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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2023 Office of the Secretary Of Defense **Date:** April 2022

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604555D8Z I <i>Operational Energy Prototyping (OEP)</i>
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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	0.000	0.000	23.069	45.779	-	45.779	54.801	59.681	60.926	62.145	Continuing	Continuing
035: <i>Operational Energy Prototyping</i>	0.000	0.000	23.069	45.779	-	45.779	54.801	59.681	60.926	62.145	Continuing	Continuing

**Note**

New start (Y/N): FY 2022 - Yes. FY 2023 - No.

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

This program supports the Department's initiative to Build Sustainable and Long-Term Advantage.

Operational Energy Prototyping (OEP) will identify and demonstrate the most promising, innovative, and cost-effective technologies and methods that address joint high-priority operational energy requirements. OEP funding efforts will identify and mitigate energy-related risks and increase warfighting capabilities and resilience. OEP will invest in prototype and demonstrations in three focus areas:

- **Powering the Force:** Support the deployment of mobile and distributed operations with resilient and agile energy logistics in contested environments. Reduce the risks, vulnerability, and climate impacts of the DOD's dependence on fuel.
- **Electrifying the Battlespace:** Enable the electrification of weapons, platforms, unmanned systems, and soldiers to field new weapon, sensing, active defense, and other technologies. Meet the growing demands of power across the battlespace.
- **Commanding Energy:** Capture and understand energy profiles to transform the Joint Force from reactive to predictive energy management and control. Achieve real-time energy awareness and command and control at all levels.

OEP serves as the program by which operational energy technology advances made under the Operational Energy Capability Innovation (OECI) can transition to military service acquisition programs. Transition plans for each prototype will be established to ensure that components have time to plan, program, and budget for technology transition to programs of record.

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<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604555D8Z I <i>Operational Energy Prototyping (OEP)</i>
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<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	0.000	23.200	0.000	-	0.000
Current President's Budget	0.000	23.069	45.779	-	45.779
Total Adjustments	0.000	-0.131	45.779	-	45.779
• Congressional General Reductions	-	-0.131			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Year	-	-	45.779	-	45.779

**Change Summary Explanation**

OEP was a new program element in FY 2022. The Secretary of Defense, per Section 324(c)(1) of the National Defense Authorization Act for FY 2021, was required to “carry out a program for the demonstration of technologies related to operational energy prototyping, including demonstration of operational energy technology” through the Assistant Secretary of Defense for Energy, Installations, and Environment. Establishing OEP meets this Congressional requirement.

FY 2023 funding increase reflects the fact that the FY 2022 President’s Budget request did not include out-year funding.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2023 Office of the Secretary Of Defense										<b>Date:</b> April 2022		
<b>Appropriation/Budget Activity</b> 0400 / 4					<b>R-1 Program Element (Number/Name)</b> PE 060455D8Z / Operational Energy Prototyping (OEP)				<b>Project (Number/Name)</b> 035 / Operational Energy Prototyping			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023 Base</b>	<b>FY 2023 OCO</b>	<b>FY 2023 Total</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
035: Operational Energy Prototyping	0.000	0.000	23.069	45.779	-	45.779	54.801	59.681	60.926	62.145	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

Operational Energy Prototyping (OEP) will identify and demonstrate the most promising, innovative, and cost-effective technologies and methods that address joint high-priority operational energy requirements. OEP funding efforts will identify and mitigate energy-related risks and increase warfighting capabilities and resilience. OEP will invest in prototype and demonstrations in three focus areas:

- **Powering the Force:** Support the deployment of mobile and distributed operations with resilient and agile energy logistics in contested environments. Reduce the risks, vulnerability, and climate impacts of DOD's dependence on fuel.
- **Electrifying the Battlespace:** Enable the electrification of weapons, platforms, unmanned systems, and soldiers to field new weapon, sensing, active defense, and other technologies. Meet the growing demands of power across the battlespace.
- **Commanding Energy:** Capture and understand energy profiles to transform the Joint Force from a reactive to a predictive energy management and control. Achieve real-time energy awareness and command and control at all levels.

OEP serves as the program by which operational energy technology advances made under the Operational Energy Capability Innovation program (OECI) can transition to military service acquisition programs. Transition plans for each prototype will be established to ensure that components have time to plan, program, and budget for technology transition to programs of record. Demand for this program is greater than 4 times the funding available ensuring the most competitive programs are awarded to move forward.

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

	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>
<b>Title:</b> Operational Energy Prototyping (OEP)	0.000	23.069	45.779
<b>Description:</b> Operational Energy Prototyping (OEP) will identify and demonstrate the most promising, innovative, and cost-effective technologies and methods that address joint high-priority operational energy requirements. OEP will invest in prototyping and demonstrations in four focus areas: (1) support prototype development of new operational energy technologies, (2) carry out formal demonstrations at installations or in conjunction with exercises conducted by the Joint Staff, a combatant command, or a military department, (3) collect cost and performance data to overcome barriers against employing an innovative technology because of concerns regarding technical or programmatic risk, and (4) provide the tools and analysis that quantifies the mission impact of these new technologies. Transition plans for each prototype will be established to ensure that components have time to plan, program, and budget for technology transition to programs of record.			

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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>
<p><b><i>FY 2022 Plans:</i></b> Focus on operational energy capability improvement outcomes ready for prototyping with clear transition pathways at completion. OEP FY 2022 funding is for surge projects that require only one-year of funding. OEP projects all have a transition partner in FY 2023 or FY 2024. OEP provides bridge funding upon successful advanced technology demonstrations, keeping momentum for projects that have warfighter transition support. Seven high impact demonstration and porotype projects will be funded in FY 2022. The opportunity to fund a significantly larger number of efforts was validated in the selection of these seven projects justifying the proposed ramp up in the program in FY 2023.</p> <p><b><i>FY 2023 Plans:</i></b> Demand for funding of Operational Energy, Advanced Technology Development, mature programs is more than four times the funding available annually. In FY 2022 OECl will complete projects in energy storage, tactical microgrids, nuclear fuel production, space solar, and power and thermal management for high-energy weapons. OEP will continue to operationalize the best of these efforts with continued prototyping ahead of transition to programs of record. Additional funding will be allocated to advancing Section 324(c4) of the NDAA for FY 2021 to ensure development of a DOD-wide operational energy tool for accountability and transition.</p> <p><b><i>FY 2022 to FY 2023 Increase/Decrease Statement:</i></b> This program accelerates the deployment of innovative technologies that improve operational energy efficiency and security in a contested logistics environment. The demand was validated in FY22. The programmatic increase aligns with advanced technologies maturation through OECIF (0604055D8Z) and the Services to rapidly transition capability to the warfighter. The program demonstrates and transitions technologies focused on solutions to reduce the time and cost to implement and operate tactical microgrids, optimized energy storage, and extended duration and use of autonomous systems, as examples.</p>			
<b>Accomplishments/Planned Programs Subtotals</b>	0.000	23.069	45.779

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

N/A

**Remarks**

N/A

**D. Acquisition Strategy**

N/A





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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2023 Office of the Secretary Of Defense		<b>Date:</b> April 2022
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604555D8Z / <i>Operational Energy Prototyping (OEP)</i>	<b>Project (Number/Name)</b> 035 / <i>Operational Energy Prototyping</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Develop Program</i></b>				
Develop FY 2022 Program	3	2021	1	2022
<b><i>In Progress Reviews</i></b>				
FY 2022 In Progress Reviews	2	2022	4	2023