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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2025 Air Force **Date:** March 2024

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604032F / <i>Directed Energy Prototyping</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	-	4.202	1.246	3.712	0.000	3.712	4.216	4.302	4.457	4.545	0.000	26.680
640200: <i>DE Prototyping</i>	-	4.202	1.246	3.712	0.000	3.712	4.216	4.302	4.457	4.545	0.000	26.680
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

**A. Mission Description and Budget Item Justification**

The Air Force Life Cycle Management Center, Architecture and Integration Directorate Directed Energy Prototyping Program develops, acquires and evaluates prototype high energy laser, high power microwave and/or other electromagnetic radiation or particle beam technologies as a future integral component of Air Force missions. The Directed Energy Prototyping Program bridges the gap between lab based technology demonstration under a controlled environment, and demonstration of a system in realistic environments with the intent of establishing successful acquisition, and operation or operational capability implementation.

This prototyping effort enables the ability to integrate the directed energy prototype systems with other operational systems required for the mission (e.g. radar, command and control, etc.), conduct test and evaluation activities, and mature emerging directed energy technology systems based on prototyping activities to enable rapid fielding to the warfighter. The Directed Energy Prototyping Program allows acquisition program managers (capability developers) and warfighters (capability recipients and end users) to prototype, integrate, evaluate, and demonstrate candidate weapon technologies and assess them in an operational environment with the intent of iteratively maturing directed energy technologies to a production representative design.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program's funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In Prior Year 2023, 1.046M was expended for civilian pay expenses in this program element, and in CY 2024 1.023M is forecasted for civilian pay expenses in this program element.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025 Base</b>	<b>FY 2025 OCO</b>	<b>FY 2025 Total</b>
Previous President's Budget	4.269	1.246	4.106	0.000	4.106
Current President's Budget	4.202	1.246	3.712	0.000	3.712
Total Adjustments	-0.067	0.000	-0.394	0.000	-0.394
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.067	0.000			
• Other Adjustments	0.000	0.000	-0.394	0.000	-0.394

**Change Summary Explanation**

FY 2025 funding increased compared to FY 2024 by 2.466 million due to Air Force funding re-prioritization. The FY 2025 funding request was reduced by 0.400 million to account for the availability of prior year execution balances.

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>
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<b>Title:</b> Directed Energy Capabilities	4.202	1.246	3.712
<b>Description:</b> Prototypes and evaluates Directed energy weapon technologies for Airbase Defense against unmanned aerial vehicles and cruise missiles, Precision Strike against electronic and conventional targets and Aircraft Defense against incoming threats.			
<b>FY 2024 Plans:</b> Continue field effectiveness testing of Directed Energy Counter Unmanned Aerial System effectors to OCONUS locations. Continue to work with Air Force futures, the Joint counter small Unmanned Aerial System Office, and others to refine requirements and architecture for defense of critical infrastructure and base defense. Continue coordinating with major/combatant commands to incorporate new directed energy prototypes into integration and testing. Continue test data and initiate fielded data analysis to determine reliability, manufacturability, maintainability and mission effectiveness. In conjunction with major/combatant commands, determine if these systems are ready for another round of improvement for transition to a program of record.			
<b>FY 2025 Plans:</b> - Initiate modification of laser system to be fully transportable. - Initiate evaluation of transportable laser technology in coordination with transition partners for potential transition opportunities - Continue field effectiveness testing of Directed Energy Counter Unmanned Aerial System effectors to OCONUS locations.			

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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>		<b>R-1 Program Element (Number/Name)</b> PE 0604032F / <i>Directed Energy Prototyping</i>		
<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>
<ul style="list-style-type: none"> <li>- Continue to work with Air Force futures, the Joint counter small Unmanned Aerial System Office, and others to refine requirements and architecture for defense of critical infrastructure and base defense.</li> <li>- Continue increased focus on coordinating with major/combatant commands to incorporate new directed energy prototypes into integration and testing.</li> <li>- Continue increased focus on testing, data collection, and fielded data analysis to determine reliability, manufacturability, maintainability and mission effectiveness. In conjunction with major/combatant commands, determine if these systems are ready for another round of improvement for transition to a program of record.</li> </ul> <p><b>FY 2024 to FY 2025 Increase/Decrease Statement:</b> FY 2025 increased compared to FY 2024 by \$2.466 million due to Air Force funding re-prioritization.</p>				
<b>Accomplishments/Planned Programs Subtotals</b>		4.202	1.246	3.712
<b>D. Other Program Funding Summary (\$ in Millions)</b>				
N/A				
<b>Remarks</b>				
Not Applicable				
<b>E. Acquisition Strategy</b>				
<p>During FY 2020, the Air Force Life Cycle Management Center, Architecture and Integration Directorate, Wright-Patterson Air Force Base, Ohio conducted a source selection evaluating eight (8) ground-based Counter unmanned Aerial Systems for prototype development. In Fourth Quarter FY 2020, three (3) vendors were selected for award using Other Transaction Authority based on a best value determination with Technical being the most important factor. During FY 2021, these three (3) prototypes were selected based on operational capability/suitability assessment supporting the Airbase defense mission. In FY 2022, a high energy laser system was transferred into the program from AFRL/RS 0604858F. In FY 2023, a congressional interest item added an upgraded unit that will be delivered in early FY 2024. Acceptance testing and characterization test through early FY 2024. Prototypes will undergo field assessment in FY 2023 and FY 2024 at OCONUS locations. In FY 2023 with potential updates in FY 2024, an acquisition readiness assessment will be made while documenting design, sustainment, and initial operational concepts of operation information to inform a production representative unit in FY 2025. In FY25, a prototype mobile counter-UAS system will be demonstrated. This will lead to a decision for a program of record in FY 2027. The program will also seek to leverage industry and sister service prototypes for field evaluation and acquisition readiness assessments in the best interest of the Air Force.</p>				

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Air Force** **Date:** March 2024

<b>Appropriation/Budget Activity</b> 3600 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604032F / <i>Directed Energy Prototyping</i>	<b>Project (Number/Name)</b> 640200 / <i>DE Prototyping</i>
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<b>Test and Evaluation (\$ in Millions)</b>				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Directed Energy C-UAS Prototype Technical Maturation and Improvements	Various	Various : Various	-	2.863	Mar 2024	0.000	Jan 2024	2.407		-		2.407	Continuing	Continuing	-
<b>Subtotal</b>			-	2.863		0.000		2.407		-		2.407	Continuing	Continuing	N/A

<b>Management Services (\$ in Millions)</b>				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Directed Energy Prototyping Program Administration	Various	AFLCMC : Various	-	0.263	Oct 2022	0.150	Oct 2023	0.205		-		0.205	Continuing	Continuing	-
Direct Cite Authority	TBD	AFLCMC : Various	-	1.076	Oct 2022	1.096	Oct 2023	1.100		-		1.100	Continuing	Continuing	-
<b>Subtotal</b>			-	1.339		1.246		1.305		-		1.305	Continuing	Continuing	N/A

			Prior Years	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>			-	4.202	1.246	3.712	-	3.712	Continuing	Continuing	N/A

**Remarks**  
 FY 2022 - FY 2028 will concentrate on prototyping and maturing high energy laser and high power microwave systems for base area defense in preparation for transition to program of record. The program makes use of Other Transactional Authorities (OTA). Continued support will be provided by the Directed Energy Transition Management Office, Kirtland Air Force Base, New Mexico.

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**Exhibit R-4, RDT&E Schedule Profile: PB 2025 Air Force** **Date:** March 2024

<b>Appropriation/Budget Activity</b> 3600 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604032F / <i>Directed Energy Prototyping</i>	<b>Project (Number/Name)</b> 640200 / <i>DE Prototyping</i>
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FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028				FY 2029			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b>Field Suitability Assessment</b>	
Government assessment of suitability and effectiveness for field operations	
<b>Directed Energy Counter-Unmanned System (C-UAS) technical maturation</b>	
Incremental improvements to Directed Energy counter-UAS Prototype systems to provide increased Airbase defense counter-UAS capability to warfighter	
<b>Directed Energy Base Defense technical maturation</b>	
Production Representative prototyping of mobile counter-UAS system	
<b>Field Assessments</b>	
Government assessment of suitability and effectiveness for acquired counter-UAS prototype systems	
<b>Directed Energy Acquisition Readiness Assessment</b>	
Analyze field data to determine reliability, maintainability and suitability for transition to program of record	

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2025 Air Force **Date:** March 2024

<b>Appropriation/Budget Activity</b> 3600 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604032F / <i>Directed Energy Prototyping</i>	<b>Project (Number/Name)</b> 640200 / <i>DE Prototyping</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Field Suitability Assessment</i></b>				
Government assessment of suitability and effectiveness for field operations	1	2023	2	2024
<b><i>Directed Energy Counter-Unmanned System (C-UAS) technical maturation</i></b>				
Incremental improvements to Directed Energy counter-UAS Prototype systems to provide increased Airbase defense counter-UAS capability to warfighter	1	2023	1	2024
<b><i>Directed Energy Base Defense technical maturation</i></b>				
Production Representative prototyping of mobile counter-UAS system	3	2025	1	2028
<b><i>Field Assessments</i></b>				
Government assessment of suitability and effectiveness for acquired counter-UAS prototype systems	3	2023	4	2027
<b><i>Directed Energy Acquisition Readiness Assessment</i></b>				
Analyze field data to determine reliability, maintainability and suitability for transition to program of record	1	2023	4	2027

**Note**

FY 2022 - FY 2028 will concentrate on maturing high energy laser and high power microwave systems for base area defense in preparation for transition of prototype weapon systems to program(s) of record. The program makes use of Other Transactional Authorities (OTA). Continued support will be provided by the Directed Energy Transition Management Office, Kirtland Air Force Base, New Mexico.