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 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603669D8Z / *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	269.256	0.000	0.000	-	0.000	0.000	0.000	0.000	-	Continuing	Continuing
829: *Microelectronics Research Maturation – Prototyping*	0.000	269.256	0.000	0.000	-	0.000	0.000	0.000	0.000	-	Continuing	Continuing

Note

New Start (Y/N): No

FY 2023 funding of $269.256 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 emphasizes 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 is 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 will focus on critical, on-shore prototyping to transition innovation from universities, start-ups, and small companies to fabrication facilities (lab-to-fab transition). Key features are:
• 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 technology development activities of the Commons, including staffing at Commons hub facilities, advanced technology development, and significant prototyping activity. In addition, it provides for the establishment, staffing, and operation of the Microelectronics Commons Consortium Manager (CM), the overall management of the Commons, and will support the required physical, digital, and human infrastructure of the hubs.

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	269.256	0.000	0.000	-	0.000
Total Adjustments	269.256	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	269.256	-	-	-	-

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 I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603669D8Z *I Microelectronics Commons*

Change Summary Explanation

FY 2023 funding of $269.256 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 / 3	R-1 Program Element (Number/Name) PE 0603669D8Z / *Microelectronics Commons*	Project (Number/Name) 829 / *Microelectronics Research Maturation – 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
829: *Microelectronics Research Maturation – Prototyping*	0.000	269.256	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 $269.256 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 the advanced technology development activities of the Commons including prototyping of devices or components using new microelectronics materials, processes, device designs, and architectural designs. It will also enable the establishment and operation of a Commons Consortium Manager (CM), which will provide efficient coordination and administration of regional innovation hubs. The CM is tasked with operating the Commons network, in alignment with the OUSD(R&E) Commons vision to ensure DOD access to and benefit from resulting technologies. 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 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. This effort includes workforce development activities through the Commons network through technology development and prototyping activities. Activities may span K-12, undergraduate, graduate and continuing education and may include, for example, establishment of PhD internships and post-doc training at Hub facilities and internships with Hub members. Additionally, it will develop training for the existing Commons workforce with potential for impact beyond the entities participating directly in the Commons Hubs.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
Title: Microelectronics Research Maturation – Prototyping	269.256	0.000	0.000
Description: This effort focuses on the development and prototyping of promising new microelectronics materials, processes, devices, and architectural designs with potential DoD applications, development of these technologies, and operation of the CM. 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 0604669D8Z. This effort includes workforce development activities through the Commons network through technology development and prototyping activities. Activities may span K-12, undergraduate,			

Exhibit R-2A, RDT&E Project Justification: PB 2025 Office of the Secretary Of Defense		Date: March 2024
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603669D8Z / *Microelectronics Commons*	**Project (Number/Name)** 829 / *Microelectronics Research Maturation – Prototyping*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2023	FY 2024	FY 2025
graduate and continuing education and may include, for example, establishment of PhD internships and post-doc training at Hub facilities and internships with Hub members. Additionally, it will develop training for the existing Commons workforce with potential for impact beyond the entities participating directly in the Commons Hubs. ***FY 2024 Plans:*** • 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. • Continue 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. ***FY 2024 to FY 2025 Increase/Decrease Statement:*** N/A			
Accomplishments/Planned Programs Subtotals	269.256	0.000	0.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

N/A

D. Acquisition Strategy

N/A

Exhibit R-4, RDT&E Schedule Profile: PB 2025 Office of the Secretary Of Defense		Date: March 2024
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603669D8Z / *Microelectronics Commons*	**Project (Number/Name)** 829 / *Microelectronics Research Maturation – Prototyping*

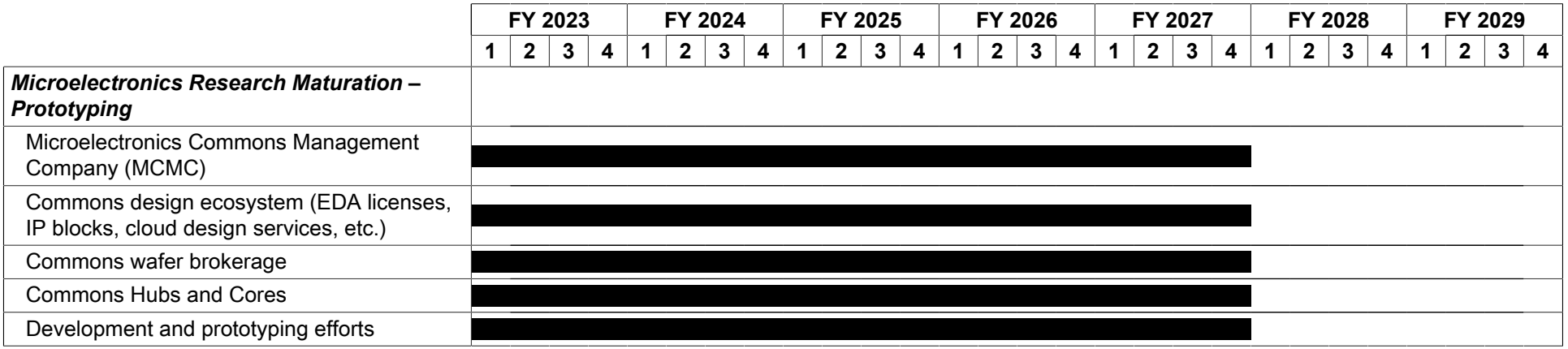

Exhibit R-4A, RDT&E Schedule Details: PB 2025 Office of the Secretary Of Defense		Date: March 2024
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603669D8Z / *Microelectronics Commons*	**Project (Number/Name)** 829 / *Microelectronics Research Maturation – Prototyping*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Microelectronics Research Maturation – Prototyping				
Microelectronics Commons Management Company (MCMC)	1	2023	4	2027
Commons design ecosystem (EDA licenses, IP blocks, cloud design services, etc.)	1	2023	4	2027
Commons wafer brokerage	1	2023	4	2027
Commons Hubs and Cores	1	2023	4	2027
Development and prototyping efforts	1	2023	4	2027