Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
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 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	0.000	19.708	21.257	16.329	-	16.329	16.652	17.005	17.361	17.740	Continuing	Continuing
108: *Joint Directed Energy Basic Research*	0.000	19.708	21.257	16.329	-	16.329	16.652	17.005	17.361	17.740	Continuing	Continuing

Note

New Start (Y/N): No

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. Additionally, this program supports research efforts through academia 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 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 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	20.342	16.257	16.616	-	16.616
Current President's Budget	19.708	21.257	16.329	-	16.329
Total Adjustments	-0.634	5.000	-0.287	-	-0.287
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	5.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-0.634	-	-0.287	-	-0.287

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
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*

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

	FY 2022	FY 2023
Project: 108: *Joint Directed Energy Basic Research*		
Congressional Add: *High Energy Laser Research*	5.000	5.000
Congressional Add Subtotals for Project: 108	5.000	5.000
Congressional Add Totals for all Projects	5.000	5.000

Change Summary Explanation

The FY 2024 reduction of $0.287 million is comprised of a realignment of $0.362 million to support Historically Black Colleges and Universities/Minority Serving Institutions program, which is a priority of the Under Secretary of Defense for Research and Engineering (USD(R&E)), and $0.017 million to support departmental priorities and an economic assumption increase of $0.092 million.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
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 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
108: *Joint Directed Energy Basic Research*	0.000	19.708	21.257	16.329	-	16.329	16.652	17.005	17.361	17.740	Continuing	Continuing

Note

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 efforts through academia 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 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 2022	FY 2023	FY 2024
Title: Directed Energy Foundational Research	14.708	16.257	16.329
Description: Improve the fundamental understanding and modeling of high energy laser and high power microwave sources and devices. 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 2023 Plans:*** 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.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
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 2022	FY 2023	FY 2024
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 2024 Plans:*** Investigate innovative laser technologies that show potential in power scalability for high energy laser applications, alternative defense capabilities, counter capabilities, and counter-counter capabilities. Monitor national and international efforts to leverage technology advancements. Conduct foundational research on laser technologies to gain more understanding on scalability and utility. Investigate innovative microwave technologies, in microwave sources, antennas, and related microwave component technologies. Perform overseas efforts to leverage international microwave technology advancements. Continue the investigation into innovative high power microwave technologies. Investigate innovative high energy laser beam control phenomenology and methods of measuring, modeling, and manipulating laser beam propagation. Investigate high power microwave antenna architectures with potential to revolutionize performance. Leverage international research developments and technology advancements where possible. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** The increase of $0.072 million between FY 2023 and FY 2024 reflects an inflationary adjustment.			
Accomplishments/Planned Programs Subtotals	14.708	16.257	16.329

	FY 2022	FY 2023
Congressional Add: High Energy Laser Research	5.000	5.000
FY 2022 Accomplishments: 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. ***FY 2023 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.		
Congressional Adds Subtotals	5.000	5.000

C. Other Program Funding Summary ($ in Millions)

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
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*

C. Other Program Funding Summary ($ in Millions)

Remarks

NA

D. Acquisition Strategy

NA