Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Office of the Secretary Of Defense	Date: April 2022
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 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	0.000	0.000	20.342	16.257	0.000	16.257	16.616	16.953	17.301	17.647	Continuing	Continuing
108: *Joint Directed Energy Basic Research*	0.000	0.000	20.342	16.257	0.000	16.257	16.616	16.953	17.301	17.647	Continuing	Continuing

Note

New Start (Y/N): No

In order to better align resources and program management to functional, organizational sponsorship, the High Energy Laser Research Initiatives program has transferred from the Air Force (PE 0601108F) to the Office of the Secretary of Defense in FY 2022. This Program will focus on fundamental science supporting future Directed Energy (DE) technologies divided into DE Sources, and Beam Control and Propagation.

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Defend the Homeland, Deter Aggression and Prevail in Conflict, and Build Sustainable and Long-Term Advantage.

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 research grants to stimulate student interest in directed energy and encourage graduate research in topics related to high energy lasers and high power microwaves. 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.

Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Office of the Secretary Of Defense	Date: April 2022
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*

B. Program Change Summary ($ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	0.000	15.390	0.000	0.000	0.000
Current President's Budget	0.000	20.342	16.257	0.000	16.257
Total Adjustments	0.000	4.952	16.257	0.000	16.257
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	5.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• FFRDC	-	-0.048	-	-	-
• Adjustments to Budget Year	-	-	15.696	-	15.696
• Economic Assumption	-	-	0.561	-	0.561

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2021	FY 2022
Project: 108: *Joint Directed Energy Basic Research*		
Congressional Add: *High Energy Laser Research*	-	5.000
Congressional Add Subtotals for Project: 108	-	5.000
Congressional Add Totals for all Projects	-	5.000

Change Summary Explanation

FY 2022 funding increase reflects a Congressional add for $5.000 million for High Energy Laser Research.

FY 2023 funding increase reflects the fact that the FY 2022 President’s Budget request did not include out-year funding.

Exhibit R-2A, RDT&E Project Justification: PB 2023 Office of the Secretary Of Defense			Date: April 2022
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 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
108: *Joint Directed Energy Basic Research*	0.000	0.000	20.342	16.257	0.000	16.257	16.616	16.953	17.301	17.647	Continuing	Continuing

Note

In order to better align resources and program management to functional, organizational sponsorship, the High Energy Laser Research Initiatives program has transferred from the Air Force (PE 0601108F) to the Office of the Secretary of Defense in FY 2022. This Program will focus on fundamental science supporting future Directed Energy (DE) technologies divided into DE Sources, and Beam Control and Propagation.

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 research grants to stimulate student interest in directed energy and encourage graduate research in topics related to high energy lasers and high power microwaves. 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 2021	FY 2022	FY 2023
Title: Directed Energy Sources	-	7.716	8.409
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. 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 2023 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2023 Office of the Secretary Of Defense		Date: April 2022
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 2021	FY 2022	FY 2023
Continue the investigation into innovative laser technologies, in diode-pumped lasers, fiber, and solid state laser technologies. Monitor national and international efforts to leverage technology advancements. Investigate innovative high-power laser technologies. Investigate innovative microwave technologies, in microwave sources, antennas, and related microwave component technologies. Continue overseas efforts to leverage international microwave technology advancements. Continue the investigation into innovative high power microwave technologies. ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Resourcing level increase due to budget fluctuations.			
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 2023 Plans:*** Initiate new research of innovative high energy laser beam control and high power microwave antenna architectures. Leverage international research developments and technology advancements where possible. ***FY 2022 to FY 2023 Increase/Decrease Statement:*** There is no significant change between FY 2022 and FY 2023.	-	7.626	7.848
Accomplishments/Planned Programs Subtotals	-	15.342	16.257

	FY 2021	FY 2022
Congressional Add: High Energy Laser Research ***FY 2022 Plans:*** Funds will be used to establish a DE Center of Excellence under the Joint DE Transition Office to conduct basic research in high energy lasers and high power microwaves.	-	5.000
Congressional Adds Subtotals	-	5.000

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C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

NA

D. Acquisition Strategy

NA