| Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Navy | | | | | | | | | | | Date: February 2018 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Appropriation/Budget Activity<br>1319: *Research, Development, Test & Evaluation, Navy I* BA 2: *Applied Research* | | | | | R-1 Program Element (Number/Name)<br>PE 0602114N *I Power Proj Applied Research* | | | | | | | |
| **COST ($ in Millions)** | **Prior Years** | **FY 2017** | **FY 2018** | **FY 2019 Base** | **FY 2019 OCO** | **FY 2019 Total** | **FY 2020** | **FY 2021** | **FY 2022** | **FY 2023** | **Cost To Complete** | **Total Cost** |
| Total Program Element | 0.000 | 69.950 | 13.553 | 14.643 | - | 14.643 | 14.610 | 14.651 | 14.822 | 15.125 | Continuing | Continuing |
| 0000: *Power Proj Applied Research* | 0.000 | 50.607 | 13.553 | 14.643 | - | 14.643 | 14.610 | 14.651 | 14.822 | 15.125 | Continuing | Continuing |
| 9999: *Congressional Adds* | 0.000 | 19.343 | 0.000 | 0.000 | - | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 19.343 |

**A. Mission Description and Budget Item Justification**

The efforts described in this Program Element (PE) are based on investment directions as defined in the Naval Research and Development Framework. This strategy is based on needs and capabilities from Navy and Marine Corps guidance and input from the Naval Research Enterprise (NRE) stakeholders (including the Naval enterprises, the combatant commands, the Chief of Naval Operations (CNO), and Headquarters Marine Corps). It provides the vision and key objectives for the essential science and technology efforts that will enable the continued supremacy of U.S. Naval forces in the 21st century. The Strategy focuses and aligns Naval S&T with Naval missions and future capability needs that address the complex challenges presented by both rising peer competitors and irregular/asymmetric warfare.

This PE supports both advanced technology research and near to mid-term transition opportunities. The advanced research focus is primarily on directed energy, high speed weapon propulsion, and electro-optic/infrared (EO/IR) sensor technologies.

Due to the number of efforts in this PE, the programs described herein are representative of the work included in this PE.

| **B. Program Change Summary ($ in Millions)** | **FY 2017** | **FY 2018** | **FY 2019 Base** | **FY 2019 OCO** | **FY 2019 Total** |
|---|---|---|---|---|---|
| Previous President's Budget | 41.371 | 13.553 | 17.736 | - | 17.736 |
| Current President's Budget | 69.950 | 13.553 | 14.643 | - | 14.643 |
| Total Adjustments | 28.579 | 0.000 | -3.093 | - | -3.093 |
| • Congressional General Reductions | - | - | | | |
| • Congressional Directed Reductions | - | - | | | |
| • Congressional Rescissions | - | - | | | |
| • Congressional Adds | - | - | | | |
| • Congressional Directed Transfers | - | - | | | |
| • Reprogrammings | 9.796 | 0.000 | | | |
| • SBIR/STTR Transfer | -1.090 | 0.000 | | | |
| • Program Adjustments | 0.000 | 0.000 | -2.936 | - | -2.936 |
| • Rate/Misc Adjustments | 0.000 | 0.000 | -0.157 | - | -0.157 |
| • Congressional General Reductions Adjustments | -0.127 | - | - | - | - |
| • Congressional Add Adjustments | 20.000 | - | - | - | - |

| Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Navy | Date: February 2018 |
|---|---|
| **Appropriation/Budget Activity**<br>1319: *Research, Development, Test & Evaluation, Navy I* BA 2: *Applied Research* | **R-1 Program Element (Number/Name)**<br>PE 0602114N *I Power Proj Applied Research* |

**Congressional Add Details ($ in Millions, and Includes General Reductions)**

| | FY 2017 | FY 2018 |
|---|---|---|
| **Project:** 9999: *Congressional Adds* | | |
| Congressional Add: *Program Increase* | 19.343 | 0.000 |
| Congressional Add Subtotals for Project: 9999 | 19.343 | 0.000 |
| Congressional Add Totals for all Projects | 19.343 | 0.000 |

**Change Summary Explanation**

The FY 2019 funding request was reduced by $0.113 million to reflect the Department of Navy's effort to support the Office of Management and Budget directed reforms for Efficiency and Effectiveness that include a lean, accountable, more efficient government.

Technical: Not applicable.

Schedule: Not applicable.

| Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy | | | Date: February 2018 |
|---|---|---|---|
| Appropriation/Budget Activity<br>1319 / 2 | R-1 Program Element (Number/Name)<br>PE 0602114N / *Power Proj Applied Research* | Project (Number/Name)<br>0000 / *Power Proj Applied Research* | |

| COST ($ in Millions) | Prior Years | FY 2017 | FY 2018 | FY 2019 Base | FY 2019 OCO | FY 2019 Total | FY 2020 | FY 2021 | FY 2022 | FY 2023 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000: *Power Proj Applied Research* | 0.000 | 50.607 | 13.553 | 14.643 | - | 14.643 | 14.610 | 14.651 | 14.822 | 15.125 | Continuing | Continuing |

**Note**

Effective FY2018, the Electro Magnetic (EM) Railgun program funding, plans, and associated justification has been realigned to the new innovative naval prototype (INP) PE 0602792N Innovative Naval Prototypes.

**A. Mission Description and Budget Item Justification**

This project addresses the technology issues involving the Navy's capability to project naval power on the broad seas and in the littoral regions.

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2017 | FY 2018 | FY 2019 Base | FY 2019 OCO | FY 2019 Total |
|---|---|---|---|---|---|
| ***Title:*** DIRECTED ENERGY | 20.752 | 4.556 | 6.463 | 0.000 | 6.463 |
| ***Description:*** The goal of this activity is to develop Directed Energy (DE) technology for Navy applications. The DE program addresses the requirements of future Navy combatants to provide ship defense against the emerging threats that are proliferating throughout the Navies of the world. The Directed Energy portion of this activity consists of two elements.<br><br>The decrease from FY 2017 to FY 2018 reflects the realignment of the Solid-State Laser - Technology Maturation (SSL-TM) program funding to the new innovative naval prototype (INP) PE - 0602792N Innovative Naval Prototypes.<br><br>***FY 2018 Plans:***<br>Directed Energy Research:<br>Initiate research in component technologies and basic understanding of laser/material interactions to enable higher power, more lethal High Energy Laser, high power Microwave/Radio Frequency, and Ultra Short Pulse Laser weapons capabilities. Some examples of research include the development of novel laser and beam directory architectures, improved sensor and illuminator technologies including materials and coating, improved HEL electrical to optical efficiency, improved laser sources with enhanced spectrum control, reduced system jitter and improved precision aim point maintenance. Other research areas that will be explored are the syntheses of target recognition, pose/trajectory estimation, autonomous aim point selection and maintenance including tracking through intermittent viewing conditions such as waves and clouds, understanding atmospheric characterization and modeling tools, blooming, laser/material/target interactions, novel laser sources in Medium | | | | | |

| Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy | | Date: February 2018 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 2 | **R-1 Program Element (Number/Name)**<br>PE 0602114N / *Power Proj Applied Research* | **Project (Number/Name)**<br>0000 / *Power Proj Applied Research* |

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2017 | FY 2018 | FY 2019 Base | FY 2019 OCO | FY 2019 Total |
|---|---|---|---|---|---|
| Wavelength Infrared (MWIR) and Long Wavelength Infrared (LWIR) (4-12 microns), USPL propagations and effects. Research will continue in Counter Directed Energy Weapons (CDEW), in response to the development of high energy laser (HEL) and high-power microwave (HPM)/high-power radio frequency (HPRF) threats. Complete effort to develop a fiber based high power laser operating in the eye safe regime beyond 2 microns.<br><br>Electronics<br><br>Develop & apply innovative S&T in plasmas, pulsed power, electromagnetic acceleration, particle beams, high-energy & ultra-short-pulse lasers (USPL), and non-linear optics to support current and future Navy and DoD needs.<br>***FY 2019 Base Plans:***<br>Directed Energy Research:<br>Continue research and thrusts in component technologies and basic understanding of laser/material interactions to enable higher power, more lethal High Energy Laser, high power Microwave/Radio Frequency, and Ultra Short Pulse Laser weapons capabilities. Some examples of research include the development of novel laser and beam directory architectures, improved sensor and illuminator technologies including materials and coating, improved HEL electrical to optical efficiency, improved laser sources with enhanced spectrum control, reduced system jitter and improved precision aim point maintenance. Other research areas that will be explored are the syntheses of target recognition, pose/trajectory estimation, autonomous aim point selection and maintenance including tracking through intermittent viewing conditions such as waves and clouds, understanding atmospheric characterization and modeling tools, blooming, laser/material/target interactions, novel laser sources in Medium Wavelength Infrared (MWIR) and the Long Wavelength Infrared (LWIR)-(4-12 microns), USPL propagations and effects. Research will continue in Counter Directed Energy Weapons (CDEW), in response to the development of high energy laser (HEL) and high-power microwave (HPM)/high-power radio frequency (HPRF) threats. Complete effort to develop a fiber based high power laser operating in the eye safe regime beyond 2 microns.<br><br>Electronics: Continue applied research efforts to apply innovative S&T in plasmas, pulsed power, electromagnetic acceleration, particle beams, high-energy & ultra-short-pulse lasers (USPL), and non-linear optics to support current and future Navy and DoD needs.<br>***FY 2019 OCO Plans:*** | | | | | |

| Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy | | Date: February 2018 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 2 | **R-1 Program Element (Number/Name)**<br>PE 0602114N / *Power Proj Applied Research* | **Project (Number/Name)**<br>0000 / *Power Proj Applied Research* |

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2017 | FY 2018 | FY 2019 Base | FY 2019 OCO | FY 2019 Total |
|---|---|---|---|---|---|
| N/A<br><br>***FY 2018 to FY 2019 Increase/Decrease Statement:***<br>The funding increase in FY 2019 supports increased investment in laser component technologies. | | | | | |
| ***Title:*** HIGH SPEED PROPULSION AND ADVANCED WEAPON TECHNOLOGIES | 3.813 | 4.712 | 3.878 | 0.000 | 3.878 |
| ***Description:*** The high speed weapons work in this activity is focused on demonstrating propulsion and vehicle technologies for Mach3+ to Mach8 capable weapons. This work includes technologies associated with high acceleration capable projectile structures, high temperature and high strength materials to enable projectiles to survive high speed launch environment, improved thermal prediction methodologies and test techniques, wide dynamic pressure adaptable projectile controls and non-explosively launched lethal mechanisms. The high speed projectile technologies are intended to support long range Naval Surface Fire Support weapons.<br><br>***FY 2018 Plans:***<br>-Examples of current investments include topics relevant for development of high speed/hypersonic aerodynamics technologies to support exploratory development to enable very long range hypersonic boost-glide missiles and hypersonic ship-launched projectiles. Specific research and development plans include: development of very long range hypersonic boost-glide missiles and hypersonic ship-launched projectiles; advanced computational and experimental techniques for hypersonic boundary layer transition; high temperature thermal management research; ultra-high temperature materials research for hypersonic leading edges and nose tips; technology maturation of advanced airframes and controls; high G-force components and miniaturization of electronics; advanced guidance and control technologies for high speed weapons; insulator and ablative technology investigations; high speed propulsion and integrated airframe technology development to enhance system range, responsiveness, and reliability; and advanced material solutions to high speed airframes and air systems operating in maritime environments.<br><br>***FY 2019 Base Plans:***<br>-Continue current investments to include topics relevant for development of high speed/hypersonic aerodynamics<br>technologies to support exploratory development to enable very long range hypersonic boost-glide missiles and hypersonic<br>ship-launched projectiles. Specific research and development plans include continued development of very long range hypersonic boost-glide missiles and hypersonic ship-launched projectiles; advanced computational and experimental techniques for hypersonic boundary layer transition; high temperature thermal management | | | | | |

| Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy | | Date: February 2018 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 2 | **R-1 Program Element (Number/Name)**<br>PE 0602114N / *Power Proj Applied Research* | **Project (Number/Name)**<br>0000 / *Power Proj Applied Research* |

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2017 | FY 2018 | FY 2019 Base | FY 2019 OCO | FY 2019 Total |
|---|---|---|---|---|---|
| research; ultra-high temperature materials research for hypersonic leading edges and nose tips; technology maturation of advanced airframes and controls; high Gforce components and miniaturization of electronics; advanced guidance and control technologies for high speed weapons; insulator and ablative technology investigations; high speed propulsion and integrated airframe technology development to enhance system range, responsiveness, and reliability; and advanced material solutions to high speed airframes and air systems operating in maritime environments.<br><br>***FY 2019 OCO Plans:***<br>N/A<br><br>***FY 2018 to FY 2019 Increase/Decrease Statement:***<br>The reduction from FY2018 to FY2019 in this activity is due to a realignment of hypersonics research funds into directed energy research to reflect the increased overall investment in developing speed of light weapons for current threats. | | | | | |
| ***Title:*** NAVIGATION, ELECTRO OPTIC/INFRARED (EO/IR), AND SENSOR TECHNOLOGIES<br><br>***Description:*** This activity describes Navy Science and Technology (S&T) investments in the areas of Electro Optic/Infrared (EO/IR) devices and advanced sensors and includes investment/performance in the technology areas of EO/IR, Electronic Warfare (EW)and Electromagnetic Warfare , and Communications.<br><br>***FY 2018 Plans:***<br>Electronic Warfare:<br>- Continue the development of an active optics system that can survey a wide area and instantly, nonmechanically zoom-in on an area of interest for target tracking/identification.<br>- Continue development of new processes/methodologies to enable construction of composite countermeasures that fit the engagement timeline while maintaining effectiveness against existing and emerging IR guided threats.<br>- Continue effort to develop mid & long wave IR focal plane arrays using graded-band gap W-type-II. Superlattices with much higher detectivity than that of state-of-the-art HgCdTe (MCT).<br>- Continue development of next generation IR focal plane sensor and countermeasures to defeat it.<br>- Continue research to apply manifold modeling and optimal control techniques to airborne EO/IR sensor systems.<br>- Continue development of novel photovoltaic and autonomous soaring technology to enable long range EW sensor delivery systems. | 5.755 | 2.555 | 2.570 | 0.000 | 2.570 |

| Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy | | Date: February 2018 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 2 | **R-1 Program Element (Number/Name)**<br>PE 0602114N / *Power Proj Applied Research* | **Project (Number/Name)**<br>0000 / *Power Proj Applied Research* |

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2017 | FY 2018 | FY 2019 Base | FY 2019 OCO | FY 2019 Total |
|---|---|---|---|---|---|
| -Complete development of novel photovoltaic and autonomous soaring technology to enable long range EW sensor delivery systems.<br>-Complete development of methodology to concatenate nanoparticle structures for spectral control of obscurant material.<br><br>Electro Optic/Infrared<br><br>- Continue development of next generation IR focal plane sensor and countermeasures to defeat it.<br>- Continue research to apply manifold modeling and optimal control techniques to airborne EO/IR sensor systems.<br>- Continue development of methodology to concatenate nanoparticle structures for spectral control of obscurant material<br>- Continue development and prove a method of more efficiently transporting EW sensors using a low Reynolds Number regime boundary layer control system.<br>- Continue development of a water assisted take-off process for electronic warfare sensors.<br>- Continue development of advanced fuel cell technology for UAS to increase on-station time of EW sensors.<br>- Continue efforts for Unmanned Aerial System (UAS) Based EW: The objective is to develop a System of Systems (SoS) able to artificially create the appearance of a realistic naval force to many adversary surveillance and targeting sensors simultaneously. It will benefit the warfighter by providing battle space confusion to adversary surveillance and targeting systems both above and below water, creating seamless cross-domain countermeasure coordination, and enabling rapid advanced technology/capability insertion to counter emerging threats. Technology developments will include reconfigurable and modular EW payloads, Distributed Decoy and Jammer Swarms (DDJS), effective acoustic countermeasures (CM), and Multiple Input/Multiple Output Sensor/ CM (MIMO S/CM) for false force generation to both above and below water sensors.<br>- Continue development of ultra-low noise uncooled nanotechnology infrared sensors.<br>- Continue development of nanoatomic sensor nonvolatile memories.<br>- Continue development of electronic field of view and zoom imagers.<br>- Conduct multiple efforts of EO/IR threats through both active and passive countermeasures technologies and assuring deployment capabilities are available to achieve the proper disposition of materials for extended durations. | | | | | |

| Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy | | Date: February 2018 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 2 | **R-1 Program Element (Number/Name)**<br>PE 0602114N / *Power Proj Applied Research* | **Project (Number/Name)**<br>0000 / *Power Proj Applied Research* |

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2017 | FY 2018 | FY 2019 Base | FY 2019 OCO | FY 2019 Total |
|---|---|---|---|---|---|
| Electronics<br>-Create and explore new concepts, components, techniques, and subsystems for the detection of UV, visible, and infrared radiation to support current and future Navy and DoD needs.<br>***FY 2019 Base Plans:***<br>Electronics: Continue efforts to create and explore new concepts, components, techniques, and subsystems for the detection of UV, visible, and infrared radiation to support current and future Navy and DoD needs.<br><br>Electromagnetic Warfare: Continue multiple efforts to address the necessary technologies to engage EO/IR threats through both active and passive countermeasures technologies and assuring deployment capabilities are available to achieve the proper disposition of materials for extended durations. Recent results in the application of new material concepts applied to IR concepts have received interest by OPNAV for potential follow on consideration pending successful demonstrations.<br>***FY 2019 OCO Plans:***<br>N/A<br>***FY 2018 to FY 2019 Increase/Decrease Statement:***<br>There is no significant change from FY 2018 to FY 2019. | | | | | |
| ***Title:*** STRIKE AND LITTORAL COMBAT TECHNOLOGIES | 0.909 | 1.730 | 1.732 | 0.000 | 1.732 |
| ***Description:*** The focus of this activity is on those technologies that will support Naval Precision Strike Operations and provide the Navy of the future the ability to quickly locate, target, and strike critical targets ashore.<br><br>***FY 2018 Plans:***<br>Conduct applied research in Advanced RF/EO Sensor & Seeker Technologies for Navy and Marine Corp operations and systems.<br><br>Electromagnetic Warfare:<br><br>Technology development is ongoing to address capabilities to understand the defeat mechanism for operations of ISR platforms using non-traditional frequencies as well as protecting current capabilities against electronic attack through enhanced concepts. The non-traditional integration of ISR capabilities is being implemented into | | | | | |

| Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy | | Date: February 2018 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 2 | **R-1 Program Element (Number/Name)**<br>PE 0602114N / *Power Proj Applied Research* | **Project (Number/Name)**<br>0000 / *Power Proj Applied Research* |

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2017 | FY 2018 | FY 2019 Base | FY 2019 OCO | FY 2019 Total |
|---|---|---|---|---|---|
| a major Commercialization Pilot Program (CPP) funded effort at NRL to validate expectations at minimal cost to this program and expand the capability of a significant testing resource.<br>***FY 2019 Base Plans:***<br>Electromagnetic Warfare:<br><br>Continue technology development is ongoing to address capabilities to understand the defeat mechanism for operations of ISR platforms using non-traditional frequencies as well as protecting current capabilities against electronic attack through enhanced concepts.<br>***FY 2019 OCO Plans:***<br>N/A<br>***FY 2018 to FY 2019 Increase/Decrease Statement:***<br>There is no significant change from FY 2018 to FY 2019. | | | | | |
| ***Title:*** ELECTROMAGNETIC GUNS<br>***Description:*** This activity is the Electro Magnetic (EM) railgun program that is focused on developing the technology to launch a long range projectile from Navy ships. EM railgun is being considered for multi-mission applications including USMC Naval Surface Fire Support, anti-surface warfare (ASUW) and ship self defense from missiles and small boat threats.<br><br>Effective FY2018, the Electro Magnetic (EM) Railgun program funding, plans, and associated justification has been realigned to the new innovative naval prototype (INP) PE 0602792N Innovative Naval Prototypes.<br>***FY 2018 Plans:***<br>N/A<br>***FY 2019 Base Plans:***<br>N/A<br>***FY 2019 OCO Plans:***<br>N/A<br>***FY 2018 to FY 2019 Increase/Decrease Statement:*** | 19.378 | 0.000 | 0.000 | 0.000 | 0.000 |

| Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy | | Date: February 2018 |
|---|---|---|
| **Appropriation/Budget Activity**<br>1319 / 2 | **R-1 Program Element (Number/Name)**<br>PE 0602114N / *Power Proj Applied Research* | **Project (Number/Name)**<br>0000 / *Power Proj Applied Research* |

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2017 | FY 2018 | FY 2019 Base | FY 2019 OCO | FY 2019 Total |
|---|---|---|---|---|---|
| Effective FY2018, the Electro Magnetic (EM) Railgun program funding, plans, and associated justification has been realigned to the new innovative naval prototype (INP) PE 0602792N Innovative Naval Prototypes. | | | | | |
| **Accomplishments/Planned Programs Subtotals** | 50.607 | 13.553 | 14.643 | 0.000 | 14.643 |

**C. Other Program Funding Summary ($ in Millions)**

N/A

**Remarks**

**D. Acquisition Strategy**

N/A

**E. Performance Metrics**

This PE develops early components technologies that can be integrated into weapon systems that meet warfighter requirements. Most of the work in this PE can be classified between Technology Readiness Level (TRL) 2 (technology concept and/or application formulation) and TRL 4 (component and/or breadboard validation in laboratory environments). The metrics used to evaluate 6.2 programs are necessarily less precise than those used in 6.3 programs.

The metrics for this PE can be divided into two categories: technological and organizational/functional. Technological metrics address the success of the work performed. The primary technological metrics used in this PE involve laboratory experiments/tests demonstrating proof of the concept for the technology. This demonstration is frequently a hand-assembled functioning breadboard of the concept. The organizational/functional metrics applied to this PE include: transition of the technology to advanced development in a 6.3 PE and applicability of the technology to documented warfighter problems or requirements. Successful implementation of these categories would result in the application of a pass/fail metric and further evaluation for possible transition to a 6.3 development/demonstration program.

| Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy | | | Date: February 2018 |
|---|---|---|---|
| Appropriation/Budget Activity<br>1319 / 2 | R-1 Program Element (Number/Name)<br>PE 0602114N / *Power Proj Applied Research* | Project (Number/Name)<br>9999 / *Congressional Adds* | |

| COST ($ in Millions) | Prior Years | FY 2017 | FY 2018 | FY 2019 Base | FY 2019 OCO | FY 2019 Total | FY 2020 | FY 2021 | FY 2022 | FY 2023 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9999: *Congressional Adds* | 0.000 | 19.343 | 0.000 | 0.000 | - | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 19.343 |

**A. Mission Description and Budget Item Justification**

Congressional Interest Items not included in other Projects.

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2017 | FY 2018 |
|---|---|---|
| ***Congressional Add:*** Program Increase | 19.343 | 0.000 |
| ***FY 2017 Accomplishments:*** The rapid advance of commercial unmanned vehicles, the payloads they can transport, and the ease with which they can deliver such payloads to air bases, naval yards and their assets, present a looming, irregular and important threat. Directionally tunable high power microwave weapons provide one direct solution. Research, development and demonstration of this capability are required to rapidly move this unique defensive capability to an operational level. | | |
| ***FY 2018 Plans:*** N/A | | |
| **Congressional Adds Subtotals** | 19.343 | 0.000 |

**C. Other Program Funding Summary ($ in Millions)**

N/A

**Remarks**

**D. Acquisition Strategy**

N/A

**E. Performance Metrics**

Congressional Interest Items not included in other Projects.