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* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0604669D8Z / *Microelectronics Commons*

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	0.000	65.682	0.000	0.000	-	0.000	0.000	0.000	0.000	-	Continuing	Continuing
832: *Microelectronics Research Maturation – Advanced Prototyping*	0.000	65.682	0.000	0.000	-	0.000	0.000	0.000	0.000	-	Continuing	Continuing

Note

New Start (Y/N): No

FY 2023 funding of $65.682 million was transferred from the Creating Helpful Incentives to Produce Semiconductors (CHIPS) for America Defense Fund to the FY 2023 Research, Development, Test and Evaluation, Defense-Wide appropriation for proper execution. The funds were appropriated by, and are transferred using special transfer authority provided by, section 102(b) of the CHIPS Act of 2022, division A of Public Law 117–167.

A. Mission Description and Budget Item Justification

This Program Element supports the Department's initiatives to Build Sustainable and Long-Term Advantage, Defend the Homeland, and Deter Aggression.

The Office of the Under Secretary of Defense for Research and Engineering (OUSD(R&E)) is executing the Microelectronics Commons (the Commons) activity pursuant to the Fiscal Year (FY) 2021 National Defense Authorization Act (NDAA) (Pub. L. 116-283), including the CHIPS for America Act, and funded through the CHIPS for America Defense Fund established by the CHIPS Act of 2022. The FY 2021 NDAA legislation significantly emphasized solutions that promote the domestic on-shoring of capabilities to address economic and technology security concerns. Under FY 2021 NDAA Sec. 9903(b), the DOD was directed to establish a National Network for Microelectronics Research and Development (NNMRD) to enable the laboratory-to-fabrication transition of microelectronics innovations in the United States and to expand the global leadership in microelectronics of the United States. Specifically, the DOD is addressing a component of the NNMRD, the Commons, through a public-private partnership consisting of regional innovation hubs distributed across the U.S. to foster a pipeline of innovative ideas and talent residing in, for example, university labs and small business R&D teams.

Background

U.S. technological dominance in microelectronics materials, processes, devices, and architectural designs can only be sustained through the development of a robust domestic innovation ecosystem that fosters the rapid development and transition of novel concepts into commercially viable manufacturing processes. The U.S. innovation ecosystem has long been the driver of our nation’s technology leadership throughout the world. U.S. R&D kick-started the enormous semiconductor industry and continues to lead the world in developing the next generation of disruptive technologies including new materials, devices, circuits, architectures, and design tools.

In recent years, the efficient domestic adoption of U.S. chip innovation has been threatened as emerging hardware technologies have become increasingly reliant on offshore sources for State of the Art (SOTA) manufacturing, prototyping, and investment. There are several significant hurdles that hardware startups face, including limited or expensive access to necessary facilities and design infrastructure, high costs of design intellectual property, limited expertise with hardware engineering, and

high costs of prototyping. As a result, the number of U.S. hardware startups has dropped significantly and foreign investment in U.S.-based technology startups has enabled offshore fabrication and maturation of emerging technologies.

To address these needs, OUSD(R&E) is standing up the Commons as a public private partnership, consisting of regional innovation hubs distributed across the U.S. to foster a pipeline of innovative ideas and talent residing in university labs and small business R&D teams. The partnership will provide resources for and access to specialized lab equipment, technical expertise, and connections to existing or upgraded prototyping facilities. Fabrication facilities (fabs) will help mature promising technologies and demonstrate the manufacturing and economic benefits of these innovations for dual-use application for defense and commercial sectors.

The Commons focuses on critical, on-shore prototyping to transition innovation from universities, start-ups, and small companies to fabrication facilities (lab-to-fab transition). Key features include:
• Creates and connects “Lab-to-Fab” testing/prototyping hubs to form a network focused on maturing emerging microelectronics technologies
• Provides broad access to these prototyping hubs, potentially by augmenting facilities and enabling access to facilities within local semiconductor companies or FFRDCs.
• Facilitates microelectronics education and training of students at local colleges and universities and grows a talent pipeline to bolster local semiconductor economies and contribute more broadly to the growth of a domestic semiconductor workforce.

This program element focuses on the advanced component development and advanced prototyping activities of the Commons, including staffing at Commons Hub facilities, prototype development, and the establishment and development of a path for successful Lab-to-Fab technology transition. The Commons will establish early and sustained engagement with industry and academic stakeholders to build consensus on technology roadmaps to guide maturation and delivery of innovation into a given commercial fab’s pilot line and production plans.

B. Program Change Summary ($ in Millions)	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	65.682	0.000	0.000	-	0.000
Total Adjustments	65.682	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Programmatic transfer from DoD Appropriation 0403D	65.682	-	-	-	-

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* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0604669D8Z / *Microelectronics Commons*

Change Summary Explanation

FY 2023 funding of $65.682 million was transferred from the Creating Helpful Incentives to Produce Semiconductors (CHIPS) for America Defense Fund to the FY 2023 Research, Development, Test and Evaluation, Defense-Wide appropriation for proper execution. The funds were appropriated by, and are transferred using special transfer authority provided by, section 102(b) of the CHIPS Act of 2022, division A of Public Law 117–167.

Exhibit R-2A, RDT&E Project Justification: PB 2025 Office of the Secretary Of Defense			Date: March 2024
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604669D8Z / *Microelectronics Commons*	Project (Number/Name) 832 / *Microelectronics Research Maturation – Advanced Prototyping*	

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
832: *Microelectronics Research Maturation – Advanced Prototyping*	0.000	65.682	0.000	0.000	-	0.000	0.000	0.000	0.000	-	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

New Start (Y/N): No

FY 2023 funding of $65.682 million was transferred from the Creating Helpful Incentives to Produce Semiconductors (CHIPS) for America Defense Fund to the FY 2023 Research, Development, Test and Evaluation, Defense-Wide appropriation for proper execution. The funds were appropriated by, and are transferred using special transfer authority provided by, section 102(b) of the CHIPS Act of 2022, division A of Public Law 117–167.

A. Mission Description and Budget Item Justification

This project focuses on advanced prototyping activities of the Commons. Additionally, it focuses on providing cost-effective ways to capture and incentivize domestic R&D for various semiconductor technologies in a low-volume production environment and transition them for DOD and commercial market applications. Specifically, it works to transition developments from Commons Hubs resulting from technology identification and research funded by Commons PEs 0602669D8Z and matured by activities funded by Commons PE 0603669D8Z. The project also supports the establishment of the Commons Hubs, which will be networks of regional capabilities organized in collaboration with the CM to address DoD and commercial needs and requirements. The Hubs may include existing academic facilities augmented to enhance intrinsic specializations in emerging areas of microelectronics. Each Hub will concentrate on one of six technical areas including: Secure Edge Computing, 5G/6G Technology, Artificial Intelligence Hardware, Quantum Technology, Electromagnetic Warfare, and Commercial Leap Ahead Technologies. Core Facilities (i.e., fabs) are integral parts of the Hubs network that will provide key fabrication capabilities that are required to demonstrate prototypes with the volume and characteristics required to ensure reduced risk for full manufacturing production.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
Title: Microelectronics Research Maturation – Advanced Prototyping	65.682	0.000	0.000
Description: This effort focuses on the advanced prototyping of promising new microelectronics technologies and enabling the transition of these technologies into fabrication processes that ensure reduced risk for insertion into DOD Programs and commercial applications. It will also support operation of regional Commons Hubs and initial selection and execution of Commons Projects in conjunction with activities funded by PEs 0602669D8Z and 0603669D8Z.			
FY 2024 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2025 Office of the Secretary Of Defense		Date: March 2024
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604669D8Z / *Microelectronics Commons*	**Project (Number/Name)** 832 / *Microelectronics Research Maturation – Advanced Prototyping*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
Select initial Commons Projects to be executed by the Hubs; advanced prototyping efforts for new microelectronics technologies with potential DOD or dual-use applications • Execution of Hubs – access to prototyping capabilities and development of the semiconductor talent pipeline. • Facilitate transition of novel concepts matured in a low-volume production environment into commercially viable high-volume manufacturing processes. ***FY 2025 Plans:*** • Select the FY 2025 Commons Projects to be executed by the Hubs; advanced prototyping efforts for new microelectronics technologies with potential DOD or dual-use applications • Execution of Hubs – access to prototyping capabilities and development of the semiconductor talent pipeline. • Execution of FY 2024 Commons Projects; advanced prototyping efforts for new microelectronics technologies with potential DOD or dual-use applications • Continue to facilitate transition of novel concepts matured in a low-volume production environment into commercially viable high-volume manufacturing processes.			
Accomplishments/Planned Programs Subtotals	65.682	0.000	0.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

N/A

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Office of the Secretary Of Defense			Date: March 2024
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604669D8Z / *Microelectronics Commons*	**Project (Number/Name)** 832 / *Microelectronics Research Maturation – Advanced Prototyping*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2023 Cost	FY 2023 Award Date	FY 2024 Cost	FY 2024 Award Date	FY 2025 Base Cost	FY 2025 Base Award Date	FY 2025 OCO Cost	FY 2025 OCO Award Date	FY 2025 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Microelectronics Research Maturation – Advanced Prototyping	C/Various	Air Force, Army, Navy: Various : Various	-	65.682	Mar 2023	0.000		0.000		0.000		0.000	Continuing	Continuing	-
		Subtotal	-	65.682		0.000		0.000		0.000		0.000	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
Project Cost Totals	-	65.682		0.000		0.000		0.000		0.000	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2025 Office of the Secretary Of Defense		Date: March 2024
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604669D8Z / *Microelectronics Commons*	**Project (Number/Name)** 832 / *Microelectronics Research Maturation – Advanced Prototyping*

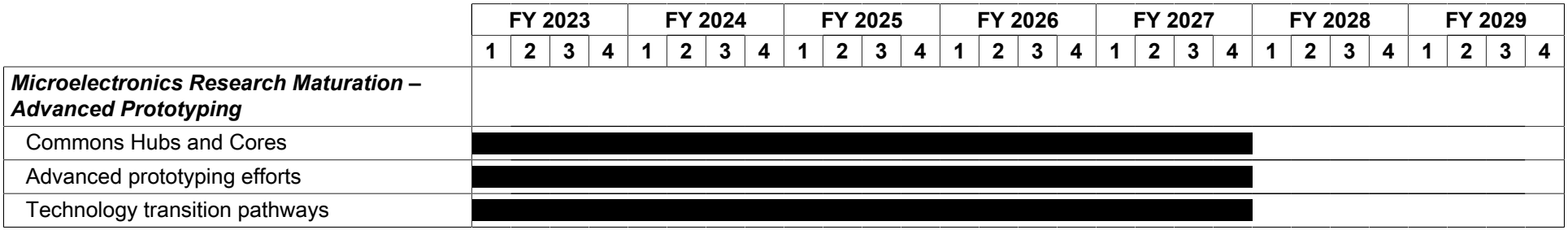

Exhibit R-4A, RDT&E Schedule Details: PB 2025 Office of the Secretary Of Defense		Date: March 2024
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604669D8Z / *Microelectronics Commons*	**Project (Number/Name)** 832 / *Microelectronics Research Maturation – Advanced Prototyping*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Microelectronics Research Maturation – Advanced Prototyping				
Commons Hubs and Cores	1	2023	4	2027
Advanced prototyping efforts	1	2023	4	2027
Technology transition pathways	1	2023	4	2027