Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Navy											Date: March 2014	
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 2013**	**FY 2014**	**FY 2015 Base**	**FY 2015 OCO #**	**FY 2015 Total**	**FY 2016**	**FY 2017**	**FY 2018**	**FY 2019**	**Cost To Complete**	**Total Cost**
Total Program Element	115.722	85.577	45.618	69.415	-	69.415	57.021	54.387	50.024	51.066	Continuing	Continuing
0829.: *ENERGY CONSERVATION (ADV)*	27.867	8.001	7.695	17.755	-	17.755	12.597	14.656	11.883	12.176	Continuing	Continuing
0838: *Mobility Fuels (ADV)*	37.425	9.922	7.649	11.690	-	11.690	14.616	11.873	12.015	12.251	Continuing	Continuing
0928: *Directed Energy Research*	26.808	13.822	1.870	7.292	-	7.292	2.414	1.656	1.680	1.738	Continuing	Continuing
0996: *Aircraft Energy Conservation*	23.622	17.167	28.404	32.678	-	32.678	27.394	26.202	24.446	24.901	Continuing	Continuing
9999: *Congressional Adds*	0.000	36.665	-	-	-	-	-	-	-	-	-	36.665

The FY 2015 OCO Request will be submitted at a later date.

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 2015 Navy	Date: March 2014
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 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	55.324	45.618	93.836	-	93.836
Current President's Budget	85.577	45.618	69.415	-	69.415
Total Adjustments	30.253	-	-24.421	-	-24.421
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-2.286	-			
• Program Adjustments	-	-	-5.169	-	-5.169
• Rate/Misc Adjustments	-	-	-19.252	-	-19.252
• Congressional General Reductions Adjustments	-7.461	-	-	-	-
• Congressional Add Adjustments	40.000	-	-	-	-

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2013	FY 2014
Project: 9999: *Congressional Adds*		
Congressional Add: *Alternative Energy Initiatives*	36.665	-
Congressional Add Subtotals for Project: 9999	36.665	-
Congressional Add Totals for all Projects	36.665	-

Change Summary Explanation

Technical: Not applicable.

Schedule:

0838 -Generation 4 Protocol Development added to ensure that test protocols maximize lessons learned as efficiently as possible, they are planned to be updated periodically as testing is completed. Advanced BioFuel Lab/Rig Testing extended to 4Qtr 2016. Additional promising production processes have been identified since the last exhibit revision, and fuel for these processes will not be available until 2016. The Generation 3 Protocol Development and the Advanced Biofuel Hardware Testing are delayed until 1QTR FY16. The Generation 4 Protocol Development will be delayed until 1QTR FY18.

Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Navy	Date: March 2014
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*

0996 - Mission Planning Upgrades schedule was extended to 4Qtr 2019. The program office has identified, through an industry white paper, a potential advanced mission planning technology that was incorporated into the program plan after subject matter expert review. The extension will allow the development and validation of the advanced mission planning technology within the current program.

Exhibit R-2A, RDT&E Project Justification: PB 2015 Navy			Date: March 2014
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 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
0829.: *ENERGY CONSERVATION (ADV)*	27.867	8.001	7.695	17.755	-	17.755	12.597	14.656	11.883	12.176	Continuing	Continuing
Quantity of RDT&E Articles	0.000	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

The Energy Conservation Advanced Project is designed to develop and implement energy and maintenance saving improvements into existing Fleet assets. The aircraft energy conservation project identifies, evaluates, and implements energy savings initiatives for potential implementation into Naval aircraft. The objective of the project is to engage technical experts from across Naval aviation, industry, and academia to identify mature potential energy saving opportunities and determine the technical and fiscal viability of implementing them in existing aircraft platforms.

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The Energy Conversation Advanced Project is designed to develop and implement energy and maintenance saving improvements into existing Fleet assets. This energy conservation project, managed through NAVSEA 05T, will identify mature potential energy saving areas, by involvement with Fleet representatives, Life-Cycle Managers (LCMs), NAVSEA Technical Warrant Holders, In-Service Engineering Agents (ISEAs), PEOs, TMA/TMI, Industry, and Academia. The project directly supports SECNAV and CNO goals to reduce energy consumption. Potential technology target areas will include: Power Generation and Storage systems, Hull Hydrodynamics, Underwater Hull Husbandry, Heating, Ventilation & Air Conditioning (HVAC) Systems, Thermal Management, Man Propulsion Systems, Electrical Systems, Auxiliary Systems, and Energy Monitoring & Assessment.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2013	FY 2014	FY 2015
Title: Power Generation and Storage Project	0.724	0.925	1.664
Articles:	-	-	-
Description: Power Generation & Storage System Sub Project - This project area will accomplish prototype development, laboratory and Fleet testing to determine overall mission and cost effectiveness of energy conservation technologies these improvements.			
FY 2013 Accomplishments: Completed Land based testing of Energy Storage Module (ESM). Identified new fuel saving technology for LPD 17 Diesel engines and prepared proposal and Business Case Analyses aimed at reducing fossil fuel consumption.			
FY 2014 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2015 Navy		Date: March 2014
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 2013	FY 2014	FY 2015
Prepare final report of Land Based Testing for ESM. Continue to identify new fuel saving technologies in Power Generation & Storage for Gas Turbine, Diesel and Steam ships. Prepare proposals and Business Case Analyses for promising technologies with potential to reduce fossil fuel consumption. ***FY 2015 Plans:*** Based on evaluation of potential energy conservation initiatives initiate tasking to test and evaluate improvements to LPD 17 Ship Service Diesel Generators. Continue to identify new fuel saving technologies in Power Generation & Storage for Gas Turbine, Diesel and Steam ships. Prepare proposals and Business Case Analyses for promising technologies with potential to reduce fossil fuel consumption.			
Title: Hull Hydrodynamic Sub Project	1.808	1.725	1.357
Articles:	-	-	-
Description: (U) Hull Hydrodynamic Sub Project - This project area will accomplish prototype development, modeling, laboratory and Fleet testing of ship modifications to propellers such as fouling release coatings and/or hull appendages to determine overall mission and cost effectiveness of these improvements. ***FY 2013 Accomplishments:*** Completed model testing on bow bulb design; prepared risk analysis, identified ship, initiated preparation of ship installation drawings and Ship Change documents as required for installation of Proof of Concept on a DDG Hull. Continued support for installation of improved steering modifications to LHD 2 for evaluation and test. Continue to identify additional fuel saving technologies in Hull Hydrodynamic systems and prepare proposals and Business Case Analyses for promising technologies with potential to reduce fossil fuel consumption. ***FY 2014 Plans:*** Install bow bulb on selected DDG 51 class ship for test and evaluation, conduct pre-installation sea trials to capture baseline performance data. Conduct post installation sea trial of improved steering modifications to LHD 2 and prepare preliminary and final report of performance. Continue to identify additional fuel saving technologies in Hull Hydrodynamic systems and prepare proposals and Business Case Analyses for promising technologies with potential to reduce fossil fuel consumption. ***FY 2015 Plans:*** Conduct post-installation sea trial, analyze data and prepare preliminary and final report of Bow Bulb installation on DDG 51 Class ship. Continue to identify additional fuel saving technologies in Hull Hydrodynamic systems and prepare proposals and Business Case Analyses for promising technologies with potential to reduce fossil fuel consumption.			
Title: Hull Husbandry Sub Project	0.481	0.994	0.300
Articles:	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2015 Navy		Date: March 2014
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 2013	FY 2014	FY 2015
Description: (U) Hull Husbandry Sub Project - Project funds will be utilized to identify and evaluate new underwater hull coating systems and underwater hull cleaning and maintenance techniques to reduce hydrodynamic drag on the hull and thereby increase fuel efficiency. ***FY 2013 Accomplishments:*** Developed approaches to monitor performance of hull and propeller coatings with focus on determining when ships are operating in a fuel penalty condition due to hull or propeller roughness conditions. Conducted visits to ship homeports to assess propeller fouling conditions pre and post deployment, captured data for analysis and reporting, developed modeling of fouling conditions, developing quick look report of preliminary results. Continue to identify new fuel saving initiatives in Hull Husbandry and prepare proposals and Business Case Analyses for promising technologies with potential to reduce fossil fuel consumption. ***FY 2014 Plans:*** Conduct model testing as required and ship installation for test and evaluation of identified hull/propeller modifications or monitoring approaches with objective to measure fuel savings. Continue to identify new fuel saving initiatives in Hull Husbandry and prepare proposals and Business Case Analyses for promising technologies with potential to reduce fossil fuel consumption. ***FY 2015 Plans:*** Continue to identify new fuel saving initiatives in Hull Husbandry and prepare proposals and Business Case Analyses for promising technologies with potential to reduce fossil fuel consumption.			
Title: Heating , Ventilation and Air Conditioning (HVAC) Sub Project	1.283	0.791	2.675
Articles:	-	-	-
Description: (U) HVAC Sub Project - Project funds will be utilized to accomplish prototype development, land and shipboard testing to determine cost effectiveness of improvements aimed at more efficient climate control of shipboard spaces. ***FY 2013 Accomplishments:*** Completed prototype installation of Thermal Management Control System (TMCS) on USS KIDD, completed test and evaluation of installed system, and delivered preliminary report of performance. Prepared TMCS proposals for other classes of ships and continued to identify additional fuel saving technologies in HVAC Systems. ***FY 2014 Plans:*** Based on merits of TMCS improvement proposal evaluations on DDG 51 Class ships initiate tasking for test and evaluation of TMCS for LHD class ships. Continue to identify additional fuel saving technologies in HVAC Systems and prepare proposals and Business Case Analyses for promising technologies with potential to reduce fossil fuel. ***FY 2015 Plans:***			

Exhibit R-2A, RDT&E Project Justification: PB 2015 Navy		Date: March 2014
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 2013	FY 2014	FY 2015
Continue FY14 tasking to install, test and evaluate a TMCS on LHD Class ship and report results. Initiate tasking for test and evaluation of Air Conditioning (AC) Plant improvements on DDG 51 Class ships. Conduct engineering design, material procurement and laboratory testing of prototype system for ship installations in FY17. Continue to identify additional fuel saving technologies in HVAC Systems and prepare proposals and Business Case Analyses for promising technologies with potential to reduce fossil fuel.			
Title: Thermal Management Sub Project ***Articles:*** ***Description:*** (U) Thermal Management Sub Project - Project funds will be utilized to identify and evaluate potential uses for Thermal Management techniques designed to reduce overall shipboard heat generation and reduce the shipboard electrical demand on HVAC systems. ***FY 2013 Accomplishments:*** Continued to identify additional fuel saving technologies in Thermal Management that may be applicable to navy ships. Examined potential improvements to thermal properties of topside and non-skid coatings with aim of increasing heat reflective properties and reducing ships internal space temperatures. Prepared proposals and Business Case Analyses for promising technologies with potential to reduce fossil fuel consumption. ***FY 2014 Plans:*** Continue to identify additional fuel saving technologies in Thermal Management that may be applicable to Navy ships. Prepare proposals and Business Case Analyses for promising technologies with potential to reduce fossil fuel consumption. ***FY 2015 Plans:*** Pursue lab and shipboard testing of identified thermal management/heat recovery technologies. Continue to identify additional fuel saving technologies in Thermal Management that may be applicable to Navy ships. Prepare proposals and Business Case Analyses for promising technologies with potential to reduce fossil fuel consumption.	0.100 -	0.100 -	0.100 -
Title: Propulsion Systems Sub Project ***Articles:*** ***Description:*** (U) Propulsion Systems Sub Project - Project funds will be utilized to identify requirements and perform land based and shipboard testing of ship propulsion system improvements on Gas Turbine, Steam, and Diesel Engine systems to reduce overall fuel consumption and lower maintenance costs. ***FY 2013 Accomplishments:*** Installed and activated Shipboard Energy Dashboards (SED) Proof of Concept (PoC) on six DDG 51 Flight IIA hulls for evaluation. Energy performance data on the test ships was being captured for main propulsion fuel usage and a draft report was issued in April 13. Final report was issued 17 Jan 2013. Conducted gap analysis for SED applications for other classes of ships and	1.750 -	1.400 -	0.885 -

Exhibit R-2A, RDT&E Project Justification: PB 2015 Navy		Date: March 2014
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 2013	FY 2014	FY 2015
identified DDG 51 Flight I and LPD 17 Classes as next to pursue. Continue to identify additional fuel saving technologies in Propulsion Systems and prepare proposals and Business Case Analyses for promising technologies with potential to reduce fossil fuel consumption. ***FY 2014 Plans:*** Based on engineering analyses in FY13 of SED, and determination of actions for other classes of ships; develop plan of action to test and evaluate SED on at least one ship of each identified class. Develop necessary documentation for installation and test of SED based on ships' availability. Monitor performance and prepare reports to evaluate effectiveness in providing ships force with actionable data to operate ships in energy efficient manner based on mission requirements. ***FY 2015 Plans:*** Based on review of Business Case Analyses initiate test and evaluation of Variable Speed Drive (VSD) improvements to propulsion system components. Continue to identify additional fuel saving technologies in Propulsion Systems and prepare proposals and Business Case Analyses for promising technologies with potential to reduce fossil fuel consumption.			
Title: Electrical Systems SubProject ***Articles:*** ***Description:*** Electrical Systems Sub Project - Project funds will be utilized to identify and perform land based and shipboard testing of ship electrical system improvements to reduce energy consumption. ***FY 2013 Accomplishments:*** Prepared necessary documentation for land based and shipboard testing and evaluation of: Variable Speed Drives (VSD) for DDG 51 Class Collective Protective System (CPS), VSD for the Port Use Fan (PUF) on LHD 1, and Shipboard Energy Dashboard (SED) on DDG 51 Flight IIA class ships. Planning to install VSD/CPS on a DDG 51 class hull by the end of FY13, pending ship availability. Installed VSDs for PUF on LHD 1 for evaluation and activated Shipboard Energy Dashboard (SED) Proof of Concept (PoC) on six DDG Flight IIA hulls for evaluation. Energy performance data on the test ships is being captured for electric plant energy usage and a draft report was issued in April 13. Conducted gap analysis for SED applications for other classes of ships and identified DDG 51 Flight I and LPD 17 Classes as next to pursue. Continue to identify additional fuel saving technologies in Electrical Systems and prepare proposals and Business Case Analyses for promising technologies with potential to reduce fossil fuel consumption. ***FY 2014 Plans:*** Monitor performance of installed electric plant initiatives, analyze data and prepare reports. Continue SED efforts to monitor and display energy consumption data to ships' force personnel for fossil fuel ships, identify additional fuel saving technologies in	1.855 -	1.760 -	3.201 -

Exhibit R-2A, RDT&E Project Justification: PB 2015 Navy		Date: March 2014
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 2013	FY 2014	FY 2015
Electrical Systems and prepare proposals and Business Case Analyses for promising technologies with potential to reduce fossil fuel consumption. ***FY 2015 Plans:*** Based on review of Business Case Analysis Proposals initiate tasking to design test and evaluate fuel saving initiatives for electrical systems such as Main Space Ventilation Fans for LHD 1 class ships and Fan Coil Assembly improvements to DDG 51 class ships. Continue to identify additional fuel saving technologies in Electrical Systems and prepare proposals and Business Case Analyses for promising technologies with potential to reduce fossil fuel consumption.			
Title: Auxiliary Systems Sub Project	-	-	1.134
Articles:	-	-	-
Description: Auxiliary Systems Sub Project -- Project funds will be utilized to identify, test and evaluate new technologies for shipboard auxiliary systems aimed at reducing fuel consumption. ***FY 2013 Accomplishments:*** N/A ***FY 2014 Plans:*** N/A ***FY 2015 Plans:*** Project funds will be utilized to identify, test and evaluate new technologies for shipboard auxiliary systems aimed at reducing fuel consumption. Based on Business Case Analyses, auxiliary improvements to systems such as Advanced Reverse Osmosis (RO), High Pressure Compressed Air and Low Pressure Compressed Air will be initiated. Continue to identify additional fuel saving technologies in Electrical Systems and prepare proposals and Business Case Analyses for promising technologies with potential to reduce fossil fuel consumption.			
Title: Energy Monitoring & Assessment	-	-	6.439
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. ***FY 2013 Accomplishments:*** N/A ***FY 2014 Plans:***			

Exhibit R-2A, RDT&E Project Justification: PB 2015 Navy		Date: March 2014
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 2013	FY 2014	FY 2015
N/A ***FY 2015 Plans:*** Expand SED efforts to additional ship systems identified by Fleet and other ship classes, LSD, LCS, etc. as applicable based on gap analysis data. Install monitoring capability for evaluation. Investigate methods to capture and display hull fuel penalty conditions relating to hull and propeller fouling, and feed information to SED and other reporting systems to measure ship energy performance. Continue to identify additional fuel saving technologies and monitoring methodologies and prepare proposals and Business Case Analyses for promising technologies with potential to reduce fossil fuel consumption.			
Accomplishments/Planned Programs Subtotals	8.001	7.695	17.755

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

This is a non-acquisition program that develops, evaluates, and validates mature technologies in support of Fleet fuel and maintenance savings.
RDT&E Contracts are Competitive Procurements.

E. Performance Metrics

Actual performance of energy conservation initiatives are measured against initially projected fuel savings measured in barrels of fuel saved based on aircraft and ship demonstration testing.
Quarterly Program Reviews

Exhibit R-2A, RDT&E Project Justification: PB 2015 Navy			Date: March 2014
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 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
0838: *Mobility Fuels (ADV)*	37.425	9.922	7.649	11.690	-	11.690	14.616	11.873	12.015	12.251	Continuing	Continuing
Quantity of RDT&E Articles	0.000	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

This project provides data through laboratory, component, engine, fuel system, and weapon system tests, which relate the effects of changes in the Navy fuel procurement specification properties and chemistries to the performance and reliability of Naval ship, aircraft, and fuel distribution systems. The information is required to: (a) develop, validate, and execute the test protocols necessary to approve fuels from non-petroleum feedstocks, (b) determine the extent to which unnecessarily restrictive 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 commercial grade fuels when military specifications are unavailable or in short supply, (d) technically justify changes to fuel specifications to ensure fuel quality and avoid fleet operating problems while accommodating evolutionary changes in fuel supply, and (e) improve capability to provide fuel quality surveillance in the field. Continued volatility and rapid escalation of the cost of fuel have placed additional pressures on Navy budgets responsible for maintaining and sustaining the Navy tactical fleet both now and in the future. These pressures have placed an added emphasis on the potential use of lower cost commercial fuels and/or fuels derived from non-petroleum sources as a potential means of stabilizing the current and anticipated price volatility. Recent problems with petroleum-based fuel quality have demonstrated the adverse effects that fuel-related problems can have on ship and aircraft system performance, reliability, and readiness. The program addresses readiness, additional maintenance costs, and the cost of lost equipment. The potential risk of fuel-related problems over the next decade, given the unknown supply, feedstocks, and the introduction of new theaters of operation, will continue to increase.

This project represents the Navy's only investment designed to maintain its capability to operate as a "smart" customer for fuels that cost over $4.0B per year for procurement, transport, storage, and consumption, and are essential to fleet operations. Additionally, it is the Navy's only investment in the approval of alternative fuels for tactical applications and directly supports the Navy's energy goals of increased energy security and environmental stewardship.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2013	FY 2014	FY 2015
Title: Naval Tactical Fuels	9.922	7.649	11.690
Articles:	-	-	-
Description: Perform development, test and evaluation work on Naval tactical fuels to: a) determine the extent to which unnecessarily restrictive specification features can be relaxed to reduce cost and increase availability worldwide; b) provide guidance and approval to fleet operators for the safe use of military aircraft that include new additives or are derived from non-petroleum sources; c) make needed periodic changes to the fuel specifications to ensure fuel quality and avoid fleet operating problems while accommodating evolutionary changes in the fuel supply industry and d) improve fleet methods to ensure fuel quality.			
FY 2013 Accomplishments:			

Exhibit R-2A, RDT&E Project Justification: PB 2015 Navy		Date: March 2014
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 2013	FY 2014	FY 2015
Continued rig and propulsion system testing on aircraft and ship biofuels blends containing greater than 50% bio-derived components. Initiated ship and aircraft trials on biofuel blends containing greater than 50% bio-derived components. Initiated laboratory and rig testing on promising advanced biofuel production pathway fuels. The JP-5 jet fuel specification was updated to include allowance for hydro-processed fatty acid esters and fatty acids (HEFA) and Fischer Tropsch (FT) fuels, and all testing to qualify hydro-treated renewable diesel fuel was completed. ***FY 2014 Plans:*** Expand the list of qualified renewable sources/production pathways for inclusion into the JP-5 and F-76 specifications. Complete hardware testing on direct sugar-to-hydrocarbon and biomass-to-alcohol-to-jet production pathways. Continue laboratory and rig testing, and begin component testing on advanced biofuel production pathway. Evaluate impact of increased use of commercial shipboard propulsion fuel. Evaluate impact on Navy operations of government regulations requiring mandatory addition of fatty acid methyl ester into commercial diesel fuel. ***FY 2015 Plans:*** Continue to expand list of qualified renewable sources/production pathways for inclusion into JP-5 and F-76 specifications. Conduct hardware testing on hydroprocessed depolymerized cellulosic. Continue testing on advanced production pathways.			
Accomplishments/Planned Programs Subtotals	9.922	7.649	11.690

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Alternative Fuel Efforts including testing and fuel procurement efforts will be competitively contracted, and performed under Cost Plus Fixed Fee and Firm Fixed Price contracts.

E. Performance Metrics

Program will develop Alternate Fuel test and certification protocols for 100% of all Naval aircraft and ships. Program will evaluate biofuels, biofuel chemistry and components tests as defined in test and certification protocols.

Exhibit R-4, RDT&E Schedule Profile: PB 2015 Navy		Date: March 2014
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603724N / *Navy Energy Program*	**Project (Number/Name)** 0838 / *Mobility Fuels (ADV)*

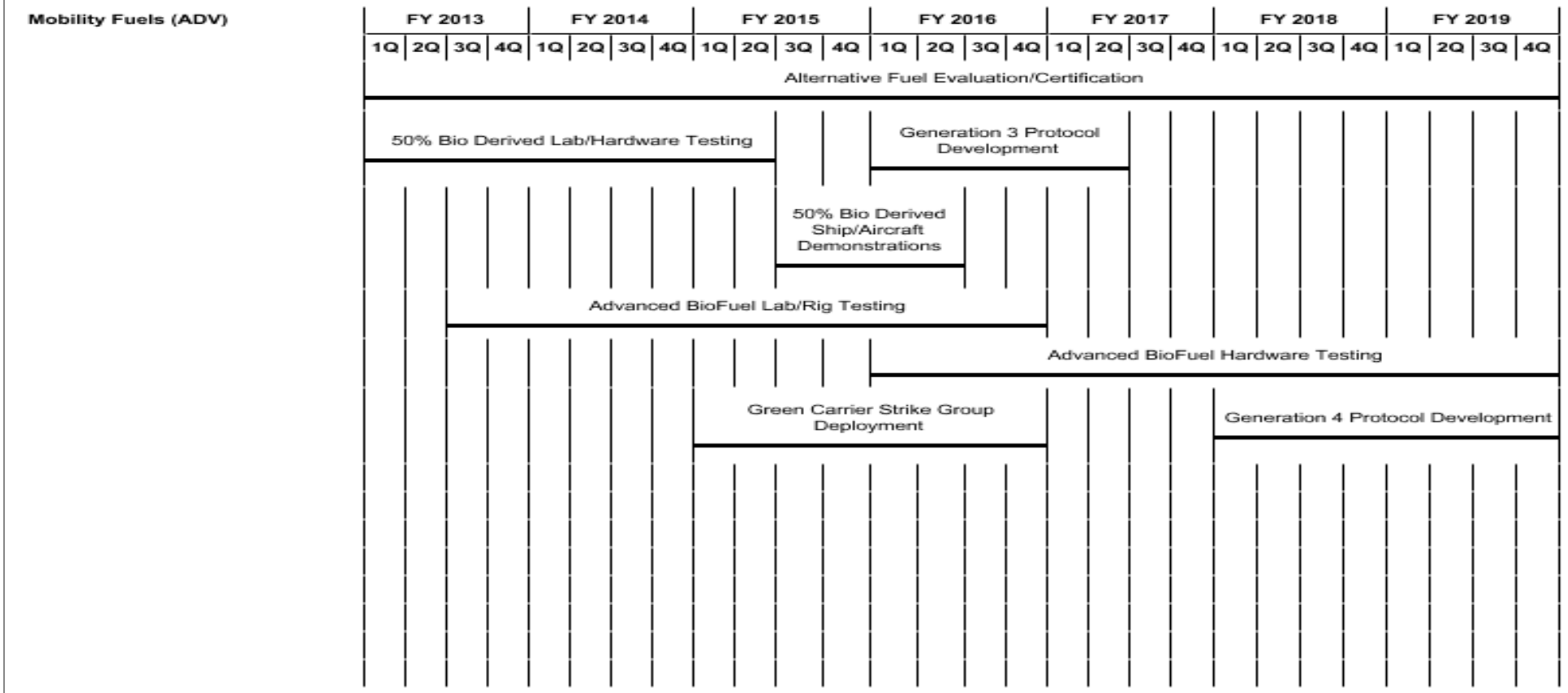

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Navy											Date: March 2014	
Appropriation/Budget Activity 1319 / 4					R-1 Program Element (Number/Name) PE 0603724N / *Navy Energy Program*				Project (Number/Name) 0928 / *Directed Energy Research*			
COST ($ in Millions)	**Prior Years**	**FY 2013**	**FY 2014**	**FY 2015 Base**	**FY 2015 OCO #**	**FY 2015 Total**	**FY 2016**	**FY 2017**	**FY 2018**	**FY 2019**	**Cost To Complete**	**Total Cost**
0928: *Directed Energy Research*	26.808	13.822	1.870	7.292	-	7.292	2.414	1.656	1.680	1.738	Continuing	Continuing
Quantity of RDT&E Articles	0.000	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

Legislation, Executive Orders (EO), and SECNAV Guidance direct DoN to reduce fossil fuel use and increase renewable energy use. This guidance includes the Energy Policy Act of 2005, which directs agencies to reduce energy intensity 30% by 2015, the National Defense Authorization Act of 2010, which directs DOD to source 25% of its energy from renewable sources by 2025, EO13514, which directs DOD to reduce greenhouse gas emissions by 2020, and SECNAV energy goals, which direct that 50% of DoN's energy come from alternative sources by 2020. Further, studies by the Defense Science Board and others have stressed the dangerous reliance of DOD on vulnerable grid power and unreliable imported oil. Currently, the Navy has limited options for producing energy from renewable sources. Private industry and other federal agencies are developing and testing new technologies. Renewable energy from the ocean such as wave, sea water air conditioning, tidal energy, outer continental shelf wind development, ammonia production and utilization, vortex induced vibration marine hydrokinetic, and compressed air storage for ocean energy, among other technologies have potential to alleviate current Navy island installation dependence on fossil fuel, at comparable costs to projected fossil energy sources. Also, advanced energy management systems have potential to increase installation energy security and enable broader use of renewable energy sources.

This Energy RDT&E Project will test, evaluate, and validate components as well as demonstrate cost-effective and technical viability of energy efficiency and renewable energy, energy storage and Alternative Fuel Vehicle prototypes. 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) Renewable Energy to support feasibility evaluation, modeling and possible prototype testing of new energy sources for use at Naval installations with potential for widespread applicability to energy security and renewable energy requirements. Other renewable sources for evaluation, modeling and possible prototype testing may include energy storage (dead-ended fuel cell, zinc air battery, etc.), facility level concentrating solar power, next generation solar heat reflective film, plasma lighting for high wattage applications, micro-inverters for photo-voltaic storage, building level micro-grid, new generation waste heat capture, and other technologies; (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, Sustainable Building Features, Alternative Fuel Vehicles, and Smart Energy Management Technology: This project will support the testing, demonstration, validation, and application of innovative facility energy efficiency and alternative energy technology.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2013	FY 2014	FY 2015
Title: Directed Energy Research	13.822	1.870	7.292
Articles:	-	-	-
FY 2013 Accomplishments: Performing component testing and prototype development and deployment for alternative energy and advanced grid management technology at Naval installations as follows: - Evaluation of environmental impacts of ocean renewable energy generation systems			

Exhibit R-2A, RDT&E Project Justification: PB 2015 Navy		Date: March 2014
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603724N / *Navy Energy Program*	**Project (Number/Name)** 0928 / *Directed Energy Research*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2013	FY 2014	FY 2015
- Developing, evaluating, and begin installation of supporting equipment for validation of ocean renewable energy generation components and prototypes - Evaluation, and planning for outer continental shelf wind, photovoltaic, ocean compressed air storage and other promising technologies - Demonstration, testing, deployment, and evaluation of smart energy management technology, - Demonstration and validation of mature technologies to be transitioned such as advanced, sustainable building technologies, solar PV collection technologies, alternative fuel vehicles, and improved energy storage systems at Naval installations			
FY 2014 Plans: Perform component testing and prototype development and deployment for alternative energy and advanced lighting grid management technology at Naval installations as follows: - Evaluation of environmental impacts of ocean renewable energy generation systems - Evaluating and testing Wave Energy Systems - Begin development of technical specifications and acquisition strategies for wave energy systems - Evaluation, and planning for outer continental shelf wind, photovoltaic, ocean compressed air storage and other promising technologies - Demonstration, testing, deployment, and evaluation of smart energy management technology, and begin development of technical specifications - Demonstration and validation of mature technologies to be transitioned such as advanced lighting, sustainable building technologies, solar PV collection technologies, alternative fuel vehicles, and improved energy storage systems at Naval installations In FY14 we will continue component testing and prototype development and deployment for alternative energy and advanced lighting grid management technology at Naval installations that were started in FY12 and FY13. The plan is to complete and begin transitioning some of the technologies initiated in FY12 and FY13.			
FY 2015 Plans: Perform component testing and prototype development and deployment for alternative energy and advanced lighting grid management technology at Naval installations as follows: - Evaluation of environmental impacts of ocean renewable energy generation systems - Evaluating and testing Wave Energy Systems - Begin development of technical specifications and acquisition strategies for wave energy systems - Evaluation, and planning for outer continental shelf wind, photovoltaic, ocean compressed air storage and other promising technologies - Demonstration, testing, deployment, and evaluation of smart energy management technology, and begin development of technical specifications			

Exhibit R-2A, RDT&E Project Justification: PB 2015 Navy		Date: March 2014
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603724N / *Navy Energy Program*	**Project (Number/Name)** 0928 / *Directed Energy Research*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2013	FY 2014	FY 2015
- Demonstration and validation of mature technologies to be transitioned such as advanced lighting, sustainable building technologies, solar PV collection technologies, alternative fuel vehicles, and improved energy storage systems at Naval installations The FY15 plan includes: - Initiate evaluation, and planning for outer continental shelf wind, and ocean compressed air storage and other promising technologies - Continue and expand demonstration, testing, deployment, and evaluation of smart energy and micro-grid management technology; and begin development of technical specifications - Continue and expand demonstration and validation of mature technologies to be transitioned such as sustainable building technologies, alternative fuel vehicles, and improved energy storage systems and integration at Naval installations			
Accomplishments/Planned Programs Subtotals	13.822	1.870	7.292

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.

E. Performance Metrics

The program will be coordinated across DOD and with other agencies as appropriate to achieve 30% Energy Intensity Reduction by FY2015 and 25% Renewable Energy Increase by 2025.

Exhibit R-2A, RDT&E Project Justification: PB 2015 Navy											Date: March 2014	
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 2013**	**FY 2014**	**FY 2015 Base**	**FY 2015 OCO #**	**FY 2015 Total**	**FY 2016**	**FY 2017**	**FY 2018**	**FY 2019**	**Cost To Complete**	**Total Cost**
0996: *Aircraft Energy Conservation*	23.622	17.167	28.404	32.678	-	32.678	27.394	26.202	24.446	24.901	Continuing	Continuing
Quantity of RDT&E Articles	0.000	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

The Aircraft Energy Conservation program is designed to develop and implement energy and maintenance saving improvements into existing fleet assets. The program identifies, evaluates, and implements energy savings initiatives for potential implementation into Naval aircraft. The objective of the program is to engage technical experts from across Naval aviation, industry, and academia to identify mature potential energy saving opportunities and determine the technical and fiscal viability of implementing them in existing aircraft platforms.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2013	FY 2014	FY 2015
Title: Aircraft Energy Conservation	17.167	28.404	32.678
Articles:	-	-	-
FY 2013 Accomplishments: Initiated Fleet Air ENCON program beta launch. Completed F-35 "Smart Start" material solution analysis. Completed F135 fuel burn reduction high-pressure compressor rig preliminary design and performance and operability analysis.			
FY 2014 Plans: Conduct preliminary design for F135 engine fuel burn reduction demonstration. Implement AIR-ENCON full program launch. Conduct evaluation/assessment of advanced mission planning and navigation technologies. Conduct assessment of aircraft subsystem energy efficiency technologies.			
FY 2015 Plans: Complete F135 compressor rig test and conduct Critical Design Review in support of F135 engine fuel burn reduction demonstration. Continue to identify, validate, and institutionalize energy conservation/efficiency concepts into the fleet. Continue validation of aircraft subsystem technologies and advance mission planning and navigation technologies for incorporation into legacy and emerging platforms.			
Accomplishments/Planned Programs Subtotals	17.167	28.404	32.678

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2015 Navy		Date: March 2014
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603724N / *Navy Energy Program*	**Project (Number/Name)** 0996 / *Aircraft Energy Conservation*

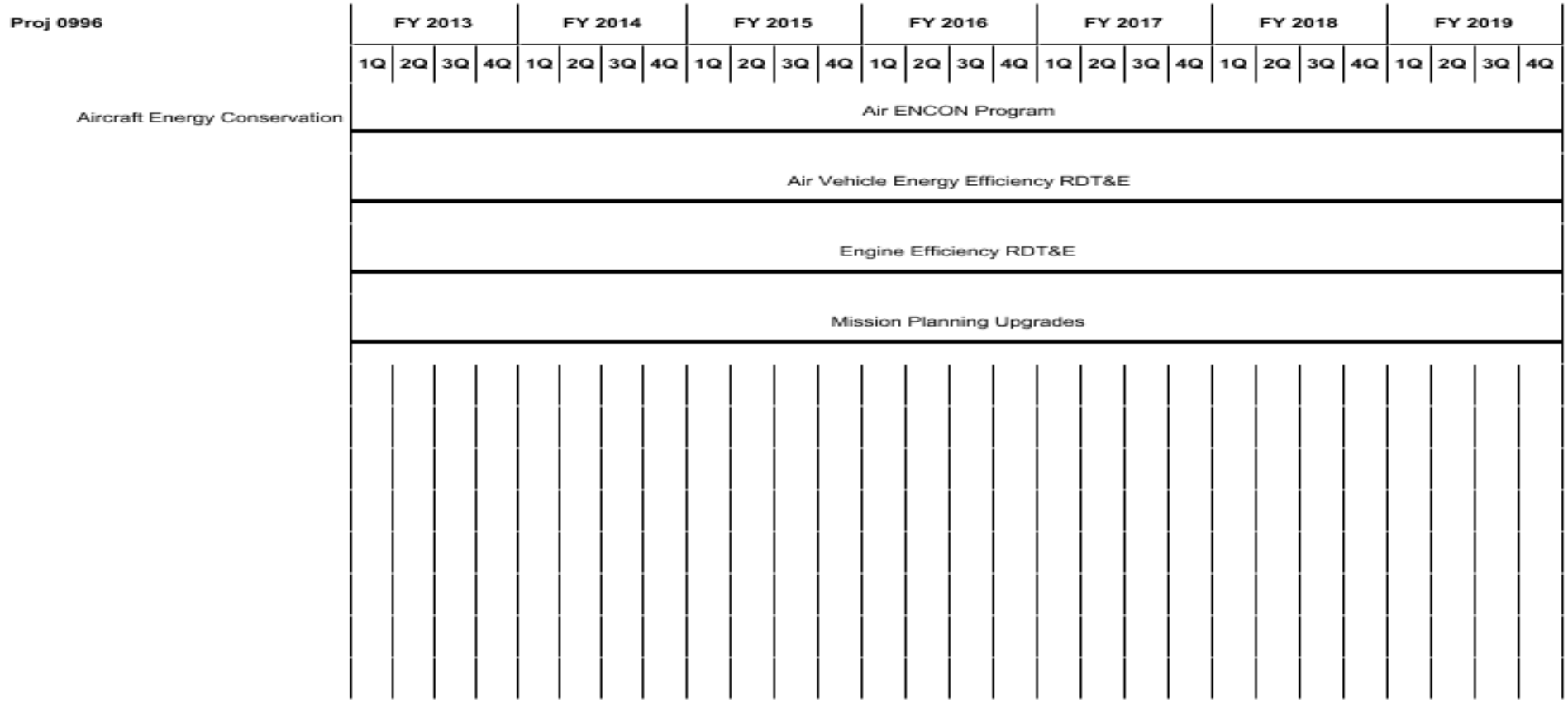
D. Acquisition Strategy

This is a non-acquisition program that develops, evaluates, and validates mature technologies in support of fleet fuel and maintenance savings.

E. Performance Metrics

Actual performance of energy conservation initiatives are measured against initially projected fuel savings measured in barrels of fuel saved based on aircraft demonstration testing.

Exhibit R-4, RDT&E Schedule Profile: PB 2015 Navy		Date: March 2014
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603724N / *Navy Energy Program*	**Project (Number/Name)** 0996 / *Aircraft Energy Conservation*



2015DON - 0603724N - 0996

Exhibit R-2A, RDT&E Project Justification: PB 2015 Navy			Date: March 2014
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 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
9999: *Congressional Adds*	-	36.665	-	-	-	-	-	-	-	-	-	36.665
Quantity of RDT&E Articles	0.000	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

The Congressional Add funding will be used to support the Alternative Energy Initiatives project, which includes research to reduce the use fossil fuels and increase the use of renewable energy in accordance with Legislation, Executive Orders (EO), and SECNAV guidance. The anticipated deliverables will promote the development of alternative energy systems by demonstrating the technical and financial viability of innovative renewable energy technologies. These efforts are in accordance with, and in response to, the Energy Policy Act of 2005, which directs agencies to reduce energy intensity 30% by 2015; the National Defense Authorization Act of 2010, which directs DOD to source 25% of its energy from renewable sources by 2025; EO13514, which directs DOD to reduce greenhouse gas emissions by 2020; and SECNAV energy goals, which direct that 50% of DON's energy come from alternative sources by 2020.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2013	FY 2014
Congressional Add: Alternative Energy Initiatives	36.665	-
FY 2013 Accomplishments: N/A		
FY 2014 Plans: N/A		
Congressional Adds Subtotals	36.665	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Not required for Congressional Add.

E. Performance Metrics

Not required for Congressional Add.