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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605232A / <i>Hypersonics EMD</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	-	-	111.473	633.499	-	633.499	944.768	940.402	422.581	420.219	0.000	3,472.942
HX2: <i>Hypersonic Weapon (LRHW)</i>	-	-	111.473	633.499	-	633.499	944.768	940.402	422.581	420.219	0.000	3,472.942

Note

Funds BA5 activities managed by the Program Executive Office Missiles and Space (PEO MS) under Program Element (PE) 0605232A, in preparation for the FY24 transition of the BA4 activities from the Rapid Capabilities and Critical Technologies Office (RCCTO) under PE 0604182A, which continues Long Range Hypersonic Weapon (LRHW) activities.

A. Mission Description and Budget Item Justification

This funding is directly aligned to the Army's precision fires modernization effort.

PE 0605232A / Hypersonics "EMD" efforts fund the continuous hypersonic effort. Hypersonics funds the Program Executive Office, Missiles and Space continuation of the Army's Hypersonic efforts beyond the Rapid Capabilities and Critical Technologies Office (RCCTO) hypersonic activities. This includes the continuous development and prototype fielding of a Long Range Hypersonic Weapon to suppress adversary Long Range Fires and engage other high payoff/time critical targets. The LRHW system will provide the Army a strategic attack weapon system to defeat Anti Access/Area Denial (A2/AD) capabilities, suppress adversary Long Range Fires, and engage other high payoff/time critical targets. The Army is working collaboratively with the Navy in the development of the LRHW. Common with the Navy, the LRHW system includes a Common Hypersonic Glide Body (CHGB) and common 34.5 inch booster.

PEO MS transition activities are performed to support continuous development and production of ground support equipment and Battery 2 training, operational, and reload missiles, as well as Long Range Fires technologies growth, testing, and fielding.

The LRHW system consists of the CHGB with the Navy 34.5 inch booster, a Battery Operations Center (BOC) for command and control (C2), and the Transporter Erector Launcher (TEL). Each TEL holds 2 canisterized rounds. Each LRHW Battery contains eight (8) All Up Rounds (AUR) with canister (AUR+C), one (1) BOC, and four (4) TELs. Additionally, the LRHW will use a modified version of an existing C2 network, the Advanced Field Artillery Tactical Data System (AFATDS).

Prior development effort is funded in PE 0604182A.

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B. Program Change Summary (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	0.000	111.473	0.000	-	0.000
Current President's Budget	0.000	111.473	633.499	-	633.499
Total Adjustments	0.000	0.000	633.499	-	633.499
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	633.499	-	633.499

Change Summary Explanation

FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605232A / <i>Hypersonics EMD</i>	Project (Number/Name) HX2 / <i>Hypersonic Weapon (LRHW)</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
HX2: <i>Hypersonic Weapon (LRHW)</i>	-	-	111.473	633.499	-	633.499	944.768	940.402	422.581	420.219	0.000	3,472.942
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Funds BA5 activities managed by the Program Executive Office Missiles and Space (PEO MS) under Program Element (PE) 0605232A, in preparation for the FY24 transition of the BA4 activities from the Rapid Capabilities and Critical Technologies Office (RCCTO) under PE 0604182A, and continues Long Range Hypersonic Weapon (LRHW) activities.

A. Mission Description and Budget Item Justification

This funding is directly aligned to the Army's precision fires modernization effort.

PE 0605232A / Hypersonics "EMD" efforts fund the continuous hypersonic effort. Hypersonics funds the Program Executive Office, Missiles and Space continuation of the Army's Hypersonic efforts beyond the Rapid Capabilities and Critical Technologies Office (RCCTO) hypersonic activities. This includes the continuous development and prototype fielding of a Long Range Hypersonic Weapon to suppress adversary Long Range Fires and engage other high payoff/time critical targets. The LRHW system will provide the Army a strategic attack weapon system to defeat Anti Access/Area Denial (A2/AD) capabilities, suppress adversary Long Range Fires, and engage other high payoff/time critical targets. The Army is working collaboratively with the Navy in the development of the LRHW. Common with the Navy, the LRHW system includes a Common Hypersonic Glide Body (CHGB) and common 34.5 inch booster.

PEO MS transition activities are performed to support continuous development and production of ground support equipment and Battery 2 training, operational, and reload missiles, as well as Long Range Fires technologies growth, testing, and fielding.

The LRHW system consists of the CHGB with the Navy 34.5 inch booster, a Battery Operations Center (BOC) for command and control (C2), and the Transporter Erector Launcher (TEL). Each TEL holds 2 canisterized rounds. Each LRHW Battery contains eight (8) All Up Rounds (AUR) with canister (AUR+C), one (1) BOC, and four (4) TELs. Additionally, the LRHW will use a modified version of an existing C2 network, the Advanced Field Artillery Tactical Data System (AFATDS).

Prior development effort is funded in PE 0604182A.

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

	FY 2021	FY 2022	FY 2023
Title: Long Range Hypersonic Weapon	-	-	625.393
Description: Funding is provided for planning, prototype manufacturing, testing and delivery of the Long Range Hypersonic Weapon and consists of four lines of effort:			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605232A / <i>Hypersonics EMD</i>	Project (Number/Name) HX2 / <i>Hypersonic Weapon (LRHW)</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
<p>CHGB with TPS Development, purchase of hardware, integration, assembly, test and delivery of the Common Hypersonic Glide Body (CHGB) system for the All Up Round and Canister (AUR+C). Remain technologically capable to support CHGB production for requiring services.</p> <p>All Up Round and Canister (AUR+C) Technology development, purchase of hardware, integration, assembly, test and delivery of the All Up Round and Canister (AUR+C).</p> <p>Ground Support Equipment (GSE) Provides for planning, manufacturing and integration efforts for LRHW reload trailers, LRHW technology development and deployment, and additional training development (enhances existing and incorporates detailed operator and maintainer skills). Designs training aid devices, simulations, and simulator in accordance with the system training plan. Develops the overall Systems Integration and training for the All Up Round and Canister (AUR+C) for the LRHW program.</p> <p>Test and Evaluation Test and evaluation includes test planning, execution and analysis of POR JFCs and Army operational and developmental tests. Also provides required support for environmental testing.</p> <p>FY 2023 Plans: FY23 Base funds continue transition efforts for the LRHW prototype battery from RCCTO to PEO MS as a POR. Supports further development and demonstration of LRHW system components and training; purchases basic load and reload All Up Rounds and Canisters (AUR+C); designs reload trailers; enhances training in accordance with system training plan; performs logistics analysis required for materiel release; and provides resources to stand up a PEO MS project office.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding increase from FY 2022 to FY 2023 is due to program of record initiation and transition efforts for the LRHW prototype battery from RCCTO to PEO MS as a POR. Cost drivers for the increase include purchase of basic load and reload AUR+C, reload trailer design, and testing requirements.</p>				
<p>Title: System Engineering/Program Management</p> <p>Description: Includes the Government PM's office (civilian, SETA, and matrix personnel) to support RDT&E efforts. This encompasses overall planning, direction, and control of the definition, development, and production of the system/program, including functions of logistics engineering and integrated logistics support.</p> <p>FY 2023 Plans:</p>		-	-	8.106

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605232A / Hypersonics EMD	Project (Number/Name) HX2 / Hypersonic Weapon (LRHW)		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
<p>FY23 Plans continue transition efforts for the LRHW prototype Battery from RCCTO to PEO MS as a POR. Stands up project office, supports further analysis and assessments for development and demonstration of LRHW system components and training. Continues logistics analysis required for the POR.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding increase from FY 2022 to FY 2023 is due to program initiation and contracting efforts for LRHW GSE, missile Long Lead requirements, Missile buys for Battery 2 with reloads, testing requirements, and logistics analysis for system supportability.</p>				
<p>Title: Training/Evaluation/Certification Hardware - Live AUR+C and Training Canisters</p> <p>Description: Purchase live AUR+C components and training canisters to support LRHW training, evaluation, certification, and delivery of LRHW battery 2.</p> <p>FY 2022 Plans: Purchase live AUR+C components and training canisters to support LRHW training, evaluation, certification, and delivery of LRHW battery 2.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding decrease in FY23 due to the purchase of 6 additional missile assets in FY22.</p>		-	101.920	-
<p>Title: Development Engineering/Studies</p> <p>Description: Continues analysis for investment determination required to produce data required for program of record (POR) documentation for fielded equipment.</p> <p>FY 2022 Plans: FY22 Base funds initiate transition efforts for the LRHW prototype battery from RCCTO to PEO MS as a POR. Initiates project office planning efforts, supports further development and demonstration of LRHW training, and performs logistics analysis and assessments on delivered equipment to further mature the LRHW prototype design. Includes development engineering for LRHW hardware components and systems engineering support to modify the battery configuration delivered by RCCTO.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: The decrease of FY23 funding is due to transition efforts from the Army Rapid Capabilities and Critical Technologies Office (RCCTO) to PEO Missiles and Space.</p>		-	5.484	-
<p>Title: FY 2022 SBIR/STTR Transfer</p> <p>FY 2022 Plans: FY 2022 SBIR/STTR Transfer</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p>		-	4.069	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army	Date: April 2022
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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605232A / <i>Hypersonics EMD</i>	Project (Number/Name) HX2 / <i>Hypersonic Weapon (LRHW)</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
FY 2022 SBIR/STTR Transfer			
Accomplishments/Planned Programs Subtotals	-	111.473	633.499

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

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• 0604182A: <i>Hypersonics</i>	841.666	315.131	173.168	-	173.168	43.244	28.014	-	-	0.000	1,401.223

Remarks

D. Acquisition Strategy

The Army will field two additional Hypersonic Weapons System Batteries with residual operational capability NLT FY 2025 and FY2027, respectively. These Battery Level assets are part of the Long Range Fires Battalion in support of Multi-domain Operations. RCCTO will provide CLS for one year following the delivery of the first LRHW Battery in FY23. PEO MS will leverage current RCCTO contract vehicles, Navy contract vehicles (Navy Conventional Prompt Strike (CPS) contract with Lockheed Martin) for the missile booster and integration, and initiate stand-alone Other Transaction Authority's (OTA's) for follow on Ground Support Equipment and CHGB efforts. Long-lead procurement is required 2 years prior to delivery resulting in a requirement to execute funding in FY 2022 to meet the FY 2024 manufacturing and FY 2025 fielding requirement. Quick awards of the OTA and Navy CPS contracts ensure procurements are executed with adequate time to execute the funds and program requirements. A SETA contract provides support to the Government Project Office. The PEO MS transition team is currently embedded within RCCTO to ensure an efficient transition in FY 2024 as a program of record and to facilitate the initiation of follow-on contracts required for continuous production. PEO MS transition activities, are performed in support of continuous development and production of LRHW systems, as well as Long Range Fires technologies growth, testing, and fielding.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605232A / Hypersonics EMD	Project (Number/Name) HX2 / Hypersonic Weapon (LRHW)
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Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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			
System Engineering/ Program Management	Various	Various : Various	-	-		5.484	Dec 2021	8.106	Dec 2022	-		8.106	Continuing	Continuing	-
SBIR/STTR Transfer	TBD	Various : Various	-	-		4.069		-		-		-	0.000	4.069	-
Subtotal			-	-		9.553		8.106		-		8.106	Continuing	Continuing	N/A

Remarks
Includes the Government PM's office (civilian, SETA, and matrix personnel) to support RDT&E efforts. This encompasses overall planning, direction, and control of the definition, development, and production of the system/program, including functions of logistics engineering and integrated logistics support.

Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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			
Development Engineering/ Studies	C/TBD	Various : Various	-	-		4.881	Jan 2022	15.643	Jan 2023	-		15.643	Continuing	Continuing	-
Development Engineering/ Hardware	TBD	Various : Various	-	-		97.039	Mar 2022	596.631	Mar 2023	-		596.631	Continuing	Continuing	-
Subtotal			-	-		101.920		612.274		-		612.274	Continuing	Continuing	N/A

Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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			
Government Test Support	MIPR	Various : Various	-	-		-		13.119	Dec 2022	-		13.119	Continuing	Continuing	-
Subtotal			-	-		-		13.119		-		13.119	Continuing	Continuing	N/A

			Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	-	111.473	633.499	-	633.499	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605232A / <i>Hypersonics EMD</i>	Project (Number/Name) HX2 / <i>Hypersonic Weapon (LRHW)</i>
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Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027																															
	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																												
AAE Approval of LRHW Funds Execution under PEO MS					▲ 1																																																			
LRHW Project Office Establishment																																																								
Purchase Training/Certification/Evaluation Rounds																																																								
Purchase Training Canisters																																																								
Development Engineering																																																								
Purchase Eight (8) Tactical AUR+C Technology Insertion (TI) 22 and reloads																																																								
Section 804 MTA ADM Approval																													▲ 2																											
Transition LRHW from RCCTO to PEO MS																																																								
Training/Certification/Evaluation Rounds Delivery #1																																									▲ 3															
Training Canister Delivery #1																																													▲ 4											
JFC 5																																													▲ 5											
Purchase Eight (8) Tactical AUR+C Technology Insertion (TI) 24 and reloads																																																								
Reloads Fielding																																																								

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605232A / <i>Hypersonics EMD</i>	Project (Number/Name) HX2 / <i>Hypersonic Weapon (LRHW)</i>
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Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	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
Training/Certification/Evaluation Rounds Delivery #2																												
JFC 6																												
Battery 2 Fielding Complete																												
Training/Certification/Evaluation Rounds Delivery #3																												
JFC 7																												
Training/Certification/Evaluation Rounds Delivery #4																												
JFC FY27																												
Battery 3 Fielding Complete																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605232A / <i>Hypersonics EMD</i>	Project (Number/Name) HX2 / <i>Hypersonic Weapon (LRHW)</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
AAE Approval of LRHW Funds Execution under PEO MS	2	2022	2	2022
LRHW Project Office Establishment	1	2022	4	2024
Purchase Training/Certification/Evaluation Rounds	1	2022	4	2028
Purchase Training Canisters	1	2022	4	2028
Development Engineering	1	2022	4	2028
Purchase Eight (8) Tactical AUR+C Technology Insertion (TI) 22 and reloads	1	2023	4	2025
Section 804 MTA ADM Approval	1	2023	1	2023
Transition LRHW from RCCTO to PEO MS	1	2023	4	2024
Training/Certification/Evaluation Rounds Delivery #1	4	2024	4	2024
Training Canister Delivery #1	4	2024	4	2024
JFC 5	4	2024	4	2024
Purchase Eight (8) Tactical AUR+C Technology Insertion (TI) 24 and reloads	1	2025	4	2027
Reloads Fielding	1	2025	4	2028
Training/Certification/Evaluation Rounds Delivery #2	4	2025	4	2025
JFC 6	4	2025	4	2025
Battery 2 Fielding Complete	4	2025	4	2025
Training/Certification/Evaluation Rounds Delivery #3	4	2026	4	2026
JFC 7	4	2026	4	2026
Training/Certification/Evaluation Rounds Delivery #4	4	2027	4	2027
JFC FY27	4	2027	4	2027
Training/Certification/Evaluation Rounds Delivery #5	4	2028	4	2028
Battery 3 Fielding Complete	4	2027	4	2027