Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Office of the Secretary Of Defense	Date: May 2021
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 1: *Basic Research*	**R-1 Program Element (Number/Name)** PE 0601108D8Z / *High Energy Laser Research Initiatives*

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	15.390	-	15.390	-	-	-	-	-	-
108: *Joint Directed Energy Basic Research*	-	0.000	0.000	15.390	-	15.390	-	-	-	-	-	-

Note

In FY 2022, High Energy Laser Research Initiatives (including funding) will be transferred from Air Force Program Element (PE) 0601108F to the Office of the Secretary of Defense (OSD) under PE 0601108D8Z for management and execution responsibility to better align this research area to Department of Defense Science and Technology strategy and priorities for Directed Energy. This Program will focus on fundamental science supporting future Directed Energy (DE) technologies divided into DE Sources, and Beam Control and Propagation. This is not a new start PE; efforts are follow-on from Air Force PE 0601108F.

A. Mission Description and Budget Item Justification

This program funds basic research aimed at developing fundamental scientific knowledge to support future Department of Defense Directed Energy weapon systems through the Joint Directed Energy Transition Office. This program funds multi-disciplinary research institutes to conduct research on laser, laser beam control and high power microwave technologies. In addition, this program supports educational grants to stimulate student interest in directed energy and encourage graduate research in topics related to high energy lasers and high power microwaves. These educational grants are used for educational tools, scholarships, and summer intern employees in military laboratories. Efforts in this program have been coordinated through the Department of Defense Science and Technology Executive Committee process to harmonize efforts and eliminate duplication.

This program is in Budget Activity 1, Basic Research because this budget activity includes scientific study and experimentation directed toward increasing fundamental knowledge and understanding in those fields of the physical, engineering, environmental, and life sciences related to long-term national security needs.

B. Program Change Summary ($ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	0.000	15.390	-	15.390
Total Adjustments	0.000	0.000	15.390	-	15.390
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustment	-	-	15.390	-	15.390

Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Office of the Secretary Of Defense	Date: May 2021
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 1: *Basic Research*	**R-1 Program Element (Number/Name)** PE 0601108D8Z / *High Energy Laser Research Initiatives*

Change Summary Explanation

In FY 2022, High Energy Laser Research Initiatives transferred from Air Force Program Element (PE) 0601108F to the Office of the Secretary of Defense (OSD) under PE 0601108D8Z for management and execution responsibility to better align this research area to OSD priorities.

Exhibit R-2A, RDT&E Project Justification: PB 2022 Office of the Secretary Of Defense			Date: May 2021
Appropriation/Budget Activity 0400 / 1	R-1 Program Element (Number/Name) PE 0601108D8Z / *High Energy Laser Research Initiatives*	Project (Number/Name) 108 / *Joint Directed Energy Basic Research*	

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
108: *Joint Directed Energy Basic Research*	-	0.000	0.000	15.390	-	15.390	-	-	-	-	-	-

Note

In FY 2022, High Energy Laser Research Initiatives (including funding) will be transferred from Air Force Program Element (PE) 0601108F to the Office of the Secretary of Defense (OSD) under PE 0601108D8Z for management and execution responsibility to better align this research area to OSD priorities. Additionally, this Program will focus on Directed Energy (DE) technologies divided into DE Sources, and Beam Control and Propagation to reflect the OSD Science and Technology (S&T) priorities for Directed Energy. This is not a new start PE; efforts are follow-on from Air Force PE 0601108F.

A. Mission Description and Budget Item Justification

This program funds basic research aimed at developing fundamental scientific knowledge to support future Department of Defense Directed Energy weapon systems through the Joint Directed Energy Transition Office. This program funds multi-disciplinary research institutes to conduct research on laser, laser beam control and high power microwave technologies. In addition, this program supports educational grants to stimulate student interest in directed energy and encourage graduate research in topics related to high energy lasers and high power microwaves. These educational grants are used for educational tools, scholarships, and summer intern employees in military laboratories. Efforts in this program have been coordinated through the Department of Defense Science and Technology Executive Committee process to harmonize efforts and eliminate duplication.

This program is in Budget Activity 1, Basic Research because this budget activity includes scientific study and experimentation directed toward increasing fundamental knowledge and understanding in those fields of the physical, engineering, environmental, and life sciences related to long-term national security needs.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: Directed Energy Sources	-	-	7.740
Description: Improve the fundamental understanding and modeling of high energy laser and high power microwave sources and devices.			
FY 2022 Plans: Investigate innovative laser technologies, in diode-pumped lasers, fiber, and solid state laser technologies. Monitor overseas efforts to leverage international technology advancements. Investigate innovative high power laser technologies.			

Exhibit R-2A, RDT&E Project Justification: PB 2022 Office of the Secretary Of Defense		Date: May 2021
Appropriation/Budget Activity 0400 / 1	**R-1 Program Element (Number/Name)** PE 0601108D8Z / *High Energy Laser Research Initiatives*	**Project (Number/Name)** 108 / *Joint Directed Energy Basic Research*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Investigate innovative microwave technologies, in microwave sources, antennas, and related microwave component technologies. Continue overseas efforts to leverage international microwave technology advancements. Investigate innovative high power microwave technologies. ***FY 2021 to FY 2022 Increase/Decrease Statement:*** In FY 2022, Program Element and funding transferred from Air Force Program Element (PE) 0601108F to the Office of the Secretary of Defense (OSD).			
Title: Beam Control and Propagation ***Description:*** Improve the fundamental understanding and modeling of beam control technologies as they relate to high energy laser applications and high power microwaves. Conduct research in atmospheric characterization, metrology, control systems, algorithms, waveguides, antennas and beam control component technology. ***FY 2022 Plans:*** Conduct research of innovative high energy laser beam control architectures. Leverage international research developments and technology advancements where possible. ***FY 2021 to FY 2022 Increase/Decrease Statement:*** In FY 2022, Program Element and funding transferred from Air Force Program Element (PE) 0601108F to the Office of the Secretary of Defense (OSD).	-	-	7.650
Accomplishments/Planned Programs Subtotals	-	-	15.390

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

NA