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Exhibit R-2, RDT&E Budget Item Justification: PB 2025 Office of the Secretary Of Defense **Date:** March 2024

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603924D8Z I <i>High Energy Laser Advanced Development</i>
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COST (\$ in Millions)	Prior Years	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total	FY 2026	FY 2027	FY 2028	FY 2029	Cost To Complete	Total Cost
Total Program Element	81.173	108.865	111.799	110.367	-	110.367	111.019	111.664	112.060	112.950	Continuing	Continuing
924: <i>High Energy Laser Initiative</i>	81.173	108.865	111.799	110.367	-	110.367	111.019	111.664	112.060	112.950	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to build a sustainable and long-term advantage, as well as a resilient joint force and defense ecosystem.

This program funds directed energy advanced technology development aimed at translating technology solutions for broadly defined military problems into demonstrated performance pay-offs, increased capabilities, increased supportability, and/or increased affordability. Directed energy weapon systems have many potential advantages, including speed-of-light time-to-target, high precision, low incremental cost per kill, and a magazine that is recharged through on-board, fuel-based power and thermal management systems that reduce logistics requirements in contrast to stocks of munitions or warheads. As a result, directed energy weapon systems have the potential to perform a wide variety of military missions. Activities conducted under this program will develop and demonstrate the technology necessary to enable the employment of directed energy weapon systems in support of mission areas across the Department of Defense.

B. Program Change Summary (\$ in Millions)

	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025 Base</u>	<u>FY 2025 OCO</u>	<u>FY 2025 Total</u>
Previous President's Budget	111.149	111.799	113.468	-	113.468
Current President's Budget	108.865	111.799	110.367	-	110.367
Total Adjustments	-2.284	0.000	-3.101	-	-3.101
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustment	-2.284	-	-1.096	-	-1.096
• Internal Realignment	-	-	-2.228	-	-2.228
• Economic Assumptions	-	-	0.223	-	0.223

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Change Summary Explanation

The FY 2025 decrease of \$3.324 million is the result of an internal realignment to Program Element 0604924D8Z: High Energy Laser Tech Maturation (2.228 million) to support directed energy advanced component development and prototypes.

In addition to the internal realignment, a reduction of -\$1.096 million was applied to meet DoD overall funding reductions, which were spread to mitigate impact.

+\$0.223 Small Increase due to economic assumptions.

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Exhibit R-2A, RDT&E Project Justification: PB 2025 Office of the Secretary Of Defense **Date:** March 2024

Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603924D8Z / High Energy Laser Advanced Development	Project (Number/Name) 924 / High Energy Laser Initiative
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COST (\$ in Millions)	Prior Years	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total	FY 2026	FY 2027	FY 2028	FY 2029	Cost To Complete	Total Cost
924: High Energy Laser Initiative	81.173	108.865	111.799	110.367	-	110.367	111.019	111.664	112.060	112.950	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This program is part of an overall Department strategy in directed energy advanced technology development. Efforts within this program will focus on scaling the output power of directed energy weapon systems to reach operationally effective power levels applicable to broad mission areas across the Department of Defense. Additionally, efforts will pursue improvements in common directed energy system components to enable scalable beam control architectures and increase lethality and vulnerability. This program complements, and will be closely coordinated with, other Department efforts directed at specific Service and Agency missions. This program leverages and/or builds upon other investments in directed energy by the Services and Agencies.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2023	FY 2024	FY 2025
<p>Title: Directed Energy Advanced Technology Development</p> <p>Description: Develop, mature, and demonstrate directed energy sources that will enable fieldable directed energy systems. Develop, mature, and demonstrate technologies that improve beam control and beam propagation for directed energy weapon systems. Conduct directed energy lethality and vulnerability experiments on materials, components, and targets. Develop a lethality database for use in system-level models.</p> <p>FY 2024 Plans: - Directed Energy Sources: Follow-on 500 kilowatt to 1 megawatt developments under the High Energy Laser Scaling Initiative (HELSEI) will further mature through critical design and each will begin the system build phase after the procurement of expensive, long-lead items.</p> <p>-Beam Control and Propagation: Investigate beam control architectures to include acquisition and course track, fine track and aimpoint maintenance, wavefront compensation, and high power optical components in relevant environments for multiple mission areas to understand effectiveness and identify shortfalls that require additional research focus.</p> <p>-Lethality: Static and dynamic lethality testing of representative and/or actual targets will be conducted using existing high energy laser systems to validate cruise missile aimpoint selections, vulnerability predictions and system response.</p> <p>FY 2025 Plans: - Directed Energy Sources: 500 kilowatt and 1 megawatt class high energy laser development efforts under HELSEI will continue with their prototype build phase in support of multiple milestones.</p>	108.865	111.799	110.367

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2023	FY 2024	FY 2025
- Beam Control and Propagation: Validate the use of beam control technology to include acquisition and course track, fine track and aimpoint maintenance, wavefront compensation, and high power optical components in relevant environments to understand effectiveness and identify shortfalls that require additional research focus.			
- Lethality and Vulnerability: Static and dynamic lethality testing of representative and/or actual targets will be conducted using existing directed energy systems to validate aimpoint selections, vulnerability predictions, and system response.			
<i>FY 2024 to FY 2025 Increase/Decrease Statement:</i> The decrease of \$1.655 million between FY 2024 and FY 2025 reflects an internal realignment to Program Element 0604924D8Z: High Energy Laser Tech Maturation to support directed energy advanced component development, as well as a reduction to meet DoD overall funding reductions, which were spread to mitigate impact.			
Accomplishments/Planned Programs Subtotals	108.865	111.799	110.367

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

N/A

Remarks

N/A

D. Acquisition Strategy

N/A