

United States Senate

133 HART SENATE OFFICE BUILDING
WASHINGTON, DC 20510-2204

March 5, 2010

The Honorable Carl Levin
Chairman
Committee on Armed Services
228 Russell Senate Office Building
Washington, DC 20510

The Honorable John McCain
Ranking Member
Senate Committee on Armed Services
228 Russell Senate Office Building
Washington, DC 20510

Dear Chairman Levin and Ranking Member McCain:

As the Committee begins its consideration of the fiscal year 2011 National Defense Authorization Act, I am writing to request support for the following programs. These programs are a good use of taxpayer funds because they meet a local, state or national public need and maintain or create jobs:

Item: Chemical & Biological Agent Fate Appropriate Response Operations Tool
Request: \$4,500,000
Account: CHEM
Line: R-1 Line 14
PE: 0602384BP

Suggested Recipient: Kettering University
Suggested Location of Performance: Flint, MI

Purpose/Project Description: The purpose of this project is to utilize the models developed in the Department of Defense Agent Fate Program to build an operational tool. This tool will provide the operational user with a prediction of the environment he faces when chemical agents, biological agents, and toxic industrial chemicals are employed by an enemy. The project will also recommend the most appropriate response to mitigate the hazard and improve the safety of troops and civilians. This project will establish Kettering University as a Center of Excellence for the Development, Verification, and Validation of Chemical and Biological Warfare Defense models.

Item: Maritime Automated Perception and Cueing
Request: \$3,000,000
Account: RDN
Line: 9

PE: 0602236N

Suggested Recipient: Cybernet Systems Corporation

Suggested Location of Performance: Ann Arbor, MI

Purpose/Project Description: The sensor systems, as well as deployed research USV platforms (cameras, radar, IR, sonar, etc.), necessary to detect these obstacles are already in place and available for this R&D as existing Navy assets. The technology development accomplished within this proposal could advance the existing baseline system to attain the higher degrees of machine perception that are required to reach the LCS minimal manning goals. In addition, because this effort advances a fundamental capability, applications beyond USV operations into harbor security, and force protection exist where automated and low signature, low cost, persistent intelligence and surveillance are high-value mission capabilities.

Item: Next Generation UAV Engine

Request: \$2,700,000

Account: RDA

Line: 31

PE: 0603003A

Suggested Recipient: MAHLE Powertrain, LLC

Suggested Location of Performance: Farmington Hills, MI

Purpose/Project Description: This project will upgrade the testing capability at AMRDEC, Redstone Arsenal, AL and procure a representative diesel engine to validate the test capability improvements. The Army's Shadow UAV is one of the few vehicles in the Army's UAV inventory that still uses aviation gasoline. Replacing gasoline burning UAVs engine with an engine that burns heavy fuel (diesel, JP-5, JP-8) eliminates costly special handling requirements associated with aviation gasoline. The Army expects to conduct a demonstration of a heavy fuel burning engine during FY11 for the next generation Shadow UAV engine.

Item: Universal Vehicle Autonomy Kit

Request: \$3,000,000

Account: RDA

Line: 33

PE: 0603005A

Suggested Recipient: iRobot Corporation

Suggested Location of Performance: Troy, MI

Purpose/Project Description: Unmanned remotely controlled technology is widely used by the military. This project would focus on providing near-term affordable unmanned capability to the existing fleet of legacy ground combat vehicles via rapid installation of Intelligent Vehicle Robotic Kits. Funding will be used to custom develop this kit to enable any combat vehicle to be made into an autonomous vehicle.

Item: DEGC Defense Supply Chain Initiative

Request: \$1,000,000
Account: RDA
Line: 225
PE: 0708011S

Suggested Recipient: Detroit Economic Growth Corporation

Suggested Location of Performance: Detroit, Michigan

Purpose/Project Description: This project would help manufacturers in Detroit improve their competitiveness for Defense contract opportunities and address parts obsolescence issues, especially during this time of heightened national security needs. Funds will be used to work individually with Detroit manufacturers to prepare them to fill holes in the defense supply chain by identifying critical parts obsolescence needs and connecting them to technical and financial resources to retool operations to meet these needs. This initiative will stabilize and grow Detroit manufacturers who have been severely impacted by the economic downturn and will help diversify Detroit's economic base.

Item: Advanced Modeling Technology for Large Structure Titanium Machining Initiative

Request: \$3,000,000
Account: RDA
Line: 185
PE: 0708045A

Suggested Recipient: Third Wave Systems

Suggested Location of Performance: North Canton, MI

Purpose/Project Description: Titanium could be a key material for the Army's Ground Combat Vehicles (GCV) due to its strength to weight ratio. However, machining titanium is difficult, time consuming, and high stress on the cutting tool and can lead to tool wear and failure. This project would utilize advanced modeling software and simulate the machining environment for optimizing speed and cutting ability of machines, resulting in faster production of titanium parts.

Item: Nanomag TTMP – High Strength Magnesium for Lightweight Structures
Request: \$5,000,000
Account: RDA
Line: 5
PE: 0602105A

Suggested Recipient: Thixomat, Inc.

Suggested Location of Performance: Ann Arbor, MI

Purpose/Project Description: Funding for this project would be used to demonstrate the Nanomag TTMP process as a solution to some of the Army's light-weighting goals such as those identified in the 2003 National Materials Advisory Board Report entitled "Use of Lightweight Materials in 21st Century Army Trucks." Nanomag TTMP is eco-friendly and produces an ultra-

fine grain nanocrystalline magnesium sheet with strength properties superior to conventional materials. Its fine crystal structure displays a combination of 50% higher strength and improved toughness over conventional magnesium providing design engineers with a strength-to-weight ratio higher than steel and aluminum.

Item: Advanced Powertrain Components for Military Vehicles
Request: \$2,770,000
Account: RDA
Line: 32
PE: 0603004A

Suggested Recipient: MAG Industrial Automation Systems LLC

Suggested Location of Performance: Port Huron, MI

Purpose/Project Description: Funding for this project will be used to develop high-speed automated cryogenic machining supported by three-dimensional inspection. This will increase output while providing continuous feedback during the manufacturing process. High speed automated cryogenic processing replaces traditional cutting fluids with more environmentally friendly cryogenic fluid. Manufacturing costs will be lower both from a production standpoint as well as operationally. Tool life could be increased thus lowering perishable costs, and higher speeds will mean fewer machines and greater part throughput for the military.

Item: Non Combat Fleet Vehicle- Battery to Heavy Duty Truck/Bus Program
Request: \$3,000,000
Account: RDA
Line: 33
PE: 0603005A

Suggested Recipient: A123Systems, Inc.

Suggested Location of Performance: Livonia, Michigan

Purpose/Project Description: This project is a demonstration program that aims to support the "Advanced Vehicle and Power Initiative." This program seeks to enhance national energy security by introducing advanced propulsion vehicles into the Department of Defense's (DOD) non-tactical vehicle. This project will use Michigan produced batteries, power trains and buses to demonstrate the feasibility of electrifying the non-combat fleet. The Army's non-tactical vehicles total over 82,000. Converting a percentage of these assets to alternative energy vehicles would produce a significant cost savings and reduce our dependence on foreign oil.

Item: MEST (Medically Engineered Seating Technology)
Request: \$5,000,000
Account: RDAF
Line: 27
PE: 0603216N

Suggested Recipient: Trac Tec, Ltd.

Suggested Location of Performance: Okemos, MI

Purpose/Project Description: This project will survey existing military helicopter and ground seating and will design a conformable military seat focused on enhancing human endurance and comfort and reducing or eliminating back pain suffered by military personnel in the current seats. The project directly addresses a national military need to provide suitable platforms for military personnel to perform their assigned tasks, without suffering pain and injury in the process. This will reduce or eliminate major costs for medical treatment, replacement training, and disability payments for life. It will also enhance military readiness by eliminating lost time for medical treatment or prematurely ended careers.

Item: Development of a lightweight hybrid transmission for military ground vehicles

Request: \$5,250,000

Account: RDA

Line: 13

PE: 0602601A

Suggested Recipient: Limo Reid

Suggested Location of Performance: Deerfield, MI

Purpose/Project Description: This project will build field testable vehicles that allow the military to validate the robustness of U.S. based hydraulic propulsion systems. These systems are expected to show improved safety and durability over other hybrid technologies by building off enhancements on the time tested hydrostatic transmission combined with the fuel efficient sophistication of a modern hybrid system. A Drop-In Hybrid System that allows for a hybrid to be added to existing vehicle platforms would reduce the re-engineering required to deploy hybrids in the U.S. vehicle fleet.

Item: Autonomous Connected Vehicle Proving Center

Request: \$2,000,000

Account: RDA

Line: 11

PE: 633005

Suggested Recipient: Henry Ford Community College

Suggested Location of Performance: Dearborn, MI

Purpose/Project Description: This project will advance the development and certification for the military and commercial autonomous vehicle products under common standards. Funds would be used to install and maintain wireless communication testing equipment for autonomous connected vehicles, including backhaul communications equipment to connect multiple partners and test sites for data collection and analysis. When put together, this equipment will fulfill the capabilities for autonomous, connected vehicles testing, proving and demonstrating. This project

will advance war fighter effectiveness by generating test results to improve future combat vehicle procurements.

Item: Navy-Centric Lean Design & Tech Transfer Design Tools
Request: \$3,000,000
Account: RDA
Line: 221
PE: 0708011N

Suggested Recipient: Munro & Associates, Inc.

Suggested Location of Performance: Troy, MI

Purpose/Project Description: Funding would be used to research, develop, and customize the Lean Design and Tech Transfer engineering and manufacturing suite of tools. The tools will be used by the United States Navy to reduce cost and schedule within Navy shipbuilding programs by analyzing building block designs to identify potential flaws and operability issues.

Item: BIA combat Vehicle Design Optimization Tool with Survivability Database
Request: \$5,000,000
Account: RDA
Line: 33
PE: 0603005A

Suggested Recipient: Badenoch LLC

Suggested Location of Performance: Troy, MI

Purpose/Project Description: This request is for continuation, maintenance and extension of the Survivability Database and Laboratory program at the United States Army TARDEC to include improved methods of using blast data, advanced modeling and simulation, and testing to evaluate and improve combat vehicle designs. Badenoch began this work for TARDEC in 2008 to understand the mathematics of human trauma on a bone-by-bone, organ-by-organ basis. The math models of human injury form the basis of a computer tool, the Badenoch Injury Analyzer (BIA), now in use to translate live fire test data into projected injuries and deaths. The program will be enhanced to broaden the utility across the entire RDECOM community and test regimes and improve combat vehicle design.

Item: Combat Blast Recorder for Vehicles and Warfighters
Request: \$5,000,000
Account: RDA
Line: 33
PE: 0603005A

Suggested Recipient: Badenoch LLC

Suggested Location of Performance: Troy, MI

Purpose/Project Description: The "Combat Blast Recorder for Vehicles and War Fighters" is a battlefield system for improving the medical treatment of soldiers exposed to energetic effects. It is a coin-sized sensor embedded in the soldier's equipment and a rugged black box on the vehicle to measure energetic effects. An injury analyzer would be further developed into a handheld device carried by the unit that scans the soldier and vehicle sensors to help diagnose specific injury. A hospital-based software suite records the full event history to support long term treatments of the soldier. The database and analytical tools combine to optimize future vehicle design to minimize soldier injury, reduce vehicle mass, and support mobility.

Item: Advancements in Robotic Soldier Mobility and IED Defeat Technology
SMIDT
Request: \$4,500,000
Account: RDA
Line: 11
PE: 633005/515

Suggested Recipient: Omaha Automation Inc.

Suggested Location of Performance: Harrison Township, MI

Purpose/Project Description: Omaha Automation will research, design, manufacture, and integrate the SMIDT unmanned robotic tactical vehicle, a vehicle addressing several key mission gaps of the military. This vehicle will be available to support rapid fielding initiative and joint IED defeat organizations immediate needs. Technologies addressing soldier mobility, persistent stare situation monitoring, route clearing, 24 plus hours stand alone surveillance hybrid charging system would be the focus of the project. The vehicle's capabilities will be suited for rocky terrain as well as unimproved roads. This mobile platform will advance the productivity of several soldiers with the ability to carry vital equipment, thus, decreasing a soldiers fatigue and reducing threats.

Item: Advanced Robotics Research and Education Initiative
Request: \$1,001,375
Account: RDA
Line: 13
PE: 062601A

Suggested Recipient: University of Detroit Mercy

Suggested Location of Performance: Detroit, MI

Purpose/Project Description: This project would enhance the capability for robotics research at the University of Detroit Mercy and provide a steady supply of specialized talent for the defense robotics community in Michigan. This initiative would contribute to the development of a robotics curriculum that additionally will train a future workforce capable of expanding the State of Michigan's leadership and competitive advantage in robotics, advanced vehicles, and intelligent transportation systems technologies.

Item: Magnesium Armor Composite
Request: \$2,258,000
Account: RDA
Line: 5
PE: PE0602105A

Suggested Recipient: REL Inc.

Suggested Location of Performance: Calumet, MI

Purpose/Project Description: The development of Magnesium Composite Armor will increase war fighter survivability as well as create a new processing technology for advancing cutting edge manufacturing in the United States. Some of the direct and indirect benefits of this program are superior war fighter protection, mobility, lifecycle maintenance efficiency, and technology being deployed into the transportation industry to revitalize manufacturing in Michigan.

Item: Michigan National Guard Support Pilot (MNGSP)
Request: \$20,000,000
Account: TBD
Line: TBD
PE: TBD

Suggested Recipient: Demmer Corp

Suggested Location of Performance: Lansing, MI

Purpose/Project Description: The Michigan National Guard Support Pilot (MNGSP) aims to improve National Guard force readiness by establishing a military vehicle refurbishment site to reset 150 cargo trucks (900 series 5 ton) for the National Guard. The truck reset work will be performed by a partnership involving the Michigan Army National Guard's Combined Support Maintenance Shop (CSMS) and MEDC's Defense Contract Coordination Center (DC3).

Item: Highly Integrated Optical Interconnect for Military Avionics
Request: \$5,000,000
Account: RDN
Line: 60
PE: 0603739N

Suggested Recipient: Calumet Electronics Corporation

Suggested Location of Performance: Calumet, MI

Purpose/Project Description: Joint-Strike Fighter FA-18, and B-2, F-16, Q-70 technology requires next generation high speed interconnect technology for communications across and between circuit boards to meet the data processing requirements of the next generation of avionics for targeting and navigation. This project will develop materials and manufacturing processes to produce high speed optical waveguides embedded in circuit boards, and the

associated optical and electronic interconnections, and is one of the few remaining domestic producers of printed circuit boards.

Item: Heavy Fuel Engine for Unmanned Systems
Request: \$4,000,000
Account: RDA
Line: 33
PE: 060305A

Suggested Recipient: L-3 Combat Propulsion Systems

Suggested Location of Performance: Muskegon, MI

Purpose/Project Description: Funding would be used to design, procure, and assemble three & four rotor engines and conduct performance testing to further improve fuel economy and overall engine performance. The project will conduct further development and testing to increase the mechanical integrity of the engine family. The goal is to develop the engine family so integration and installation can begin into current Unmanned System development level. While the one & two rotor engines are being developed for the Shadow 200 C airframe, the three & four rotor engines at 135 and 180 hp, respectively, would be an ideal candidate for other Unmanned Systems.

Item: Mission-Configurable Hybrid Vehicle Power System
Request: \$2,000,000
Account: RDA
Line: 33
PE: 0603005A; Combat Vehicle and Automotive Advanced Technology

Suggested Recipient: Eaton Corporation

Suggested Location of Performance: Galesburg, MI

Purpose/Project Description: This program will significantly increase fuel economy and reduce emissions for military and commercial vehicles through on-the-fly reconfiguration of hybrid-electrical power systems. Currently, state-of-the-art hybrid-electric drivetrain solutions are designed and optimized for particular duty-cycles or missions. When operated outside the optimized conditions, many systems do not realize the full benefit of the hybrid system. The proposed technology development adapts the drivetrain and onboard electrical power network to the specifics of the mission or duty cycle, in effect re-optimizing the architecture for the activity at hand.

Item: Starr Commonwealth Trauma and Loss program for Michigan's military children and families
Request: \$850,000
Account: DHP
Line: BA-01

PE: N/A

Suggested Recipient: Starr Commonwealth

Suggested Location of Performance: Albion, MI

Purpose/Project Description: Funding for this project would be used to expand the Trauma and Loss Program. Starr will create a network of 300 providers in Michigan who will be trained to assist military children/families who are struggling with complex emotional issues induced by multiple deployments and tentative reintegration into the family. The project would utilize 20 years of experience with the Trauma and Loss program to develop a resiliency curriculum for schools and agencies working with military children/families.

Item: Oakland University Automotive Tribology Center

Request: \$2,500,000

Account: RDA

Line: 33

PE: 0603005A

Suggested Recipient: Oakland University

Suggested Location of Performance: Rochester, MI

Purpose/Project Description: An Automotive Tribology Center (ATC) is proposed as an academic research unit. The center would perform research that lowers frictional energy losses and enhances reliability and durability of automotive components. The center would have an emphasis on engine and transmission tribology. Research will be conducted to lower friction and wear, reduce weight, improve fuel economy, lower emissions and produce higher power output. Tribological effects of various high-tech coatings/surface treatments and new environmentally friendly oil additives will be studied. Vigorous analytical modeling will be conducted for rapid evaluations of new designs to meet the needs of programs such as the Future Combat System.

Item: Small Turbine Engine Technology for Long Range Strike and C2ISR

Request: \$7,000,000

Account: RDN

Line: 173

PE: 0204229N

Suggested Recipient: Williams International Co., LLC

Suggested Location of Performance: Wallad Lake, MI

Purpose/Project Description: The funding will be applied to the Department of Defense Versatile Affordable Advanced Turbine Engine (VAATE) program, which funds the development and transition of advanced turbine technologies. The funding will augment VAATE's small engine work for cruise missiles and UAVs. For several years most VAATE funding has gone toward large engine technology via the ADVENT and HEETE VAATE products, whereas funding for missile and UAV engines has been diminishing. Williams International has designed and built a supersonic turbine engine for a Long Range Strike Missile,

and is designing a small, low cost, efficient engine for UAVs. The current funding for small engines is not sufficient to cover testing of full engine systems to TRL6 as required for transition to FSD.

Item: Handheld Medical Information Device (HMID)

Request: \$2,950,000

Account: RDA

Line: 6

PE: 0602120A

Suggested Recipient: MIS2000 / Global Defense, Inc.

Suggested Location of Performance: Southfield, MI

Purpose/Project Description: Handheld Medical Information Device (HMID) is a medical information entry point device that is built on the IPOD platform, and provides critical medical information at the point of injury in battlefield or in a civilian scenario. In addition the HMID would monitor blood pressure, pulse, temperature, respiration, eye response, nerve response and other vital data through short range wireless devices. HMID is linked to host Cognitive Software Digital two-way Radio, placed short range in a helicopter. Integral to HMID is a radio-frequency identification dog tag which has recorded medical history which can be retrieved in the field.

Item: Smart Plug-In Hybrid Electric Vehicle Program

Request: \$4,730,000

Account: RDA

Line: 33

PE: 0603005A

Suggested Recipient: NextEnergy

Suggested Location of Performance: Detroit, Michigan

Purpose/Project Description: Funding would be used to work with TARDEC to accelerate development of new infrastructure and technologies associated with vehicle to grid (V2G) communication and power flow for seamless integration of electric vehicles within military and commercial stationary power applications. Deployment of Smart Plug-In Hybrid Vehicle (PHEV) technology will support Department of Defense initiatives to reduce fuel consumption using vehicles with exportable electric power and deliver high-quality electrical power to the grid. Expected deliverables include, Tactical Modular Mobile Microgrid Power System (TM3) modules + trailer; Tactical Mobile Vehicle Charging System (TMVCS) hardened to meet Department of Defense Test Method Standard for Environmental Engineering Considerations and Laboratory Tests, field demonstration of equipment.

Item: Next Generation Casting Initiative

Request: \$6,000,000

Account: RDA

Line: 27
PE: 0603680F

Suggested Recipient: Alcoa Howmet

Suggested Location of Performance: Whitehall, MI

Purpose/Project Description: The Next Generation Castings Initiative (NGCI) will provide the Department of Defense and industry with an integrated dual-use capability to develop, demonstrate, and transition advanced technologies/methodologies for cost effective, volume production of high performance titanium and super alloy castings. The request would fund Phase II of this multi-year program.

Item: Advanced Tactical Laser Flashlight Devices (ATFLD's)

Request: \$1,900,000

Account: RDA

Line: 6

PE: 0602120A

Suggested Recipient: Electro Optics Manufacturing, Inc.

Suggested Location of Performance: Wyandotte, MI

Purpose/Project Description: This project will finish the development of Advanced Tactical Laser Flashlight Devices (ATLFD), manufacture and test as many as 100 ATLFD devices, and deliver 20 devices to the U.S. Army Laser/Optical Radiation Program, Aberdeen Proving Ground, for testing and certification. These revolutionary ATLFD devices would be some of the most advanced in the world and will use laser technology not available anywhere else.

Item: Freedom Loader (for use with V-22, CH-53, CJ27)

Request: \$1,500,000

Account: PMC

Line: N/A

PE: N/A

Suggested Recipient: ATD Engineering and Machine, LLC

Suggested Location of Performance: Au Gres, MI

Purpose/Project Description: The project is to complete the engineering and manufacturing of a custom cargo loader for the United States Armed Forces. With the requested funding, 3 prototype units for validation testing would be completed. The unit called the Freedom Loader meets a national need expressed by our servicemen to effectively move cargo in the field.

Item: Proposal To Grow The Defense Industry In Southeast Michigan Through The Transportation, Distribution And Logistics Sector

Request: \$765,000

Account: RDA

Line: N/A

PE: N/A

Suggested Recipient: Detroit Regional Chamber

Suggested Location of Performance: Detroit, MI

Purpose/Project Description: This project would convene regional stakeholders to develop an implementation plan for the Defense Supply Chain in order to convene key regional public and private leaders and stakeholders. The project aims to develop a Defense Supply Chain and Logistics Center, design an economic development structure that will connect the supply chain hub, ensure leverage of all hub assets, complement state economic development goals and provide a format to work across state and country borders.

Item: Holographic Grenade Launcher Sighting System

Request: \$3,000,000

Account: DPA

Line: 75

PE: N/A

Suggested Recipient: L-3 EOTech POC

Suggested Location of Performance: Ann Arbor, MI

Purpose/Project Description: The currently issued grenade launcher sights are slow in aiming, require substantial training and cannot be used in low light or with night vision devices. Currently fielded systems also require time-consuming mechanical manipulation of the sight prior to firing, and do not compensate for "spin-drift" of the projectile. There is a documented valid requirement for 40 mm grenade launcher sights for the Special Operations forces. None have been procured as this is a recently validated requirement. This project would provide funding for procurement.

Item: Modeling Support for the Army Materiel Command Equipping Strategy

Request: \$5,000,000

Account: RDA

Line: 04 2020A 370 423

PE: N/A

Suggested Recipient: ProModel Corporation

Suggested Location of Performance: Ann Arbor, MI

Purpose/Project Description: Funding will be used to modify an existing software tool to the specifications of the Army Materiel Command (AMC). The goal of this project is to have capability to visualize the entire Army equipment inventory and to plan for future potential changes, so that soldiers continue to have the equipment they need during combat, training and rest phases. With the drawdown of equipment in Iraq, and surge in Afghanistan, along with retirement of worn equipment and introduction of new equipment, AMC could use such a tool to manage the complexities of the current and future Army missions.

Item: Under-Armor Auxiliary Power Unite for M1 Abrams Tank 60kW Power Output Demonstration
Request: \$7,000,000
Account: RDA
Line: 13
PE: 0602601A

Suggested Recipient: Honeywell

Suggested Location of Performance: Warren, MI

Purpose/Project Description: This project will modify its RE100 Auxiliary Power Unit (APU), currently used in commercial business jet service that produces 60kW, to build a modified commercial off-the-shelf APU – the HGT80 in order to produce auxiliary power for the U.S. Army M1 Abrams tank. The HGT80 fits in the space available under the armor of the M1 Abrams tank. It also provides the 60kW of power necessary for all currently identified and future electrical demands including the environmental cooling system in order to enable improved crew comfort and mission effectiveness. The completion of this initial work will confirm a Technology Readiness Level (TRL) 6 for adoption into the tank.

Item: Decision and Energy Reduction Tool
Request: \$4,500,000
Account: RDA
Line: 13
PE: 0602601A

Suggested Recipient: Ricardo, Inc US

Suggested Location of Performance: Van Buren Township, MI

Purpose/Project Description: Ricardo, in collaboration with Colorado State University, requests \$4.5 million for the application of computer co-simulation tools to increase fuel efficiency of United Marine Corps military vehicle fleet. Funding will provide the government and industry with computer tools capable of near real time prediction of performance of various technologies when applied to the legacy and future vehicle fleets. This project will provide physics based prediction of performance due to changing requirements and energy reduction initiatives.

Item: Military Mental Health Initiative
Request: \$750,000
Account: DHP
Line: 28
PE: 0602787A

Suggested Recipient: Detroit-Wayne County Community Mental Health Agency

Suggested Location of Performance: Detroit, MI

Purpose/Project Description: The County Community Health Agency (CMH), in partnership with community organizations and the Department of Defense, will help to connect 75-100 combat soldiers with services to address the incidence of combat trauma and increasing rates of suicide among soldiers returning from Iraq and Afghanistan. The CMH Agency is uniquely positioned to identify individuals in need of specialized services and care, including crisis outpatient services and housing. Transitional services will be offered to help reintegrate soldiers in their communities and identify and maintain stable employment.

Item: Prognostic Health Management Technology Development
Request: \$309,947
Account: RDA
Line: 7
PE: 0602201F

Suggested Recipient: Parker Hannifin Corporation

Suggested Location of Performance: Kalamazoo, MI

Purpose/Project Description: This project involves the development of Prognostic Health Management (PHM) models for the monitoring of hydraulic pumps on military weapons systems. PHM is the study of conditions in complex systems (like jet engines) to create predictive models of system failure. PHM is popular because it helps reduce catastrophic systems failures and allows better management of maintenance and replacement. The U.S. military is interested in developing PHM applications to better manage weapons systems. Because of the importance of pumps, there is an increasing requirement for advanced maintenance strategies of the pumps to improve availability, reduce operating costs, and maximize mission success.

Item: Physician Executable Guidelines System
Request: \$2,500,000
Account: RDA
Line: 30
PE: 0603002A

Suggested Recipient: Henry Ford Health System

Suggested Location of Performance: Detroit, MI

Purpose/Project Description: The Henry Ford Physician Executable Guidelines System project (PEGS) seeks to take an existing early version of translator technology, which Henry Ford has developed in collaboration with the Department of Defense, and expand and improve on that technology. This technology allows the integration of clinical practice guidelines into any electronic medical record without the need to program or reprogram the EMR. In addition to refining and testing the translator technology, the PEGS project offers the opportunity to demonstrate the development in electronic format of set clinical practice guidelines covering the care of medical conditions important to the military.

Item: Long Duration/High Efficiency Heavy Fuel Engine Program (25 hp)
Request: \$1,970,000
Account: RDA
Line: 35
PE: 0603122D8Z

Suggested Recipient: Ricardo, Inc US

Suggested Location of Performance: Van Buren Township, MI

Purpose/Project Description: Funding for this project would be used for the development and field demonstration of a 25hp Heavy Fuel engine for use on unmanned systems. Ricardo will expand upon an internally funded revolutionary light weight Heavy Fuel Engine for use on unmanned systems. With the requested funding, this development will be leveraged into a 25hp compression ignition heavy fuel engine capable of powering a 4 meter UAV for 18-24 hour missions that will carry a payload of up to 100 pounds of sensors and/or ordinance. Ricardo will manufacture 5 prototype engines that will be integrated for flight testing on the UAS Nightwind 4, a blended wing aircraft with low radar cross section and the ability to rapidly reconfigure for multiple missions.

Item: Waste Water to Energy Program
Request: \$4,200,000
Account: RDA
Line: 50
PE: 0603734A

Suggested Recipient: NextEnergy Center

Suggested Location of Performance: Detroit, MI

Purpose/Project Description: Funding will be used to work with the Army Construction Engineering Research Laboratory (CERL) to develop Waste Water to Energy (WW2E) technology in support of Department of Defense initiatives. WW2E project will increase generation of renewable energy for electrical power, minimize the environmental footprint, enhance energy efficiency, and improve operational readiness at both forward deployed and main bases. This project will develop a comprehensive baseline for varied grey and black water applications for Brigade strength military base camps. With WW2E, less fuel is consumed because fewer generators are required, thereby reducing the number of fuel trucks and personnel exposed to security risks during delivery.

Item: US Army Operator Driving Simulator
Request: \$5,000,000
Account: OPA
Line: 169
PE: N/A

Suggested Recipient: FAAC Inc

Suggested Location of Performance: Ann Arbor, MI

Purpose/Project Description: Operator Driving Simulators (ODS) are interactive, re-configurable training devices applying state of the art simulation to train motor vehicle operators. ODS enables students to learn proper operational techniques under all terrain, weather, road, traffic conditions, and tactical conditions as well as the ability to create hazardous and potentially dangerous situations, without risk to man or material.

Item: Ad Hoc Personnel Tracking & Robotic Navigation in GPS Denied Environments

Request: \$2,750,000

Account: RDA

Line: 13

PE: 0602601A

Suggested Recipient: iTrack LLC

Suggested Location of Performance: Rochester, MI

Purpose/Project Description: The development of a low cost, ad hoc, GPS-denied tracking & positioning system would benefit the Department of Defense, the Department of Homeland Security, First Responders and commercial industry. This project would assist in supplementing the resources required for the final engineering needed to commercialize this critical GPS-denied tracking technology for the DOD. This project would establish a Michigan based R&D, product assembly and sales facility that will employ engineering, sales and administrative personnel to support the military and commercial industry purchases.

Item: Advanced Reformer-Fuel Cell Generator Demo on Con-way Trucks

Request: \$6,000,000

Account: RDA

Line: 13

PE: 06026010A

Suggested Recipient: Energy Technology Components, LLC

Suggested Location of Performance: Ann Arbor, MI

Purpose/Project Description: The purpose of this project is to manufacture, demonstrate and evaluate on board reforming of diesel fuel for electricity generation from clean-silent fuel cell auxiliary power units (APU) for integration into Army vehicles. The program will establish a pilot scale manufacturing facility in Ann Arbor, Michigan and produce reformer units that will be integrated with solid oxide fuel cells through a joint venture arrangement with a fuel cell manufacturer.

Item: Applied Power Management Control and Integration (APMCI)

Request: \$3,600,000

Account: RDA
Line: 33
PE: 0603005A

Suggested Recipient: Global Embedded Technologies, Inc.

Suggested Location of Performance: Farmington Hills, MI

Purpose/Project Description: Mission critical equipment consumes a majority of the electrical power available in military vehicles. Electrification of vehicle subsystems promises to save fuel and extend missions, but these subsystems add an extra burden to the electrical system and need to be managed to realize their anticipated benefits. TARDEC has guided research and development efforts in the area of power control and intelligent power management to address these challenges. Funding for this project will be used to integrate and objectively evaluate the power management solutions and to perform qualification testing of the power management and control technology.

Item: MRAP Armored Vehicle Precision Engineering and Manufacturing
Advancement

Request: \$2,500,000

Account: RDA

Line: 3

PE: 0603005A

Suggested Recipient: Precision Engineering and Manufacturing Alliance

Suggested Location of Performance: Ann Arbor, MI

Purpose/Project Description: Funding for this project would be used to develop and configure high-definition metrology, defect detection, and completeness-of-assembly technology research and development results needed for improved engineering and manufacturing process control for MRAP and related U.S. Army and Marine armored vehicles; thereby, promoting and improving the reliability, service life, performance, and manufacturing cost efficiency of these essential vehicles as deployed to U.S. combat troops.

Item: Sensor Collection Predictive Analysis

Request: \$3,000,000

Account: RDA

Line: 35

PE: 603008

Suggested Recipient: Fs4 Usa, Llc

Suggested Location of Performance: Midland, MI

Purpose/Project Description: This project would provide the users and operators of unmanned ground vehicles' and unmanned aerial vehicles' information via collected sensor analyzed traffic through a predictive analysis engine. It would use the predictive analysis engine to produce meaningful data from an array of sensors in UGVs, UAVs or other unmanned vehicle types. This

predictive analysis engine will have the ability to produce meaningful data from raw sensor data to the operator, allowing for instant action. The collaborative data will then be utilized by command structures to make informed decisions.

Item: Hydrokinetic Energy Converter

Request: \$3,800,000

Account: RDA

Line: 60

PE: 0603725N

Suggested Recipient: Vortex Hydro Energy, LLC

Suggested Location of Performance: Ann Arbor, MI

Purpose/Project Description: This project will build and demonstrate a hydrokinetic power generation system based on the phenomenon of vortex induced vibration. The technology behind the system represents a major breakthrough in the area of hydrokinetic power (power derived from water movement). Funding will be used to build, test, and install a full-scale prototype in the St. Clair River in St. Clair Shores, Michigan. A fully developed system will be capable of supplying power to Navy facilities or instrumentation clusters.

Item: Rapid Virtual Prototyping for Thermal Analysis of Electronics/Electrical Systems involved in Hybrid Vehicle Technology

Request: \$3,000,000

Account: RDA

Line: 33

PE: 0603005A

Suggested Recipient: TES International LLC

Suggested Location of Performance: Troy, MI

Purpose/Project Description: Funding would be used to incorporate critical elements for the thermal modeling of electric and/or hybrid automotive power train components as part of a total vehicle thermal model into the software developed. These components include the battery system and the electric motor as well as all other electrical components. This tool could be used to design upgrades for cooling systems in existing vehicles and for the overall design of cooling systems in future military vehicles, both conventional and hybrid.

Item: Base Security System

Request: \$2,000,000

Account: RDA

Line: 33

PE: 0603005A

Suggested Recipient: Lowry Computer Products, Inc.

Suggested Location of Performance: Lansing, MI

Purpose/Project Description: This request is to enhance the current Base Security System in the State of Michigan to expand the number of Command Kits and Mobile PIV Kits. Funding would provide the Michigan National Guard with an internet enabled application to allow connected devices to track an evacuee, giving the latest location/destination of the evacuee to both the current and future Michigan National Guard command, and control over a site of a terrorist attack such as Fort Hood or a natural disaster.

Item: Intelligent Orthopedic Fracture Implant System (IOFIS)
Request: \$3,500,000
Account: RDA
Line: 30
PE: 0603002A

Suggested Recipient: Mott Community College

Suggested Location of Performance: Flint, MI

Purpose/Project Description: Funding would be used to implement complete healing of critical sized skeletal defects with reduced patient rehabilitation time by stabilizing bone segments and using a scaffold to deliver antibiotic and bone growth-promoting drugs into the defect on an optimized controlled release schedule. With a primary objective to deploy Intelligent Orthopedic Fracture Implant System into human clinical trials in the nearest possible term, the team strategy is to first optimally and uniquely integrate existing FDA approved scaffold and drug components to produce an implant system where the scaffold will be permanently and safely incorporated into the healed bone defect. The longer term objective is to produce a bioresorbable scaffold that will disappear from the healed bone over time.

Item: Versatile Laser Protection Material
Request: \$2,000,000
Account: RDA
Line: E01
PE: 0602786A

Suggested Recipient: Michigan Molecular Institute

Suggested Location of Performance: Midland, MI

Purpose/Project Description: This project would utilize the salient features of the technology by making use of a series of laser blocking additives embedded within a highly transparent, light stable, and a proprietary polymer system that can be easily applied to a variety of surfaces. The system instantly responds when hit by a high intensity laser beam thereby protecting whatever is behind the protective layer. These systems are being developed to protect highly sensitive optical equipment as well as to give superior eye protection for the soldier. In the commercial sector, there is also interest in such areas as hospital laser surgical units, law enforcement, and commercial aviation.

Item: Electro-kinetic (E-K) Wind Energy for Rapid Deployment Applications
Request: \$1,900,000
Account: RDA
Line: 5
PE: 0602123N

Suggested Recipient: Accio Energy, Inc.

Suggested Location of Performance: Ann Arbor, MI

Purpose/Project Description: The purpose of this project is to develop a portable, scalable, modular wind energy technology for military applications that is rapidly deployable, robust and damage tolerant. This will address operational needs for in theater renewable energy, as well as support the larger Department of Defense objective of meeting 25% electricity needs from renewable sources by 2025.

Item: REDS, Re-Engineering for Depots and the Supply Chain
Request: \$5,000,000
Account: RDA
Line: 33
PE: 0603005A

Suggested Recipient: Onodi Tool & Engineering

Suggested Location of Performance: Melvindale, MI

Purpose/Project Description: This project will help overcome platform weight and produce parts on-demand through an expedient, and a cost effective acquisition process. The request will also overcome limited resources available to develop innovative re-engineering and cost effective acquisition for problematic and obsolete hard metal parts.

Item: Navy Electric Actuation Systems Development
Request: \$5,400,000
Account: RDN
Line: 1319
PE: NAVSEA 0603561N (Advanced Submarine Systems Development)

Suggested Recipient: Beaver Aerospace & Defense, Inc.

Suggested Location of Performance: Livonia, Michigan

Purpose/Project Description: Advancements in technology and opportunity make the time right to replace the hydraulic actuator system with electro-mechanical actuators in the next class of submarines. It is critical that the testing of electro-mechanical actuators be completed in the early phases of design. Replacing the hydraulic system provides numerous benefits to the war fighter including reduced maintenance, reduced noise, weight reduction, elimination of environmental hazards (leaking hydraulic fluid), and reduction in power consumption. Additionally, replacing the hydraulic power supply and the associated miles of tubing presently in use with electro-mechanical actuators frees up critical space within the hull of the ship.

Item: Lean Supply Chain and Pilot Production Facility
Request: \$9,000,000
Account: DPA
Line: 1
PE: N/A

Suggested Recipient: QinetiQ North America (QNA)

Suggested Location of Performance: At a facility to be established in Southeast Michigan.

Purpose/Project Description: The purpose of this project is to scale up production capacity for third-generation Modular Advanced Armed Robotic System (MAARS) Unmanned Ground Vehicles (UGVs) through the Title III, Defense Production Act, to establish a lean supply chain and a world-class facility capable of cost-effective production of large quantities of reliable systems. This will help meet current and future military demands for these UGV units while creating 500 jobs in Michigan. FY 2011 funding will be used to develop the lean supply chain and pilot manufacturing facility for MAARS in Southeast Michigan.

Item: Mid-Infrared Super Continuum Laser (MISCL) for light aircraft missile defense
Request: \$3,500,000
Account: RDA
Line: DK16
PE: 0603270A

Suggested Recipient: Omni Sciences, Inc.

Suggested Location of Performance: Ann Arbor, MI

Purpose/Project Description: Enemy heat-seeking anti-aircraft missiles are becoming more sophisticated, rendering traditional infrared countermeasure (IRCM) methods ineffective. Current IRCMs are not practical for light aircraft such as helicopters because they are large, heavy, expensive, and require frequent maintenance. The Mid-Infrared Super Continuum Laser (MISCL) is light weight and has no moving parts. Project goals are to improve the engineering of the prototype up to Technical Readiness Level, to increase the long wavelength range of the laser, and to increase the overall laser power so that the output can be modulated with jamming codes while maintaining the militarily relevant power levels.

Item: Flammability, Smoke, and Toxicity (FST) Standards for Military Ground Vehicles to Improve Health and Safety of Troops
Request: \$4,800,000
Account: RDA
Line: 33
PE: 0603005A-63305

Suggested Recipient: Lawrence Technological University

Suggested Location of Performance: Southfield, MI

Purpose/Project Description: The U.S. Army does not currently have Flammability, Smoke, and Toxicity (FST) Standards for Military Ground Vehicles and the current Automatic Fire Extinguisher System deployed in these vehicles is inadequate for the combat situations being faced today and expected in the future. Lawrence Tech's, Center for Innovative Materials Research (CIMR), working in collaboration with the TARDEC and the Army Research Laboratory (ARL), will provide critical assessment, testing and evaluation of materials, vehicle components, vehicle sections, and entire vehicles to determine acceptable Flammability, Smoke, and Toxicity (FST) Standards aimed at improving health and safety and increasing survivability for troops.

Item: Center for Genetic Origins of Cancer

Request: \$5,750,000

Account: RDA

Line: 30

PE: 0603002A

Suggested Recipient: University of Michigan

Suggested Location of Performance: Ann Arbor, MI

Purpose/Project Description: Funding for this project would be used for cancer patients in Michigan to participate in the nationally preeminent U.S. Department of Defense National Functional Genomics Center to accelerate discovery of molecular signatures for cancers and rapidly develop new personalized drugs to more effectively treat cancer patients with the right treatment, to the right patient at the right time.

Item: Center for Advanced Energy Storage Research and Technology at Michigan State University

Request: \$5,000,000

Account: RDA

Line: 33

PE: 0601102A

Suggested Recipient: Michigan State University

Suggested Location of Performance: East Lansing, MI

Purpose/Project Description: The Center for Alternative Energy Storage Research and Technology (CAESRT) at Michigan State University is a center of excellence for the synthesis, design, and validation of high energy and power density storage devices and systems for defense (US Army) and civilian applications. CAESRT will achieve this objective by conducting innovative, high impact, fundamental and applied research in materials, technology and systems for storing and retrieving energy, developing the next generation of energy storage batteries and electrochemical capacitors through the use of innovative nonmaterials and nanoarchitectures and working closely with defense, state and the private sector to transfer this technology to industry.

Item: Electrodeposited Aluminum as a Replacement for Cadmium Plating
Request: \$6,650,000
Account: DPA
Line: 1
PE: N/A

Suggested Recipient: PPI Aerospace

Suggested Location of Performance: Warren, MI

Purpose/Project Description: The purpose of this project is to enable supply chain industrialization through the Title III, Defense Production Act, by establishing and qualifying a second source of electroplated aluminum as a replacement in defense products for cadmium which has been designated as a known human carcinogen. A second source will enable the Department of Defense program life cycle cost savings by eliminating sole source risk. FY2011 funding will be used to establish and qualify electroplated aluminum capacity in Michigan.

Item: Development of Flame Retardant Textile Fabric for Military Clothing and Other Applications

Request: \$1,500,000

Account: RDA

Line: 60

PE: 0603739N

Suggested Recipient: Eastern Michigan University

Suggested Location of Performance: Ypsilanti, MI

Purpose/Project Description: Funding for this project would be used to develop, design, fabricate, and test a new highly fire-resistant textile fabric. This flame-retardant property will be durable even after numerous washings without diminishing the fabric's effectiveness and appearance. This advanced-protection technology uses novel chemistry to increase the safety of military personnel, particularly soldiers in combat, who are exposed to fire in the course of duty. Research will be done in partnership with the U.S. Army Natick Soldier Systems Center, MA.

Item: Highly Integrated Production for Expediting Reset (HIPER)

Request: \$6,200,000

Account: RDA

Line: 17

PE: 0602624A

Suggested Recipient: nVision Inc

Suggested Location of Performance: Wixom, MI

Purpose/Project Description: Funding for this project would utilize laser scanning technology at Anniston Army Depot to quickly determine battle damaged and/or defective parts that need replacing, avoiding the need to replace good parts, and rapidly determine if a part is non-

conforming before it is inserted into a weapon. Highly Integrated Production for Expediting Reset (HIPER) will also utilize laser scanning to create 3D models of the ARDEC-designed parts required for the product improvements to be applied at Anniston. Finally, the project would deliver a web-based environment where design engineers in NJ can collaborate real-time with manufacturing engineers in Alabama to develop improvements that meet war fighters needs.

Item: Advanced Manufacturing Technology for High Efficiency Solar Laminates
Request: \$3,700,000
Account: RDA
Line: R-1 Line 25
PE: 602784A

Suggested Recipient: United Solar Ovonic, LLC.

Suggested Location of Performance: Troy, Michigan

Purpose/Project Description: This project would develop processes to produce high efficiency thin film silicon photovoltaic on flexible substrates, reduce cost/watt, and increase electrical power generated from roof installations. Major applications will be Department of Defense buildings/parking structures to charge hybrid vehicles. First year funding will be used to optimize the deposition process for nanocrystalline silicon films to create higher efficiency photovoltaic. In parallel, large area solar modules will optimize total area efficiency for highest power output possible, making best use of any available rooftop area. This project includes installing a demonstration system incorporating photovoltaic on the parking structure to charge hybrid vehicles. Technology will be scaled up in subsequent years to provide modules for larger installations.

Item: Total Perimeter Surveillance
Request: \$1,200,000
Account: RDA
Line: 34
PE: 0603384BP

Suggested Recipient: Dexter Research Center, Inc.

Suggested Location of Performance: Dexter, MI

Purpose/Project Description: Passive infrared spectroscopy is the standard, proven technique for identifying chemical threats at a distance. However, Fourier-Transform Infrared -based systems are too bulky, complex and maintenance intensive and lack performance when sensing threats released close to the horizon. This project would fund research using passive/near-passive infrared spectroscopy which is a proven standard for standoff molecular detection and vapor sensing. As such, an ensemble of near-passive self-contained infrared spectrometers would be properly networked will give 360 degree coverage of a facility. This project aims to develop an effective and high-confidence solution for aerosol release monitoring.

Item: GEI Deployable Multi-Fuels Mobile Electric Generator
Request: \$5,000,000
Account: RDA
Line: 50
PE: 603734A

Suggested Recipient: Global Energy Innovations

Suggested Location of Performance: Flint, MI

Purpose/Project Description: Current power generation technologies are inefficient, noisy, bulky and limited to diesel fuel, and are not compatible with military future base and fleet requirements. This project aims to create a generator that can reduce fuel consumption, operate cleanly, be easy to deploy, and operate quiet power for Special Forces and Silent Watch Operations.

Item: Superconducting Injector R&D for a MW Free Electron Laser
Request: \$7,000,000
Account: RDA
Line: 4
PE: 0602114N

Suggested Recipient: Niowave, Inc.

Suggested Location of Performance: Lansing, MI

Purpose/Project Description: The Department of Defense requires a domestic industrial facility of this nature to develop the military applications of accelerator technology. As superconducting particle accelerator technology matures, military applications such as the Free Electron Laser are becoming deployable in the near future. This project will create a domestic industrial high-power test facility required to develop this technology. Without this kind of facility, the United States will fall behind other nations in developing the technology, putting our national security at risk.

Item: Armed Forces Institute of Pathology Tissue Repository Modernization
Request: \$4,500,000
Account: RDA
Line: 30
PE: NA

Suggested Recipient: Asterand plc

Suggested Location of Performance: Detroit, MI

Purpose/Project Description: Asterand will implement a modernization plan for the Tissue Repository at the Armed Forces Institute of Pathology beginning in 2011, that will improve access, retrievability and usefulness of the collections for government sponsored scientific research and consultations; and prepare the tissue collections for access by the broader medical and scientific research community, ultimately positioning Michigan as a world class resource in support of diagnostic consultation, education, training, and research.

Item: Distance Education for Military Personnel
Request: \$1,125,453
Account: MPA
Line: N/A
PE: N/A

Suggested Recipient: Sienna Heights University

Suggested Location of Performance: Adrian, MI

Purpose/Project Description: Funds for this project would support the technology expenses for teaching the classes and digitalizing student services, such as digitizing the processing of MOS (Military Occupational Specialty) credits for deployed members of the military.

Item: Unmanned Aerial Systems with Electronic Skin
Request: \$2,000,000
Account: RDA
Line: 79
PE: Z4, 0603890C

Suggested Recipient: Ann Arbor Aircraft

Suggested Location of Performance: Adrian, MI

Purpose/Project Description: This project would develop scalable Blended Wing Body (BWB) Unmanned Aerial Systems with Printed Electronic Skin (PES). The UAS will be comprised of a carbon composite for increased ruggedness and reduced weight. The PES will allow for increased electronic functions such as imaging, sound, sensing and an RF link for reach back communication. This PES will reduce the weight of the payload, thus increasing the fuel allowance and the mission endurance. This project would integrate the world's first variable velocity automatic weapon system capable of reliable non-lethal engagements as well as the added capability to deliver lethal force to be mounted on various unmanned aerial systems.

Item: SiC Inverters for Army Tactical Quiet Generators
Request: \$2,000,000
Account: RDA
Line: 18
PE: 0602705A

Suggested Recipient: Dow Corning Corporation

Suggested Location of Performance: Midland, MI

Purpose/Project Description: This project will transfer silicon carbide (SiC) power electronics technology to a mobile electric power tactical generator field prototype system. Manufacturing and integrating state-of-the-art SiC power modules into generator units, the Army could reduce the weight of the power electronic inverter systems by approximately 50% while simultaneously enabling a two-time reduction in electrical conversion losses compared to legacy power systems

technology, thus significantly contributing to overall Army goals to reduce fuel resupply needs to forward operating bases.

Item: Tomahawk Cost Reduction Initiative
Request: \$7,600,000
Account: RDN
Line: 173
PE: PE0204229N

Suggested Recipient: Williams International

Suggested Location of Performance: Wallad Lake, MI

Purpose/Project Description: The purpose of the continuation of this program is to proactively insert new and affordable technology into the Tomahawk missile Williams International engine system to assure long term affordability, performance and reliability, leading to a more affordable missile system that meets the overall budget objectives. The project helps maintain a critical technology base necessary for future Department of Defense Cruise Missile projects. The project is currently in Phase I, the identification and preliminary design of improved technologies and lower cost solutions.

Item: Poplar Fuel Point Alternative Energy Program and Mobile Bio-Refinery System
Request: \$5,000,000
Account: RDA
Line: 5
PE: 0602105A

Suggested Recipient: Alion Science and Technology

Suggested Location of Performance: Mt Clemens, MI

Purpose/Project Description: The Department of Defense has expressed urgency for access to an economically viable and reliable source of ethanol to support E85 fleets, which continue to consume standard production gasoline. This project would develop a successful prototype bio-refinery for this purpose, the Mobile Bio-Refinery System (MBRS), but further development is needed to make the system competitive with petroleum-based energy products at wholesale levels. While some funds will be used to acquire needed equipment, the program will complete the engineering upgrades, testing, and fielding of the portable MBRS.

Item: Hydraulic Hybrid Vehicles (HHV) for the Tactical Wheeled Fleet
Request: \$2,700,000
Account: RDA
Line: 33
PE: 0603005 A

Suggested Recipient: Bosch Rexroth Corporation

Suggested Location of Performance: Rochester Hills, MI

Purpose/Project Description: To address the needs of the tactical wheeled fleets for significantly reduced fuel consumption, improved vehicle performance and mobility. This project would further develop technology for introduction into military and commercial vehicle applications. Expected outcomes include improved fuel economy by up to 70%, reduced emissions by 50% as compared to conventional drive train configuration, reduce vehicle maintenance and lifecycle costs due to reduction in brake and engine wear, and improve acceleration, enhancing mission performance. The enabling technology of this hydraulic hybrid system is a highly efficient hydraulic pump & motor products, replacing the conventional transmission.

Item: HYDRA-AUGV

Request: \$3,500,000

Account: RDA

Line: 33

PE: 0603005A

Suggested Recipient: Raytheon Company

Suggested Location of Performance: Troy, Michigan

Purpose/Project Description: This request will convert the current manned hybrid all terrain vehicle known as Hy-DRA to an unmanned semi-autonomous, armed reconnaissance vehicle. The program will include developing a guidance and control system for the vehicle (hardware & software), a remote control station capable of being mounted in another vehicle or stationary location, and a precision weapon gimbals with auto target tracking capability.

Item: Mobile Laser Deposition Work Cell

Request: \$3,000,000

Account: RDA

Line: 16

PE: 603123

Suggested Recipient: Focus: Hope

Suggested Location of Performance: Detroit, Michigan

Purpose/Project Description: The proposed system would extend work done by the Naval Undersea Warfare Center, Keyport, Washington and Focus: HOPE in Laser Direct Metal Deposition (DMD) to provide the Department of Defense with a Common Mobile Platform capable of Deployment to remote areas using standard ISO containers. The system would consist of two modules, the Mobile Laser Deposition Module (MLDM) and the Mobile Remote Machining Module (MRMM).

Item: Fault Current Limiting Systems for the Navy's CVN and DDX Integrated Power Systems
Request: \$4,000,000
Account: RDA
Line: 5
PE: 0602123N

Suggested Recipient: Grid Logic Incorporated

Suggested Location of Performance: Metamora, MI

Purpose/Project Description: This project will address the need for advanced technologies for the Navy. Fault Current Limiters (FCLs) for use in shipboard applications represent an enabling component of future naval power systems. This project seeks to connect all shipboard generators to the same network. Without FCLs in place, the power system has the potential for catastrophic fault currents greater than 100,000 Amps. The recipients FCLs will enable the integration into the Navy's current system.

Item: Dual Frequency Hub Mounted Vibration Suppressor
Request: \$5,000,000
Account: RDA
Line: 31
PE: 0603003A

Suggested Recipient: LORD Corporation

Suggested Location of Performance: Arsenal, AL

Purpose/Project Description: This project will utilize funds to take advantage of an Operational Test and Evaluation with the UH-60 Program Office, and the Aviation Advanced Technology Directorate (AATD) to develop the Dual Frequency Hub Mounted Vibration Suppressor with great potential to achieve zero vibration for Black Hawk Helicopters in both steady and transient state operations. On many helicopters, vibration control treatment is required for safe operation. The existing Dual Frequency Hub Mounted Vibration Suppressor replaces the heavy and bulky bifilar vibration dampers that currently reside on the UH-60 Black Hawk main rotor head.

Item: Dual Mode Hybrid Drive System for Heavy Duty Wheeled Military Vehicles
Request: \$4,000,000
Account: RDA
Line: 33
PE: 603005

Suggested Recipient: ArvinMeritor, Inc.

Suggested Location of Performance: Troy, MI

Purpose/Project Description: This project would demonstrate a Class 8 hybrid power train that can offer significant operational benefits for military vehicles. Project goals include reduced

emissions; the capability to provide exportable electric power (up to 40 kW-hrs of battery capacity) and an engine-off mode of operation for extended periods of time. Funding will be used to conduct laboratory validation testing of the hybrid drive train to confirm that both component level and system level durability and reliability targets are achieved. A vehicle would be built to demonstrate and document the system benefits in military wheeled vehicle applications, such as the M915.

Item: Cancer Vaccine and Immunotherapy Project (Cancer VIP)
Request: \$5,135,000
Account: RDA
Line: 28
PE: 0602787A

Suggested Recipient: Barbara Ann Karmanos Cancer Institute

Suggested Location of Performance: Detroit, MI

Purpose/Project Description: The Cancer Vaccine and Immunotherapy Project (Cancer VIP) would develop novel immune agents to combat cancer by mobilizing patients' own immune system. Based on research and clinical trials at KCI, Cancer VIP will develop vaccine and immunotherapy platforms to trigger a patient's immune system to kill cancer cells that standard therapies leave behind. These therapies will provide the military with new weapons in the anti-cancer arsenal to protect our service members and veterans.

Item: Office of Naval Research Alternative Fuels Program
Request: \$4,500,000
Account: RDN
Line: 5
PE: 0602123N

Suggested Recipient: Fev, Inc.

Suggested Location of Performance: Auburn Hills MI

Purpose/Project Description: The Secretary of the Navy's green fleet initiative will reduce petroleum based fuel consumption by introducing the use of fuels produced from renewable sources. The bio-fuels currently of interest to the US Navy are produced from non-food plant sources and will be blended with the Navy's current fuels. To achieve this, a sample set of large bore and small bore engines have been selected, representing the largest cross-section of varying hardware and sub-system components. This project will quantify any bio-fuel induced operational implications on Navy engine performance, emissions, fuel consumption and fuel system durability.

Item: Automatic Data Organization for Vehicle and Diagnostic Systems
Request: \$2,500,000
Account: RDA

Line: Line 33

PE: 0603005A

Suggested Recipient: BOSSdev, Inc.

Suggested Location of Performance: Troy, MI

Purpose/Project Description: This funding will support an Army research and development project to develop a web-based, collaborative software platform that will link the dozens of databases that track vehicle parts and maintenance. The Army currently does not have a central software tool that can effectively link the dozens of databases used to manage vehicle parts and maintenance. The funds will be used to conduct research on the Army vehicle databases and customize an existing software tool to meet the needs of the Army's vehicle maintenance system. The goal of the project is to provide a centralized software tool that the Army can use to link its vehicle databases.

Item: Antimicrobial Army Mobile Medical Facilities

Request: \$4,100,000

Account: RDA

Line: 179

PE: 0708045A

Suggested Recipient: Midbrook

Suggested Location of Performance: Jackson, MI

Purpose/Project Description: The project objective is to develop and construct a full-scale adaptation of an Army mobile medical treatment facility for a demonstration project, utilizing equipment proven to be antimicrobial with the objective of reducing war fighter susceptibility to opportunistic infections acquired in the military theater and improve force readiness in operational environments.

Item: Plug-In Hybrid Electric Vehicle Demonstration

Request: \$3,000,000

Account: RDA

Line: 33

PE: 0603005A

Suggested Recipient: Ricardo, Inc US

Suggested Location of Performance: Van Buren Township, MI

Purpose/Project Description: This project would develop and field implementation of a plug-in hybrid electric power train for use in non-tactical vehicle fleets (base use) in order to demonstrate vehicle electrification technology. Developing two initial vehicle demonstration units (one light-duty and one medium-duty or one van and one truck) will allow testing and development of plug-in hybrid vehicles on a domestic military base for vehicle-to-grid interface, including smart transportation and grid buffering, while providing increased fuel efficiency and significant energy reduction as mandated by the Department of Defense.

Item: Off-Board Electric Vehicle Charger for US Army Operations
Request: \$4,000,000
Account: RDA
Line: 33
PE: 0603005A

Suggested Recipient: National Automotive Center, U.S. Army Research, Development and Engineering Command

Suggested Location of Performance: Warren, MI

Purpose/Project Description: The project would use an Off-Board Charger (OBC) to charge the electric vehicle (EV) battery directly removes disadvantages associated with on-board charger inefficiency, cost, weight, and volume and also allows grid services in the form of Vehicle-to-Grid (V2G) peak shaving and frequency regulation. Depending on the power level, the OBC enables charging times of four to six hours for Army vehicles ranging from small neighborhood EVs (NEVs) to pickup trucks to large tactical vehicles. This effort in conjunction with Tank Automotive Research, Development and Engineering Center (TARDEC) will develop a prototype 10kW OBC and demonstrate its capabilities, consequences to the grid, installation costs and user convenience in multiple Army base applications with EVs.

Item: Portable Electric Vehicle Charger for US Army Operations
Request: \$3,000,000
Account: RDA
Line: 33
PE: 0603005A

Suggested Recipient: National Automotive Center, U.S. Army Research, Development and Engineering Command

Suggested Location of Performance: Warren, MI

Purpose/Project Description: A portable charging appliance (PCA) for electric vehicles (EVs) that plugs into a normal 120VAC outlet wouldn't require an expensive electrical installation, would act in synergy with the Smart Grid and would allow for an EV and plug-in hybrid EV (PHEV) charging time of four to five hours. The PCA, (7kW), would use advanced batteries to store off-peak grid power or renewable power in conjunction with Electric Vehicle Supply Equipment (EVSE) and also provide peak shaving. This effort in conjunction with Tank Automotive Research, Development and Engineering Center (TARDEC) will develop a prototype PCA and demonstrate its capabilities, consequences to the grid, installation costs and user convenience in multiple Army base applications with EVs.

Item: Next Generation Superchargers for Increasing the Power and Performance of Military Engines
Request: \$4,000,000

Account: RDA
Line: 33
PE: 0603005A; Combat Vehicle and Automotive Advanced Technology

Suggested Recipient: Eaton Corporation

Suggested Location of Performance: Marshall, MI

Purpose/Project Description: Funding would be used to develop a military vehicle specific supercharger that will increase power and acceleration for a wide range of vehicles. The project meets a critical national need as military vehicle power and acceleration have suffered greatly due to both vehicle weight increase and operation in hot desert conditions.

Item: Combining High Dynamic Range Photography and High Range Resolution RADAR for Pre-discharge Threat Cues at Michigan Technological University

Request: \$3,500,000

Account: RDA

Line: N/A

PE: 63005/D221

Suggested Recipient: Michigan Technological University

Suggested Location of Performance: Houghton, MI

Purpose/Project Description: This request is for the third and final year for research to develop a joint high dynamic range photography and high range resolution RADAR system on mobile platforms to provide pre-discharge threat warning in urban and mountain environments. Entrenched adversaries using their local terrain pose a significant threat to our ground based units. Snipers, Man-Portable Air-Defense Systems, RPGs are all mobile threats that can appear and disappear quickly. The threat serves to slow rate of advance and reduce force security. Urban terrain and mountain terrain are two especially difficult scenarios to detect these threats.

Item: Diminishing Manufacturing Sources and Material Shortages (DMSMS) Case Resolution Program

Request: \$5,000,000

Account: RDA

Line: 33

PE: 0603005A

Suggested Recipient: Automation Alley

Suggested Location of Performance: Sterling Heights, MI

Purpose/Project Description: This project would create a strategic partnership with TACOM Lifecycle Management Command (LCMC), specifically the engineering branch, and TARDEC to research and develop a new process of alleviating the Diminishing Manufacturing Sources and Material Shortages (DMSMS) problem that afflicts the sustainment of TACOM LCMC weapons systems. The DMSMS office that would be created would provide an efficient location of

companies that will be able to reengineer, test, evaluate and manufacture obsolete components, and thereby, reduce cost to TACOM LCMC, who must resolve issues. This work will be managed daily in the form of an off-base industry outreach office.

Item: Hydrocarbon Fueled Solid Oxide Fuel Cell Manufacturability
Request: \$6,000,000
Account: RDA
Line: 33
PE: 0603005A

Suggested Recipient: Adaptive Materials, Inc.

Suggested Location of Performance: Ann Arbor, MI

Purpose/Project Description: The purpose of this effort is to assess the operability and manufacturability of a hydrocarbon fueled solid oxide fuel cell in order to meet the U.S. Army's power needs for unmanned ground vehicles in persistent stare, route clearance, and explosive ordnance disposal (EOD) missions. This project will involve the evaluation of the solid oxide fuel cell design for the purposes of manufacturability, development of a manufacturing plan, and validation of the manufacturing plan through low- and high-volume production runs. The systems produced from the production runs will support the U.S. Army's early operational assessment or combined developmental and operational testing.

Item: Titanium Aluminate Smart Armor Advancement
Request: \$1,200,000
Account: RDA
Line: 33
PE: 78045A

Suggested Recipient: Solidica, Inc

Suggested Location of Performance: Ann Arbor, MI

Purpose/Project Description: The project is transitioning into production for a new lightweight armor for the military that is lighter than steel and less expensive than titanium. Military ground combat vehicles (eg. Humvees, personnel carriers, trucks) will be able to utilize this new armor, with significant (20%) weight saving (equating to a better lifecycle) and about 50% cost reduction for the same or better armor effectiveness. This year's funding will be used primarily to transition the program from R&D over to a manufacturing program.

Item: Integrated Starter Generator
Request: \$1,300,000
Account: RDA
Line: N/A
PE: N/A

Suggested Recipient: Spartan Motors

Suggested Location of Performance: Ann Arbor, MI

Purpose/Project Description: The purpose of this project is to develop the commercialization and use of technology known as an “integrated starter generator” in both commercial and military type vehicles. This is an electrical generator type device that can be mounted between the engine and a transmission of a vehicle. It takes up minimal space within the overall power package. It offers a significant opportunity to produce large amounts of electrical power, as much as 120 kW, while both in the stationary mode and the road mode using the primary engine of the vehicle. The power this device can produce could be used for both on board requirements such as high voltage electronics or electric motors to run a multitude of devices like fans, pumps, electric drive wheels, scene lighting, as well as off board electrical demands such as hospitals, shelters, fire and police stations all during natural disasters or other interruptions of grid electrical power.

Item: Multi-Disciplinary Center for Diagnosis and Treatment of Breast Cancer
Request: \$5,000,000
Account: BCRP
Line: N/A
PE: N/A

Suggested Recipient: Wayne State University

Suggested Location of Performance: Detroit, MI

Purpose/Project Description: Funds will be used to address the specific impact of breast cancer in Michigan. The project will translate landmark technologies from the engineering laboratory to the patient bedside, in conjunction with a cancer management continuum that begins with screening and diagnosis, transitions to better treatment guidance, and then monitors therapy outcomes at the local breast and full-body levels. Combining such a system with systemic immune monitoring would have a profound impact on the diagnosis and management of breast cancer nationally.

Item: Sonic IR Imaging Technology Development
Request: \$2,000,000
Account: RDA
Line: 1
PE: 0603112F

Suggested Recipient: Wayne State University

Suggested Location of Performance: Ann Arbor, MI

Purpose/Project Description: This project, in collaboration with the Air Force Research Lab, is working to develop and deploy Sonic IR, an emerging technology for high-speed inspection of air craft engines and structures to detect cracks that have the potential to cause catastrophic accidents. Sonic IR technology would improve the air worthiness of the nation’s aging military and civilian aircraft fleets that suffer from fatigue-induced cracks that can result in catastrophic and costly accidents.

Item: Production of Transparent Polycrystalline Materials
Request: \$7,000,000
Account: DPA, Title III
Line: 1
PE: N/A

Suggested Recipient: Nanocerox

Suggested Location of Performance: Ann Arbor, MI

Purpose/Project Description: Recent laser demonstrations utilizing materials manufactured overseas indicate that transparent polycrystalline laser gain materials, that use nano-particle powders, do demonstrate these higher levels of outpower which the Department of Defense has mandated. The Department of Defense has critical needs for unique laser materials manufactured via new ceramic technologies for advanced, near infrared, high power solid-state laser systems. This project will establish a domestic powder and domestic laser gain material manufacturer.

Item: Intensive Quenching for Advanced Weapon Systems (IQAWS)
Request: \$1,500,000
Account: RDA
Line: 8
PE: 060221A

Suggested Recipient: IQ Technologies, Inc

Suggested Location of Performance: Livonia, MI

Purpose/Project Description: Intensive Quenching for Advanced Weapons Systems (IQAWS) is an environmentally friendly heat treating process that provides steel components with superior mechanical properties. IQAWS allows for weight reduction while providing greater strength and service life. Funding would be used to implement the advanced heat treatment technology for hardening steel weapon system components for the Army – including helicopter power transmission components. The coalition working on IQAWS has worked with the Department of Defense's Benet Labs in the development of this technology. The project aims to have initial prototypes in the field by early 2011.

Item: Technological Solutions for Disabled Soldiers
Request: \$2,600,000
Account: OMDW
Line: 1
PE: N/A

Suggested Recipient: Wayne State University

Suggested Location of Performance: Ann Arbor, MI

Purpose/Project Description: Technological Solutions for Disabled Soldiers (TSDS) is a public/private venture including Urban Science (a Michigan business), Rehabilitation Institute of

Purpose/Project Description: Technological Solutions for Disabled Soldiers (TSDS) is a public/private venture including Urban Science (a Michigan business), Rehabilitation Institute of Michigan (RIM) and Wayne State University-College of Engineering. The mission is to create assistive technology and medical devices that will remove barriers for soldiers returning from service with physical disabilities, create jobs for underemployed and unemployed individuals, including injured veterans while developing an economic base in Detroit. Patients and professionals of RIM will identify needs which will be the basis for new products arising from new start-ups or new products from existing businesses. Prototyping, fabrication, marketing, distribution and sales jobs will spin-off from the new ventures. Urban Science will provide business management mentoring and WSU entrepreneurial training for students and faculty forming start-up companies.

I certify that neither I nor my immediate family has a pecuniary interest, consistent with the requirements of paragraph 9 of Rule XLIV of the Standing Rules of the Senate, in any congressionally-directed spending item that I requested for inclusion in the National Defense Authorization Act for Fiscal Year 2011.

If you have any questions, please contact Amit Kalra from my staff at 202-224-4822.

Sincerely,

A handwritten signature in cursive script, reading "Debbie Stabenow". The signature is written in dark ink and is positioned above a horizontal line.

Debbie Stabenow

United States Senator