

**UNCLASSIFIED**

**Exhibit R-2, RDT&E Budget Item Justification:** PB 2023 Air Force **Date:** April 2022

<b>Appropriation/Budget Activity</b> 3620F: <i>Research, Development, Test &amp; Evaluation, Space Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 1206857SF / <i>Space Rapid Capabilities Office</i>
---	---

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	-	104.796	73.193	45.427	0.000	45.427	11.982	11.277	9.713	9.903	Continuing	Continuing
64A020: <i>AF Funded ORSSats</i>	-	104.796	73.193	45.427	0.000	45.427	11.982	11.277	9.713	9.903	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

The Space Rapid Capabilities Office (Space RCO) mission is to expedite the development and fielding of operationally focused capabilities for immediate and near term needs as directed by the Space RCO Board of Directors (BoD). Key operating principles include a short and narrow chain of command, overarching programmatic insight, early and prominent war fighter involvement, and small integrated teams within a single office to rapidly augment existing space capabilities when needed, to expand operational capability, reconstitute/replenish/protect critical space capabilities to reserve "continuity of operations" capability, and exploit space technological or operational innovations to increase U.S. advantage.

The Space RCO is ready to develop, test, train, and equip war fighter needs as they are identified at any time. First, the requirements must be validated by the commander U.S. Space Command; second, the project must be approved by the Space RCO BoD; third, the project will be executed by the Space RCO. If the effort is initiated during execution year, it will be described in the next year's budget exhibit.

Space RCO is supporting the Air Force Research Lab (AFRL) developed Space Solar Power project to collect solar energy and provide uninterrupted, assured, and logistically agile power to expeditionary forces operating in unimproved areas such as forward operating bases. AFRL formulated the Space Solar Power Incremental Demonstrations and Research (SSPIDR) project to rapidly demonstrate this innovative technology via a series of integrated demos and technology development/maturation efforts.

In addition, Space RCO will conduct studies and analyses for future programs to support the BoD.

The FY 2023 funding request was reduced by \$5.0 million to account for the availability of prior year execution balances.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver Space RCO weapon system capabilities. 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.

**UNCLASSIFIED**

**Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Air Force** **Date:** April 2022

<b>Appropriation/Budget Activity</b> 3620F: Research, Development, Test & Evaluation, Space Force I BA 4: Advanced Component Development & Prototypes (ACD&P)	<b>R-1 Program Element (Number/Name)</b> PE 1206857SF I Space Rapid Capabilities Office
---	--

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023 Base</b>	<b>FY 2023 OCO</b>	<b>FY 2023 Total</b>
Previous President's Budget	108.518	66.193	0.000	0.000	0.000
Current President's Budget	104.796	73.193	45.427	0.000	45.427
Total Adjustments	-3.722	7.000	45.427	0.000	45.427
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	7.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-3.722	0.000			
• Other Adjustments	0.000	0.000	45.427	0.000	45.427

**Congressional Add Details (\$ in Millions, and Includes General Reductions)**

**Project:** 64A020: AF Funded ORSSats

Congressional Add: Space RCO Solar Power Congressional Add

Congressional Add: Space RCO Digital Beamformed Ground-based SATCOM

Congressional Add Subtotals for Project: 64A020

Congressional Add Totals for all Projects

	<b>FY 2021</b>	<b>FY 2022</b>
	5.000	0.000
	0.000	7.000
	5.000	7.000
	5.000	7.000

**Change Summary Explanation**

FY 2022: +\$7.00M; FY 2023: +\$45.427M; 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.

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>
---	----------------	----------------	----------------

<p><b>Title:</b> Space RCO Board of Directors (BoD) Projects, Studies, and Analysis</p>	17.033	8.826	8.872
---	--------	-------	-------

**Description:** Execute projects, studies, and analyses under rapid acquisition authorities inherent to the Space RCO, that address emergent capabilities and respond to validated requirements and other BoD approved efforts to meet needs in year of execution. In addition, provide systems engineering, program management support and civilian pay across all the Space RCO activities as well as perform modeling, simulation, analyses, and assess alternative concepts and requirements.

**FY 2022 Plans:**

**UNCLASSIFIED**

<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2023 Air Force		<b>Date:</b> April 2022		
<b>Appropriation/Budget Activity</b> 3620F: <i>Research, Development, Test &amp; Evaluation, Space Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>		<b>R-1 Program Element (Number/Name)</b> PE 1206857SF / <i>Space Rapid Capabilities Office</i>		
<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>
<p>Continue to initiate rapid acquisition projects, studies, and analyses that address emergent capabilities requirements and other Space RCO BoD approved efforts. Continue program office and other related support activities that may include, but are not limited to studies, technical analyses, prototyping, etc. Continue ongoing systems engineering support of future mission development as well as Program office support and potentially including Civilian pay. Activities may include, but are not limited to program office support, facilities, and studies.</p> <p><b>FY 2023 Plans:</b> Continue to initiate rapid acquisition projects, studies, and analyses that address emergent capabilities requirements and other Space RCO BoD approved efforts. Continue ongoing systems engineering support of future mission development. Additionally, FY 2023 funding will allow the program to rapidly respond to implement system resiliency and situational awareness necessary to operate in the contested space domain. Activities include, but are not limited to, program office support, studies, technical analyses, experimentation, prototyping, etc.</p> <p><b>FY 2022 to FY 2023 Increase/Decrease Statement:</b> FY 2023 increased due to inflation adjustment.</p>				
<p><b>Title:</b> Space RCO Solar Power</p> <p><b>Description:</b> Space RCO is developing the Solar Power project to collect solar energy and provide uninterrupted, assured, and logistically agile power to expeditionary forces operating in unimproved areas such as forward operating bases.</p> <p><b>FY 2022 Plans:</b> Continue developing space-based solar power collection and transmission technology via a series of integrated demos and technology development/maturation efforts: 1) model updates from solar-to-RF tile and rectenna demo, 2) the space flight demonstration of solar-to-RF panel payload (take delivery of solar-to-RF payload, validate payload, integrate payload-to-bus), and 3) demonstration of scaled array payloads for ground demonstration and validate models; updated operational prototype concept designs/analysis based on tile demonstrations and models; and functional demonstrations for critical technologies in energy generation, deployable structures, thermal technology, and RF transmission.</p> <p><b>FY 2023 Plans:</b> Continue developing space-based solar power collection and transmission technology via a series of integrated demos and technology development/maturation efforts: 1) continue space flight demonstration of solar-to-RF panel payload (take delivery of solar-to-RF payload emulator, validate payload for delivery, continue pre-integration of payload-to-bus), 2) deliver thermal integrated demonstration for on-orbit demonstration, 3) initiate structural operational prototype based on results from scaled array payload demonstrations and validated models, 4) update operational prototype concept designs/analysis based on tile, rectenna,</p>		82.763	57.367	36.555

**UNCLASSIFIED**

<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2023 Air Force		<b>Date:</b> April 2022		
<b>Appropriation/Budget Activity</b> 3620F: <i>Research, Development, Test &amp; Evaluation, Space Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>		<b>R-1 Program Element (Number/Name)</b> PE 1206857SF / <i>Space Rapid Capabilities Office</i>		
<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>
thermal and structure demonstrations and updated models, and 5) continue functional demonstrations for critical technologies in energy generation, deployable structures, thermal technology, RF transmission, and distributed control.				
<b>FY 2022 to FY 2023 Increase/Decrease Statement:</b> FY 2023 decreased due to completing individual projects.				
<b>Accomplishments/Planned Programs Subtotals</b>		99.796	66.193	45.427
		<b>FY 2021</b>	<b>FY 2022</b>	
<b>Congressional Add:</b> Space RCO Solar Power Congressional Add		5.000	0.000	
<b>FY 2021 Accomplishments:</b> The Space Force, through AFRL/RV and in coordination with OSD/RE, initiated the process of establishing a University Affiliated Research Center (UARC)/consortium to aid in executing space cross mission, multi-domain, and community of interest research applicable to Space Solar Power activities that are consistent with USD(R&E) priority focus areas and the National Security Space Strategy.				
<b>FY 2022 Plans:</b> N/A				
<b>Congressional Add:</b> Space RCO Digital Beamformed Ground-based SATCOM		0.000	7.000	
<b>FY 2021 Accomplishments:</b> N/A				
<b>FY 2022 Plans:</b> To provide a proof of concept for the Air Force Satellite Control Network with a high-reliability, interoperable production prototype of a Digital Beamformed Ground-based SATCOM system.				
<b>Congressional Adds Subtotals</b>		5.000	7.000	
<b>D. Other Program Funding Summary (\$ in Millions)</b>				
N/A				
<b>Remarks</b>				
<b>E. Acquisition Strategy</b>				
Expediently award contracts through Space RCO or partner organizations.				



**UNCLASSIFIED**

<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2023 Air Force		<b>Date:</b> April 2022
<b>Appropriation/Budget Activity</b> 3620F / 4	<b>R-1 Program Element (Number/Name)</b> PE 1206857SF / <i>Space Rapid Capabilities Office</i>	<b>Project (Number/Name)</b> 64A020 / <i>AF Funded ORSSats</i>

FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b><i>Space Rapid Capabilities Office</i></b>	
Space RCO Board of Directors (BoD) Projects, Studies, and Analysis	
Space RCO Solar Power	
Digital Beamformed Ground-based SATCOM	

**UNCLASSIFIED**

<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2023 Air Force		<b>Date:</b> April 2022
<b>Appropriation/Budget Activity</b> 3620F / 4	<b>R-1 Program Element (Number/Name)</b> PE 1206857SF / <i>Space Rapid Capabilities Office</i>	<b>Project (Number/Name)</b> 64A020 / <i>AF Funded ORSSats</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Space Rapid Capabilities Office</i></b>				
Space RCO Board of Directors (BoD) Projects, Studies, and Analysis	1	2021	4	2027
Space RCO Solar Power	1	2021	4	2023
Digital Beamformed Ground-based SATCOM	1	2022	4	2022