Exhibit R-2, RDT&E Budget Item Justification: PB 2025 Office of the Secretary Of Defense	Date: March 2024
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603000D8Z *I Joint Munitions Advanced Technology*

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	-	33.577	37.706	41.072	-	41.072	38.779	33.316	33.425	33.558	Continuing	Continuing
077: *Enhanced Munitions Advanced Technology*	-	33.577	37.706	8.953	-	8.953	8.458	7.274	7.437	7.586	Continuing	Continuing
356: *Energetics Advanced Technology*	-	0.000	0.000	32.119	-	32.119	30.321	26.042	25.988	25.972	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to build sustainable and long-term technology advantages to solve operational and mission-focused challenges.

The Joint Enhanced Munitions Technology Program (JEMTP), within the Office of the Under Secretary of Defense for Research and Engineering (OUSD(R&E)) was established to develop and demonstrate joint munitions enhancing technologies (energetics, warheads, propulsion systems, advanced lethality mechanisms, fuzes and fuze components, and target detection), to provide future kinetic fires capabilities to ensure advantage for U.S. warfighters. The JEMTP concentrates on cross-cutting munitions technology needs that benefit multiple services. JEMTP investments focus on increasing and improving the performance, lethality, range, and survivability for existing and future weapons systems. The program’s plans and investments are informed by threat-opportunity based analyses from Joint Force campaign scenarios.

In FY 2025, the program will execute the Energetics Advanced Technology Project focusing on development of advanced energetic materials and manufacturing to enhance munitions capability and address supply chain resilience.
The JEMTP activities within Program Element 0603000D8Z are executed under two Project Codes: 077 - Enhanced Advanced Munitions Technology and 356 – Energetics Advanced Technologies.

Project Code 077 - The Enhanced Munitions Advanced Technology Project demonstrates critical munitions technologies such as advanced materials and designs, fuzing, power sources, seeker technologies, and counter-countermeasure technologies that combine with Energetics Advanced Technologies to demonstrate enhanced munitions performance and survivability.

Project Code 355 – The Energetics Advanced Technology Project will coordinate with and leverage DoD and Service activities to develop and execute strategies for advanced energetics to enable the transition of such technologies into munitions and the energetics manufacturing base, and to inform DoD munitions requirements using prototypes and demonstrations of advanced energetics concepts.

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Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603000D8Z *I Joint Munitions Advanced Technology*

B. Program Change Summary ($ in Millions)	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
Previous President's Budget	34.065	37.706	35.224	-	35.224
Current President's Budget	33.577	37.706	41.072	-	41.072
Total Adjustments	-0.488	0.000	5.848	-	5.848
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.485	-			
• Program Adjustments	-0.003	-	5.765	-	5.765
• Economic Assumptions	-	-	0.083	-	0.083

Change Summary Explanation

The increase of $5.765 million in FY 2025 is due to a realignment of $20.639 million from Program Element 0603375D8Z project code 375 to support Technology Innovation, a realignment of $12.632 million from Program Element 603375D8Z project code 377 to support Anomalous Incidents Research and a realignment of $0.355 million from Program Element 0603527D8Z project code 527 to support Retract Larch. A reduction of $20.861 million in FY 2025 was applied to meet DoD overall funding reductions, which were spread to mitigate impact. Funding increase of $0.083 million in FY 2025 for Economic Assumptions.

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 0603000D8Z / *Joint Munitions Advanced Technology*				Project (Number/Name) 077 / *Enhanced Munitions Advanced Technology*			
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**
077: *Enhanced Munitions Advanced Technology*	-	33.577	37.706	8.953	-	8.953	8.458	7.274	7.437	7.586	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Enhanced Munitions Advanced Technology effort will mature and demonstrate advanced technologies that can improve the performance, range, and lethality of existing and future weapons systems to inform requirements. This effort will take promising technologies demonstrated at the laboratory scale and mature them into demonstration programs with a focus on operationally relevant key munitions. Enhanced Munitions technologies that are matured and demonstrated at the Technology Readiness Level – 5 inform service requirements and transition into operational use, thereby decreasing the Program Executive Office's (PEO) program costs and risk. In FY 2025, the project will focus on developing critical munitions technologies such as advanced materials and designs, fuzing, power sources, seeker technologies, and counter countermeasure technologies that, when combined with advanced energetics, provide significant performance enhancements in range, speed, and target damage effects.

This project applies machine learning, artificial intelligence, and advanced material technologies to enable next-generation kinetic weapons capabilities, including advances in propulsion, warhead effects, fuze technologies, and targeting technologies.

In FY 2025, the Munitions Advanced Technology project continues to address the critical munitions technologies outside of advanced energetics that enable the Energetics Advanced Technology investments to be effectively incorporated into munitions systems. Increases in weapon range and run time require higher energy density munitions power sources. Lethality increases are not only dependent on advanced energetics, but also optimized munitions placement and burst point optimization.

B. Accomplishments/Planned Programs ($ in Millions)	**FY 2023**	**FY 2024**	**FY 2025**
Title: Enhanced Munitions Advanced Technology	22.577	22.706	8.953
Description: The project investments are focused in advancing munitions capabilities in kinetic lethality effects, propulsion systems, target detection and burst point control, and weapon survivability. The selected efforts are derived from the operationally informed, Department of Defense Munitions S&T Strategic Priorities, focused on cross-cutting technologies that are broadly applicable in service munitions.			
FY 2024 Plans: - Begin executing technology development Department-wide/Industry/Academia collaboration that accelerates the transition and application of emergent advanced munitions materials and capabilities.			

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 0603000D8Z / *Joint Munitions Advanced Technology*	**Project (Number/Name)** 077 / *Enhanced Munitions Advanced Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
- Develop high energy fuel formulations and variable nozzle technologies for ramjet propulsion to increase future missile range and speed. - Continue developing munitions precision placement and fuzing technologies to enhance lethal effects in same or smaller munitions form factor. - Complete development of high-resolution height of burst radar using Multiple Input Multiple Output (MIMO) technology. - Develop advanced miniature fuzing and modular thermal battery systems for improved performance, reduced size/weight, and improved producibility - Develop advanced energetics - alternate production methods, virtual testing and qualification, and for application in higher performance (range, speed lethality) munitions. ***FY 2025 Plans:*** - Complete development and testing of munitions precision placement, initiation and fuzing technologies that enhance lethal effects in small form factor munitions including rockets and weaponized unmanned air vehicles. - Conduct flight validation test of high-resolution height of burst radar using Multiple Input Multiple Output (MIMO). - Demonstrate munitions miniature and modular thermal battery prototype in representative environment testing. ***FY 2024 to FY 2025 Increase/Decrease Statement:*** The decrease of $13.753 million between FY 2024 and FY 2025 is due to a $12.139 realignment to project code 356 for investment in advanced energetics development and demonstration and a decrease of $1.614 million was applied to meet DoD overall funding reductions, which were spread to mitigate impact.			
Title: High Reliability Cluster Munition ***Description:*** Execute enhanced area effects munitions technology development with transition into weapon demonstrators. ***FY 2024 Plans:*** - With a focus on modular architecture for maximum applicability across the Joint Service, continue to develop missile technology using submunitions and sensor fused weapons that deliver distributed area effects against widely dispersed, moving, and/or poorly located targets. - Begin evaluating technologies to optimize distributed munitions expulsion and dispersion against operationally relevant target scenarios. - Continue development and testing of precision target detection and advanced energetics/warhead technologies to enhance lethality. ***FY 2024 to FY 2025 Increase/Decrease Statement:***	11.000	15.000	-

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 0603000D8Z / *Joint Munitions Advanced Technology*	**Project (Number/Name)** 077 / *Enhanced Munitions Advanced Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
The decrease of $15.000 million between FY 2024 and FY 2025 is due to a realignment to focus on advanced energetics developing under Project Code 356 Energetics Advanced Technology.			
Accomplishments/Planned Programs Subtotals	33.577	37.706	8.953

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

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 0603000D8Z / *Joint Munitions Advanced Technology*	Project (Number/Name) 356 / *Energetics Advanced Technology*	

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
356: *Energetics Advanced Technology*	-	0.000	0.000	32.119	-	32.119	30.321	26.042	25.988	25.972	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

U.S. weapons systems still largely rely on decades-old explosive and propellant technologies that limit Joint Force options to deter, and if necessary, defeat adversaries in conflict. The Energetics Advanced Technology project is established with the mission to expedite research, testing, and evaluation, as well as to transition scale up of advanced energetics. These energetics technology investments will provide immediate benefit and improvement to munitions performance and will help to bolster energetics supply chain resiliency. The Joint Enhanced Munitions Technology Program (JEMTP), Services, and Munitions Manufacturing stakeholder community will collaborate to generate Strategic Plans and Roadmaps for advanced energetic technology development and application. The Energetics Advanced Technology project invests in cross cutting technology priorities and needs identified by the advanced energetics plans and roadmaps.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
Title: Energetics Advanced Technolog	0.000	-	32.119

Description: Funded efforts are driven by program office, service, and operational needs as outlined and planned within the DoD Munitions S&T Strategic Priorities and technology gaps identified in advanced energetics roadmaps. The project investments are focused in advanced energetics formulation, material scale-up and demonstration of enhanced performance of munitions propulsion and warhead systems. The project will leverage the energetics systems Public-Private-Partnership (PPP) Energetics Partnership Intermediary Consortium (EPIC) to coordinate and accelerate munitions technology development, demonstration, and transition. Efforts include advanced energetics formulation maturation using efficient, flexible, and adaptable processes; applying biotechnology; manufacturing at pilot-scale to deliver quantities for prototype scale testing and demonstration; and targeted munitions demonstrations using advanced energetics to quantify performance.

FY 2025 Plans:
The project executes its mission by strategically expanding development of advanced energetics capability and improved industrial base capacity through novel processes and formulations:

The project initiatives include:
- Begin development of production methods for advance energetic ingredients and formulations with a focus on CL-20 compound production capacity, cost reduction, and formulation development.
- Develop processing technologies using biomanufacturing byproducts streams and synthesize two energetics ingredients of interest at laboratory scale.

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 0603000D8Z / *Joint Munitions Advanced Technology*	**Project (Number/Name)** 356 / *Energetics Advanced Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
- Develop advanced energetics material using end to end laboratory and pilot scale manufacturing through modern, continuous methods that use digital feedback and quality by design/control. - Conduct laboratory and subscale testing by combining advanced energetics with novel propulsion and warhead designs and demonstrate increased performance – target lethality, range and speed. - Begin development of machine learning modeling and simulation tools to allow optimization of energetics material formulation and processing. - Apply advanced energetics formulations, including CL-20, for missile delivered submunitions payload development that provide enhanced area effects and target defeat capabilities. - Begin testing and demonstration of missile submunitions advanced energetics payloads with precision targeting and effector technologies. ***FY 2024 to FY 2025 Increase/Decrease Statement:*** The increase of $32.119 million between FY 2024 and FY 2025 will support accelerating research, testing and demonstration of advanced energetics in munitions supporting multiple Service needs.			
Accomplishments/Planned Programs Subtotals	0.000	-	32.119

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A