Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603114N *I Power Projection Advanced Technology*

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	0.000	41.957	96.406	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	138.363
2911: *Power Proj Adv Tech*	0.000	41.957	96.406	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	138.363

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 Science & Technology Strategic Plan approved by the S&T Corporate Board as of 20 January 2015. 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.

The programs described herein are representative of the work included in this PE.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	36.971	96.406	12.392	-	12.392
Current President's Budget	41.957	96.406	0.000	-	0.000
Total Adjustments	4.986	0.000	-12.392	-	-12.392
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	5.410	0.000			
• SBIR/STTR Transfer	-0.424	0.000			
• Program Adjustments	0.000	0.000	-12.392	-	-12.392

Change Summary Explanation

The funding decrease from FY 2017 to FY 2018 reflects the realignment of the remaining Precision Strike Technology efforts to PE 0603758N Navy Warfighting Experimentation and Demonstration. Additionally, Innovative Naval Prototypes (INPs) Electromagnetic Railgun (EMRG) and Solid State Laser (SSL) program work will continue in the new INP PE 0603801N Innovative Naval Prototypes.

Technical: Not applicable.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy	Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603114N *I Power Projection Advanced Technology*

Schedule: Not applicable.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319 / 3					R-1 Program Element (Number/Name) PE 0603114N / *Power Projection Advanced Technology*				Project (Number/Name) 2911 / *Power Proj Adv Tech*			
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
2911: *Power Proj Adv Tech*	0.000	41.957	96.406	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	138.363

A. Mission Description and Budget Item Justification

This project supports the Time Critical Strike (TCS) and ForceNet FNC components which address technological issues associated with the development of strike weapons that significantly decrease the launch to engagement timeline; provide the Navy of the future the ability to quickly locate, target, and strike critical targets; and enhance mission capabilities and operational utility of Naval forces by dramatically increasing the autonomy, performance, and affordability of Naval organic, Unmanned Vehicle systems. The Navy is furthering the development of solid state, high energy laser technology for use as a weapon system on future surface ships.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: PRECISION STRIKE TECHNOLOGY	41.957	96.406	0.000	0.000	0.000
Description: Efforts in this area support Naval Precision Strike Operations, providing the Navy capability to quickly locate, target, and strike critical targets. FY 2016 to FY 2017 increase in funding is due to Solid State Laser Technology Maturation Program (SSL-TM) program entering its fabrication and testing phase. The funding decrease from FY 2017 to FY 2018 reflects the realignment of the remaining Precision Strike Technology efforts to PE 0603758N Navy Warfighting Experimentation and Demonstration. Additionally, Innovative Naval Prototypes (INPs) Electromagnetic Railgun (EMRG) and Solid State Laser (SSL) program work will continue in the new INP PE 0603801N Innovative Naval Prototypes. ***FY 2016 Accomplishments:*** - Continued kill-chain studies to identify and recommend engineering trades to enable weapon system interoperability and data fusion alternatives. These studies assess engineering feasibility of various kill-chain options and assess the capability provided. Continue EMRG. The EMRG capability will support Naval Surface Fire Support (NSFS), Integrated Air and Missile Defense (IAMD), Fast Attack Craft and Fast Inshore Attack Craft (FAC/FIAC) and Anti-Surface Warfare (ASuW) missions. Design, fabricate and integrate Electro Magnetic (EM) railgun subsystems and components into a system prototype capable of rep-rate operations. Assess the manufacturability of major components such as the railgun launcher and pulsed power modules, which are key to the technology capability. Conduct preliminary prototype system tests and demonstrations to prove the technological feasibility of the EMRG					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 3	**R-1 Program Element (Number/Name)** PE 0603114N / *Power Projection Advanced Technology*	**Project (Number/Name)** 2911 / *Power Proj Adv Tech*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
capability and assess sub-system and component operability under stressing rep-rate conditions. Continue developing and testing a prototype rep-rate railgun launcher that is suitable for installation in a prototype railgun gun mount, where the design of the power and energy architecture necessary to support the prototype EMRG system can be assessed. Continue to test and build full-scale electro-magnetic railgun system prototypes that include the battery charging system, the pulsed power subsystem, and the electromagnetic launcher. Perform full-scale testing of long-life railgun launcher material solutions inserted in laboratory launchers. Design, build, test, and evaluate iterative electromagnetic railgun composite launcher prototypes to demonstrate the technological feasibility, performance, multi-shot life, and suitable firing rate of the system. Continue activities to integrate and test a Hyper Velocity Projectile (HVP) for use with the EMRG. Continue SSL TM. Continue development of a maritime laser weapons system prototype and test it on a representative test platform for a naval surface combatant. Conduct the required laser weapon system engineering, design, integration and testing necessary to have a testable, experimental prototype. This system will be capable of supporting missions such as defense against small boat and Unmanned Aerial Vehicle (UAV) swarms and Intelligence, Surveillance and Reconnaissance (ISR) disruption and defeat. The results of scientific and engineering trade studies, including those that measure atmospheric absorption and turbulence, will be used to support the integration and testing of a maritime beam director and a high power, Solid State Laser (SSL) capable of tracking and engaging surface and airborne targets at a relevant stand-off distance in the maritime environment. A Hybrid Predictive Avoidance Safety System (HPASS) will be integrated with a solid state laser weapon system demonstrator to de-conflict laser operations with friendly sensors and platforms. At-sea testing will be conducted on the full laser weapon system demonstrator (i.e., prototype) from a representative test platform for a naval surface combatant. ***FY 2017 Plans:*** - Continue all efforts of FY 2016. ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	41.957	96.406	0.000	0.000	0.000

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 3	**R-1 Program Element (Number/Name)** PE 0603114N / *Power Projection Advanced Technology*	**Project (Number/Name)** 2911 / *Power Proj Adv Tech*

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

The metrics used are programmatic milestones and technical milestones, such as completion of technical trade studies examining suitable technologies for subsequent prototype development; incremental laboratory and field testing of components and sub-systems; and delivery of industry-developed prototypes for demonstration.