Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army											Date: March 2023	
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*					R-1 Program Element (Number/Name) PE 0604019A *I Expanded Mission Area Missile (EMAM)*							
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	-	26.855	258.320	97.018	-	97.018	363.435	778.029	2,120.659	1,592.164	0.000	5,236.480
BU9: *IFPC High Energy Laser*	-	7.957	215.343	85.852	-	85.852	359.412	778.029	2,120.659	1,592.164	0.000	5,159.416
CO6: *IFPC High Power Microwave (HPM)*	-	18.898	42.977	11.166	-	11.166	4.023	-	-	-	0.000	77.064

Note

Work in this project continues from the work done under PE 0602150A (Air and Missile Defense Technology) / Project AC9 (High Energy Laser Tactical Vehicle Demonstrator Technology) and PE 0603466A (Air and Missile Defense Advanced Technology) / Project AD1 (High Energy Laser Tactical Vehicle Demo Advanced Technology).

This PE supports transitioning the High Energy Laser -Tactical Vehicle Demonstration S&T effort to manufacturing combat ready rapid prototype systems for delivery and transition to Program of Record in FY 2025.

Project BU9 Indirect Fire Protection Capability (IFPC)- High Energy Laser (HEL) has been restructured to transfer all funds for IFPC-High Power Microwave (HPM) effort to Program Element (PE) 0604019A Expanded Mission Area Missile (EMAM) Project CO6 IFPC-HPM.

A. Mission Description and Budget Item Justification

These funding lines are directly aligned to the Army Air and Missile Defense Modernization Priority.

Work in this PE, the Expanded Mission Area Missile (EMAM) program, supports the Integrated Air and Missile Defense (IAMD) architecture and provides Directed Energy - Indirect Fire Protection Capability (DE-IFPC) intercept capability to defeat Cruise Missiles (CM), Unmanned Aircraft System (UAS), and Rocket, Artillery, and Mortar (RAM) threats.

The DE-IFPC is an Air Defense capability consisting of the IFPC-HEL and the IFPC-HPM. IFPC-HEL will provide a ground-based weapon system designed to acquire, track, engage, and defeat the CM, UAS, and RAM threats. The IFPC-HEL requirement consists of a vehicle, high energy laser subsystem, power and thermal subsystem, and a beam control subsystem integrated with a battle management command, control and communication software. IFPC-HEL provides much needed protection against adversarial threat systems capable of targeting U.S. and Allied forward operating bases and other critical assets.

IFPC-HPM will provide a ground-based weapon system designed to acquire, track, engage, and defeat UAS swarms. The IFPC-HPM requirement consists of a HPM source, power and thermal subsystem, and an antenna subsystem interoperable with a battle management command, control and communication software. IFPC-HPM provides much needed protection against adversarial UAS swarms capable of targeting and overwhelming U.S. and Allied air defense systems.

The cited work is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army	Date: March 2023
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0604019A *I Expanded Mission Area Missile (EMAM)*

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	27.872	220.820	144.936	-	144.936
Current President's Budget	26.855	258.320	97.018	-	97.018
Total Adjustments	-1.017	37.500	-47.918	-	-47.918
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-2.500			
• Congressional Rescissions	-	-			
• Congressional Adds	-	40.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-1.017	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	-47.918	-	-47.918

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Project: BU9: *IFPC High Energy Laser*		
Congressional Add: *Program Increase: IFPC-HEL*	-	40.000
Congressional Add Subtotals for Project: BU9	-	40.000
Congressional Add Totals for all Projects	-	40.000

Change Summary Explanation

Fiscal Year (FY) 2024 decrease of $47.918 Million in support of other Army modernization priorities.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604019A / *Expanded Mission Area Missile (EMAM)*	Project (Number/Name) BU9 / *IFPC High Energy Laser*	

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
BU9: *IFPC High Energy Laser*	-	7.957	215.343	85.852	-	85.852	359.412	778.029	2,120.659	1,592.164	0.000	5,159.416
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Work in this project continues the work done under PE 0602150A (Air and Missile Defense Technology) / Project AC9 (High Energy Laser Tactical Vehicle Demonstrator Technology) and PE 0603466A (Air and Missile Defense Advanced Technology) / Project AD1 (High Energy Laser Tactical Vehicle Demo Advanced Technology).

This PE supports transitioning the High Energy Laser -Tactical Vehicle Demonstration S&T effort to manufacturing combat ready rapid prototype vehicles for delivery and transition to Program of Record in FY 2025.

Project BU9 Indirect Fire Protection Capability (IFPC)- High Energy Laser TVD has been restructured to transfer all funds for IFPC-High Power Microwave (HPM) effort to Program Element (PE) 0604019A Expanded Mission Area Missile (EMAM) Project CO6 IFPC-HPM.

A. Mission Description and Budget Item Justification

This funding line is directly aligned to the Army Air and Missile Defense Modernization Priority.

The Directed Energy Indirect Fire Protection Capability (DE-IFPC) - High Energy Laser (HEL) is an Air Defense capability consisting of IFPC - HEL prototypes with residual combat capability at the IFPC Battery Level in support of Multi-Domain Operations (MDO). IFPC-HEL will provide the Army prototype weapon systems for defense of fixed and semi-fixed sites from Cruise Missiles (CM), Unmanned Aircraft Systems (UAS), and Rocket, Artillery, and Mortar (RAM) threats. This project will deliver an operationally effective rapid prototype capability in the near and mid-terms. Efforts will include accelerated materiel development and competitive prototyping. IFPC-HEL funds an improved mechanism to effectively confront emerging threats and advance America's military dominance in accordance with the National Defense Strategy. Efforts include development, acquisition, assessment, maturation, and transition of prototype technologies to acquisition programs.

The cited work is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas, the Army Modernization Strategy, and supports the Army's future capability opportunities for leap-ahead technology for directed energy.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: IFPC-High Energy Laser	7.957	168.943	85.852
Description: This effort will provide planning, prototype manufacturing, and testing for Indirect Fire Protection Capability (IFPC)-High Energy Laser (HEL) rapid prototypes with residual combat capability to support the IFPC mission. The IFPC-HEL is a modularized laser weapon system that can be integrated onto a Heavy Expanded Mobility Tactical Truck (HEMTT) Palletized Load System (PLS) to defend fixed and semi-fixed sites from Cruise Missiles (CM), Unmanned Aircraft Systems (UAS), and			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604019A / *Expanded Mission Area Missile (EMAM)*	**Project (Number/Name)** BU9 / *IFPC High Energy Laser*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Rocket, Artillery, and Mortar (RAM) threats delivered with residual combat capability in FY 2025 as part of the IFPC Battery in support of Multi-Domain Operations (MDO). IFPC-HEL builds on the technology maturation and demonstration from PE 0602150A (Air and Missile Defense Technology) / Project AC9 (High Energy Laser Tactical Vehicle Demonstrator Technology) and PE 0603466A (Air and Missile Defense Advanced Technology) / Project AD1 (High Energy Laser Tactical Vehicle Demo Advanced Technology). ***FY 2023 Plans:*** Will continue systems engineering, program management, engineering, and technical support, for weapon system prototyping. Fabrication will commence immediately upon contract award to include hardware, integration and assembly. ***FY 2024 Plans:*** Prototype fabrication will continue to include hardware integration and assembly. Will continue systems engineering, program management, engineering and technical support. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Decrease in funding in FY2024 is due to program activities transitioning from engineering, long lead purchases, sub-system integration; to prototype integration and delivery.			
Title: SBIR/STTR Transfer ***Description:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 Plans:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding transferred in accordance with Title 15 USC §638	-	6.400	-
Accomplishments/Planned Programs Subtotals	7.957	175.343	85.852

	FY 2022	FY 2023
Congressional Add: Program Increase: IFPC-HEL	-	40.000
FY 2023 Plans: This effort will complete the laboratory demonstration and the Engineering Learning Event (ELE) of the laser weapon demonstrator and inform the IFPC-HEL Prototypes.		
Congressional Adds Subtotals	-	40.000

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604019A / *Expanded Mission Area Missile (EMAM)*	**Project (Number/Name)** BU9 / *IFPC High Energy Laser*

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

A demonstration effort has been initiated for this capability that will culminate in an integrated laboratory demonstration in FY 2023. Given a favorable outcome, prototype weapon systems will be delivered with residual combat capability in FY 2025 as part of the IFPC Battery in support of Multi-Domain Operations (MDO). Soldier touchpoints will be conducted to provide feedback in support of Army requirements generation/soldier centered design, prototype maturation, fielding, and future capability development. Performance characteristics will be utilized to establish a Program of Record within PEO Missiles and Space.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604019A / *Expanded Mission Area Missile (EMAM)*	Project (Number/Name) BU9 / *IFPC High Energy Laser*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	Various	Various : Various	-	0.795		10.119	Dec 2022	8.547	Dec 2023	-		8.547	Continuing	Continuing	-
SBIR/STTR Transfer	TBD	Various : Various	-	-		6.400		-		-		-	0.000	6.400	-
Facilities, IT/Supplies, Travel, Training	TBD	Various : Various	-	-		0.135	Dec 2022	-		-		-	0.000	0.135	-
Program Increase: IFPC-HEL Management Support	TBD	Various : Various	-	-		2.944		-		-		-	0.000	2.944	-
		Subtotal	-	0.795		19.598		8.547		-		8.547	Continuing	Continuing	N/A

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems, Development: Indirect Fire Protection Capability - High Energy Laser (IFPC-HEL)	C/CPFF	TBD : TBD	-	7.162		154.856	Jul 2023	77.305	Nov 2023	-		77.305	Continuing	Continuing	-
Software Development and Support	MIPR	Various : Various	-	-		3.833	Feb 2023	-		-		-	0.000	3.833	-
Program Increase: IFPC-HEL	C/CPFF	Dynetics : Huntsville, AL	-	-		37.056		-		-		-	0.000	37.056	-
		Subtotal	-	7.162		195.745		77.305		-		77.305	Continuing	Continuing	N/A

	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	-	7.957		215.343		85.852		-		85.852	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604019A / *Expanded Mission Area Missile (EMAM)*	**Project (Number/Name)** BU9 / *IFPC High Energy Laser*

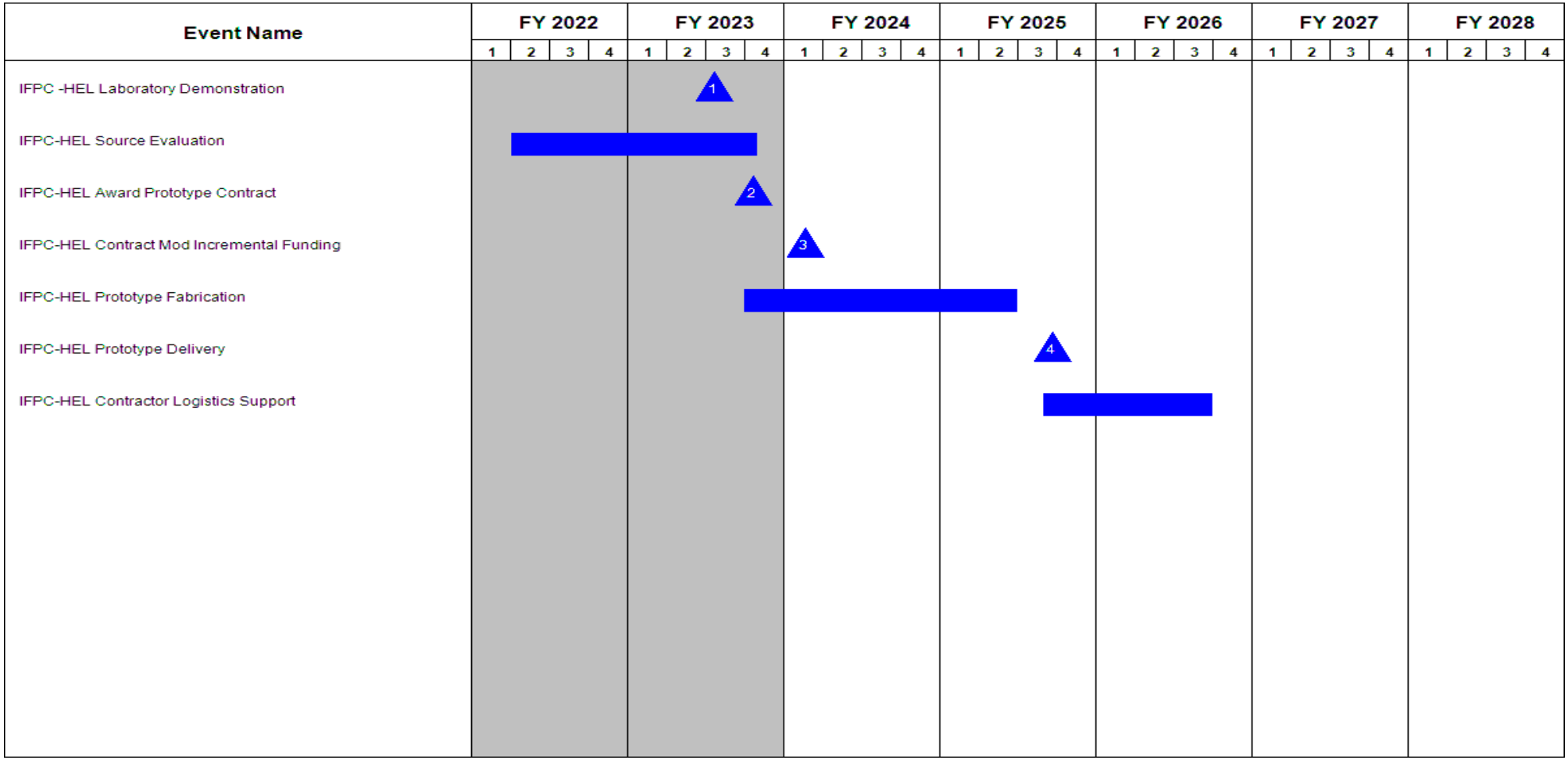

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604019A / *Expanded Mission Area Missile (EMAM)*	**Project (Number/Name)** BU9 / *IFPC High Energy Laser*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
IFPC -HEL Laboratory Demonstration	3	2023	3	2023
IFPC-HEL Source Evaluation	2	2022	4	2023
IFPC-HEL Award Prototype Contract	4	2023	4	2023
IFPC-HEL Contract Mod Incremental Funding	1	2024	1	2024
IFPC-HEL Prototype Fabrication	4	2023	2	2025
IFPC-HEL Prototype Delivery	3	2025	3	2025
IFPC-HEL Contractor Logistics Support	3	2025	3	2026

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604019A / *Expanded Mission Area Missile (EMAM)*	Project (Number/Name) CO6 / *IFPC High Power Microwave (HPM)*	

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
CO6: *IFPC High Power Microwave (HPM)*	-	18.898	42.977	11.166	-	11.166	4.023	-	-	-	0.000	77.064
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Project BU9 Indirect Fire Protection Capability (IFPC)- High Energy Laser has been restructured to transfer all funds for the IFPC-High Power Microwave (HPM) effort to Program Element (PE) 0604019A Expanded Mission Area Missile (EMAM) Project CO6 IFPC-HPM.

A. Mission Description and Budget Item Justification

This funding line is directly aligned to the Army Air and Missile Defense Modernization Priority.

The Directed Energy - Indirect Fire Protection Capability (DE-IFPC) - High Power Microwave (HPM) is an Air Defense capability consisting of the IFPC-HPM prototype with residual combat capability at the IFPC Battery Level in support of Multi-domain Operations (MDO). IFPC-HPM will provide the Army with HPM prototype weapon systems for the short-range defense of fixed and semi-fixed sites from Unmanned Aircraft System (UAS) swarms. This project will deliver an operationally effective rapid prototype capability in the near and mid-terms. Efforts will include accelerated materiel development and prototyping. IFPC-HPM funds an improved mechanism to effectively confront emerging threats and advance America's military dominance in accordance with the National Defense Strategy. Efforts include development, acquisition, assessment, maturation, and transition of prototype technologies to acquisition programs.

The cited work is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas, the Army Modernization Strategy, and supports the Army's future capability opportunities for leap-ahead technology for directed energy.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: IFPC-High Power Microwave	18.898	41.408	11.166
Description: This effort will provide development, planning, prototype manufacturing, and testing of 4 IFPC-HPM rapid prototypes with residual combat capability to support the IFPC mission. The IFPC-HPM is a weapon system that can be transported by common brigade combat team equipment to defend fixed and semi-fixed sites against Group 1-2 UAS swarms. IFPC-HPM is common with other Services and the Joint Counter-UAS Office HPM effectors for countering UAS. IFPC-HPM leverages previous HPM technology demonstrations and experimentation campaigns.			
FY 2023 Plans: Continuation of fabricating and producing prototypes of the common HPM system, delivering 4 prototypes in FY 2024.			
FY 2024 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604019A / *Expanded Mission Area Missile (EMAM)*	**Project (Number/Name)** CO6 / *IFPC High Power Microwave (HPM)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Will continue prototype fabrication, systems engineering, program management, engineering, and technical support, for weapon system prototyping. Initiate Contractor Logistics Support (CLS). ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Decrease in funding in FY 2024 is due to system integration, assembly and testing activities progressing into prototype delivery and Contractor Logistics Support.			
Title: SBIR/STTR Transfer ***Description:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 Plans:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding transferred in accordance with Title 15 USC §638	-	1.569	-
Accomplishments/Planned Programs Subtotals	18.898	42.977	11.166

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

DE-IFPC will utilize streamlined acquisition methods, processes and techniques to rapidly acquire the capability. Prototype Other Transactions Agreement (pOTA) will be utilized to acquire four prototype HPM systems to deliver to Soldiers NLT 4Q FY 2024. Soldier touchpoints will be conducted to provide feedback in support of Army requirements generation, prototype maturation, fielding residual combat capability to a unit of action, and future capability development.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604019A / *Expanded Mission Area Missile (EMAM)*	Project (Number/Name) CO6 / *IFPC High Power Microwave (HPM)*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	Various	Various : Various	-	1.889		2.280	Dec 2022	1.112	Dec 2023	-		1.112	Continuing	Continuing	Continuing
SBIR/STTR Transfer	TBD	Various : Various	-	-		1.569		-		-		-	0.000	1.569	-
Facilities, IT/Supplies, Travel, Training	TBD	Various : Various	-	-		0.125	Dec 2022	-		-		-	0.000	0.125	-
		Subtotal	-	1.889		3.974		1.112		-		1.112	Continuing	Continuing	N/A

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Indirect Fire Protection Capability - High Power Microwave (IFPC-HPM)	C/FFP	Epirus : Los Angeles, CA	-	17.009	Dec 2022	33.553	Feb 2023	9.354	Dec 2023	-		9.354	Continuing	Continuing	Continuing
Software Development and Support	MIPR	Various : Various	-	-		0.750	Feb 2023	-		-		-	0.000	0.750	-
GFE	MIPR	Various : Various	-	-		1.000	Feb 2023	-		-		-	0.000	1.000	-
		Subtotal	-	17.009		35.303		9.354		-		9.354	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test Support	MIPR	Various : Various	-	-		0.700	Jun 2023	0.700	Dec 2023	-		0.700	0.000	1.400	-
Targets	MIPR	TSMO : Huntsville, AL	-	-		3.000	Mar 2023	-		-		-	0.000	3.000	-
		Subtotal	-	-		3.700		0.700		-		0.700	0.000	4.400	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604019A / *Expanded Mission Area Missile (EMAM)*	Project (Number/Name) CO6 / *IFPC High Power Microwave (HPM)*	

	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	-	18.898		42.977		11.166		-		11.166	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604019A / *Expanded Mission Area Missile (EMAM)*	**Project (Number/Name)** CO6 / *IFPC High Power Microwave (HPM)*

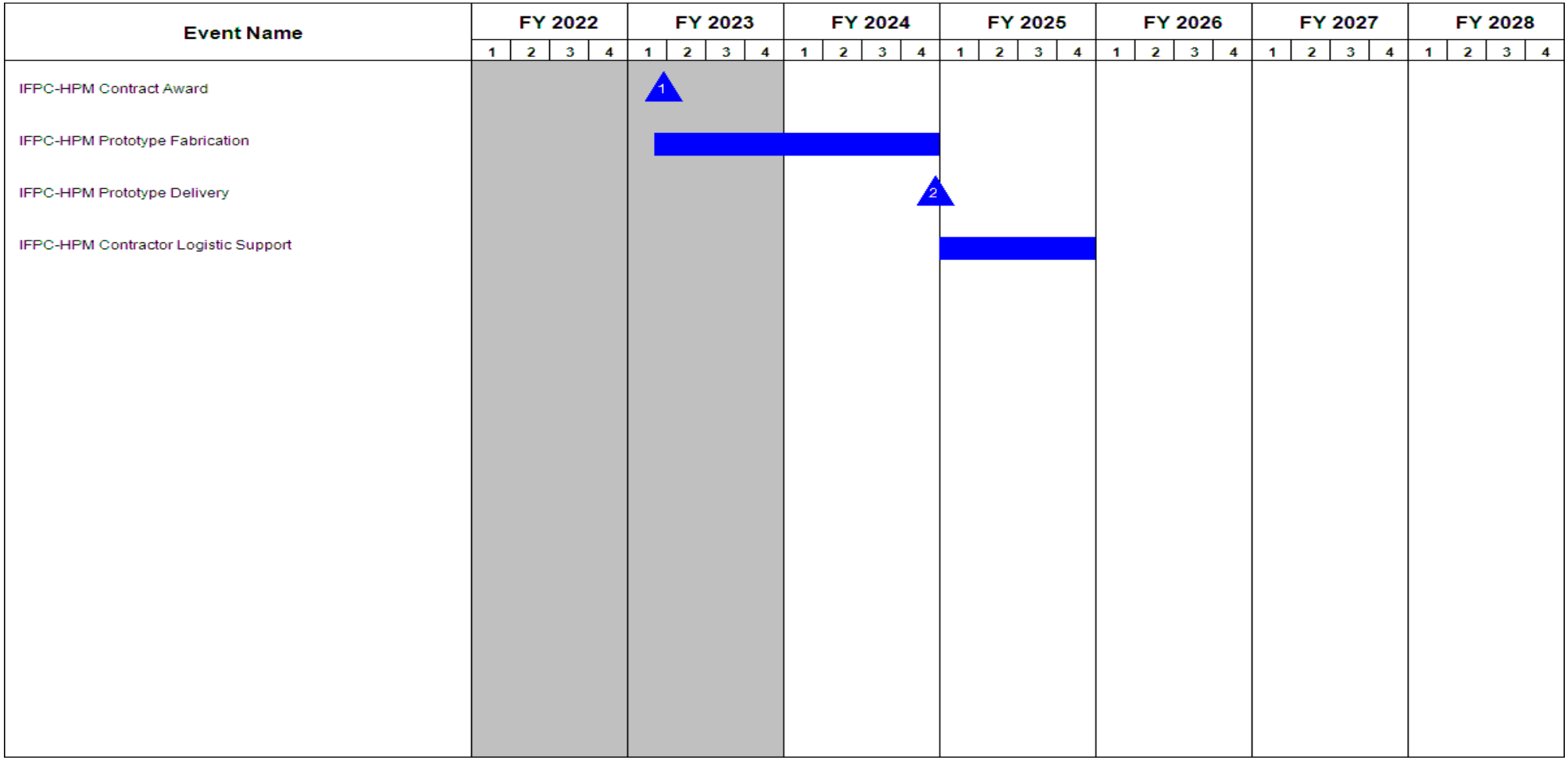

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604019A / *Expanded Mission Area Missile (EMAM)*	**Project (Number/Name)** CO6 / *IFPC High Power Microwave (HPM)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
IFPC-HPM Contract Award	1	2023	1	2023
IFPC-HPM Prototype Fabrication	1	2023	4	2024
IFPC-HPM Prototype Delivery	4	2024	4	2024
IFPC-HPM Contractor Logistic Support	1	2025	4	2025