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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development	R-1 Program Element (Number/Name) PE 0203743A / 155mm Self-Propelled Howitzer Improvements
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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	-	168.683	116.510	122.902	-	122.902	149.968	111.299	68.113	68.872	0.000	806.347
FF9: PIM Improvement Program	-	168.683	116.510	122.902	-	122.902	149.968	111.299	68.113	68.872	0.000	806.347

A. Mission Description and Budget Item Justification

The Extended Range Cannon Artillery (ERCA) modernization effort integrates emerging technologies to include: a new cannon, gun mount, gun drive systems, fire control systems, and rate of fire system improvements capability onto the M109A7 Self-Propelled Howitzer platform. ERCA improves lethality through increased range and increased rate of fire while also using mature technology to improve mobility, survivability, reliability, supportability, and lethality. This effort will analyze and evaluate the impact of the new cannon technology and make modifications to the cab, mobility and electronic architecture required to support ammunition automation, remote firing, and remote movement on the platform. This effort will also develop, evaluate, build, and test prototypes. Funding also supports work being completed at the Watervliet Arsenal (WVA) in Watervliet, NY.

B. Program Change Summary (\$ in Millions)

	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024 Base</u>	<u>FY 2024 OCO</u>	<u>FY 2024 Total</u>
Previous President's Budget	175.076	136.680	99.481	-	99.481
Current President's Budget	168.683	116.510	122.902	-	122.902
Total Adjustments	-6.393	-20.170	23.421	-	23.421
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-20.170			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-6.393	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	23.421	-	23.421

Change Summary Explanation

FY 2024 funding increase reflects additional developmental engineering, test, and prototype retrofit activities required to address safety and functionality challenges.

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army **Date:** March 2023

Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203743A / 155mm Self-Propelled Howitzer Improvements	Project (Number/Name) FF9 / PIM Improvement Program
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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
FF9: PIM Improvement Program	-	168.683	116.510	122.902	-	122.902	149.968	111.299	68.113	68.872	0.000	806.347
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Extended Range Cannon Artillery (ERCA) modernization effort integrates emerging technologies to include: a new cannon, gun mount, gun drive systems, fire control systems, and rate of fire system improvements capability onto the M109A7 Self-Propelled Howitzer platform. ERCA improves lethality through increased range and increased rate of fire while also using mature technology to improve mobility, survivability, reliability, supportability, and lethality. This effort will analyze and evaluate the impact of the new cannon technology and make modifications to the cab, mobility and electronic architecture required to support ammunition automation, remote firing, and remote movement on the platform. This effort will also develop, evaluate, build, and test prototypes. Funding also supports work being completed at the Watervliet Arsenal (WVA) in Watervliet, NY.

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

	FY 2022	FY 2023	FY 2024
<p>Title: ERCA Prototype Development and Build</p> <p>Description: Funds support the ERCA range and ERCA Rate of Fire development costs which include continuously improving the design and implementing changes to ERCA prototypes as informed by testing and the operational assessment.</p> <p>FY 2023 Plans: Completion of developmental engineering efforts and ERCA prototype builds required for the First Unit Issued battalion in 1st quarter of FY 2025.</p> <p>FY 2024 Plans: Continuation of developmental engineering efforts, ERCA prototype improvements, Milestone C documentation, First Unit Issued support activities, rate of fire preparation, and transition to Milestone C.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: FY 2024 funding increase reflects additional developmental engineering, hardware procurement, and prototype retrofit activities required to address safety and functionality challenges.</p>	101.219	75.683	76.563
<p>Title: Program Management</p> <p>Description: Funding is provided for all Program Management efforts on the Extended Range Cannon Artillery effort.</p> <p>FY 2023 Plans: Continue the development and production for all required documents, office staff and engineering IPT development.</p> <p>FY 2024 Plans:</p>	12.700	13.152	13.861

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
Continue the development and generate all required documents, office staff and engineering IPT development for Range and Rate of Fire efforts. FY 2023 to FY 2024 Increase/Decrease Statement: Increase due to slight increase in development and production costs.				
Title: Test and Evaluation Description: This funding supports all Testing and Evaluation the Extended Range Cannon Artillery effort. FY 2023 Plans: Conduct Developmental Testing. These events include all test execution, data collection, contractor and logistics support for mobility, reliability and firings tests. FY 2024 Plans: Conduct Developmental Testing in support of Root Cause Corrective Action (RCCA) validation efforts. These events include all test execution, data collection, contractor and logistics support for safety, mobility, reliability and firings tests. FY 2023 to FY 2024 Increase/Decrease Statement: FY 2024 funding increase reflects additional testing activities required to address safety and functionality challenges.		54.764	23.422	32.478
Title: SBIR/STTR Transfer FY 2023 Plans: SBIR/STTR Transfer FY 2023 to FY 2024 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC 638.		-	4.253	-
Accomplishments/Planned Programs Subtotals		168.683	116.510	122.902
C. Other Program Funding Summary (\$ in Millions) N/A Remarks				
D. Acquisition Strategy Extended Range Cannon Artillery (ERCA) used the approved National Defense Authorization Act (NDAA) Section 804 Middle Tier Acquisition Authority for development efforts as the program moves forward and transitions to a program of record to field the ERCA system.				

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army												Date: March 2023			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 7				PE 0203743A / 155mm Self-Propelled Howitzer Improvements				FF9 / PIM Improvement Program							
Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
SBIR/STTR Transfer	TBD	Various : Various	-	-		4.253		-		-		-	0.000	4.253	-
Subtotal			-	-		4.253		-		-		-	0.000	4.253	N/A
Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
ERCA Range - Developmental Eng	Various	Various : Various Locations	178.494	62.862	Jan 2022	47.391	Jan 2023	42.275	Jan 2024	-		42.275	Continuing	Continuing	Continuing
ERCA Range - Prototype Build	Various	Various : Various Locations	133.264	33.436	Jan 2022	28.292	Jan 2023	34.288		-		34.288	Continuing	Continuing	Continuing
ERCA Rate of Fire - Developmental Eng	Various	Various : Various Locations	20.195	4.921	Feb 2022	-		-		-		-	Continuing	Continuing	Continuing
Subtotal			331.953	101.219		75.683		76.563		-		76.563	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
PMO/PEO Support	MIPR	PM/PEO PIM : Various	24.167	12.700	Oct 2021	13.152	Oct 2022	13.861	Oct 2023	-		13.861	Continuing	Continuing	Continuing
Subtotal			24.167	12.700		13.152		13.861		-		13.861	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Test and Evaluation	MIPR	Various - OGAs : Various	82.880	54.764	Oct 2021	23.422	Oct 2022	32.478	Oct 2023	-		32.478	Continuing	Continuing	Continuing
Subtotal			82.880	54.764		23.422		32.478		-		32.478	Continuing	Continuing	N/A

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	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	439.000	168.683		116.510		122.902		-		122.902	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203743A / 155mm Self-Propelled Howitzer Improvements	Project (Number/Name) FF9 / PIM Improvement Program

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028							
	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				
Range - Developmental Engineering	[Redacted]																															
Range - Dev Eng	[Redacted]																															
Range - Prototype Manufacturing	[Redacted]																															
Range - Prototypes	[Redacted]																															
Range - Developmental Testing and Operational Assessment	[Redacted]																															
Range - DT/OA	[Redacted]																															
Range - First Unit Issued														1 FUI																		
Milestone C																			2 MS C													
Rate of Fire - Developmental Engineering	[Redacted]																															
Rate of Fire - Dev Eng	[Redacted]																															
Rate of Fire - Prototype Manufacturing																																

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203743A / 155mm Self-Propelled Howitzer Improvements	Project (Number/Name) FF9 / PIM Improvement Program

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Range - Developmental Engineering	2	2018	4	2025
Range - Integration OTA Award	4	2019	4	2019
Range - Prototype Manufacturing	4	2018	4	2024
Range - Developmental Testing and Operational Assessment	1	2019	1	2026
Range - First Unit Issued	1	2025	1	2025
Milestone C	2	2026	2	2026
Rate of Fire - Developmental Engineering	4	2020	2	2029
Rate of Fire - Prototype Manufacturing	2	2028	2	2030
Rate of Fire - Developmental Testing and Operational Assessment	2	2029	4	2032