| Exhibit R-2, RDT&E Budget Item Justification: PB 2025 Air Force | Date: March 2024 |
|---|---|
| **Appropriation/Budget Activity**<br>3620F: *Research, Development, Test & Evaluation, Space Force I* BA 4: *Advanced Component Development & Prototypes (ACD&P)* | **R-1 Program Element (Number/Name)**<br>PE 1203710SF *I EO/IR Weather Systems* |

| 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 | - | 87.195 | 95.615 | 76.391 | 0.000 | 76.391 | 80.322 | 81.976 | 84.936 | 86.611 | 0.000 | 593.046 |
| 643730: *EO/IR Weather System Dev* | - | 87.195 | 95.615 | 76.391 | 0.000 | 76.391 | 80.322 | 81.976 | 84.936 | 86.611 | 0.000 | 593.046 |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

**A. Mission Description and Budget Item Justification**

In compliance with the 2015, 2016, 2017, and 2020 National Defense Authorization Act (NDAA) and Joint Requirements Oversight Council (JROC) Memos 092-14, 062-17, and 031-22, EWS will provide global Low-Earth Orbit (LEO) coverage to meet Space-Based Environmental Monitoring (SBEM) Electro-Optical/Infrared (EO/IR) Gaps 1) Cloud Characterization (CC) and 2) Theatre Weather Imagery (TWI). This capability will operationally replace the obsolete and aging Defense Meteorological Satellite Program (DMSP) projected end-of-life June 2026, and the EWS-Geostationary (EWS-G) projected end-of-life Sept 2030. Without the CC and TWI data, production of global predictive weather data will be severely impacted, affecting daily air operations and intelligence gathering for strategic mission planning. Moreover, INDOPACOM, CENTCOM, and AFRICOM will be unable to forecast and monitor adverse weather conditions over eastern Africa and the Indian Ocean. Lastly, the US will not meet the DoD responsibility of maintaining the SBEM civil/international partnership for the Family of Systems architecture.

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.

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.

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.

| Exhibit R-2, RDT&E Budget Item Justification: PB 2025 Air Force | Date: March 2024 |
|---|---|
| **Appropriation/Budget Activity**<br>3620F: *Research, Development, Test & Evaluation, Space Force* / BA 4: *Advanced Component Development & Prototypes (ACD&P)* | **R-1 Program Element (Number/Name)**<br>PE 1203710SF / *EO/IR Weather Systems* |

| B. Program Change Summary ($ in Millions) | FY 2023 | FY 2024 | FY 2025 Base | FY 2025 OCO | FY 2025 Total |
|---|---|---|---|---|---|
| Previous President's Budget | 86.519 | 95.615 | 78.458 | 0.000 | 78.458 |
| Current President's Budget | 87.195 | 95.615 | 76.391 | 0.000 | 76.391 |
| Total Adjustments | 0.676 | 0.000 | -2.067 | 0.000 | -2.067 |
| • 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 | -2.924 | 0.000 | | | |
| • Other Adjustments | 3.600 | 0.000 | -2.067 | 0.000 | -2.067 |

**Change Summary Explanation**

FY 2023: -2.924M for SBIR/STTR transfer

FY 2023: +3.6M for inflation adjustment

FY 2024: -0.630M to realign funding to APPN 3410, PE 1207804SF (SAG 13C), for fiscal policy compliance as Space Systems Command (SSC) establishes Headquarters functions and a Chief Information Office (CIO) for integrated cybersecurity.

FY 2025: -.020M for higher priorities

FY 2025: The FY 2025 funding request was reduced by $2.2 million to account for the availability of prior year execution balances.

| C. Accomplishments/Planned Programs ($ in Millions) | FY 2023 | FY 2024 | FY 2025 Base | FY 2025 OCO | FY 2025 Total |
|---|---|---|---|---|---|
| ***Title:*** Electro-Optical/Infrared Weather System (EWS) | 87.195 | 95.615 | 76.391 | 0.000 | 76.391 |
| ***Description:*** EWS will focus on an overlapping multi-phased approach intended to mature multi-spectral imaging capabilities to collect and disseminate terrestrial atmospheric phenomena to support Department of Defense (DoD) operations. Primary effort will focus on competitive prototyping of the latest industry sensor and bus designs, development, integration, test, launch and successful on-orbit demonstrations. This effort will also assess current industrial capability to deliver CC and TWI data in a viable commercial service business, hosted on a proliferated LEO mesh network. Program will minimize technology maturity risks by evaluating multiple, competitive EO/IR sensors, satellite vehicle prototypes and commercial services in order to inform a decision on a cost-effective system or service to replace the legacy DMSP constellation and EWS-G in a timely manner. Per the approved EWS Acquisition Strategy, the Program Office will continue to 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 to operationally | | | | | |

| Exhibit R-2, RDT&E Budget Item Justification: PB 2025 Air Force | | Date: March 2024 |
|---|---|---|
| **Appropriation/Budget Activity**<br>3620F: *Research, Development, Test & Evaluation, Space Force* / BA 4: *Advanced Component Development & Prototypes (ACD&P)* | **R-1 Program Element (Number/Name)**<br>PE 1203710SF / *EO/IR Weather Systems* | |

| C. Accomplishments/Planned Programs ($ in Millions) | FY 2023 | FY 2024 | FY 2025 Base | FY 2025 OCO | FY 2025 Total |
|---|---|---|---|---|---|
| replace DMSP and EWS-G at their end of life. Leveraging the success of these efforts, the Program Office intends to field an affordable and highly capable operational replacement system in Phase III. | | | | | |
| ***FY 2024 Plans:***<br>For Phase II Modernized Pathfinder efforts: For the additional Orion Space Solutions Technology Demonstration, complete associated space vehicle and launch vehicle integration, on-orbit calibration and check-out, and technology demonstration. Assess prototype microbolometer performances in Early Morning Orbit and feed results to Phase III operational system acquisition strategy.<br><br>For Increment 0 Operational Demonstrations: continue Operational Demonstration #1 build, Integration & Test (I&T) activities in preparation for an FY 2025 launch. Begin pre-acquisition activities and execute contract award of Operational Demonstration #2. Prepare for Acquisition Strategy decision in FY 2025 to support Phase III Operational Replacement definition.<br><br>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 2025 Base Plans:***<br>For Phase II Modernized Pathfinder efforts: For the second Orion Space Solutions Technology Demonstration, complete on-orbit assessment of microbolometer performances in Early Morning Orbit. The results will inform Phase III operational replacement strategy.<br><br>For Increment 0 Operational Demonstrations: Complete demonstration #1 build, Integration & Test (I&T), and launch activities. Continue demonstration #2 complete design activities and begin build, integration and test. Progress will inform Phase III operational replacement strategy.<br><br>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, and activities that may leverage commercial and international opportunities. | | | | | |
| ***FY 2025 OCO Plans:*** | | | | | |

| Exhibit R-2, RDT&E Budget Item Justification: PB 2025 Air Force | Date: March 2024 |
|---|---|
| **Appropriation/Budget Activity**<br>3620F: *Research, Development, Test & Evaluation, Space Force I* BA 4: *Advanced Component Development & Prototypes (ACD&P)* | **R-1 Program Element (Number/Name)**<br>PE 1203710SF *I EO/IR Weather Systems* |

| C. Accomplishments/Planned Programs ($ in Millions) | FY 2023 | FY 2024 | FY 2025 Base | FY 2025 OCO | FY 2025 Total |
|---|---|---|---|---|---|
| N/A<br>***FY 2024 to FY 2025 Increase/Decrease Statement:***<br>FY 2025 to have a slight decrease due to completion of Phase II 2nd on-orbit technology demonstration of Orion Space Solution Technology Demonstration and ramping down of build, integration and test of Phase II Operational Demonstration prototype #1, while picking up pace on Ops Demo #1 launch activities and acquisition of Ops Demo #2. | | | | | |
| **Accomplishments/Planned Programs Subtotals** | 87.195 | 95.615 | 76.391 | 0.000 | 76.391 |

**D. Other Program Funding Summary ($ in Millions)**

N/A

**Remarks**

**E. Acquisition Strategy**

In accordance with the 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 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. The Phase II modernized pathfinder efforts will include OTA contracts for technology risk reduction and operational demonstration efforts. The purpose of Phase II is to explore various technology projects and partnerships to determine the most technically acceptable, resilient, and affordable option to support Phase III. Informed by Phase II, the Phase III operational system replacement acquisition strategy will be decided in FY26 and will consider modern architectures such as proliferated-LEO, hosted-payload, or other commercial capabilities.

| Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Air Force | | | Date: March 2024 |
|---|---|---|---|
| Appropriation/Budget Activity<br>3620F / 4 | R-1 Program Element (Number/Name)<br>PE 1203710SF / *EO/IR Weather Systems* | Project (Number/Name)<br>643730 / *EO/IR Weather System Dev* | |

**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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phase II Demo 1 | C/Various | Various : Various | - | 77.272 | Dec 2022 | 50.891 | Dec 2023 | 19.444 | Dec 2024 | - | | 19.444 | Continuing | Continuing | - |
| Phase II Demo 2 | C/Various | TBD : TBD | - | - | | 29.106 | Jul 2024 | 42.533 | Feb 2025 | - | | 42.533 | Continuing | Continuing | - |
| Technical Mission Analysis | RO | Aerospace Corp : El Segundo, CA | - | 0.896 | Jan 2023 | 2.178 | Jan 2024 | 1.844 | Jan 2025 | - | | 1.844 | Continuing | Continuing | - |
| Enterprise Systems Engineering & Integration | C/CPIF | Engility Corp : Andover, WA | - | 2.527 | Jan 2023 | 2.625 | Jan 2024 | 2.746 | Jan 2025 | - | | 2.746 | Continuing | Continuing | - |
| SBIR/STTR | C/Various | TBD : TBD | - | 2.924 | Mar 2024 | 3.347 | Mar 2024 | 2.707 | Mar 2025 | - | | 2.707 | Continuing | Continuing | - |
| | | **Subtotal** | - | 83.619 | | 88.147 | | 69.274 | | - | | 69.274 | Continuing | Continuing | N/A |

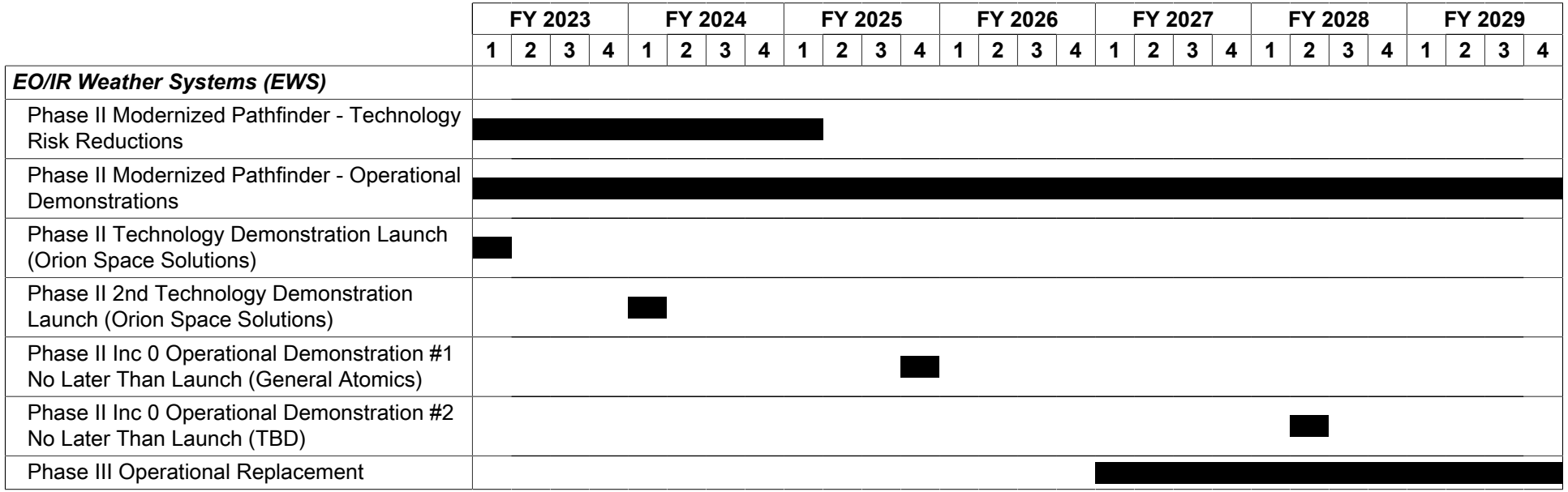
**Management Services ($ in Millions)**

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FFRDC | RO | Aerospace Corp : El Segundo, CA | - | 3.489 | Jan 2023 | 3.267 | Jan 2024 | 2.767 | Jan 2025 | - | | 2.767 | Continuing | Continuing | - |
| A&AS | Various | Various : Various | - | 0.000 | Jan 2023 | 4.111 | Jan 2024 | 3.374 | Jan 2025 | - | | 3.374 | Continuing | Continuing | - |
| Other Support | Various | Various : Various | - | 0.087 | Oct 2022 | 0.090 | Oct 2023 | 0.976 | Oct 2024 | - | | 0.976 | Continuing | Continuing | - |
| | | **Subtotal** | - | 3.576 | | 7.468 | | 7.117 | | - | | 7.117 | 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** | - | 87.195 | | 95.615 | | 76.391 | | - | | 76.391 | Continuing | Continuing | N/A |

**Remarks**

| Exhibit R-4, RDT&E Schedule Profile: PB 2025 Air Force | | Date: March 2024 |
|---|---|---|
| **Appropriation/Budget Activity**<br>3620F / 4 | **R-1 Program Element (Number/Name)**<br>PE 1203710SF / *EO/IR Weather Systems* | **Project (Number/Name)**<br>643730 / *EO/IR Weather System Dev* |



| Exhibit R-4A, RDT&E Schedule Details: PB 2025 Air Force | | Date: March 2024 |
|---|---|---|
| **Appropriation/Budget Activity**<br>3620F / 4 | **R-1 Program Element (Number/Name)**<br>PE 1203710SF / *EO/IR Weather Systems* | **Project (Number/Name)**<br>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 - Technology Risk Reductions | 1 | 2023 | 1 | 2025 |
| Phase II Modernized Pathfinder - Operational Demonstrations | 1 | 2023 | 4 | 2029 |
| Phase II Technology Demonstration Launch (Orion Space Solutions) | 1 | 2023 | 1 | 2023 |
| Phase II 2nd Technology Demonstration Launch (Orion Space Solutions) | 1 | 2024 | 1 | 2024 |
| Phase II Inc 0 Operational Demonstration #1 No Later Than Launch (General Atomics) | 4 | 2025 | 4 | 2025 |
| Phase II Inc 0 Operational Demonstration #2 No Later Than Launch (TBD) | 2 | 2028 | 2 | 2028 |
| Phase III Operational Replacement | 1 | 2027 | 4 | 2029 |