Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Navy											Date: March 2023	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*					R-1 Program Element (Number/Name) PE 0603724N *I Navy Energy Program*							
COST ($ in Millions)	**Prior Years**	**FY 2022**	**FY 2023**	**FY 2024 Base**	**FY 2024 OCO**	**FY 2024 Total**	**FY 2025**	**FY 2026**	**FY 2027**	**FY 2028**	**Cost To Complete**	**Total Cost**
Total Program Element	565.773	64.991	75.320	72.214	-	72.214	61.256	48.513	47.018	48.312	Continuing	Continuing
0829: *ENERGY CONSERVATION (ADV)*	88.487	9.603	14.056	21.131	-	21.131	16.109	12.535	12.659	12.812	Continuing	Continuing
0838: *Mobility Fuels (ADV)*	122.718	9.030	7.442	6.491	-	6.491	8.463	8.365	8.049	8.211	Continuing	Continuing
0928: *Shore Energy Technology*	59.021	1.910	1.981	2.059	-	2.059	2.111	2.155	2.199	2.244	Continuing	Continuing
0996: *Aircraft Energy Conservation*	177.643	6.863	26.203	30.419	-	30.419	22.905	16.906	17.019	17.362	Continuing	Continuing
2566: *Battery Development and Safety*	0.000	4.290	10.638	12.114	-	12.114	11.668	8.552	7.092	7.683	Continuing	Continuing
9999: *Congressional Adds*	117.904	33.295	15.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	166.199

A. Mission Description and Budget Item Justification

This program supports projects to evaluate, adapt, and demonstrate energy related technologies for Navy aircraft and ship operations to: (a) increase fuel-related weapons systems capabilities such as range and time on station; (b) reduce energy costs; (c) apply energy technologies that improve environmental compliance; (d) examine restrictive fuel specification requirements to reduce cost and increase availability worldwide; (e) provide guidance to fleet operators for the safe use of commercial grade or off-specification fuels; and (f) make needed periodic changes to fuel specifications to ensure fuel quality and avoid fleet operating problems. This program supports the achievement of legislated, White House, Department of Defense, and Navy energy management goals.

JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ADVANCED COMPONENT DEVELOPMENT AND PROTOTYPES because it includes all efforts necessary to evaluate integrated technologies, representative models or prototype systems in a high fidelity and realistic operating environment.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Navy	Date: March 2023
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0603724N *I Navy Energy Program*

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	66.824	60.320	58.125	-	58.125
Current President's Budget	64.991	75.320	72.214	-	72.214
Total Adjustments	-1.833	15.000	14.089	-	14.089
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	15.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.050	0.000			
• SBIR/STTR Transfer	-1.883	0.000			
• Program Adjustments	0.000	0.000	13.693	-	13.693
• Rate/Misc Adjustments	0.000	0.000	0.396	-	0.396

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Project: 9999: *Congressional Adds*		
Congressional Add: *Marine energy systems for sensors and microgrids*	10.136	10.000
Congressional Add: *Navy energy program*	14.471	0.000
Congressional Add: *Cargo drone family of advanced batteries*	8.688	0.000
Congressional Add: *Navy energy systems*	0.000	5.000
Congressional Add Subtotals for Project: 9999	33.295	15.000
Congressional Add Totals for all Projects	33.295	15.000

Change Summary Explanation

FY 2024 funding request increased by $11.894M.

Project 0829 - increase of $7.075M for energy efficiency efforts.
Project 0838 - decrease of $0.951M due to Misc adjustments.
Project 0928 - increase of $0.078M for Misc adjustments.
Project 0996 - increase of $4.216M for Misc adjustments.
Project 2566 - increase of $1.476M for renewable energy and jumpstart program efforts.

Schedule:

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Navy	Date: March 2023
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0603724N *I Navy Energy Program*

Project 0996- Aircraft Dashbooard extends from 1st QTR FY22 to 4th QTR FY24. Advanced fuel cells for UAS application extends from 2nd QTR FY23 to 4th QTR FY24.

Project 0838 - Advance Chemical Composition Detection Technology extends from 2nd QTR of FY23 to 4th QTR of FY24.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy											Date: March 2023	
Appropriation/Budget Activity 1319 / 4					R-1 Program Element (Number/Name) PE 0603724N / *Navy Energy Program*				Project (Number/Name) 0829 / *ENERGY CONSERVATION (ADV)*			
COST ($ in Millions)	**Prior Years**	**FY 2022**	**FY 2023**	**FY 2024 Base**	**FY 2024 OCO**	**FY 2024 Total**	**FY 2025**	**FY 2026**	**FY 2027**	**FY 2028**	**Cost To Complete**	**Total Cost**
0829: *ENERGY CONSERVATION (ADV)*	88.487	9.603	14.056	21.131	-	21.131	16.109	12.535	12.659	12.812	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Energy Conservation Advanced Project is designed to enhance lethality, resilience, reach, and sustainment of warfare systems through more effective generation, use and distribution of energy on existing and future surface fleet assets, including Unmanned Surface Vessels (USVs), by developing and transitioning energy and maintenance improvements. This project, managed through NAVSEA 05T, will identify mature, promising energy related technologies through involvement with Fleet representatives, Life-Cycle Managers (LCMs), NAVSEA Technical Warrant Holders, In-Service Engineering Agents (ISEAs), the Navy Shipbuilding Research Program (NSRP), PEOs, Industry, and Academia. The project directly supports Department of Navy goals for agility, resilient force posture, and innovation by maximizing energy to increase operational capability (e.g., extend range, increase time on station, enable high power combat systems). Potential technology areas include Power Generation and Storage (PG&S), Hull Hydrodynamics (HH), Underwater Hull Husbandry (UHH), Heating, Ventilation & Air Conditioning (HVAC) Systems, Thermal Management (TM), Main Propulsion Systems (MP), Electrical Systems (EL), Auxiliary Systems (AUX) and Energy Monitoring, Planning, and Assessment (EMP&A). Promising energy related proposals that improve the effective use, conversion, storage, distribution, and control of energy to enable the integration with future weapons and sensors onto platforms are developed each FY for evaluation. Projects are selected based on technical review and business case analysis. Not all proposals are pursued, and funding changes between functional categories or fiscal years may occur based on fleet needs, technology maturity level, ship schedule changes, or other factors.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	**FY 2022**	**FY 2023**	**FY 2024 Base**	**FY 2024 OCO**	**FY 2024 Total**
Title: Power Generation and Storage Sub Project	2.402	4.050	0.546	0.000	0.546
Articles:	-	-	-	-	-
Description: This project area will accomplish prototype development, laboratory and Fleet testing to determine overall effectiveness of technologies focused on improving efficiency of current power generation & storage methodologies.					
FY 2023 Plans: FY23 funding will continue congressionally funded efforts, which began in FY21, to develop a new electronic fuel injection (EFI) system for the Fairbanks Morse PA6B engines installed on the LCS Freedom class, LHA-6 America Class & LHD-8 Makin Island class vessels and include the development and environmental testing of upgraded fuel nozzles for installation on these platforms. Upgrading the fuel delivery system to electronic fuel injection will improve fuel efficiency of the engine by approximately 3-5%, reduce emissions and visible smoke, and reduce maintenance manhours and costs. Funding will also continue prototyping & land based testing a					

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603724N / *Navy Energy Program*	**Project (Number/Name)** 0829 / *ENERGY CONSERVATION (ADV)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
1500 Volt Amp (VA) Uninterrupted Power Supply (UPS) using Lithium Iron Phosphate batteries, which will offer a 2x increase in operational life and reduce life cycle costs on most surface ship applications. This development effort will lead to shipboard installation and test in the following year(s). In addition, continue to identify other energy saving/capability improvement technologies in Power Generation & Storage and prepare proposals and business case analyses for promising technologies, with potential to reduce fuel demand and increase capability through increased time on station and/or enabling future combat system advancements. ***FY 2024 Base Plans:*** FY24 funding will produce the design and control basis (Hardware & Software) for dissimilar power resources and will consider the use of paralleled power generation and energy storage interface as a dynamic source and load, with energy storage being able to be dispatched as necessary according to weapon system load requirements. Funding will also continue prototyping & land based testing a 1500 Volt Amp (VA) Uninterrupted Power Supply (UPS) using Lithium Iron Phosphate batteries, which will offer a 2x increase in operational life and reduce life cycle costs on most surface ship applications. This effort will complete in FY24 with an analysis of the findings from the shipboard demonstration. In addition, continue to identify other energy saving/capability improvement technologies in Power Generation & Storage and prepare proposals and business case analyses for promising technologies, with potential to reduce fuel demand and increase capability through increased time on station and/or enabling future combat system advancements. ***FY 2024 OCO Plans:*** N/A ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY24 decrease ($3.504M) is due to completion of efforts on PA6B Diesel Engine and a shift in focus on other projects within the PG&S focus area.					
Title: Underwater Hull Husbandry Sub Project	0.783	0.906	0.602	0.000	0.602
Articles:	-	-	-	-	-
Description: Project funds will be utilized to identify and evaluate new underwater hull/propeller coating systems and underwater hull cleaning and maintenance techniques to reduce hydrodynamic drag on the hull and thereby increase fuel efficiency.					

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603724N / *Navy Energy Program*	**Project (Number/Name)** 0829 / *ENERGY CONSERVATION (ADV)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
FY 2023 Plans: Continue development of Hull Biofouling Decision Making tool, with user interface and manual for evaluating or estimating the effects of hull biofouling on ship powering condition and fuel use. This desktop tool will employ simple computational approaches combined with ship operational data that will allow for decision making for hull maintenance, evaluation of new biofouling control technologies or strategies, and potentially for ship design, based on expected resistance and fuel use due to the presence of hull biofouling. In addition, continue to identify other energy saving/capability improvement technologies in Underwater Hull Husbandry and prepare proposals and business case analyses for promising technologies with potential to reduce fuel demand and increase capability through increased time on station. ***FY 2024 Base Plans:*** Complete the Hull Biofouling Decision Making Tool with user interface and manual for evaluating or estimating the effects of hull biofouling on ship powering condition and fuel use. This desktop tool will employ simple computational approaches combined with ship operational data that will allow for decision making for hull maintenance, evaluation of new biofouling control technologies or strategies, and potentially for ship design, based on expected resistance and fuel use due to the presence of hull biofouling. Continue to identify other energy saving/capability improvement technologies in Underwater Hull Husbandry and prepare proposals and business case analyses for promising technologies with potential to reduce fuel demand and increase capability through increased time on station. ***FY 2024 OCO Plans:*** N/A ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY24 decrease ($0.304M) is due to decreased efforts associated with the Hull Biofouling Decision Making Tool compared to previous year.					
Title: Hull Hydrodynamic Sub Project	1.274	0.222	2.466	0.000	2.466
Articles:	-	-	-	-	-
Description: This project area will accomplish prototype development, modeling, laboratory and Fleet testing of ship modifications to propellers and/or hull appendages to determine overall mission, energy, and cost effectiveness of these improvements.					

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603724N / *Navy Energy Program*	**Project (Number/Name)** 0829 / *ENERGY CONSERVATION (ADV)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
FY 2023 Plans: Continue to identify other energy saving/capability improvement technologies in Hull Hydrodynamics and prepare proposals and business case analyses for promising technologies with potential to reduce fuel demand and increase capability through increased time on station. ***FY 2024 Base Plans:*** Energy savings of appropriately designed Hydrodynamic Hull Appendages (HHA) is well documented; however, the government does not have robust methods to specify or validate contractors' Computational Fluid Dynamics (CFD) analysis of HHAs performance. A study will be conducted by utilizing existing HHA model-scale testing data as a validation for CFD/Fluid Flow analysis methods to determine input and modeling requirements to accurately predict appendage performance. Parametric studies will then be conducted to determine/verify the ability of CFD/Fluid Flow analysis to predict data trends and provide optimized results. Study results will be used to develop updates to DDS-051 design guidance and develop a Data Item Description (DID) to support ship design during acquisition. In addition, fluid dynamics and other advanced analytical capabilities will be used to explore more efficient hull designs for future surface combatants. Continue to identify other energy saving/capability improvement technologies in Hull Hydrodynamics and prepare proposals and business case analyses for promising technologies with potential to reduce fuel demand and increase capability through increased time on station. ***FY 2024 OCO Plans:*** N/A ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY24 increase ($2.244M) provided for examining and validating Computational Fluid Dynamics (CFD)/Fluid Flow methods for Hydrodynamic Hull Appendages and another project to explore more efficient hull designs for future surface combatants.					
Title: Heating, Ventilation and Air Conditioning (HVAC) Sub Project	0.471	0.772	0.605	0.000	0.605
Articles:	-	-	-	-	-
Description: Project funds will be utilized to accomplish prototype development, land and shipboard testing of improvements aimed at more efficient climate control of shipboard spaces.					
FY 2023 Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603724N / *Navy Energy Program*	**Project (Number/Name)** 0829 / *ENERGY CONSERVATION (ADV)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
The LHD 1 class is currently operating at full available cooling capacity or negative cooling margin using existing 300-ton chillers. FY23 funding will leverage existing Monoshell heat-exchanger High Efficiency Super Capacity (HESC) technology, on both LPD and DDG platforms, and apply it to a Double Barrel heat-exchanger design as a direct upgrade to the existing 300-ton legacy AC Plant currently in-use by the LHD 1 class. The product of this engineering analysis effort will be an HESCDB Conceptual Design and Draft Interface Control Document (ICD). The HESC Double Barrel (HESCDB) technology development will support future development and installation of a modern AC Plant containing both new hardware and software for use onboard any LHD. In addition, continue to identify other energy saving/capability improvement technologies in HVAC and prepare proposals and business case analyses for promising technologies with potential to reduce fuel demand and increase capability through increased time on station and/or enabling future combat system advancements. ***FY 2024 Base Plans:*** Advanced Thermal Insulation for shipboard use will be researched, developed and tested for viability on naval ships. Market research will be conducted for commercially available products, a cost benefit analysis will be performed on various candidates, and procurement specifications will be drafted. Continue to identify other energy saving/capability improvement technologies in HVAC and prepare proposals and business case analyses for promising technologies with potential to reduce fuel demand and increase capability through increased time on station and/or enabling future combat system advancements. ***FY 2024 OCO Plans:*** N/A ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY24 decrease ($0.167M) is due to completion of High Efficiency Super Capacity Double Barrel (HESCDB) efforts.					
Title: Thermal Management Sub Project	0.296	0.222	1.996	0.000	1.996
Articles:	-	-	-	-	-
Description: Project funds will be utilized to identify and evaluate potential uses for Thermal Management techniques designed to reduce overall shipboard heat generation as well as incorporating waste heat recovery techniques to reduce the shipboard electrical demand on HVAC and other systems. ***FY 2023 Plans:***					

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603724N / *Navy Energy Program*	**Project (Number/Name)** 0829 / *ENERGY CONSERVATION (ADV)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Continue to identify other energy saving/capability improvement technologies in Thermal Management and prepare proposals and business case analyses for promising technologies with potential to reduce fuel demand and increase capability through increased time on station and/or enabling future combat system advancements. ***FY 2024 Base Plans:*** Explore shipboard technologies or techniques that could be used to cool high power combat systems with very short during power draws and significant cooling needs. Also investigate waste heat recovery technologies that could produce additional electrical power for the ship using waste heat from prime movers or other large heat sources. Continue to identify other energy saving/capability improvement technologies in Thermal Management and prepare proposals and business case analyses for promising technologies with potential to reduce fuel demand and increase capability through increased time on station and/or enabling future combat system advancements. ***FY 2024 OCO Plans:*** N/A ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY24 increase ($1.774M) supports on shipboard cooling technologies and techniques as well as waste heat recovery options.					
Title: Main Propulsion Systems Sub Project	0.220	5.112	4.012	0.000	4.012
Articles:	-	-	-	-	-
Description: Project funds will be utilized to identify requirements and perform land based and at sea testing of surface ship and Unmanned Surface Vessel (USV) propulsion system improvements on Gas Turbine, Steam, and Diesel Engine systems to reduce overall fuel consumption and lower maintenance costs. ***FY 2023 Plans:*** This funding supports the test and evaluation of various LM2500 Gas Turbine Fuel Efficiency Concepts. Gas turbine compressor fouling reduces engine efficiency and increases fuel demand and this project will obtain an engine set of "Super Polished" compressor airfoils to test and document the potential efficiency gains by using highly polished airfoils. Additionally, this funding aims to adjust the cooling to the high-pressure turbine (HPT) in order to reduce fuel consumption at the same power output levels.					

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603724N / *Navy Energy Program*	**Project (Number/Name)** 0829 / *ENERGY CONSERVATION (ADV)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
In addition, continue to identify other energy saving/capability improvement technologies in Propulsion Systems and prepare proposals and business case analyses for promising technologies, with potential to reduce fuel demand and increase capability through increased time on station. ***FY 2024 Base Plans:*** Continue FY23 efforts for LM2500 Gas Turbine Fuel Efficiency Concepts. Gas turbine compressor fouling reduces engine efficiency and increases fuel demand and this project will obtain an engine set of "Super Polished" compressor airfoils to test and document the potential efficiency gains by using highly polished airfoils. Additionally, this funding aims to adjust the cooling to the high-pressure turbine (HPT) in order to reduce fuel consumption at the same power output levels. In addition, continue to identify other energy saving/capability improvement technologies in Propulsion Systems and prepare proposals and business case analyses for promising technologies, with potential to reduce fuel demand and increase capability through increased time on station. ***FY 2024 OCO Plans:*** N/A ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY24 decrease ($1.100M) is due to reduced cost for LM2500 Gas Turbine efforts.					
Title: Electrical Systems Sub Project	0.725	0.902	1.466	0.000	1.466
Articles:	-	-	-	-	-
Description: Project funds will be utilized to identify and perform land based and shipboard testing of ship electrical system improvements to optimize power and energy use. ***FY 2023 Plans:*** Advanced electric plant operations and utilization of energy storage systems on ship platforms require the need for cross-control system coordination. FY23 funding will support development and demonstration of Cross-control system interface which will enable advanced utilization and deployment of Energy Storage, advanced power management, and load shedding techniques to realize efficient operations and fuel savings In addition, continue to identify other energy saving/capability improvement technologies in Electrical Systems and prepare proposals and business case analyses for promising technologies with potential to reduce fuel					

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603724N / *Navy Energy Program*	**Project (Number/Name)** 0829 / *ENERGY CONSERVATION (ADV)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
demand and increase capability through increased time on station and/or enable future combat system enhancements. ***FY 2024 Base Plans:*** Existing Non-Intrusive Load Monitoring (NILM) sensors are stand-alone and lack network connection requiring ship visits to remove data sets. FY 24 funding will develop a Concept of Operations Plan (CONOP), architectures and Interface Design Document (IDD) for NILM and existing data acquisition systems on navy ships. Objective is to develop a functional system prototype for NILM integration into CANES and into eRM and install shipboard as a proof-of-concept test. In addition, continue to identify other energy saving/capability improvement technologies in Electrical Systems and prepare proposals and business case analyses for promising technologies with potential to reduce fuel demand and increase capability through increased time on station and/or enable future combat system enhancements. ***FY 2024 OCO Plans:*** N/A ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY24 increase ($0.564M) supports Non-Intrusive Load Monitoring (NILM) network integration effort.					
Title: Auxiliary Systems Sub Project	0.221	0.222	0.316	0.000	0.316
Articles:	-	-	-	-	-
Description: Project funds will be utilized to identify, test and evaluate new technologies for shipboard auxiliary systems aimed at reducing fuel consumption. ***FY 2023 Plans:*** Continue to identify additional energy saving/capability improvement technologies in auxiliary systems and prepare proposals and business case analyses for promising technologies, with potential to reduce fuel demand and increase capability through increased time on station and/or enable future combat system enhancements. ***FY 2024 Base Plans:*** Continue to identify additional energy saving/capability improvement technologies in auxiliary systems and prepare proposals and business case analyses for promising technologies, with potential to reduce fuel demand and increase capability through increased time on station and/or enable future combat system enhancements. ***FY 2024 OCO Plans:***					

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
N/A ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY24 increase ($0.094M) supports identifying new work in this area, conducting the business case analysis, and down selecting from a list of proposals.					
Title: Energy Monitoring, Planning & Assessment	3.211	1.648	9.122	0.000	9.122
Articles:	-	-	-	-	-
Description: This project area will focus on methods of capturing and displaying energy related data to shipboard personnel as actionable information for ships force to employ energy conservation measures underway and in port as mission requirements permit. Through projects like GENISYS, it also supports Naval Operational Architecture/Joint All-Domain Command and Control. ***FY 2023 Plans:*** Continue GENISYS development efforts and shipboard evaluation including implementation of critical updates based on user feedback and integration with enterprise Remote Monitoring (eRM) and other fuel related navy enterprise applications. Continue expanding GENISYS capability to other ship classes. In addition, continue to identify other energy capability improvement technologies and monitoring methodologies and prepare proposals and business case analyses for promising technologies, with potential to reduce fuel demand and increase capability through increased time on station and/or enable future combat system enhancements. ***FY 2024 Base Plans:*** Continue GENISYS software development lifecycle (SDLC) efforts for developing USFF Requirements Management Board capabilities and shipboard evaluation including implementation of critical updates based on user feedback and integration with enterprise Remote Monitoring (eRM) and other fuel related navy enterprise applications. Continue expanding GENISYS capability to the LPD-17 class and exploring feasibility of a cross security domain solution. Initiate planning efforts to remove previously installed TRITON system on DDG 102 for test and evaluation. Conduct a shipboard demonstration of an emission's monitoring system in the exhaust stack of a gas turbine in order to monitor emissions but also utilize the information to determine if power generation and propulsion systems are operating efficiently or require maintenance.					

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603724N / *Navy Energy Program*	**Project (Number/Name)** 0829 / *ENERGY CONSERVATION (ADV)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Develop new shipboard power and energy curricula for USN personnel and navy engineers. Initiate efforts to pilot a commercial energy technology demonstration on a MARAD training vessel to show the efficiency and cost savings associated with this approach as compared to traditional navy shipboard prototyping. Begin a multi-year effort to improve enterprise-wide energy monitoring and visibility. This includes developing the capability to conduct thorough and effective energy supportability analysis in support of the energy key performance parameters, improving the theater energy modeling work that was started under previous efforts, and expanding on the existing coordination of efforts across the various fuel logistics, decarbonization working groups, and fleet energy monitoring programs throughout the USN and USMC. In addition, continue to identify other energy capability improvement technologies and monitoring methodologies and prepare proposals and business case analyses for promising technologies, with potential to reduce fuel demand and increase capability through increased time on station and/or enable future combat system enhancements. ***FY 2024 OCO Plans:*** N/A ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY24 increase ($7.474M) due to the start of Triton Hull Sensor removal work, a shipboard emissions monitoring demonstration, development of power and energy training curricula, piloting a commercial energy technology shipboard demonstration with MARAD, and supporting the enterprise-wide energy monitoring and visibility work.					
Accomplishments/Planned Programs Subtotals	9.603	14.056	21.131	0.000	21.131

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

RDT&E Contracts are Competitive Procurements.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603724N / *Navy Energy Program*	Project (Number/Name) 0829 / *ENERGY CONSERVATION (ADV)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering	C/CPFF	NAVSEA HQ : Washington, DC	1.310	0.000		0.000		0.000		-		0.000	0.000	1.310	-
Systems Engineering	Grant	NSWC DD : Dahlgren, VA	0.100	1.112	Dec 2021	0.000		0.000		-		0.000	0.000	1.212	-
Systems Engineering	WR	NSWC Philadelphia : Philadelphia, PA	3.537	1.297	Dec 2021	0.800	Nov 2022	1.715	Nov 2023	-		1.715	0.000	7.349	-
Primary Hardware Development	WR	NSWC Carderock : Bethesda, MD	8.983	0.000		0.612	Dec 2022	0.000		-		0.000	0.000	9.595	-
Systems Engineering	WR	NSWC PHD : Port Hueneme, CA	0.100	0.000		0.000		0.000		-		0.000	0.000	0.100	-
Systems Engineering	C/CPAF	NSWC Carderock : Bethesda, MD	6.948	0.000		0.000		0.000		-		0.000	0.000	6.948	-
Engineering Development	WR	NSWC Carderock : Bethesda, MD	9.002	1.053	Nov 2021	0.000		2.436	Nov 2023	-		2.436	0.000	12.491	-
Demonstration & Evaluation	WR	NSWC Carderock : Bethesda, MD	8.149	0.000		0.000		0.000		-		0.000	0.000	8.149	-
System Development	C/BOA	NAWC-AD : Lakehurst, NJ	7.038	1.940	Dec 2021	0.500	Jan 2023	0.000		-		0.000	0.000	9.478	-
Primary Hardware Development	C/CPAF	NSWC Phila : Philadelphia, PA	0.000	0.000		3.580	Feb 2023	0.000		-		0.000	0.000	3.580	-
System Engineering	WR	NSWC CR : Crane, Indiana	0.300	0.000		0.000		0.035	Nov 2023	-		0.035	0.000	0.335	-
System Engineering	WR	NUWC NPT : Newport, Rhode Is	0.193	0.000		0.000		0.000		-		0.000	0.000	0.193	-
Primary Hardware Development	WR	NSWC PD : Philadelphia, PA	0.000	0.000		1.580	Nov 2022	0.100	Nov 2023	-		0.100	0.000	1.680	-
Engineering Development	WR	NSWC PD : Philadelphia, PA	0.000	0.000		0.000		0.655	Nov 2023	-		0.655	0.000	0.655	-
Systems Engineering	C/CPAF	SOS Bath Maine : Bath, Maine	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
Engineering Development	MIPR	Army Research Lab : Arlington, TX	0.000	0.000		0.000		0.150	Jan 2024	-		0.150	0.000	0.150	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy			Date: March 2023
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603724N / *Navy Energy Program*	Project (Number/Name) 0829 / *ENERGY CONSERVATION (ADV)*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
System Development	C/CPFF	FEDSIM : Washington, DC	0.000	0.000		0.000		0.512	Jan 2024	-		0.512	0.000	0.512	-
Engineering Development	C/CPAF	NSWC Philadelphia : Philadelphia, PA	0.000	0.000		0.000		0.505	Jan 2024	-		0.505	0.000	0.505	-
		Subtotal	45.660	5.402		7.072		6.108		-		6.108	0.000	64.242	N/A

Remarks

Increase of $0.915M for Systems Engineering NSWC PD (G/WR) reflects an adjusted mix of FY24 development projects. A decrease of $0.612M in Primary Hardware Development NSWC CD reflects completion of Biofouling project in FY23. A decrease of $3.58M / NSWC PD (C/CPAF) reflects a decrease in FY24 projects contract requirements. Increase of $0.035M for Systems Engineering NSWC CR reflects support for FY24 UPS Lithium-ion Batteries. Increase of $2.436M for Engineering Development NSWC CR reflects support for FY24 CFD for Hull Hydro Appendages Project and Surface Combatant Hull Efficiency Design work. Decrease of $1.480M NSWC PD (G/WR) reflects an adjusted mix of FY24 development projects. Increase of $0.655M for Engineering Development NSWC PD (G/WR) reflects an adjusted mix of FY24 development projects. Increase of $0.150M for Engineering Development ARL reflects support for FY24 Non-Intrusive Load Monitoring (NILM) network integration. Decrease of $.500M for NAWC-AD System Development and increase of $.512M for FEDSIM System Development reflects a shift in contract vehicle for GENISYS Development. Increase of $.505M for NSWC Philadelphia Engineering Development reflects an adjusted mix of FY24 development projects.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Support	WR	NSWC Carderock : Bethesda, MD	3.684	0.000		0.072	Nov 2022	0.000		-		0.000	Continuing	Continuing	Continuing
Study Anaylsis	WR	NSWC CD : Bethesda, MD	1.174	0.000		0.000		0.624	Nov 2023	-		0.624	Continuing	Continuing	Continuing
Development Support	C/CPAF	NSWC Philadelphia : Philadelphia, PA	1.028	0.100	Dec 2021	0.000		0.000		-		0.000	0.000	1.128	-
Development Support	C/CPAF	NAVSEA HQ : Washington, DC	2.895	0.123	Jan 2022	0.123	Jan 2023	0.000		-		0.000	0.000	3.141	-
Development Support	WR	NSWC PD : Philadelphia, PA	3.238	0.300	Nov 2021	0.000		0.300	Nov 2023	-		0.300	0.000	3.838	-
Development Support	WR	NSWC DD : Dahlgren, Va	0.050	0.069	Nov 2021	0.000		0.000		-		0.000	0.000	0.119	-
Development Support	C/CPFF	NSWC Corona : Corona, IN	0.000	0.000		0.000		0.600	Nov 2023	-		0.600	0.000	0.600	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603724N / *Navy Energy Program*	**Project (Number/Name)** 0829 / *ENERGY CONSERVATION (ADV)*

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Software Support	C/CPFF	PEO STRI : Orlando, FL	0.000	0.000		0.000		0.243	Jan 2024	-		0.243	0.000	0.243	-
Development Support	C/BA	Naval Postgraduate School : Monterey, CA	0.000	0.000		0.000		1.920	Jan 2024	-		1.920	0.000	1.920	-
Study Analysis	WR	NSWC DD : Dahlgren, VA	0.000	0.000		0.000		0.360	Nov 2023	-		0.360	0.000	0.360	-
Study Analysis	C/CPAF	NSWC Dahlgren : Dahlgren, VA	0.000	0.000		0.000		0.040	Jan 2024	-		0.040	0.000	0.040	-
Study Analysis	C/CPAF	NSWC Carderock : Carderock, MD	0.000	0.000		0.000		0.850	Jan 2024	-		0.850	0.000	0.850	-
Study Analysis	C/CPFF	PEO STRI : Orlando, FL	0.000	0.000		0.000		1.000	Jan 2024	-		1.000	0.000	1.000	-
		Subtotal	12.069	0.592		0.195		5.937		-		5.937	Continuing	Continuing	N/A

Remarks

Decrease of $0.072M for Development Support / NSWC CD reflects adjusted mix for FY24 projects. Decrease of $0.123M for NAVSEA HQ Development Support and increase of NSWC Corona Development Support reflects transfer of support to new contract vehicle. Increase of $0.300M for Development Support / NSWC PD reflects FY24 requirement for TRITON Removal planning support. Increase of $0.600M for NSWC Corona C/CPFF reflects transfer of development support to a new contract. Increase of $.243M for PEO STRI Software Support reflects shift of previous work to new contract vehicle. Increase of $1.920M for Naval Postgraduate School Development Support is for shipboard power and energy training and education curriculum development. Increase of $0.624M for NSWC CD (G/WR), $0.850M for NSWC Carderock (C/CPAF), $0.360M for NSWC DD (G/WR), $0.040M for NSWC Dahlgren (C/CPAF), and $1.000M for PEO STRI is for start of the new Enterprise-wide Energy Visibility project.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation (DT&E)	WR	NSWC Carderock : Bethesda, MD	10.645	0.562	Nov 2021	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Developmental Test & Evaluation (DT&E)	C/CPAF	NSWC Philadelphia : Philadelphia, PA	0.383	0.000		3.482	Jan 2023	4.410	Jan 2024	-		4.410	0.000	8.275	-
Developmental Test & Evaluation (DT&E)	WR	NSWC PD : Philadelphia, PA	0.918	0.662	Nov 2021	0.506	Dec 2022	1.636	Nov 2023	-		1.636	0.000	3.722	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603724N / *Navy Energy Program*	**Project (Number/Name)** 0829 / *ENERGY CONSERVATION (ADV)*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation (DT&E)	WR	APL : Washington, DC	0.085	0.000		0.000		0.000		-		0.000	0.000	0.085	-
Developmental Test & Evaluation (DT&E)	C/BOA	NAWC-AD : Lakehurst, NJ	3.519	0.733	Jan 2022	0.000		0.000		-		0.000	0.000	4.252	-
Developmental Test & Evaluation (DT&E)	C/CPFF	FEDSIM : Washington, DC	0.000	0.000		0.890	Feb 2023	0.600	Jan 2024	-		0.600	0.000	1.490	-
		Subtotal	15.550	1.957		4.878		6.646		-		6.646	Continuing	Continuing	N/A

Remarks

Increase of $0.928MM in Development Test & Evaluation (C/CPAF) / NSWC PD reflects an adjusted mix of FY24 test and evaluation projects. Increase of $1.130M in Development Test & Evaluation (G/WR) / NSWC PD reflects an adjusted mix of FY24 test and evaluation projects. Decrease of $0.290M for Developmental Test & Evaluation at FEDSIM reflects decreased testing of GENISYS requirements as the R&D ramps down.

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Management Support	WR	NSWC Philadelphia : Philadelphia, PA	7.428	0.158	Nov 2021	0.196	Nov 2022	0.210	Nov 2023	-		0.210	0.000	7.992	-
Travel	Allot	NAVSEA HQ : Washington, DC	0.237	0.015	Dec 2021	0.015	Jan 2023	0.015	Mar 2024	-		0.015	0.000	0.282	-
Program Management Support	C/CPAF	NAVSEA HQ : Washington, DC	6.369	1.302	Jan 2022	1.463	Dec 2022	1.205	Jan 2024	-		1.205	0.000	10.339	-
Project Management Support	WR	NSWC Carderock : Bethesda, MD	1.174	0.177	Nov 2021	0.237	Nov 2022	0.510	Nov 2023	-		0.510	0.000	2.098	-
Program Management Support	C/CPFF	NSWC Corona : Corona, IN	0.000	0.000		0.000		0.500	Nov 2023	-		0.500	0.000	0.500	-
		Subtotal	15.208	1.652		1.911		2.440		-		2.440	0.000	21.211	N/A

Remarks

Increase of $0.014M for NSWC PD and $0.273M NSWC CD in Project Management Support reflects management needs for new mix of FY24 projects. Decrease of $0.258M for NAVSEA HQ reflects reduced overhead costs (taxes, contract fees, etc.) required for FY24 projects. Increase of $0.5M for NSWC Corona Program Management Support reflects transfer of program management support to new contract.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy			Date: March 2023
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603724N / *Navy Energy Program*	Project (Number/Name) 0829 / *ENERGY CONSERVATION (ADV)*	

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	88.487	9.603		14.056		21.131		-		21.131	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603724N / *Navy Energy Program*	**Project (Number/Name)** 0829 / *ENERGY CONSERVATION (ADV)*

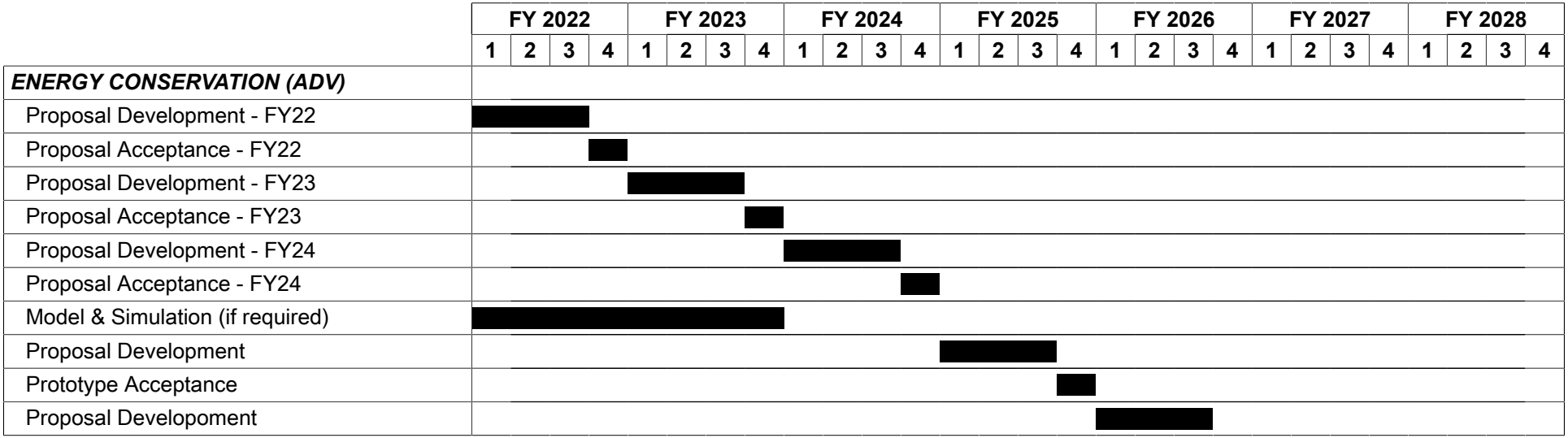

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603724N / *Navy Energy Program*	**Project (Number/Name)** 0829 / *ENERGY CONSERVATION (ADV)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
ENERGY CONSERVATION (ADV)				
Proposal Development - FY22	1	2022	3	2022
Proposal Acceptance - FY22	4	2022	4	2022
Proposal Development - FY23	1	2023	3	2023
Proposal Acceptance - FY23	4	2023	4	2023
Proposal Development - FY24	1	2024	3	2024
Proposal Acceptance - FY24	4	2024	4	2024
Model & Simulation (if required)	1	2022	4	2023
Proposal Development	1	2025	3	2025
Prototype Acceptance	4	2025	4	2025
Proposal Developoment	1	2026	3	2026

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy			Date: March 2023
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603724N / *Navy Energy Program*	Project (Number/Name) 0838 / *Mobility Fuels (ADV)*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
0838: *Mobility Fuels (ADV)*	122.718	9.030	7.442	6.491	-	6.491	8.463	8.365	8.049	8.211	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This program represents the Navy's only RDTE investment designed to maintain and enhance its capability to operate as a "smart" customer for aviation and ship tactical fuels that are an operationally critical, single point of failure, $4.0+ billion per year consumable requiring worldwide availability and interoperability.

Recent field problems have demonstrated the adverse effects that fuel-related problems can have on ship and aircraft performance, durability, and readiness. The potential risk and adverse operational impacts from fuel-related problems over the next decade, given the evolving production technologies, changing feedstocks, more stringent environmental regulations and the introduction of new operational requirements and platforms will continue to increase.

This program provides data and enables technology through laboratory, component, fuel system, engine, and platform tests. These evaluations relate the effects of changes in the Navy fuel properties and chemistry to the performance and durability of Naval ship, aircraft, ground and fuel distribution systems. The information is required by technical authorities and decision makers to: (a) assure interoperability with fuel procured from commercial/ international specifications, (b) determine the extent to which unnecessarily restrictive military specification requirements can be relaxed to reduce cost and increase availability worldwide, (c) provide guidance to fleet operators for the safe use of off-specification fuels or emerging CONOPS requiring the use of non-traditional fuels, (d) assure operational interoperability with evolving changes in fuel production technology, feedstocks, environmental regulations and tactical system demands, (e) improve the capability and reduce the cost of field fuel quality surveillance, and (f) facilitate rapid identification and resolution of field identified fuel deficiencies.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Title: Naval Tactical Fuels	9.030	7.442	6.491	0.000	6.491
Articles:	-	-	-	-	-
Description: Perform development, test and evaluation work on Naval tactical fuels to: a) assure interoperability with commercial/international fuel specifications, b) determine the extent to which unnecessarily restrictive military specification features can be relaxed to reduce cost and increase availability worldwide; c) provide guidance to fleet operators for the safe use of off-specification or non-primary fuels , d) validate periodic changes to the Navy tactical fuel specifications to ensure fuel quality and avoid fleet operating problems while accommodating evolutionary changes in the fuel supply industry and e) improve fleet methods to ensure fuel quality and performance.					
FY 2023 Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603724N / *Navy Energy Program*	**Project (Number/Name)** 0838 / *Mobility Fuels (ADV)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Continue to conduct lab, rig, component, and engine testing to assure fuel interoperability with evolving commercial fuel specifications and emerging operational and platform requirements. Refine advanced chemical composition measurement capability and enterprise data analytics tools that increase readiness through proactive stock protection and rapid safe-use determinations. Conduct field trials on prototype cost-reducing autonomous quality surveillance and contamination detection sensors. ***FY 2024 Base Plans:*** Continue to conduct lab, rig, component, and engine testing to assure fuel interoperability with evolving commercial fuel specifications and emerging operational and platform requirements. Develop and trial modules to the Naval Fuel Data Analytics Tool adding hardware and non-specification test data to the fuel property and compositional modules already developed. Field trial additive detection capability in support of deployed additization requirements. ***FY 2024 OCO Plans:*** N/A ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY24 decrease ($0.951) is due to funding delays the field trial/approval of additive detection technology in support of the deployment of fuel additization capability.					
Accomplishments/Planned Programs Subtotals	9.030	7.442	6.491	0.000	6.491

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Testing efforts will be competitively contracted, and performed under Cost Plus Fixed Fee and Firm Fixed Price contracts.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy			Date: March 2023
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603724N / *Navy Energy Program*	Project (Number/Name) 0838 / *Mobility Fuels (ADV)*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering	WR	NRL : Washington, D.C.	8.952	1.214	Nov 2021	1.165	Nov 2022	0.469	Nov 2023	-		0.469	Continuing	Continuing	Continuing
Systems Engineering	WR	NAWCAD : Patuxent River, MD	25.139	2.000	Nov 2021	2.000	Nov 2022	1.984	Nov 2023	-		1.984	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC : Philadelphia, PA	5.381	0.450	Nov 2021	0.500	Nov 2022	0.400	Nov 2023	-		0.400	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC : Bethesda, MD	0.462	0.000		0.000		0.000		-		0.000	0.000	0.462	0.462
Systems Engineering	C/FFP	Various : Various	4.756	2.298	Mar 2022	1.200	Jan 2023	0.660	Jun 2024	-		0.660	0.000	8.914	8.914
Prior year Prod Dev no longer funded in the FYDP	Various	Various : Various	0.161	0.000		0.000		0.000		-		0.000	0.000	0.161	0.161
Systems Engineering	MIPR	Army Ground Vehicle Systems Center : Warren, MI	0.000	0.500	Nov 2021	0.000		0.000		-		0.000	0.000	0.500	0.500
Systems Engineering	MIPR	AFRL : Dayton, OH	0.000	0.221	Nov 2021	0.000		0.000		-		0.000	0.000	0.221	0.221
		Subtotal	44.851	6.683		4.865		3.513		-		3.513	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation (DT&E)	WR	NAWCAD : Patuxent River, MD	6.349	0.500	Dec 2021	0.600	Nov 2022	0.500	Nov 2023	-		0.500	Continuing	Continuing	Continuing
Developmental Test & Evaluation (DT&E)	C/CPFF	Life Cycle Engineering : Charleston, SC	20.923	1.500	Apr 2022	1.614	Mar 2023	2.028	Mar 2024	-		2.028	0.000	26.065	26.065
Developmental Test & Evaluation (DT&E)	C/CPFF	Univ of Dayton Research Inst : Dayton, OH	1.289	0.000		0.000		0.000		-		0.000	0.000	1.289	1.289
Developmental Test & Evaluation (DT&E)	WR	US Naval Academy : Annapolis, MD	0.188	0.040	Apr 2022	0.040	May 2023	0.100	May 2024	-		0.100	0.000	0.368	0.368
Developmental Test & Evaluation (DT&E)	C/FFP	Various : Various	7.826	0.000		0.000		0.000		-		0.000	0.000	7.826	7.826

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy			Date: March 2023
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603724N / *Navy Energy Program*	Project (Number/Name) 0838 / *Mobility Fuels (ADV)*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation (DT&E)	MIPR	DLA-Energy : Ft. Belvoir, VA	0.722	0.030	Apr 2022	0.038	Mar 2023	0.040	May 2024	-		0.040	0.000	0.830	0.830
Prior Year Developmental Test & Evaluation Not Funded FYDP (PYDT&E)	Various	Various : Various	31.545	0.000		0.000		0.000		-		0.000	0.000	31.545	31.545
		Subtotal	68.842	2.070		2.292		2.668		-		2.668	Continuing	Continuing	N/A

Remarks

All prior year lines have been consolidated.

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	WR	NAWCAD : Patuxent River, MD	2.319	0.267	Dec 2021	0.270	Nov 2022	0.300	Oct 2023	-		0.300	Continuing	Continuing	Continuing
Program Management Support	C/FFP	Coord Research Council : Alpharetta, GA	0.090	0.010	Nov 2021	0.015	Dec 2022	0.010	Oct 2023	-		0.010	0.000	0.125	0.125
Prior year Mgmt Supp no longer funded in the FYDP	Various	Various : Various	6.616	0.000		0.000		0.000		-		0.000	0.000	6.616	6.616
		Subtotal	9.025	0.277		0.285		0.310		-		0.310	Continuing	Continuing	N/A

Remarks

1.

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	122.718	9.030		7.442		6.491		-		6.491	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603724N / *Navy Energy Program*	**Project (Number/Name)** 0838 / *Mobility Fuels (ADV)*

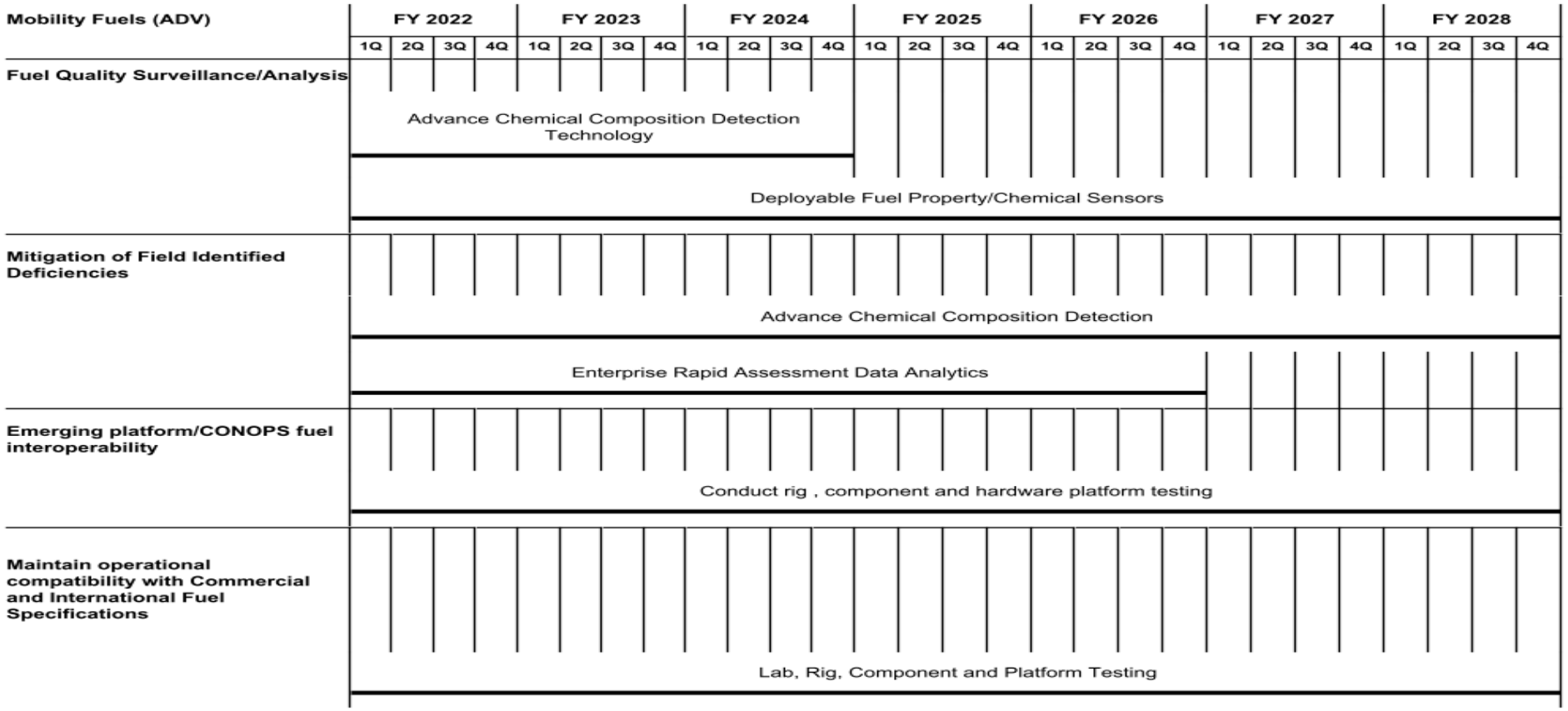

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603724N / *Navy Energy Program*	**Project (Number/Name)** 0838 / *Mobility Fuels (ADV)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Mobility Fuels (ADV)				
Fuel Quality Surveillance/Analysis: Advance Chemical Composition Detection Technology	1	2022	4	2024
Fuel Quality Surveillance/Analysis: Deployable Fuel Property/Chemical Sensors	1	2022	4	2028
Mitigation of Field Identified Deficiencies: Advance Chemical Composition Detection	1	2022	4	2028
Mitigation of Field Identified Deficiencies: Enterprise Rapid Assessment Data Analytics	1	2022	4	2026
Emerging platform/CONOPS fuel interoperability: Conduct rig, component and hardware platform testing	1	2022	4	2028
Maintain operational compatibility with Commercial and International Fuel Specifications: Lab, Rig, Component and Platform Testing	1	2022	4	2028

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy											Date: March 2023	
Appropriation/Budget Activity 1319 / 4					R-1 Program Element (Number/Name) PE 0603724N / *Navy Energy Program*				Project (Number/Name) 0928 / *Shore Energy Technology*			
COST ($ in Millions)	**Prior Years**	**FY 2022**	**FY 2023**	**FY 2024 Base**	**FY 2024 OCO**	**FY 2024 Total**	**FY 2025**	**FY 2026**	**FY 2027**	**FY 2028**	**Cost To Complete**	**Total Cost**
0928: *Shore Energy Technology*	59.021	1.910	1.981	2.059	-	2.059	2.111	2.155	2.199	2.244	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Legislation, Executive Orders (EO), and SECNAV Guidance direct DoN to increase energy security through resiliency, efficiency, reliability, cybersecurity and alternative energy sources. This guidance includes the National Defense Strategy (NDS) of 2018, A Design for Maintaining Maritime Superiority 2.0, and the NAVFAC Strategic Design 2.0. Guidance directs DOD to posture logistics capability (projected from Navy Installations) ashore and at sea in ways that allow the fleet to operate globally, at a pace that can be sustained over time. Improved resilience of our installations (employing key technology focus areas defined in the NDS) will enable platform refueling, re-arming, resupply and repair. Installations shall enable Dynamic Force Employment and Distributed Lethality.

This Energy RDT&E Project will test, evaluate, and validate components as well as demonstrate cost-effective and technical viability of energy security , efficiency, resilience, reliability, and technologies. All efforts will be coordinated across DOD and with other agencies as appropriate. Specifically, this project aims to pursue three areas of development, testing and evaluation: (A) Modeling and possible prototype testing of new energy sources for use at Naval installations with potential for widespread applicability to energy security; (B) It will support demonstration and validation of advanced electric grid management systems, known as "Smart Grid" and "Micro Grid" technology, for use at Naval installations to enable improved energy security; (C) Demonstration and Validation of Alternative Energy, Energy Efficiency, and Resiliency and Smart Energy Management Technology. Cyber Security resilience technology shall align to NIST 800-82 and be interoperable within the NAVFAC cybersecurity enclave.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	**FY 2022**	**FY 2023**	**FY 2024 Base**	**FY 2024 OCO**	**FY 2024 Total**
Title: Shore Energy Technology	1.910	1.981	2.059	0.000	2.059
Articles:	-	-	-	-	-
FY 2023 Plans: - Continue development and demonstration of energy storage sites to include cyber security measures. - Continue development and demonstration of adaptable microgrids that utilize artificial intelligence and solid-state power electronics using renewable energy test bed. - Continue development and demonstration of predictive modeling, neural network, and predictive energy tools.					
FY 2024 Base Plans: - Develop and demonstrate energy storage sites to include cyber security measures. - Develop and demonstrate adaptable microgrids that utilize artificial intelligence and solid-state power electronics using renewable energy test bed.					

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603724N / *Navy Energy Program*	**Project (Number/Name)** 0928 / *Shore Energy Technology*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
- Develop and demonstrate predictive modeling, neural network, and predictive energy tools. ***FY 2024 OCO Plans:*** N/A ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY24 increase ($0.078M) supports additional investment in demonstration of advanced energy collection and energy storage technologies.					
Accomplishments/Planned Programs Subtotals	1.910	1.981	2.059	0.000	2.059

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Demonstration and validation are conducted for maximum transfer and interaction with industry such as to influence the industry COTS with the results of this demonstration and prototype validation. Acquisition is based on performance specifications enabled by this project.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy			Date: March 2023
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603724N / *Navy Energy Program*	Project (Number/Name) 0928 / *Shore Energy Technology*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Renewable Energy	WR	EXWC : Port Hueneme, CA	42.327	0.393	Jan 2022	0.416	Jan 2023	0.425	Dec 2023	-		0.425	Continuing	Continuing	Continuing
Energy Resiliency and Reliability, Security and Systems (Includes cybersecurity)	Various	EXWC : Port Hueneme, CA	9.914	0.730	Dec 2021	0.700	Jan 2023	0.724	Dec 2023	-		0.724	Continuing	Continuing	Continuing
Energy Storage	WR	EXWC : Port Hueneme, CA	6.577	0.515	Dec 2021	0.515	Jan 2023	0.540	Jan 2024	-		0.540	Continuing	Continuing	Continuing
Renewable Energy (Direct Cite)	Various	EXWC : Port Hueneme, CA	0.203	0.272	Dec 2021	0.000		0.000		-		0.000	0.000	0.475	-
Energy Resiliency and Reliability, Security and Systems (includes cybersecurity) - Direct Cite	Various	EXWC : Port Hueneme, CA	0.000	0.000		0.350	Apr 2023	0.370	Apr 2024	-		0.370	Continuing	Continuing	Continuing
		Subtotal	59.021	1.910		1.981		2.059		-		2.059	Continuing	Continuing	N/A

Remarks

- All categories: slight increase across all category items in FY24 due to budget increase.

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	59.021	1.910		1.981		2.059		-		2.059	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603724N / *Navy Energy Program*	**Project (Number/Name)** 0928 / *Shore Energy Technology*

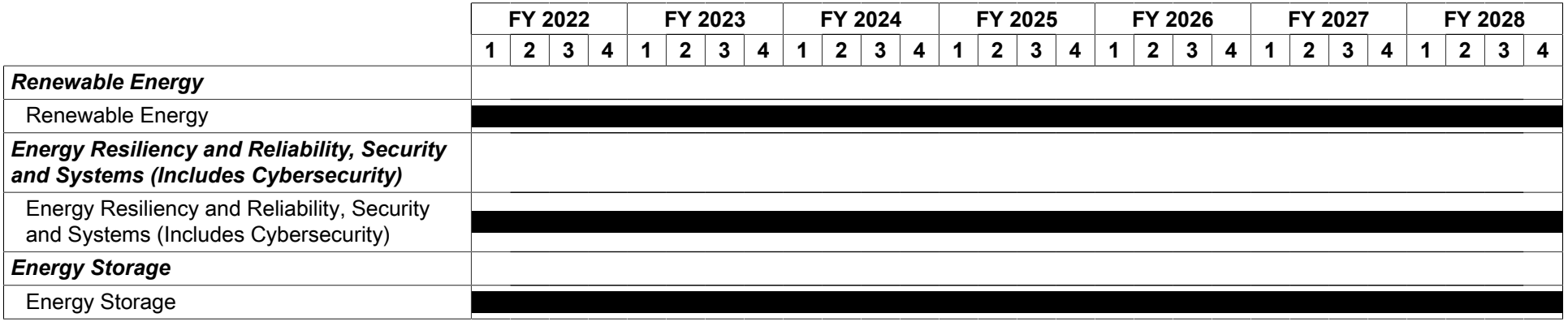


Exhibit R-4A, RDT&E Schedule Details: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603724N / *Navy Energy Program*	**Project (Number/Name)** 0928 / *Shore Energy Technology*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Renewable Energy				
Renewable Energy	1	2022	4	2028
Energy Resiliency and Reliability, Security and Systems (Includes Cybersecurity)				
Energy Resiliency and Reliability, Security and Systems (Includes Cybersecurity)	1	2022	4	2028
Energy Storage				
Energy Storage	1	2022	4	2028

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy			Date: March 2023
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603724N / *Navy Energy Program*	Project (Number/Name) 0996 / *Aircraft Energy Conservation*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
0996: *Aircraft Energy Conservation*	177.643	6.863	26.203	30.419	-	30.419	22.905	16.906	17.019	17.362	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Naval aviation must operate independently worldwide often with limited logistics support. Additionally, legacy and emerging aircraft continually add capability to enhance their lethality and survivability. Improving an aircraft's utilization and management of energy has a direct relationship to enhanced combat capability to meet the challenges of emerging threats. This program engages technical experts from across Naval aviation, industry, and academia to identify best practices and technologies for development, testing and validation to determine technical viability and assess benefit to mission capability.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Title: Aircraft Operational Energy	6.863	26.203	30.419	0.000	30.419
Articles:	-	-	-	-	-

FY 2023 Plans:

Continue identification, testing and assessment of Operational Energy technologies, best practices and metrics to enhance Naval Aviation operational capability. Build and validate integrated models to identify and support resolution of legacy aircraft power and thermal management challenges. Conduct certification testing of common safe and affordable lithium ion battery prototypes. Develop/mature advanced aircraft generator technology. Conduct test cell evaluation of engine recuperator technology for UAS applications. Mature and demonstrate operational benefits of finlet and aerial refueling technologies. Assess and mature engine component efficiency technologies

FY 2024 Base Plans:

Continue identification, testing and assessment of Operational Energy technologies to enhance Naval Aviation operational capability. Build and validate integrated models to identify and support resolution of legacy aircraft power and thermal management challenges. Conduct certification testing of common safe and affordable lithium ion battery prototypes. Mature and demonstrate operational energy benefits of P-8 finlet and aerial refueling technologies. Assess and mature engine component efficiency technologies. Develop and mature novel engine inlet particle separation.

FY 2024 OCO Plans:

N/A

FY 2023 to FY 2024 Increase/Decrease Statement:

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603724N / *Navy Energy Program*	**Project (Number/Name)** 0996 / *Aircraft Energy Conservation*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
FY24 increase ($4.216M) supports P-8 Flight testing and accelerates development of advance aerial refueling stabilization technologies.					
Accomplishments/Planned Programs Subtotals	6.863	26.203	30.419	0.000	30.419

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

This is a non-acquisition program that develops, evaluates, and validates technologies in support of Navy Operational Energy goals for increasing aircraft mission capability.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603724N / *Navy Energy Program*	**Project (Number/Name)** 0996 / *Aircraft Energy Conservation*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering	WR	NAWCAD : Patuxent River, MD	13.226	2.328	Dec 2021	3.600	Dec 2022	4.061	Dec 2023	-		4.061	Continuing	Continuing	Continuing
Systems Engineering	C/CPFF	The Boeing Company : Seattle, WA	2.000	0.000		0.000		0.000		-		0.000	0.000	2.000	2.000
Systems Engineering	C/CPFF	Various : Various	17.396	2.884	Apr 2022	17.403	May 2023	7.000	Mar 2024	-		7.000	0.000	44.683	44.683
Systems Engineering	C/BA	Deloitte Consulting : Alexandria, VA	4.571	1.100	Jan 2022	0.000		0.000		-		0.000	0.000	5.671	5.671
Systems Engineering-Prior Years	Various	Various : Various	3.612	0.000		0.000		7.000	Jun 2024	-		7.000	0.000	10.612	10.612
Systems Engineering	WR	Naval Research Lab : Washington DC	0.000	0.000		0.400	Dec 2022	0.408	Dec 2023	-		0.408	0.000	0.808	0.808
Systems Engineering	C/CPFF	Air Force Research Lab : Wright Patterson AFB, Ohio	0.000	0.000		0.250	Dec 2022	0.250	Dec 2023	-		0.500	0.000	0.500	0.500
Systems Engineering	C/CPFF	GE Aviation : Cincinnati, Ohio	0.000	0.000		0.750	Mar 2023	2.300	Dec 2023	-		2.300	0.000	3.050	3.050
Systems Engineering	C/CPFF	Creare : Hanover, NH	0.000	0.000		0.400	Nov 2022	0.000		-		0.000	0.000	0.400	0.400
Systems Engineering	C/CPFF	Vortex Controls Technologies : TBD	0.000	0.000		0.000		2.500	Mar 2024	-		2.500	0.000	2.500	2.500
		Subtotal	40.805	6.312		22.803		23.519		-		23.519	Continuing	Continuing	N/A

Remarks

5. All Prior Year lines have been consolidated.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation (DT&E)	WR	NAWCAD : Patuxent River, MD	7.536	0.201	Dec 2021	1.500	Dec 2022	3.000	Mar 2024	-		3.000	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy			Date: March 2023
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603724N / *Navy Energy Program*	Project (Number/Name) 0996 / *Aircraft Energy Conservation*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation (DT&E)	C/CPFF	Various : Various	4.740	0.000		0.000		2.000	Dec 2023	-		2.000	0.000	6.740	6.740
Prior Year Developmental Test & Evaluation Not Funded FYDP (PYDT&E)	Various	Various : Various	117.125	0.000		0.000		0.000		-		0.000	0.000	117.125	117.125
Developmental Test & Evaluation (DT&E)	WR	NSWC : Crane, IN	0.000	0.000		0.500	Dec 2022	0.500	Dec 2023	-		0.500	0.000	1.000	1.000
Developmental Test & Evaluation (DT&E)	C/CPFF	EIC Laboratories : Norwood, MA	0.000	0.000		0.750	Mar 2023	0.750	Mar 2024	-		0.750	0.000	1.500	1.500
		Subtotal	129.401	0.201		2.750		6.250		-		6.250	Continuing	Continuing	N/A

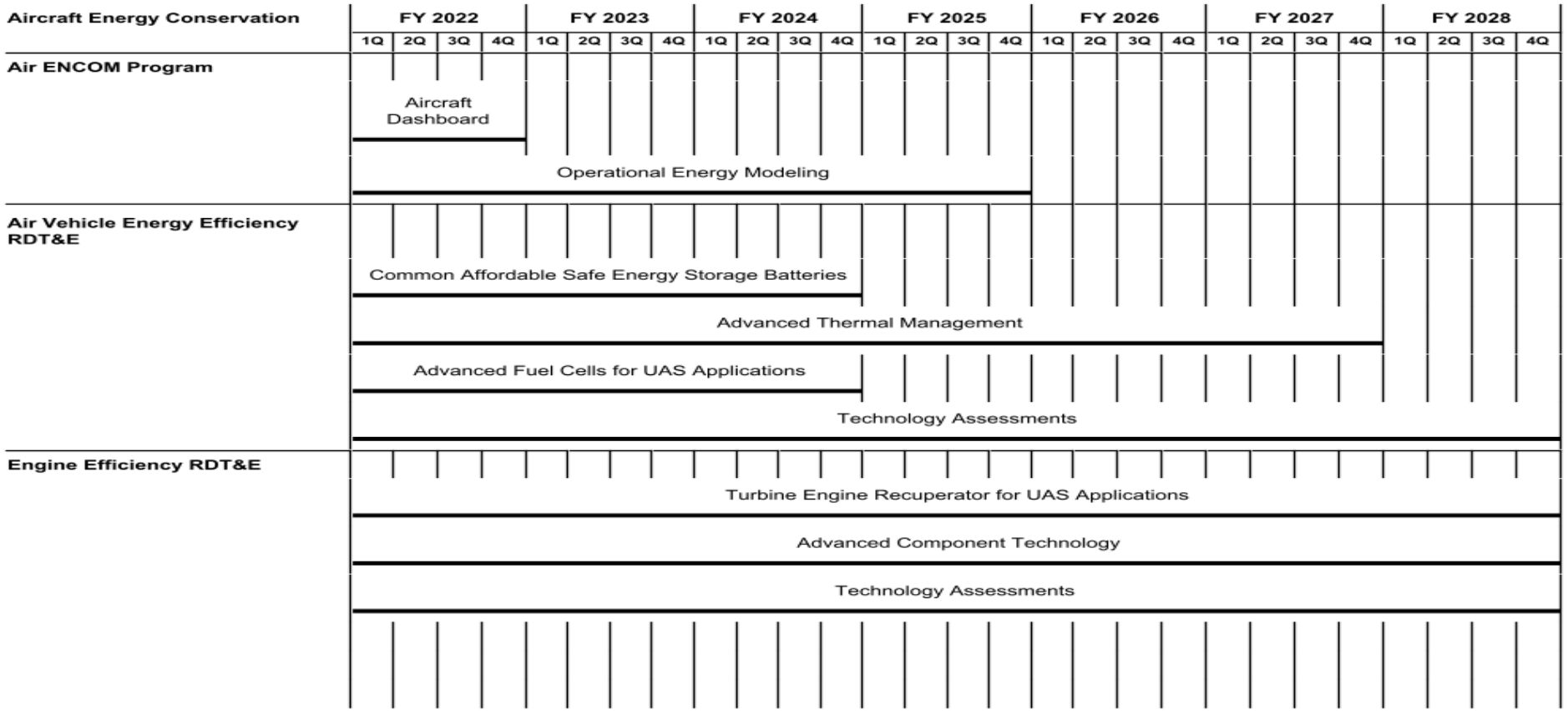
Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	WR	NAWCAD : Patuxent River, MD	2.925	0.350	Dec 2021	0.650	Dec 2022	0.650	Dec 2023	-		0.650	Continuing	Continuing	Continuing
Prog Mgnt no longer funded in the FYDP	Various	Various : Various	4.512	0.000		0.000		0.000		-		0.000	0.000	4.512	4.512
		Subtotal	7.437	0.350		0.650		0.650		-		0.650	Continuing	Continuing	N/A

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	177.643	6.863		26.203		30.419		-		30.419	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603724N / *Navy Energy Program*	**Project (Number/Name)** 0996 / *Aircraft Energy Conservation*



2024DON - 0603724N - 0996

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603724N / *Navy Energy Program*	**Project (Number/Name)** 0996 / *Aircraft Energy Conservation*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Aircraft Energy Conservation				
Air ENCOM Program: Aircraft Dashboard	1	2022	4	2022
Air ENCOM Program: Operational Energy Modeling	1	2022	4	2025
Air Vehicle Energy Efficiency RDT&E: Common Affordable Safe Energy Storage Batteries	1	2022	4	2024
Air Vehicle Energy Efficiency RDT&E: Advanced Thermal Management	1	2022	4	2027
Air Vehicle Energy Efficiency RDT&E: Advanced Fuel Cells for UAS Applications	1	2022	4	2024
Air Vehicle Energy Efficiency RDT&E: Air Vehicle Energy Technology Assessments	1	2022	4	2028
Engine Efficiency RDT&E: Turbine Engine Recuperator for UAS Applications	1	2022	4	2028
Engine Efficiency RDT&E: Advanced Engine Component Technology	1	2022	4	2028
Engine Efficiency RDT&E: Technology Assessments	1	2022	4	2028

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy											Date: March 2023	
Appropriation/Budget Activity 1319 / 4					R-1 Program Element (Number/Name) PE 0603724N / *Navy Energy Program*				Project (Number/Name) 2566 / *Battery Development and Safety*			
COST ($ in Millions)	**Prior Years**	**FY 2022**	**FY 2023**	**FY 2024 Base**	**FY 2024 OCO**	**FY 2024 Total**	**FY 2025**	**FY 2026**	**FY 2027**	**FY 2028**	**Cost To Complete**	**Total Cost**
2566: *Battery Development and Safety*	0.000	4.290	10.638	12.114	-	12.114	11.668	8.552	7.092	7.683	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

Provide Program Management Support for Battery Development and Safety program.

A. Mission Description and Budget Item Justification

1)Provide an advanced battery database with standard battery families for program offices to use to allow for selection of batteries early in the design process increasing the likelihood of design and fielding success, 2) leverage the battery database to begin common battery design efforts to save cost, 3) establish common battery standards and design requirements (e.g., propagation resistant designs, standard battery monitoring and casualty detection systems, etc.) to make advanced batteries safer and therefore deployable, 4) develop and test standard battery storage/container systems that can safely house batteries and withstand catastrophic failure (thermal runaway) of the batteries within the container while minimizing damage to surrounding equipment and platforms, 5) streamline the battery safety certification process especially for high energy storage magazines and other large battery designs (lasers) to allow
battery based weapon systems to be fielded in time to support strategic needs, 6) develop hazard mitigation technologies to support rapid safe deployment of advanced batteries to support weapon systems, 7) generate analytics that characterize the Department's current and projected energy/advanced battery needs, 8) establish the Navy's contribution to DoD and cross-service advanced battery supply chain efforts.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Title: Battery Development and Safety	4.290	10.638	12.114	0.000	12.114
Articles:	-	-	-	-	-
Description: Provide Program Management Support for Battery Development and Safety program.					
FY 2023 Plans: FY23 plans consist of the following actions: 1) Provide an advanced battery database with standard battery families for program offices to use to allow for selection of batteries early in the design process increasing the likelihood of design and fielding success 2) leverage the battery database to begin common battery design efforts to save cost 3) establish common battery standards and design requirements (e.g., propagation resistant designs, standard battery monitoring and casualty detection systems, etc.) to make advanced batteries safer and therefore deployable 4) develop and test standard battery storage/container systems that can safely house batteries and withstand catastrophic failure (thermal runaway) of the batteries within the container while minimizing damage to					

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603724N / *Navy Energy Program*	**Project (Number/Name)** 2566 / *Battery Development and Safety*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
surrounding equipment and platforms5) streamline the battery safety certification process especially for high energy storage magazines and other large battery designs (lasers) to allow battery based weapon systems to be fielded in time to support strategic needs, 6) develop hazard mitigation technologies to support rapid safe deployment of advanced batteries to support weapon systems, 7) generate analytics that characterize the Department's current and projected energy/advanced battery needs, 8) establish the Navy's contribution to DoD and cross-service advanced battery supply chain efforts. ***FY 2024 Base Plans:*** FY24 plans consist of the following actions: 1) streamline and accelerate the battery certification process through conducting an independent assessment of the process to inform process and capability improvements, 2) establish common battery standards and design requirements to make advanced batteries safer and affordable through commonality, 3) develop hazard mitigation technologies to support rapid safe deployment of advanced batteries to support weapon systems, 4) generate analytics that characterize the Department's current and projected energy/advanced battery needs, 5) establish the Navy's contribution to DoD and cross service advanced battery supply chain efforts, and 6) leverage and expand the battery database to begin common battery design efforts to save cost. 7) generate analytics that characterize the Department's current and projected energy/advanced battery needs, 8) establish the Navy's contribution to DoD and cross service advanced battery supply chain efforts. ***FY 2024 OCO Plans:*** N/A ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY24 increase ($1.476M) is due to addition of electric vehicle battery Jumpstart initiative.					
Accomplishments/Planned Programs Subtotals	4.290	10.638	12.114	0.000	12.114

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

RDT&E Contracts are Competitive Procurements.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy			Date: March 2023
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603724N / *Navy Energy Program*	Project (Number/Name) 2566 / *Battery Development and Safety*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
System Development	WR	NSWC PD : Philadelphia, PA	0.000	0.319	Apr 2022	0.931	Nov 2022	0.326	Nov 2023	-		0.326	Continuing	Continuing	Continuing
Primary Hardware Development	WR	NSWC CD : Bethesda, MD	0.000	0.418	Apr 2022	1.005	Nov 2022	0.326	Nov 2023	-		0.326	Continuing	Continuing	Continuing
Engineering Development	WR	NSWC CD : Bethesda, MD	0.000	0.091	Apr 2022	0.343	Nov 2022	0.305	Nov 2023	-		0.305	Continuing	Continuing	Continuing
Demonstration & Evaluation	WR	NSWC CD : Bethesda, MD	0.000	0.090	Apr 2022	0.343	Nov 2022	0.248	Nov 2023	-		0.248	Continuing	Continuing	Continuing
System Development	C/BOA	NAWC-AD : Lakehurst, NJ	0.000	0.166	May 2022	0.539	Nov 2022	0.106	Nov 2023	-		0.106	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC DD : Dahlgren, VA	0.000	0.158	Jan 2023	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Primary Hardware Development	WR	NSWC CR : Crane, Indiana	0.000	0.000		0.000		0.106	Nov 2023	-		0.106	0.000	0.106	-
Engineering Development	WR	NSWC CR : Crane, Indiana	0.000	0.000		0.000		0.234	Nov 2023	-		0.234	0.000	0.234	-
Demonstration and Evaluation	WR	NSWC CR : Crane, Indiana	0.000	0.000		0.000		0.094	Nov 2023	-		0.094	0.000	0.094	-
Engineering Development	MIPR	General Technical Services, LLC : Wall Township, NJ	0.000	0.000		0.000		1.517	Nov 2023	-		1.517	0.000	1.517	-
Primary Hardware Development	MIPR	ManTech International Corporation : Herndon, VA	0.000	0.000		0.000		1.732	Nov 2023	-		1.732	0.000	1.732	-
		Subtotal	0.000	1.242		3.161		4.994		-		4.994	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Support	WR	NSWC CD : Bethesda, MD	0.000	0.319	Apr 2022	0.931	Dec 2022	0.000		-		0.000	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy			Date: March 2023
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603724N / *Navy Energy Program*	Project (Number/Name) 2566 / *Battery Development and Safety*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Study Analysis	WR	NSWC CD : Bethesda, MD	0.000	0.476	Apr 2022	0.931	Nov 2022	0.362	Nov 2023	-		0.362	Continuing	Continuing	Continuing
Development Support	C/CPAF	NSWC PD : Philadelphia, PA	0.000	0.319	May 2022	0.931	Dec 2022	0.000		-		0.000	Continuing	Continuing	Continuing
Development Support	WR	NSWC PD : Philadelphia, PA	0.000	0.166	Apr 2022	0.587	Dec 2022	0.000		-		0.000	Continuing	Continuing	Continuing
Study Analysis	WR	NSWC CR : Crane, Indiana	0.000	0.000		0.000		0.819	Nov 2023	-		0.819	0.000	0.819	-
Study Analysis	MIPR	General Technical Services, LLC : Wall Township, NJ	0.000	0.000		0.000		1.618	Nov 2023	-		1.618	0.000	1.618	-
Study Analysis	MIPR	The MITRE Corporation : McLean, VA	0.000	0.000		0.000		0.306	Nov 2023	-		0.306	0.000	0.306	-
Development Support	MIPR	DTIC : Fort Belvior, VA	0.000	0.000		0.000		0.106	Nov 2023	-		0.106	0.000	0.106	-
		Subtotal	0.000	1.280		3.380		3.211		-		3.211	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation (DT&E)	WR	NSWC CD : Bethesda, MD	0.000	0.382	Apr 2022	0.823	Jan 2023	0.648	Nov 2023	-		0.648	Continuing	Continuing	Continuing
Operational Test & Evaluation (OT&E)	WR	NSWC CD : Bethesda, MD	0.000	0.318	Apr 2022	0.823	Jan 2023	0.648	Nov 2023	-		0.648	Continuing	Continuing	Continuing
Operational Test & Evaluation (OT&E)	WR	NAWC-AD : Paxtuxtent, MD	0.000	0.200	May 2022	0.500	Feb 2023	0.505	Nov 2023	-		0.505	Continuing	Continuing	Continuing
Operational Test & Evaluation (OT&E)	WR	NSWC CR : Crane, IN	0.000	0.200	Apr 2022	0.500	Nov 2022	0.476	Nov 2023	-		0.476	Continuing	Continuing	Continuing
Developmental Test & Evaluation (DT&E)	WR	NSWC CR : Crane, IN	0.000	0.434	Apr 2022	0.686	Nov 2022	0.477	Nov 2023	-		0.477	Continuing	Continuing	Continuing
		Subtotal	0.000	1.534		3.332		2.754		-		2.754	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy			Date: March 2023
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603724N / *Navy Energy Program*	Project (Number/Name) 2566 / *Battery Development and Safety*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	WR	NSWC PD : Philadelphia, PA	0.000	0.076	Apr 2022	0.196	Nov 2022	0.000		-		0.000	Continuing	Continuing	Continuing
Travel	Allot	NAVSEA HQ : Washington, DC	0.000	0.022	Apr 2022	0.059	Jan 2023	0.031	Nov 2023	-		0.031	Continuing	Continuing	Continuing
Total Assets	WR	NSWC CD : Bethesda, MD	0.000	0.090	Apr 2022	0.391	Feb 2023	0.000		-		0.000	Continuing	Continuing	Continuing
Program Management Support	WR	NSWC CD : Bethesda, MD	0.000	0.046	Apr 2022	0.119	Dec 2022	0.305	Nov 2023	-		0.305	Continuing	Continuing	Continuing
Program Management Support	C/CPFF	Serco Inc. : Herndon, VA	0.000	0.000		0.000		0.819	Nov 2023	-		0.819	0.000	0.819	-
		Subtotal	0.000	0.234		0.765		1.155		-		1.155	Continuing	Continuing	N/A

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	4.290		10.638		12.114		-		12.114	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603724N / *Navy Energy Program*	**Project (Number/Name)** 2566 / *Battery Development and Safety*

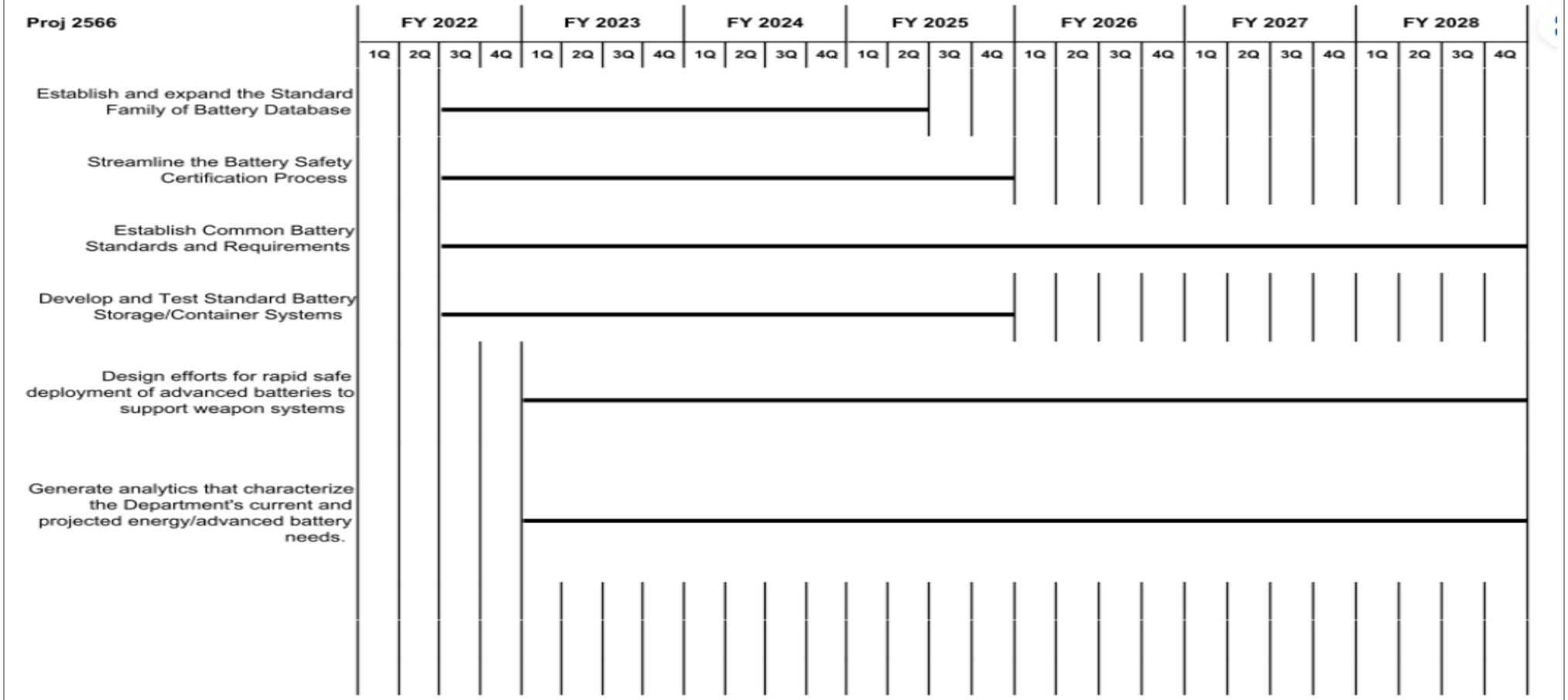


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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603724N / *Navy Energy Program*	**Project (Number/Name)** 2566 / *Battery Development and Safety*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2566				
Establish and expand the Standard Family of Battery Database:	3	2022	2	2025
Streamline the Battery Safety Certification Process:	3	2022	4	2025
Establish Common Battery Standards and Requirements:	3	2022	4	2028
Develop and Test Standard Battery Storage/Container Systems:	3	2022	4	2025
Design efforts for rapid safe deployment of advanced batteries to support weapon systems:	1	2023	4	2028
Generate analytics that characterize the Department's current and projected energy/ advanced battery needs.:	1	2023	4	2028

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy											Date: March 2023	
Appropriation/Budget Activity 1319 / 4				R-1 Program Element (Number/Name) PE 0603724N / *Navy Energy Program*			Project (Number/Name) 9999 / *Congressional Adds*					
COST ($ in Millions)	**Prior Years**	**FY 2022**	**FY 2023**	**FY 2024 Base**	**FY 2024 OCO**	**FY 2024 Total**	**FY 2025**	**FY 2026**	**FY 2027**	**FY 2028**	**Cost To Complete**	**Total Cost**
9999: *Congressional Adds*	117.904	33.295	15.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	166.199
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

C545 belongs to BSO52

A. Mission Description and Budget Item Justification

FY2023 Congressional Add ($10.000M) for C545 - Marine System Sensors Microgrids (BSO 52)
FY2023 Congressional Add ($5.000M) for C875 - Navy Energy Systems

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023
Congressional Add: Marine energy systems for sensors and microgrids ***FY 2022 Accomplishments:*** Commenced work on Marine energy systems for sensors and microgrids Congressional Add. ***FY 2023 Plans:*** N/A	10.136	10.000
Congressional Add: Navy energy program ***FY 2022 Accomplishments:*** NAVY ENERGY PROGRAM increases RDT&E investment to address challenges posed by contested logistics environments and energy supply chains to include fuels and energy storage, technologies for energy demand reduction, energy monitoring, and platform reach/endurance. ***FY 2023 Plans:*** N/A	14.471	0.000
Congressional Add: Cargo drone family of advanced batteries ***FY 2022 Accomplishments:*** Commenced work on Congressional Add for Cargo drone family of advanced batteries. ***FY 2023 Plans:*** N/A	8.688	0.000
Congressional Add: Navy energy systems ***FY 2022 Accomplishments:*** N/A ***FY 2023 Plans:*** Navy energy systems development.	0.000	5.000
Congressional Adds Subtotals	33.295	15.000

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603724N / *Navy Energy Program*	**Project (Number/Name)** 9999 / *Congressional Adds*

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

RDTEN Contracts are Competitive Procurements

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy			Date: March 2023
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603724N / *Navy Energy Program*	Project (Number/Name) 9999 / *Congressional Adds*	

Product Development ($ in Millions)

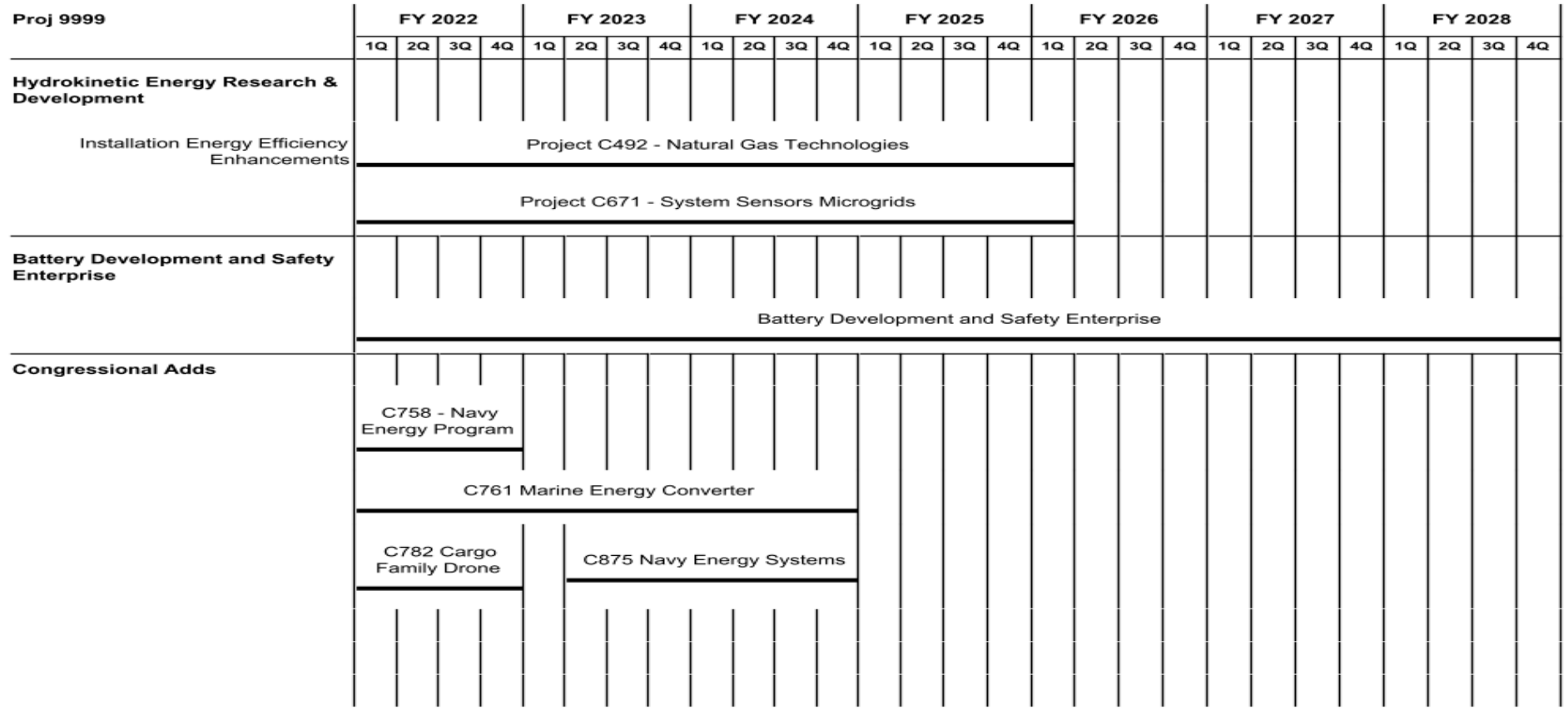
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior year Congressional Adds	Various	Various : Various	71.585	0.000		0.000		0.000		-		0.000	0.000	71.585	-
Battery Development and Safety Enterprise	TBD	TBD : TBD	28.319	0.000		0.000		0.000		-		0.000	0.000	28.319	-
C492 - Natural Gas Technologies	Various	EXWC : Port Hueneme, CA	7.500	0.000		0.000		0.000		-		0.000	0.000	7.500	-
C671 - System Sensors Microgrids	Various	EXWC : Port Hueneme, CA	10.500	0.000		0.000		0.000		-		0.000	0.000	10.500	-
C758 - Navy Energy Program	Various	TBD : TBD	0.000	7.116	Sep 2022	0.000		0.000		-		0.000	0.000	7.116	-
C782-Cargo Family Drone Battery	WR	NAWC/AD : Pax River, MD	0.000	1.500	Apr 2022	0.000		0.000		-		0.000	0.000	1.500	-
C545 - Marine Energy Converters	Various	TBD : TBD	0.000	10.136	Aug 2022	10.000	Aug 2023	0.000		-		0.000	0.000	20.136	-
C782-Cargo Family Drone Battery	SS/BA	Packet Digital : ND	0.000	7.188	Jul 2022	0.000		0.000		-		0.000	0.000	7.188	-
C758 - Navy Energy Program H2 Stalker Increment	Various	Various : Various	0.000	2.625	Jul 2022	0.000		0.000		-		0.000	0.000	2.625	-
C758- Navy Energy Program CH-53K Hybrid Inlet	Various	various : various	0.000	2.600	Jun 2022	0.000		0.000		-		0.000	0.000	2.600	-
C758 - Navy Energy Program Improved Lith. Battery SOC,SOH	Various	various : various	0.000	0.260	Aug 2022	0.000		0.000		-		0.000	0.000	0.260	-
C758 - Navy Energy Program Drouge Stabilization	Various	various : various	0.000	1.870	Jul 2022	0.000		0.000		-		0.000	0.000	1.870	-
C875 Navy Energy Systems	Various	various : varous	0.000	0.000		5.000	Sep 2024	0.000		-		0.000	0.000	5.000	-
		Subtotal	117.904	33.295		15.000		0.000		-		0.000	0.000	166.199	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy			Date: March 2023
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603724N / *Navy Energy Program*	Project (Number/Name) 9999 / *Congressional Adds*	

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	117.904	33.295		15.000		0.000		-		0.000	0.000	166.199	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603724N / *Navy Energy Program*	**Project (Number/Name)** 9999 / *Congressional Adds*



2024PB - 0603724N - 9999

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603724N / *Navy Energy Program*	**Project (Number/Name)** 9999 / *Congressional Adds*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 9999				
Hydrokinetic Energy Research & Development: Installation Energy Efficiency Enhancements: Project C492 - Natural Gas Technologies	1	2022	1	2026
Hydrokinetic Energy Research & Development: Installation Energy Efficiency Enhancements: Project C671 - System Sensors Microgrids	1	2022	1	2026
Battery Development and Safety Enterprise: Battery Development and Safety Enterprise	1	2022	4	2028
Congressional Adds: C758 - Navy Energy Program	1	2022	4	2022
Congressional Adds: C545 Marine Energy Converter	1	2022	4	2024
Congressional Adds: C782 Cargo Family Drone Battery	1	2022	4	2022
Congressional Adds: C875 Navy Energy Systems	2	2023	4	2024