a soldier’s physiological parameters, and to relay the data to a remote server. This technology consists of wearable sensors with radio frequency communication to observation stations, doctor’s offices, electronic patient records, and hospital information systems.

This system would help make troops safer and more effective by improving commanders’ situational awareness and helping to coordinate medical response to emergencies.

NP2000 Eight Bladed Propeller System New York Air National Guard Special Missions C-130s

New York Air National Guard, 109th Air Wing, Scotia, NY; \$8,500,000

The 109th Air Wing at Stratton Air National Guard Base, Scotia, New York has an urgent need for improved performance of its assigned aircraft to execute high-altitude, deep-field polar missions. The NP-2000 propeller system improves performance capability, provides better fuel efficiency, and increases maintenance reliability over the existing propeller system. The 109th requests that five of their assigned aircraft be fitted with the NP-2000 propeller system.

The 109th has the responsibility of supporting the Air Force's only "polar reach" capability and this project would help fulfill that mission. The 109th supports Department of Defense polar operations and National Science Foundation (NSF) polar research missions using specialized ski equipped LC-130 aircraft. Many of these missions are to remote science camps located in high polar plateau areas with rough snow conditions and aircraft have a difficult time taking off from these areas.

Oblique Imaging and Software Tool for Marine Installations Pictometry, Rochester, NY; \$2,000,000

The company has a software tool to use aerial photography to generate oblique-angle aerial images of specific locations. The images of most Marine bases are available; the requested funding would enable the company to generate the oblique-angle images for each base.

The visualization tools would strengthen public safety, physical security, and anti-terrorism programs by supporting security planning, situational awareness, vulnerability analysis, pre-emptive and concurrent tactical operations, and will integrate with dispatch systems, surveillance and sensor systems, and plume modeling. Other uses include planning, real property and range management, training, environmental management and public affairs presentations.

Parsons Institute for Information Mapping for Defense Health Program's TRICARE System and AHLTA

The New School, Parsons Institute for Information Mapping, New York, NY; \$4,800,000

The project would continue collaboration between the school, the Veterans Administration (VA) and the Department of Defense (DoD). Together, the partners are working to develop a new type of electronic medical record (EMR) system that would create a single, unified view of VA and DoD beneficiary patient records. Specifically, the project improves the graphic front-end user interface (GUI), which would allow for easier navigation of the EMR by clinicians and administrators.

The current GUI is acknowledged by DOD and VA to be a major shortcoming of the system. This project could improve the quality of care provided to TRICARE's 9.3 million beneficiaries.

SCR-170 Heavy Fuel UAV Propulsion System Rotary Power, Glen Cove, NY; \$7,000,000

The project will develop an propulsion system for the Shadow unmanned aerial vehicle (UAV) that uses strategic battlefield fuel. The Shadow UAV currently operates only on a non-standard fuel type, thus creating a strain on theater logistics. Furthermore, Shadow UAV mission capability (availability, endurance, and payload capacity) is restricted by the propulsion system's limited durability and high fuel consumption. The solution is the development of a lightweight, efficient, and durable propulsion system capable of operating on all standard battlefield fuels (heavy fuel) as well as captured gasoline stores.

This project would enable UAVs to fly longer and carry a larger payload, which would improve their ability to support the troops in combat and reconnaissance operations.

**Special Operations Forces Craft Integrated Backbone
Sensis Corporation, East Syracuse, NY; \$5,000,000**

The SOF Craft Integrated Backbone would provide an integrated data-processing system in order to consolidate the number of computer processors on the vehicle, thus resulting in a reduction of size, weight, and power (SWAP) requirements for the craft. FY2010 funding would be used to integrate and improve upon commercial off-the-shelf (COTS) processing systems with the craft's current sensor systems. This is a practical, low-cost strategy to address the problem.

Special Operations Forces need to have light, small, and efficient craft to deliver them to and from their operations. This project to reduce the size and weight of their sensor packages would help to make their vehicles safer and more effective.

**Supercapacitors for Integrated Power Storage
SUNY Binghamton, Center for Autonomous Solar Power, Binghamton, NY; \$5,000,000**

This research would focus on developing new materials to improve the power density and energy density of ultracapacitors. Capacitors are used to store and release energy, and are especially important components of solar energy and wind energy systems, because the energy can only be generated at certain times and needs to be stored for later use. Currently, the supercapacitors available do not have the ability to release large enough bursts of energy (insufficient power density) nor can they store enough charge (insufficient energy density).

Research to improve the efficacy of supercapacitors would make significant strides towards achieving the Defense Department's goal of increasing its use of alternative energies.

**Transformer Technology for Combat Submersibles
STIDD Systems, Inc., Greenport, NY; \$9,300,000**

The project would re-engineer the Special Operations Forces (SOF) underwater craft so that it can have a larger interior cabin while still fitting into its existing storage space on submarines.

Expanding this internal capacity would provide a risk reduction and capability enhancement, allowing SOF commanders the greater operational capability to conduct SOF shallow-water

undersea operations. Re-engineering the craft is a cost-effective way to meet the Special Operations Command's needs.

U.S. Air Force Advanced Propulsion Non-Tactical Vehicle

General Motors Fuel Cell Activities, Honeoye Falls, NY; Protect President's budget request

The U.S. Air Force Advanced Propulsion Non-Tactical Vehicle (APNTV) initiative is applying ongoing advances in hydrogen-powered fuel cell electric vehicle technology for use in non-tactical transportation fleets. The USAF has a fleet of approximately 60,000 non-tactical vehicles.

A USAF fuel cell electric vehicle non-tactical fleet demonstration would reduce petroleum dependence, increase vehicle fuel efficiency, and promote alternative fuel vehicles. This would help the Air Force achieve its renewable-energy goals.

U.S. Navy Pandemic Influenza Vaccine Program: Enhancement of Influenza Vaccine Efficiency

Trudeau Institute, Saranac, NY; \$8,000,000

The project would evaluate the efficacy preventing pandemic influenza outbreaks by combining influenza vaccination with antiviral prophylaxis. Participants include the U.S. Naval Health and Research Center (NHRC), the non-profit requester, and a private partner with proprietary antiviral technologies.

Navy ships are extremely vulnerable to contagious diseases because of the close living quarters. This vaccine research will help to prepare the Navy for an outbreak of highly contagious flu on a ship.

UB Energy and Sensor Informatics Research and Translation Facility

State University of New York, Buffalo, Buffalo, NY; \$2,400,000

The proposed project is focused on the development of new alternative-energy collection and storage technologies coupled with the development of novel environmental and health sensors. This effort will focus on nanostructured materials for energy collection, energy storage and sensing devices coupled with informatics that will enable efficient use of the developed technologies. The acquired instruments will be applicable to photovoltaic devices, nanostructured energy storage devices, chemical and biological sensors for health informatics, biometrics devices for identification and homeland security, and thermoelectric energy collectors.

Information learned from this project would be used to make more effective and efficient electronics. These devices are crucial to the Air Force's mission and to public safety and health.

**Uninterruptable Power Source (UPS) for Navy Ships
eVionyx, Inc., Hawthorne, NY; \$2,000,000**

The project would seek to develop an affordable uninterruptible power supply (UPS) system for Navy ships, which could maintain a separate-source, continuous supply of electricity for more than 24 hours when regular power is not available. In addition, the project would develop a battery that has reduced lifecycle maintenance when compared to lead-acid batteries.

This project would allow ships to maintain operations of their critical systems in the event of a power loss. Such an ability is critical to continuity of operations and to the ship's and crew's safety.

**Webb Institute Ship Model Testing Facility
Webb Institute, Glen Cove, NY; \$7,000,000**

Funding would be used for construction of a new, modern ship model testing facility at Webb Institute. Ship model towing tanks are the signature experimental facilities of naval architecture, having both significant historical and current technical value in understanding and quantifying the hydromechanics of ships and ocean-based systems of all sorts.

The Navy currently faces a major shortage of graduates who are educated in the design of hulls and internal marine engineering systems. This facility would help to address this demand.

Military Construction Authorizations

Base Group Beddown

Stewart Air National Guard Base, Newburgh, NY; \$7,200,000

The Stewart Air National Guard Base requires adequately sized and configured space to accommodate a new Security Forces Base Defense Group unit that is manned in excess of 200 personnel. This new unit will require adding space and reconfiguration of existing space to a current Aerial Port facility to house the new mission and its assigned personnel. In addition, it requires the alteration of an existing Fire House building to house the displaced Aerial Port operations unit. This project will combine all security forces on the installation to one facility and fully accommodates the new mission and additional personnel assigned to the base. This project will cost \$7.2 million and is on the Air National Guard's Future Years Defense Plan (FYDP).

Indoor Small Arms Range

Niagara Falls Air Reserve Station, Niagara Falls, NY; \$5,700,000

The Niagara Falls Air Reserve Station has a requirement for a modern firing range which would support the requirements of the Base wings, the units of the new Armed Forces Regional Readiness Center, and Department of Homeland Security tenants. The current number of firing line positions is inadequate to satisfy the volume of monthly training requirements which has grown with the addition of the Regional Readiness Center at the Base. Furthermore, without an indoor firing range, personnel must shoot at an off-base outdoor firing range. Due to the extreme weather conditions in the Buffalo area, the Wing loses several months of weapons qualifying each year. This new Small Arms Range will allow personnel to satisfy mandatory weapons training as well as meeting safety and environmental requirements. The construction of a firing range to meet the military requirements would also serve as an asset for additional Department of Homeland Security (DHS) tenants which would offset the construction costs and reduce Base Operations Support costs to the Department of Defense.

Defense Programmatic Authorizations

Impact Aid for Schools with Military Students with Severe Disabilities; \$5,000,000

nationwide; Provides funding to school districts which have an unusually high ratio of students who come from military families and have disabilities.