Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Defense Advanced Research Projects Agency	Date: April 2022
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 2: *Applied Research*	**R-1 Program Element (Number/Name)** PE 0602383E / *BIOLOGICAL WARFARE DEFENSE*

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	-	26.082	31.421	23.059	-	23.059	10.536	11.035	11.852	11.852	-	-
BW-01: *BIOLOGICAL WARFARE DEFENSE*	-	26.082	31.421	23.059	-	23.059	10.536	11.035	11.852	11.852	-	-

A. Mission Description and Budget Item Justification

The Biological Warfare Defense project is budgeted in the Applied Research Budget Activity because its focus is on the underlying technologies associated with the detection, prevention, treatment and remediation of biological, chemical, and radionuclide threats.

Efforts to counter existing and emerging biological, chemical and radiological threats include: countermeasures to stop the pathophysiologic processes that occur as a consequence of an attack; collection of environmental trace constituents to support chemical mapping, tactical and strategic biological, chemical, and radiological sensors; and integrated defense systems.

B. Program Change Summary ($ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	26.950	31.421	0.000	-	0.000
Current President's Budget	26.082	31.421	23.059	-	23.059
Total Adjustments	-0.868	0.000	23.059	-	23.059
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.868	0.000			
• Adjustments to Budget Year	-	-	23.059	-	23.059

Change Summary Explanation

FY 2021: Decrease reflects SBIR/STTR transfer.
FY 2022: NA
FY 2023: FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.

C. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Title: Defense Against Mass Terror Threats	26.082	31.421	23.059

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C. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Description: The objective of the Defense Against Mass Terror Threats program is to identify and develop technologies that have the potential to significantly improve the United States' ability to reduce the risk of mass casualties in the wake of a Weapons of Mass Terror (WMT) attack. Challenges in reducing U.S. vulnerability to these attacks include developing new sensors and systems that afford early warning and opportunities to interdict these threats before they can be employed in urban areas and other population centers. A major goal of this program is to develop new sensors and sensing networks that can economically and reliably provide these wide-area monitoring capabilities for WMT threat signatures. ***FY 2022 Plans:*** - Continue spiral development of chemical and biological sensors, with emphasis on algorithm development, to include follow-on independent government testing of performance and suitability. - Conduct follow-on operational demonstrations of new and augmented, commercial-off-the-shelf chemical and biological sensor systems with local and Federal Government stakeholders. - Expand on utility assessment of worn physiological sensors building on developments associated with infectious disease detection. - Continue spiral development of a network backbone and operating system supporting sensor, contextual and transactional data ingestion with a focus on streaming data from open-source and stakeholder-provided sources. - Work with Federal Government partners to develop and mature methods for template generation supporting various law enforcement investigative processes. - Mature end-to-end beta build of the network, including data model, pipeline and analytics engine capable of ingestion and automated analytics of heterogeneous sensor data, with contextual and law enforcement transactional data. - Develop transition strategies for sensor and network technologies with local municipalities and Federal Government partners such as the Department of Homeland Security (DHS), Countering Weapons of Mass Destruction (CWMD) Office, Immigration and Customs Enforcement (ICE), Port Authority of New York and New Jersey, and Indianapolis Metropolitan Police Department (IMPD). - Identify limits of continuous sensing for the detection of SARS-CoV-2 viruses in the environment. ***FY 2023 Plans:*** - Complete spiral development of chemical and biological sensors validated in independent government testing. - Conclude utility assessment of worn physiological sensors using developments associated with infectious disease detection and reporting, coupled with integrated algorithms. - Finalize suite of augmented, commercial-off-the-shelf chemical and biological sensors that will compose a system including fully scaled, integrated sensors and operationalized algorithms. - Complete spiral development of a network backbone and operating system supporting sensor, contextual and transactional data ingestion with a focus operating within stakeholder system environments.			

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C. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
- Mature end-to-end beta build of the network, including data model, pipeline, and analytics engine capable of ingestion and automated analytics of heterogeneous sensor data, with contextual and law enforcement transactional data focusing on incorporating law enforcement feedback. - Present system concept of operations to local municipality and Federal Government partners to outline how developed capabilities can support relevant interdiction and response operations. - Demonstrate system in large-scale field trials (>10 square kilometers) with objective metrics or better. ***FY 2022 to FY 2023 Increase/Decrease Statement:*** The FY 2023 decrease is due to a shift from major development activities to final operational demonstrations prior to transition.			
Accomplishments/Planned Programs Subtotals	26.082	31.421	23.059

D. Other Program Funding Summary ($ in Millions)

N/A

Remarks

E. Acquisition Strategy

N/A