Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Air Force											Date: April 2022	
Appropriation/Budget Activity 3620F: *Research, Development, Test & Evaluation, Space Force I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*					R-1 Program Element (Number/Name) PE 1203710SF *I EO/IR Weather Systems*							
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	-	125.110	162.274	96.519	0.000	96.519	95.817	78.566	80.308	81.872	Continuing	Continuing
643730: *EO/IR Weather System Dev*	-	125.110	162.274	96.519	0.000	96.519	95.817	78.566	80.308	81.872	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

In compliance with 2016 National Defense Authorization Act (NDAA) and Joint Requirements Oversight Council (JROC) Memo 062-17, dated 20 Jun 2017, EWS will provide global Low-Earth Orbit (LEO) coverage to meet Space-Based Environmental Monitoring (SBEM) EO/IR Gaps 1) Cloud Characterization (CC) and 2) Theatre Weather Imagery (TWI), and succeed the aging Defense Meteorological Satellite Program (DMSP) constellation. Without the CC and TWI data, Space Force production of global predictive weather data will be severely impacted, affecting daily air operations and intelligence gathering for strategic mission planning, especially around the contested environment.

Based on SBEM Capability Assessment and Strategy Review (CASR) in April 2019, the current EWS acquisition strategy focuses on a distributed LEO architecture, for scalability and increased operational resilience. The Space Force will pursue prototyping of latest industry capabilities for simplified sensor designs, while meeting CC and TWI requirements and data latencies in a distributed architecture.

Space acquisition must respond with speed and agility to emerging adversary threats. Space Systems Command (SSC) has transformed the organization and implementation of space acquisition to an enterprise approach, maximizing innovation and resiliency, leveraging international, commercial, and mission partnerships, and managing program/project priorities according to an integrated unclassified/classified enterprise space architecture. Expanding the appropriate acquisition authorities and contract mechanisms to deliver capability sooner, SSC will strategically execute experimentation, prototyping, risk reduction, and other efforts to develop new or repurpose existing capabilities.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver EWS for weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 1206392SF and 1206398SF. In FY 2021 $0.00 was expended for civilian pay expenses in this program element, and in FY 2022 $0.00 is forecasted for civilian pay expenses in this program element.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

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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	131.000	162.274	0.000	0.000	0.000
Current President's Budget	125.110	162.274	96.519	0.000	96.519
Total Adjustments	-5.890	0.000	96.519	0.000	96.519
• 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	-1.395	0.000			
• SBIR/STTR Transfer	-4.495	0.000			
• Other Adjustments	0.000	0.000	96.519	0.000	96.519

Change Summary Explanation

FY 2021: -$5.890M; -$1.395 reduction for Below Threshold Reprogramming; -$4.495M reduction for SBIR.

FY 2023: The FY 2022 President's Budget submittal did not reflect FY 2023 through FY 2026 funding. Therefore, an explanation of the change between the two budget positions for FY 2023 cannot be made in a relevant manner.

C. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Title: Electro-Optical/Infrared Weather System (EWS)	125.110	162.274	96.519
Description: EWS will focus on an overlapping three-phased approach intended to mature multi-spectral imaging capabilities to collect and disseminate terrestrial atmospheric phenomena to support Department of Defense operations. This effort includes competitive prototyping of the sensor and bus design, development, integration, test, launch and on-orbit demonstrations. This effort will also assess industrial capabilities to provide CC and TWI data in a viable commercial business hosted on a proliferated LEO mesh network. To minimize risks associated with competitive sensor/satellite vehicle prototyping, and the need to replace the DMSP constellation in a timely manner, the Program Office is simultaneously requesting solution papers to inform a decision to pursue a competitively-awarded, more technically-mature EO/IR system design prototype from industry. Per the SECAF-approved SBEM Acquisition Strategy, EWS will continue supporting smaller sensor development and data utility assessment (Phase I), competitively prototype sensor and bus designs for a proliferated-LEO architecture while leveraging the existing SBEM Family of Systems (Phase II), and on-ramp to an operational system (Phase III) based on the success of Phase II in time for DMSP replacement. Leveraging the success of these efforts, the Program Office intends to field an affordable and highly capable operational system in Phase III.			
FY 2022 Plans:			

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C. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
For Phase II Modernized Pathfinder efforts: Under Space Enterprise Consortium Other Transaction (SpEC OT) 1a, complete competitive prototype sensor and bus build between Vendor A and the program office's choice of either Vendor B or Vendor C. Continue integration, test, and associated launch activities between the two prototype competitors, launching in FY 2022 and FY 2023 respectively. Knowledge gained from Phase II will inform the analysis for the Phase III Operational Follow-on decision, culminating in presentation of the Acquisition Strategy to Milestone Decision Authority for approval. For Phase III Operational Follow-on: Use the sensor test and on-orbit demo results from the Phase II prototype launches to conduct all relevant acquisition strategy development and associated activities leading to award for Phase III Operational Follow-on in FY 2022. Begin all efforts related to the operational follow-on, including but not limited to, ordering of flight and ground components for early integrated testing, long-lead parts planning and purchase, procurement of contractor and government provided test equipment, manufacturing prototypes, and manpower ramp-up. These efforts will support the NDAA mandated 2025 Initial Launch Capability (ILC) requirement. Additionally, FY 2022 funding will allow the program to rapidly respond to implement system resiliency and situational awareness necessary to operate in the contested space domain. Activities may include, but are not limited to program office support, studies, technical analysis, etc. ***FY 2023 Plans:*** For Phase II Modernized Pathfinder efforts: Under SpEC OT 1a, continue associated post-launch activities to include the on-orbit demonstration for Vendor A's prototype sensor. For Phase III Operational Follow-on: The program office is executing the Phase III Follow-on effort via two increments of capability. 1) Increment 0 - The original down-selection between Vendor B and C expected to launch as an FY 2023 prototype demonstration; however, based on positive vendor progress the vendors were pivoted to develop a prototype with residual operations to launch no later than FY 2025. This pivot has been re-designated as "Phase III Operational Follow-on Launch (Inc 0)." In FY 2023, continue integration, test and build efforts including but not limited to, ordering of flight and ground components for early developmental testing, long-lead parts planning and purchase, procurement of contractor and government provided test equipment, manufacturing prototypes, and manpower ramp-up. Maintain schedule for launch by FY 2025. 2) Increment 1 - Begin pre-acquisition work to include finalizing an Acquisition Strategy Panel (ASP), releasing the solicitation, evaluating proposals and performing contract negotiations.			

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C. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Rapidly respond to implement system resiliency and situational awareness necessary to operate in the contested space domain. Activities may include, but are not limited to program office support, studies, technical analysis, experimentation, prototyping, etc. ***FY 2022 to FY 2023 Increase/Decrease Statement:*** FY 2023 funding decreased due to progression of Phase II demonstration activities and ramp-up for development of operational follow-on phase.			
Accomplishments/Planned Programs Subtotals	125.110	162.274	96.519

D. Other Program Funding Summary ($ in Millions)

N/A

Remarks

E. Acquisition Strategy

In accordance with the SECAF-approved SBEM Acquisition Strategy (Sep 2020), the Space Force will continue to address Joint SBEM gaps with a combination of DoD materiel and non-materiel solutions, partnerships, and commercial, civil, and allied data. EWS will continue to use Section 815, Other Transaction Authority (OTA), to competitively pursue a scalable, proliferated-LEO architecture based on technological advancements in smaller sensor design and leveraging commercial-based capabilities.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Air Force			Date: April 2022
Appropriation/Budget Activity 3620F / 4	R-1 Program Element (Number/Name) PE 1203710SF / *EO/IR Weather Systems*	Project (Number/Name) 643730 / *EO/IR Weather System Dev*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Phase I	C/Various	Various : TBD	-	5.900	Dec 2020	-		-		-		-	Continuing	Continuing	-
Phase II	C/Various	Various : TBD	-	110.100	Dec 2020	116.239	Dec 2021	2.862	Dec 2022	-		2.862	Continuing	Continuing	-
Phase III	TBD	TBD : TBD	-	-		30.500	Jul 2022	81.361	Dec 2022	-		81.361	Continuing	Continuing	-
Technical Mission Analysis	RO	Aerospace Corp : El Segundo, CA	-	1.204	Mar 2021	3.311	Jan 2022	2.326	Jan 2023	-		2.326	Continuing	Continuing	-
Enterprise Systems Engineering & Integration	C/CPIF	Engility Corp : Andover, WA	-	2.124	Nov 2020	2.590	Jan 2022	2.527	Jan 2023	-		2.527	Continuing	Continuing	-
		Subtotal	-	119.328		152.640		89.076		-		89.076	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
FFRDC	RO	Aerospace Corp : El Segundo, CA	-	1.806	Mar 2021	3.040	Jan 2022	3.489	Jan 2023	-		3.489	Continuing	Continuing	-
A&AS	Various	Various : Various	-	3.961	Nov 2020	6.513	Jan 2022	3.867	Jan 2023	-		3.867	Continuing	Continuing	-
Other Support	Various	Various : Various	-	0.015	Jun 2021	0.081	Oct 2021	0.087	Oct 2022	-		0.087	Continuing	Continuing	-
		Subtotal	-	5.782		9.634		7.443		-		7.443	Continuing	Continuing	N/A

	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	125.110		162.274		96.519		-		96.519	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Air Force		Date: April 2022
Appropriation/Budget Activity 3620F / 4	**R-1 Program Element (Number/Name)** PE 1203710SF / *EO/IR Weather Systems*	**Project (Number/Name)** 643730 / *EO/IR Weather System Dev*

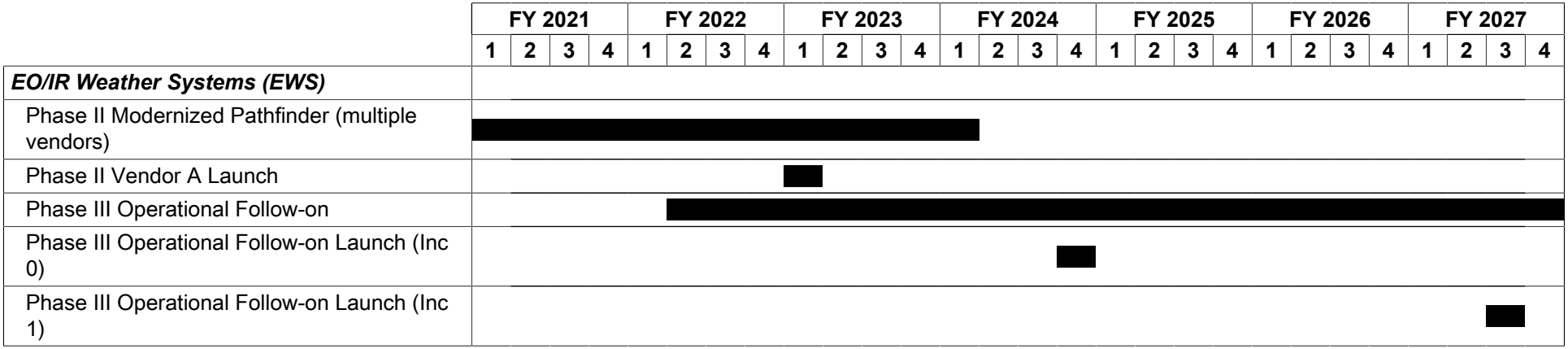

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Air Force		Date: April 2022
Appropriation/Budget Activity 3620F / 4	**R-1 Program Element (Number/Name)** PE 1203710SF / *EO/IR Weather Systems*	**Project (Number/Name)** 643730 / *EO/IR Weather System Dev*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
EO/IR Weather Systems (EWS)				
Phase II Modernized Pathfinder (multiple vendors)	1	2021	1	2024
Phase II Vendor A Launch	1	2023	1	2023
Phase III Operational Follow-on	2	2022	4	2027
Phase III Operational Follow-on Launch (Inc 0)	4	2024	4	2024
Phase III Operational Follow-on Launch (Inc 1)	3	2027	3	2027