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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2025 Air Force **Date:** March 2024

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604860F <i>I Operational Energy and Installation Resilience</i>
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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	-	24.603	46.305	63.194	0.000	63.194	43.550	28.821	20.058	19.769	Continuing	Continuing
644860: <i>Operational Energy and Installation Resilience</i>	-	24.603	46.305	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
644861: <i>Operational Energy</i>	-	0.000	0.000	37.799	0.000	37.799	25.499	9.172	8.159	17.829	Continuing	Continuing
644862: <i>Installation Resiliency</i>	-	0.000	0.000	25.395	0.000	25.395	18.051	19.649	11.899	1.940	Continuing	Continuing

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

The Operational Energy and Installation Resilience program develops, matures, prototypes, demonstrates, and assesses technologies, software, and processes for decreasing operational energy risk and increasing installation resilience. The Air Force is the DOD's (Department of Defense) largest consumer of operational energy, and requires resilient installations as power projection platforms to execute its missions. Technology transition, agile software development, and process integration efforts with a focus in these areas enable the Air Force to optimize operational energy use for maximum combat capability and mitigate multi-domain energy threats to installations. The objective of this program is to prioritize, validate, and facilitate implementation of validated solutions.

Starting in FY2025, Budget, Program, and Activity Code (BPAC) 644860: Operational Energy and Installation Resilience is broken out into two BPACs to provide additional program visibility: 644861: Operational Energy and 644862: Installation Resilience. On-going programs transferred from BPAC 644860 into these two BPACs are not new starts.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver science and technology capabilities. The use of such program funds would be in addition to the civilian pay expense budgeted in program element 0601102F, 0602020F, 0602102F, 0602201F, 0602202F, 0602203F, 0602204F, 0602602F, 0602605F, 0602788F, 1206601SF, and 0602298F.

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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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2025 Air Force **Date:** March 2024

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604860F / <i>Operational Energy and Installation Resilience</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025 Base</b>	<b>FY 2025 OCO</b>	<b>FY 2025 Total</b>
Previous President's Budget	25.500	46.305	50.396	0.000	50.396
Current President's Budget	24.603	46.305	63.194	0.000	63.194
Total Adjustments	-0.897	0.000	12.798	0.000	12.798
• 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	-0.897	0.000			
• Other Adjustments	0.000	0.000	12.798	0.000	12.798

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

**Project:** 644860: *Operational Energy and Installation Resilience*

Congressional Add: *Hydrogen Fuel Cell Microgrid Technology*

Congressional Add Subtotals for Project: 644860

Congressional Add Totals for all Projects

	<b>FY 2023</b>	<b>FY 2024</b>
	9.648	0.000
Congressional Add Subtotals for Project: 644860	9.648	0.000
Congressional Add Totals for all Projects	9.648	0.000

**Change Summary Explanation**

FY2025 \$12.798M adjustment is a reprogramming action from program element 0604858F in program element 0604860F.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2025 Air Force										<b>Date:</b> March 2024		
<b>Appropriation/Budget Activity</b> 3600 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0604860F / <i>Operational Energy and Installation Resilience</i>				<b>Project (Number/Name)</b> 644860 / <i>Operational Energy and Installation Resilience</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025 Base</b>	<b>FY 2025 OCO</b>	<b>FY 2025 Total</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>FY 2028</b>	<b>FY 2029</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
644860: <i>Operational Energy and Installation Resilience</i>	-	24.603	46.305	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

The Operational Energy and Installation Resilience program develops, matures, prototypes, demonstrates, and assesses technologies, software, and processes for decreasing operational energy risk and increasing installation resilience. The Air Force is the DOD's (Department of Defense) largest consumer of operational energy, and requires resilient installations as power projection platforms to execute its missions. Technology transition, agile software development, and process integration efforts with a focus in these areas enable the Air Force to optimize operational energy use for maximum combat capability and mitigate multi-domain energy threats to installations. The objective of this program is to prioritize, validate, and facilitate implementation of validated solutions.

Starting in FY2025, Budget, Program, and Activity Code (BPAC) 644860: Operational Energy and Installation Resilience is broken out into two BPACs to provide additional program visibility: 644861: Operational Energy and 644862: Installation Resilience. On-going programs transferred from BPAC 644860 into these two BPACs are not new starts.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver science and technology capabilities. The use of such programs funds would be in addition to the civilian pay expense budgeted in program element 0601102F, 0602020F, 0602102F, 0602201F, 0602202F, 0602203F, 0602204F, 0602602F, 0602605F, 0602788F, 1206601SF, and 0602298F.

**B. Accomplishments/Planned Programs (\$ in Millions)**

	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>
<b>Title:</b> Installation Resilience	0.000	7.400	0.000
<b>Description:</b> The Installation Resilience program develops, matures, prototypes, demonstrates, and assesses technologies, software, and processes focused on increasing installation resilience. The Air Force requires resilient installations as power projection platforms to execute its missions. Technology transition, agile software development, and process integration efforts with a focus on resilience will enable the Air Force to mitigate multi-domain energy threats to installations. The objective of this program is to prioritize, validate, and facilitate implementation of validated solutions.			
<b>FY 2024 Plans:</b> Continue to prototype, integrate, demonstrate, and assess installation energy and resilience technologies and methodologies. Efforts include prototype installation resilience energy storage solutions, prototype flightline modernization technologies including common support equipment (e.g. light carts, flightline generators) enabling Agile Combat Employment and Adaptive Operations in Contested Environments, assessing means of securing energy at the tactical edge, and support establishment of a digital			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2025 Air Force		<b>Date:</b> March 2024		
<b>Appropriation/Budget Activity</b> 3600 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604860F / <i>Operational Energy and Installation Resilience</i>	<b>Project (Number/Name)</b> 644860 / <i>Operational Energy and Installation Resilience</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>
<p>platform for installation/mission resilience integration. These efforts expand the installation resilience impacts of current efforts and integrate energy logistics into mission readiness.</p> <p><b>FY 2025 Plans:</b> Efforts transitioned to and executed in project 644862 Installation Resilience starting in FY2025.</p> <p><b>FY 2024 to FY 2025 Increase/Decrease Statement:</b> FY 2025 funding decreased compared to FY 2024 due to transition of efforts to project 644862 Installation Resilience starting in FY2025 to increase visibility into the project.</p>				
<p><b>Title:</b> Operational Energy</p> <p><b>Description:</b> Operational energy efforts seek to maximize combat capability by reducing overall DAF mission energy demand. Efforts in this program can include prototyping, demonstration, and transition of technologies, software, and processes that maximize combat capability by optimizing the following areas: platform energy use, mission planning and execution, propulsion sustainment, and energy logistics. Energy education, energy-informed wargaming, digital engineering, and modeling and simulation efforts typically support these areas. Specific examples of prototype and demonstration projects that optimize energy use and decrease energy intensity include legacy aircraft drag reduction technologies, alternate-fuel propulsion systems, ultra-efficient airframe designs, mission scheduling software, air-asset allocation tools, cargo load planning tools, and turbine engine sustainment enhancements for increased fuel efficiency.</p> <p>While similar efforts may be found in other program elements, Operational Energy projects in these technology and process areas are viewed through an "energy lens," specifically geared toward cost-effectively optimizing energy use to maximize combat capability. Ideally, as the Air Force progresses toward an energy-aware culture, all acquisition efforts will incorporate this tenet from the beginning of, and throughout, the acquisition life cycle. This program aims to advance such a culture through successful project execution.</p> <p><b>FY 2024 Plans:</b> Continued software development focused on concurrently increasing aircraft availability, optimizing mobility aircraft allocation, optimizing aircrew scheduling, and optimizing cargo load planning projects that will be enhanced by additional effort in combat air forces training scheduling, advanced data analytics systems for strategic airlift assets, air refueling optimization, and aerial refueling aircraft availability. Additional efforts include augmented reality training tools, aircraft drag reduction technology prototyping and demonstrations, advanced engine sustainment techniques, and mobile applications to support command and control of mobility aircraft. These efforts expand the readiness impacts of current efforts and integrate energy logistics in both training and operations.</p> <p><b>FY 2025 Plans:</b></p>		14.955	38.905	0.000

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2025 Air Force		<b>Date:</b> March 2024		
<b>Appropriation/Budget Activity</b> 3600 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604860F / <i>Operational Energy and Installation Resilience</i>	<b>Project (Number/Name)</b> 644860 / <i>Operational Energy and Installation Resilience</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>
Efforts continues to be executed in project 644861 Operational Energy starting in FY2025.				
<b>FY 2024 to FY 2025 Increase/Decrease Statement:</b> FY 2025 funding decreased compared to FY 2024 due to transition of efforts to project 644861 Operational Energy starting in FY2025 to increase visibility into the project.				
<b>Accomplishments/Planned Programs Subtotals</b>		14.955	46.305	0.000
		<b>FY 2023</b>	<b>FY 2024</b>	
<b>Congressional Add:</b> Hydrogen Fuel Cell Microgrid Technology		9.648	0.000	
<b>FY 2023 Accomplishments:</b> Develop and test hydrogen fuel cell microgrid technology.				
<b>FY 2024 Plans:</b> No funding requested.				
<b>Congressional Adds Subtotals</b>		9.648	0.000	
<b>C. Other Program Funding Summary (\$ in Millions)</b>				
N/A				
<b>Remarks</b>				
<b>D. Acquisition Strategy</b>				
The efforts within this program element will employ multiple different acquisition strategies to include Federal Acquisition Regulation (FAR)-based contracts and Other Transactional Authority agreements.				

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Air Force** **Date:** March 2024

<b>Appropriation/Budget Activity</b> 3600 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604860F / <i>Operational Energy and Installation Resilience</i>	<b>Project (Number/Name)</b> 644860 / <i>Operational Energy and Installation Resilience</i>
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<b>Product Development (\$ in Millions)</b>				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Mobility Air Force Long Range Planning and Allocation Tools	Various	Various : Various	-	5.390	Sep 2023	0.980	Jul 2024	-		-		-	Continuing	Continuing	-
Cargo Optimization - Improved Load Planning	Various	Various : Various	-	0.892	Oct 2023	2.950	Jul 2024	-		-		-	Continuing	Continuing	-
Puckboard Scheduling Engine	Various	Various : Various	-	5.391	Sep 2023	2.950	Jul 2024	-		-		-	Continuing	Continuing	-
Energy Supply Chain Risk Model	Various	Various : Various	-	2.242	Sep 2023	0.980	Aug 2024	-		-		-	Continuing	Continuing	-
KC-46 Winglets	Various	Various : Various	-	-		9.800	Jun 2024	-		-		-	Continuing	Continuing	-
Aircraft Engine Wash	Various	Various : Various	-	-		2.950	Apr 2024	-		-		-	Continuing	Continuing	-
Cargo Optimization-Improved Load Planning Phase II	Various	Various : Various	-	-		2.950	Apr 2024	-		-		-	Continuing	Continuing	-
C-17 Data Bus Recording System (DBRS) and Analysis	Various	Various : Various	-	-		2.950	Apr 2024	-		-		-	Continuing	Continuing	-
Aviato (CAF Scheduling)	Various	Various : Various	-	-		2.950	Jun 2024	-		-		-	Continuing	Continuing	-
Air Refueling Optimization	Various	Various : Various	-	-		2.950	Jul 2024	-		-		-	Continuing	Continuing	-
KC-135 and C-17 Warfighter Posture Predictive Logistics	Various	Various : Various	-	-		1.765	Apr 2024	-		-		-	Continuing	Continuing	-
C-17 Mobile Mission Computer Application for EFB	Various	Various : Various	-	-		0.980	Jun 2024	-		-		-	Continuing	Continuing	-
Hybrid Fuel Cell	Various	Various : Various	-	-		2.500	May 2024	-		-		-	Continuing	Continuing	-
Augmented Reality Adversary Transformation	Various	Various : Various	-	-		2.950	Apr 2024	-		-		-	Continuing	Continuing	-
Energy for Tactical Edge	Various	Various : Various	-	-		1.800	May 2024	-		-		-	Continuing	Continuing	-
Mission Resilience Digital Transformation	Various	Various : Various	-	-		2.500	Jun 2024	-		-		-	Continuing	Continuing	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Air Force												Date: March 2024			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
3600 / 4				PE 0604860F / Operational Energy and Installation Resilience				644860 / Operational Energy and Installation Resilience							
Product Development (\$ in Millions)				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Hydrogen Fuel Cell Microgrid	Various	Various : Various	-	9.648	Jan 2024	-		-		-		-	Continuing	Continuing	-
<b>Subtotal</b>			-	23.563		44.905		-		-		-	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Direct Cite Authority Civilian Pay	Allot	Not specified: TBD : TBD	-	0.440	Sep 2023	0.600	Sep 2024	-		-		-	Continuing	Continuing	-
<b>Subtotal</b>			-	0.440		0.600		-		-		-	Continuing	Continuing	N/A
Management Services (\$ in Millions)				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Operational Energy and Installation Resilience Management Administration Costs	Various	Various : Various	-	0.600	Jun 2024	0.800	Jun 2025	-		-		-	Continuing	Continuing	-
<b>Subtotal</b>			-	0.600		0.800		-		-		-	Continuing	Continuing	N/A
<b>Project Cost Totals</b>			-	24.603		46.305		-		-		-	Continuing	Continuing	N/A
<b>Remarks</b>															
Removed/transitioned lines:															
C-17 ABDR - Transitioned to Program Office in FY 2023 (PE 0401130F)															
C-17 Drag Reduction Other - Transitioned to Program Office FY 2023 (PE 0401130F)															
C-130 ABDR - Transitioned to Program Office in FY 2023 (PE 0401115F)															
KC-135 ABDR - Transitioned to Program Office in FY 2023 (PE 0401218F)															

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis:</b> PB 2025 Air Force	<b>Date:</b> March 2024
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<b>Appropriation/Budget Activity</b> 3600 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604860F / <i>Operational Energy and Installation Resilience</i>	<b>Project (Number/Name)</b> 644860 / <i>Operational Energy and Installation Resilience</i>
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	Prior Years	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total	Cost To Complete	Total Cost	Target Value of Contract
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<p>KC-135 VW - Transitioned to Program Office in FY 2023 (PE 0401218F)                      Mobility Aircraft Control Surface Analysis - Transitioned to the Operational Energy Capability Improvement Fund (OECIF) in FY 2023</p>									
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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2025 Air Force</b>			<b>Date:</b> March 2024
<b>Appropriation/Budget Activity</b> 3600 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604860F / <i>Operational Energy and Installation Resilience</i>	<b>Project (Number/Name)</b> 644860 / <i>Operational Energy and Installation Resilience</i>	

FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028				FY 2029			
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>Operational Energy</i></b>	
All	
<b><i>Installation Resilience</i></b>	
All	

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2025 Air Force		<b>Date:</b> March 2024
<b>Appropriation/Budget Activity</b> 3600 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604860F / <i>Operational Energy and Installation Resilience</i>	<b>Project (Number/Name)</b> 644860 / <i>Operational Energy and Installation Resilience</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Operational Energy</b>				
All	1	2023	4	2025
<b>Installation Resilience</b>				
All	1	2023	2	2026

**Note**  
Operational Energy & Installation Resilience efforts broken out into separate projects, 644861 - Operational Energy and 644862 - Installation Resilience starting in FY2025 to provide additional visibility.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2025 Air Force **Date:** March 2024

<b>Appropriation/Budget Activity</b> 3600 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604860F / <i>Operational Energy and Installation Resilience</i>	<b>Project (Number/Name)</b> 644861 / <i>Operational Energy</i>
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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	Total
											Complete	Cost
644861: <i>Operational Energy</i>	-	0.000	0.000	37.799	0.000	37.799	25.499	9.172	8.159	17.829	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

The Operational Energy program develops, matures, prototypes, and demonstrates technologies, software, and processes focused on decreasing operational energy risk. The Air Force is DOD's largest consumer of operational energy. Technology transition, agile software development, and process integration efforts with a focus in these areas enable the Air Force to optimize operational energy use for maximum combat capability, and mitigate multi-domain energy threats to installations. The objective of this program is to prioritize, validate, and facilitate implementation of validated solutions.

Starting in FY2025, Budget, Program, and Activity Code (BPAC) 644860: Operational Energy and Installation Resilience is broken out into two BPACs to provide additional program visibility: 644861: Operational Energy and 644862: Installation Resilience. On-going programs transferred from BPAC 644860 into these two BPACs are not new starts

This program element may include necessary civilian pay expenses required to manage, execute, and deliver science and technology capabilities. The use of such programs funds would be in addition to the civilian pay expense budgeted in program element 0601102F, 0602020F, 0602102F, 0602201F, 0602202F, 0602203F, 0602204F, 0602602F, 0602605F, 0602788F, 1206601SF, and 0602298F.

**B. Accomplishments/Planned Programs (\$ in Millions)**

	FY 2023	FY 2024	FY 2025
<b>Title:</b> Operational Energy	-	0.000	37.799
<p><b>Description:</b> Operational energy efforts seek to maximize combat capability by reducing overall DAF mission energy demand. Efforts in this program can include prototyping, demonstration, and transition of technologies, software, and processes that maximize combat capability by optimizing the following areas: platform energy use, mission planning and execution, propulsion sustainment, and energy logistics. Energy education, energy-informed wargaming, digital engineering, and modeling and simulation efforts typically support these areas. Specific examples of prototype and demonstration projects that optimize energy use and decrease energy intensity include legacy aircraft drag reduction technologies, alternate-fuel propulsion systems, ultra-efficient airframe designs, mission scheduling software, air-asset allocation tools, cargo load planning tools, and turbine engine sustainment enhancements for increased fuel efficiency.</p> <p>While similar efforts may be found in other program elements, Operational Energy projects in these technology and process areas are viewed through an "energy lens," specifically geared toward cost-effectively optimizing energy use to maximize combat capability. Ideally, as the Air Force progresses toward an energy-aware culture, all acquisition efforts will incorporate this tenet</p>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2025 Air Force	<b>Date:</b> March 2024
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<b>Appropriation/Budget Activity</b> 3600 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604860F / <i>Operational Energy and Installation Resilience</i>	<b>Project (Number/Name)</b> 644861 / <i>Operational Energy</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2023	FY 2024	FY 2025
<p>from the beginning of, and throughout, the acquisition life cycle. This program aims to advance such a culture through successful project execution.</p> <p><b><i>FY 2024 Plans:</i></b> Efforts executed in project 644860, Operational Energy and Installation Resilience in FY2024.</p> <p><b><i>FY 2025 Plans:</i></b> Continued software development focused on concurrently increasing aircraft availability, optimizing mobility aircraft allocation, optimizing aircrew scheduling, and optimizing cargo load planning projects that will be enhanced by additional effort in combat air forces training scheduling, advanced data analytics systems for strategic airlift assets, air refueling optimization, and aerial refueling aircraft availability. Additional efforts include augmented reality training tools, aircraft drag reduction technology prototyping and demonstrations, advanced engine sustainment techniques, and mobile applications to support command and control of mobility aircraft. These efforts expand the readiness impacts of current efforts and integrate energy logistics in both training and operations.</p> <p><b><i>FY 2024 to FY 2025 Increase/Decrease Statement:</i></b> FY 2025 funding increased compared to FY 2024 by 37.799M due to establishment of this project and transition of Operational Energy efforts from project 644860 Operational Energy &amp; Installation Resilience starting in FY 2025 to provide additional visibility.</p>			
<b>Accomplishments/Planned Programs Subtotals</b>	-	0.000	37.799

**C. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

**D. Acquisition Strategy**

The efforts within this program element are variable and will employ multiple different acquisition strategies to include Federal Acquisition Regulation (FAR)-based contracts and Other Transactional Authority agreements.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Air Force** **Date:** March 2024

<b>Appropriation/Budget Activity</b> 3600 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604860F / <i>Operational Energy and Installation Resilience</i>	<b>Project (Number/Name)</b> 644861 / <i>Operational Energy</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2023</b>		<b>FY 2024</b>		<b>FY 2025 Base</b>		<b>FY 2025 OCO</b>		<b>FY 2025 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Operational Energy	Various	Various : Various	-	-		-		1.757	Feb 2025	-		1.757	Continuing	Continuing	-
Aviato	Various	Various : Various	-	-		-		3.000	Nov 2024	-		3.000	Continuing	Continuing	-
KC-46 Winglet Development	Various	Various : Various	-	-		-		5.000	Feb 2025	-		5.000	Continuing	Continuing	-
Augmented Reality Adversary Air	Various	Various : Various	-	-		-		3.000	Dec 2024	-		3.000	Continuing	Continuing	-
KC-46 Winglets	Various	Various : Various	-	-		-		6.000	Jan 2025	-		6.000	Continuing	Continuing	-
C-17 Advanced Winglets	Various	Various : Various	-	-		-		12.000	Mar 2025	-		12.000	Continuing	Continuing	-
Aircraft Refueling Optimization	Various	Various : Various	-	-		-		3.000	Jan 2025	-		3.000	Continuing	Continuing	-
C-17 Mobile Mission Computer Application for EFB	Various	Various : Various	-	-		-		1.000	Nov 2024	-		1.000	Continuing	Continuing	-
KC-135 and C-17 Warfighter Posture Predictive Logistics	Various	Various : Various	-	-		-		1.800	Feb 2025	-		1.800	Continuing	Continuing	-
<b>Subtotal</b>			-	-		-		36.557		-		36.557	Continuing	Continuing	N/A

<b>Support (\$ in Millions)</b>				<b>FY 2023</b>		<b>FY 2024</b>		<b>FY 2025 Base</b>		<b>FY 2025 OCO</b>		<b>FY 2025 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Direct Cite Authority Civilian Pay	Allot	Not Specified: TBD : TBD	-	-		-		0.425	Sep 2026	-		0.425	Continuing	Continuing	-
<b>Subtotal</b>			-	-		-		0.425		-		0.425	Continuing	Continuing	N/A



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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2025 Air Force</b>		<b>Date:</b> March 2024
<b>Appropriation/Budget Activity</b> 3600 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604860F / <i>Operational Energy and Installation Resilience</i>	<b>Project (Number/Name)</b> 644861 / <i>Operational Energy</i>

FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028				FY 2029			
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>Operational Energy</i></b>	
All	

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2025 Air Force		<b>Date:</b> March 2024
<b>Appropriation/Budget Activity</b> 3600 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604860F / <i>Operational Energy and Installation Resilience</i>	<b>Project (Number/Name)</b> 644861 / <i>Operational Energy</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Operational Energy</i>				
All	1	2023	4	2029

**Note**  
Additional details can be provided in the appropriate format.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2025 Air Force										<b>Date:</b> March 2024		
<b>Appropriation/Budget Activity</b> 3600 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0604860F / <i>Operational Energy and Installation Resilience</i>				<b>Project (Number/Name)</b> 644862 / <i>Installation Resiliency</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025 Base</b>	<b>FY 2025 OCO</b>	<b>FY 2025 Total</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>FY 2028</b>	<b>FY 2029</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
644862: <i>Installation Resiliency</i>	-	0.000	0.000	25.395	0.000	25.395	18.051	19.649	11.899	1.940	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

The Installation Resilience program develops, matures, prototypes, and demonstrates technologies, software, and processes focused on increasing installation resilience. The Air Force requires resilient installations to execute its missions. Technology transition, agile software development, and process integration efforts with a focus in these areas enable the Air Force to optimize operational energy use for maximum combat capability, and mitigate multi-domain energy threats to installations. The objective of this program is to prioritize, validate, and implement solutions to that end.

Starting in FY2025, Budget, Program, and Activity Code (BPAC) 644860: Operational Energy and Installation Resilience is broken out into two BPACs to provide additional program visibility: 644861: Operational Energy and 644862: Installation Resilience. On-going programs transferred from BPAC 644860 into these two BPACs are not new starts.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver science and technology capabilities. The use of such programs funds would be in addition to the civilian pay expense budgeted in program element 0601102F, 0602020F, 0602102F, 0602201F, 0602202F, 0602203F, 0602204F, 0602602F, 0602605F, 0602788F, 1206601SF, and 0602298F.

**B. Accomplishments/Planned Programs (\$ in Millions)**

	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>
<b>Title:</b> Installation Resilience	-	0.000	25.395
<b>Description:</b> Improve installation resilience through prototyping, integration, and demonstration of energy technologies. The technologies will be assessed in an operational systems environment.			
<b>FY 2024 Plans:</b> Effort executed in project 644860 in FY 2024.			
<b>FY 2025 Plans:</b> Continue to prototype, integrate, demonstrate, and assess installation energy and resilience technologies and methodologies; additional efforts will prototype installation resilience energy storage solutions, support the establishment of a digital platform for installation/mission resilience, prototype flightline modernization technologies, and assess means of securing energy at the tactical edge. These efforts expand the installation resilience impacts of current efforts and integrate energy logistics into mission readiness.			
<b>FY 2024 to FY 2025 Increase/Decrease Statement:</b>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2025 Air Force		<b>Date:</b> March 2024
<b>Appropriation/Budget Activity</b> 3600 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604860F / <i>Operational Energy and Installation Resilience</i>	<b>Project (Number/Name)</b> 644862 / <i>Installation Resiliency</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>
FY 2025 funding increased compared to FY 2024 by 25.395M due to establishment of this project and transition of Installation Resilience efforts from project 644860 Operational Energy & Installation Resilience starting in FY2025 to provide additional visibility.			
<b>Accomplishments/Planned Programs Subtotals</b>	-	0.000	25.395

**C. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

**D. Acquisition Strategy**

The efforts within this program element are variable and will employ multiple different acquisition strategies. In general, projects will seek to inform senior decision makers regarding the suitability of technology and process transition. As an example, for legacy aircraft drag reduction technologies, solutions will be prototyped and demonstrated via ground and/or flight assessments; drag reduction and fuel savings estimates will be validated or refined, suitability for fleet implementation will be assessed (maintainability, return-on-investment, etc.), and recommendations for transition will be made. Both FAR-based contracts and Other Transactional Authority will be utilized.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Air Force** **Date:** March 2024

<b>Appropriation/Budget Activity</b> 3600 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604860F / <i>Operational Energy and Installation Resilience</i>	<b>Project (Number/Name)</b> 644862 / <i>Installation Resiliency</i>
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<b>Product Development (\$ in Millions)</b>				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Mission Resilience Digital Transformation	Various	Various : Various	-	-		-		1.800	Jan 2025	-		1.800	Continuing	Continuing	-
Energy for Tactical Edge	Various	Various : Various	-	-		-		2.991	Jan 2025	-		2.991	Continuing	Continuing	-
Hybrid Fuel Cell	Various	Various : Various	-	-		-		1.500	Jan 2025	-		1.500	Continuing	Continuing	-
Large Capacity Energy Storage	Various	Various : Various	-	-		-		2.000	Jan 2025	-		2.000	Continuing	Continuing	-
Solar at Tinker AFB	Various	Various : Various	-	-		-		1.300	Jan 2025	-		1.300	Continuing	Continuing	-
Grid Controller	Various	Various : Various	-	-		-		1.000	Jan 2025	-		1.000	Continuing	Continuing	-
Passive Cooling	Various	Various : Various	-	-		-		0.500	Jan 2025	-		0.500	Continuing	Continuing	-
Gray Water Recovery and Reuse	Various	Various : Various	-	-		-		0.500	Jan 2025	-		0.500	Continuing	Continuing	-
Small port. potable H2O purification Redux	Various	Various : Various	-	-		-		1.200	Jan 2025	-		1.200	Continuing	Continuing	-
Deployable, Efficient Solid Waste Redux	Various	Various : Various	-	-		-		1.300	Jan 2025	-		1.300	Continuing	Continuing	-
Flightline Electrification Pilot	Various	Various : Various	-	-		-		10.000	Jan 2025	-		10.000	Continuing	Continuing	-
<b>Subtotal</b>			-	-		-		24.091		-		24.091	Continuing	Continuing	N/A

<b>Support (\$ in Millions)</b>				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Direct Cite Authority Civilian Pay	Allot	Not Specified: TBD : TBD	-	-		-		0.425	Sep 2026	-		0.425	Continuing	Continuing	-
<b>Subtotal</b>			-	-		-		0.425		-		0.425	Continuing	Continuing	N/A



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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2025 Air Force		<b>Date:</b> March 2024
<b>Appropriation/Budget Activity</b> 3600 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604860F / <i>Operational Energy and Installation Resilience</i>	<b>Project (Number/Name)</b> 644862 / <i>Installation Resiliency</i>

FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028				FY 2029			
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>Installation Resilience</i></b>	
All	

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2025 Air Force		<b>Date:</b> March 2024
<b>Appropriation/Budget Activity</b> 3600 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604860F / <i>Operational Energy and Installation Resilience</i>	<b>Project (Number/Name)</b> 644862 / <i>Installation Resiliency</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Installation Resilience</i></b>				
All	1	2023	4	2029

**Note**  
Can provide additional details in appropriate format.