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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Office of the Secretary Of Defense **Date:** May 2017

Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
0400: Research, Development, Test & Evaluation, Defense-Wide / BA 1: Basic Research					PE 0601120D8Z / National Defense Education Program (NDEP)							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	52.837	69.345	74.298	-	74.298	80.489	86.833	94.108	104.426	Continuing	Continuing
P120: National Defense Education Program (NDEP)	-	52.837	69.345	74.298	-	74.298	80.489	86.833	94.108	104.426	Continuing	Continuing

A. Mission Description and Budget Item Justification

The National Defense Education Program (NDEP) ensures the Department of Defense (DoD) will have access to high-quality science, technology, engineering, and mathematics (STEM) personnel vital to national defense now and in the future. NDEP is executed by the STEM Development Office, under the Defense Laboratories Office within the Office of the Assistant Secretary of Defense for Research and Engineering (ASD(R&E)). NDEP's portfolio includes the Science, Mathematics, and Research for Transformation (SMART) program, the Military Child Pilot Program (MCPPI), STEM Education and Outreach, and STEM Operations. These programs provide a pathway to the best and the brightest minds through a continuum of DoD workforce development approaches, which include: (1) increasing STEM proficiency in the Nation's talent pool by improving the capacity to address ever-changing future Defense workforce needs; (2) shaping the Department as a STEM workplace of choice for scientists and engineers through public communications and outreach; (3) leading the Departmental STEM strategic efforts and coordinating STEM efforts in alignment with the workforce and mission requirements; and (4) identifying approaches for innovative solutions in support of the Nation's current and future defense challenges.

NDEP aligns to the DoD Science and Technology (S&T) priorities. It is synchronized with the Federal Five-Year STEM Education Strategic Plan, the DoD STEM Strategic Plan, the DoD Strategic Workforce Plan, and the DoD Agency Strategic Plan. NDEP components engage in assessment and evaluation as outlined by the Office of Management and Budget and the Government Accountability Office.

The SMART program awards highly competitive scholarships-for-service to undergraduate and graduate students in 19 STEM academic disciplines and transitions graduates directly into DoD's workforce following graduation. As part of the SMART experience, scholars engage in internships that allow for broadly relevant hands-on research and work experiences in DoD facilities, thereby enhancing their educational experience. Since its inception as a pilot program in FY 2005, SMART has awarded approximately 2,000 scholarships to students ranging from undergraduate to doctoral studies. To date, approximately 1,350 have completed program studies and approximately 1,100 are currently employed in the DoD workforce. SMART ensures that DoD has a steady infusion of high-quality technical talent, prepared in areas of critical importance to DoD, and ready to apply their technical knowledge, skills, and abilities to fulfill DoD's mission.

STEM Education and Outreach fosters conditions for activities to support and cultivate STEM talent to build a future force that is representative of the nation's diverse population and to reach underserved populations to meet national defense needs and future defense challenges. Initiatives include investing, promoting and participating in national-level STEM programs and initiatives, and providing authentic hands-on STEM experiences for students and teachers across the nation.

STEM Operations manages activities to implement the Department's strategic plan for STEM education and outreach. STEM Operations provides program management and oversight, research studies, and official responses to Congressional and non-Congressional inquiries. STEM Operations develops and maintains systems and standards to support STEM policy implementation, oversight, and assessment. Other STEM Operations activities include providing support to STEM

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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 1: Basic Research</i>	R-1 Program Element (Number/Name) PE 0601120D8Z I <i>National Defense Education Program (NDEP)</i>
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education and outreach programs, implementing the Communications Plan, and collaborating across the federal government and public domain through interagency and intradepartmental working groups and partnerships.

The MCPP enhances the preparation of dependents of members of the armed forces for careers in STEM and provides assistance to STEM teachers at elementary or secondary schools at which a significant number of military dependents are enrolled. Section 233 of the National Defense Authorization Act (NDAA) for FY 2015, and the Consolidated and Further Continuing Appropriations Act, 2015, directed the Secretary of the Defense to establish this Pilot Program. The MCPP will continue to receive support through FY 2020 in accordance with legislative direction.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	54.355	69.345	113.084	-	113.084
Current President's Budget	52.837	69.345	74.298	-	74.298
Total Adjustments	-1.518	0.000	-38.786	-	-38.786
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.518	-			
• SMART Program Adjustments	-	-	-38.786	-	-38.786

Change Summary Explanation

FY 2018 adjustments are reflective of higher priority DoD requirements. Funding for the SMART Scholarship in the amount of \$38.684 is transferred to DHRA, PE 0901220SE.

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Appropriation/Budget Activity 0400 / 1					R-1 Program Element (Number/Name) PE 0601120D8Z / National Defense Education Program (NDEP)				Project (Number/Name) P120 / National Defense Education Program (NDEP)			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
P120: National Defense Education Program (NDEP)	-	52.837	69.345	74.298	-	74.298	80.489	86.833	94.108	104.426	Continuing	Continuing

A. Mission Description and Budget Item Justification

The National Defense Education Program (NDEP) ensures the Department of Defense (DoD) will have access to high-quality science, technology, engineering, and mathematics (STEM) personnel vital to national defense now and in the future. NDEP is executed by the STEM Development Office, under the Defense Laboratories Office within the Office of the Assistant Secretary of Defense for Research and Engineering (ASD(R&E)). NDEP's portfolio includes the Science, Mathematics, and Research for Transformation (SMART) program, the Military Child Pilot Program (MCP), STEM Education and Outreach, and STEM Operations. These programs provide a pathway to the best and the brightest minds through a continuum of DoD workforce development approaches, which include: (1) increasing STEM proficiency in the Nation's talent pool by improving the capacity to address ever-changing future Defense workforce needs; (2) shaping the Department as a STEM workplace of choice for scientists and engineers through public communications and outreach; (3) leading the Departmental STEM strategic efforts and coordinating STEM efforts in alignment with the workforce and mission requirements; and (4) identifying approaches for innovative solutions in support of the Nation's current and future defense challenges.

NDEP aligns to the DoD Science and Technology (S&T) priorities. It is synchronized with the Federal Five-Year STEM Education Strategic Plan, the DoD STEM Strategic Plan, the DoD Strategic Workforce Plan, and the DoD Agency Strategic Plan. NDEP components engage in assessment and evaluation as outlined by the Office of Management and Budget and the Government Accountability Office.

The SMART program awards highly competitive scholarships-for-service to undergraduate and graduate students in 19 STEM academic disciplines and transitions graduates directly into DoD's workforce following graduation. As part of the SMART experience, scholars engage in internships that allow for broadly relevant hands-on research and work experiences in DoD facilities, thereby enhancing their educational experience. Since its inception as a pilot program in FY 2005, SMART has awarded approximately 2,000 scholarships to students ranging from undergraduate to doctoral studies. To date, approximately 1,350 have completed program studies and approximately 1,100 are currently employed in the DoD workforce. SMART ensures that DoD has a steady infusion of high-quality technical talent, prepared in areas of critical importance to DoD, and ready to apply their technical knowledge, skills, and abilities to fulfill DoD's mission.

STEM Education and Outreach fosters conditions for activities to support and cultivate STEM talent to build a future force that is representative of the nation's diverse population and to reach underserved populations to meet national defense needs and future defense challenges. Initiatives include investing, promoting and participating in national-level STEM programs and initiatives, and providing authentic hands-on STEM experiences for students and teachers across the nation.

STEM Operations manages activities to implement the Department's strategic plan for STEM education and outreach. STEM Operations provides program management and oversight, research studies, and official responses to Congressional and non-Congressional inquiries. STEM Operations develops and maintains systems and standards to support STEM policy implementation, oversight, and assessment. Other STEM Operations activities include providing support to STEM

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education and outreach programs, implementing the Communications Plan, and collaborating across the federal government and public domain through interagency and intradepartmental working groups and partnerships.				
The MCPP enhances the preparation of dependents of members of the armed forces for careers in STEM and provides assistance to STEM teachers at elementary or secondary schools at which a significant number of military dependents are enrolled. Section 233 of the National Defense Authorization Act (NDAA) for FY 2015, and the Consolidated and Further Continuing Appropriations Act, 2015, directed the Secretary of the Defense to establish this Pilot Program. The MCPP will continue to receive support through FY 2020 in accordance with legislative direction.				
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
Title: Science, Mathematics, and Research for Transformation (SMART) Defense Education Program		38.883	53.571	60.747
Description: SMART is a scholarship-for-service program that provides support to high performing U.S. graduate and undergraduate students in 19 academic science, technology, engineering, and mathematics (STEM) disciplines identified as areas of future workforce needed by DoD.				
The disciplines align with the Department’s Science and Technology (S&T) priorities and emerging scientific research areas. The disciplines include: Aeronautical and Astronautical Engineering; Biosciences; Chemical Engineering; Chemistry; Civil Engineering; Cognitive, Neural, and Behavioral Sciences; Computer Science; Electrical Engineering; Geosciences; Industrial and Systems Engineering; Information Sciences; Materials Science and Engineering; Mathematics; Mechanical Engineering; Naval Architecture and Ocean Engineering; Nuclear Engineering; Oceanography; Operations Research; and Physics. Upon completion of their degree, students fulfill a service commitment to DoD on a one-to-one payback per year of education funded. In part, SMART's success is measured by participants that choose to remain in the DoD workforce beyond their required service commitment. A total of 800 participants have successfully completed the program through their DoD commitment; 75 percent of those participants are still employed by DoD.				
Oversight of the SMART program falls under the Office of the Assistant Secretary of Defense for Research and Engineering (OASD(R&E)). Two types of individuals participate in the program: (1) retention scholars who are current DoD employees; and (2) recruitment scholars who are college students enrolled in undergraduate and graduate programs, and represent new talent for the Department. Internships provide SMART scholars with an opportunity to engage in relevant hands-on research, and work experiences in defense laboratories, thereby enhancing their educational experience.				
Since FY 2005, approximately 2,000 students have participated in the SMART program at approximately 160 sponsoring facilities. As of August 2016, approximately 1,350 SMART scholars have transitioned into the service commitment phase. To date, these scholars have transitioned as civilian employees into the Air Force, Army, Navy, and other DoD components.				
FY 2016 Accomplishments:				

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B. Accomplishments/Planned Programs (\$ in Millions)			FY 2016	FY 2017	FY 2018
<ul style="list-style-type: none">• Provided oversight of the execution of the SMART program.• Fully transitioned the SMART program execution to the Services.• Assessed the SMART scholar inception process into DoD facilities and laboratories.• 133 academic degrees completed.• 239 new SMART scholarships awarded.• 661 SMART scholars in school. <p>FY 2017 Plans:</p> <ul style="list-style-type: none">• Anticipate a 60% increase in new SMART awards to better meet DoD STEM workforce requirements.• Provide oversight of the SMART program, per SMART DoD Instruction (DoDI) 1025.09.• Continue assessment of the SMART scholar inception process into DoD facilities and laboratories. <p>FY 2018 Plans:</p> <ul style="list-style-type: none">• Increase new SMART awards by 10% to better meet DoD STEM workforce requirements.					
<p>Title: Pilot Program to Enhance the Preparation of Dependents of Members of the Armed Forces for Careers in STEM (Military Child Pilot Program)</p> <p>Description: The Military Child Pilot Program was established by the FY 2015 National Defense Authorization Act (NDAA), Section 233. The objectives are to enhance the preparation of dependents of members of the armed forces for careers in STEM, and to provide assistance to STEM teachers at elementary or secondary schools at which a significant number of military dependents are enrolled. The Department’s methodology includes: (1) providing support to the National Math and Science Initiative (NMSI) program in collaboration with the DoD Education Activity (DoDEA) to expand the number of covered schools to support the national goal; and (2) coordinating with the DoD components, federal and local government partners, and private sector organizations to complement the NMSI program.</p> <p>FY 2016 Accomplishments:</p> <ul style="list-style-type: none">• Continued implementation and assessment of the pilot program with DoDEA and NMSI in preparation for a preliminary report due to Congress in December 2016.• Coordinated the Department-wide pilot program with federal and local government partners and private sector organizations.• Achieved the national goal of 200 covered schools reached, in partnership with DoDEA and NMSI, by expanding access for military-connected children to attend Advanced Placement (A.P.) classes in STEM.• Implemented activities to improve the quality of STEM educational and training opportunities for students and teachers, including the development and improvement of curricula.• Expanded focus of the program to provide activities that engage and meet demands in STEM education for overseas students. <p>FY 2017 Plans:</p>			8.641	11.112	8.889

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017
<ul style="list-style-type: none"> • Continue implementation and assessment of the pilot program. • Reach 44 additional covered schools across 12 states. • Continue to expand access for military-connected children to attend classes in STEM, supporting the computer science national initiative (CS4All). • Implement and assess the Department-wide pilot program in coordination with the DoD components, federal and local government partners, and private sector organizations. • Implement activities to improve the quality of STEM educational and training opportunities for students and teachers, including the development and improvement of curricula. • Submit to the Committees on Armed Services of the U.S. Senate and the House of Representatives a progress report on activities carried out under the pilot program. <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> • Continue implementation and assessment of the pilot program. • Continue to expand access for military-connected children to attend classes in STEM, supporting the computer science national initiative (CS4All). • Continue to implement and assess the Department-wide pilot program in coordination with the DoD components, federal and local government partners, and private sector organizations. • Implement activities to improve the quality of STEM educational and training opportunities for students and teachers, including the development and improvement of curricula. 			
<p>Title: STEM Education and Outreach</p> <p>Description: STEM Education and Outreach fosters conditions for STEM activities to support and cultivate STEM talent to build a future force that is representative of the nation's diverse population and reaches underserved populations to meet national defense needs and future defense challenges. Investments are made to promote participation in national-level STEM programs and initiatives and provide authentic hands-on experiences for students and teachers across the globe. Specific initiatives include internships, scholarships, and mentorships through partnerships with industry to include the FIRST Robotics events and teams, MATCHCOUNTS events, and the Center for Excellence in Education's (CEE) "Rickover" and Research Science Institute (RSI) internship programs.</p> <p>FY 2016 Accomplishments:</p> <ul style="list-style-type: none"> • Continued STEM Education and Outreach and provided authentic hands-on experiences to approximately 17,452 students and 1,645 teachers across 905 schools. • Actively participated in the White House's Committee on STEM Education's (CoSTEM) Federal Coordination in STEM (FC-STEM) five Interagency Working Groups in support of the Federal STEM Education 5-Year Strategic Plan. • Provided support to STEM education and outreach programs. 		3.477	2.773
			2.773

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B. Accomplishments/Planned Programs (\$ in Millions)			FY 2016	FY 2017	FY 2018
<p>• Implemented the Department’s STEM Strategic Plan and Communications Plan to establish a clear alignment to the Federal STEM Education 5-Year Strategic Plan and continued to establish a place for DoD within the broader Federal system.</p> <p>FY 2017 Plans:</p> <ul style="list-style-type: none">• Continue STEM Education and Outreach that provides authentic hands-on experiences to students and teachers and evaluate the effectiveness of the increased outreach.• Continue participation in inter- and intra-departmental collaboration with program partners to achieve federal and DoD STEM objectives.• Continue providing support to STEM education and outreach programs.• Establish clear and consistent assessment and evaluation metrics to evaluate progress.• Continue implementation of the Department’s STEM Strategic Plan and Communications Plan. <p>FY 2018 Plans:</p> <ul style="list-style-type: none">• Continue NDEP Education and Outreach that provides authentic hands-on experiences to students and teachers and evaluate the effectiveness of the increased outreach.• Continue participation in inter- and intra-departmental collaboration with program partners to achieve federal and DoD STEM objectives.• Continue providing support to STEM education and outreach programs.• Continue implementation of the Department’s STEM Strategic Plan and Communications Plan.• Measure program progress against established desired outcomes and consistent metrics.					
<p>Title: STEM Operations</p> <p>Description: STEM Operations manages activities to implement the Department’s strategic plan for STEM education and outreach. STEM Operations provides program management and oversight, research studies, and official responses to Congressional and non-Congressional inquiries. STEM Operations develops and maintains systems and standards to support STEM education and outreach programs, implementing the Communications Plan, and collaborating across the Federal government and public domain through inter-agency and intra-departmental working groups, and partnerships.</p> <p>FY 2016 Accomplishments:</p> <ul style="list-style-type: none">• Continued program management and oversight, studies support, and responses to Congressional inquiries and other reports.• Developed and/or maintained systems and standards to support STEM policy implementation, oversight, and assessment.• Implemented the DoD STEM Advocate of the Quarter program.• Enhanced assessment and evaluation standards to support investment decisions.• Implemented the Communications Plan.• Completed the survey on the scope of DoD K-12 STEM programs, in accordance with Better Buying Power 3.0.			1.836	1.889	1.889

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017
<ul style="list-style-type: none"> Implemented policy, assigned responsibilities, and provided policy guidance including the STEM DoD Instruction and legislative proposals. <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> Continue program management and oversight, studies support, and responses to Congressional inquiries and other reports. Develop and/or maintain systems and standards to support STEM policy implementation, oversight, and assessment. Continue to enhance assessment and evaluation reporting to support investment decisions. Continue implementing STEM Advocate of the Quarter program. Continue implementing Communications Plan. Implement policy, assign responsibilities, and provide policy guidance including the STEM DoD Instruction and legislative proposals. <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> Continue program management and oversight, studies support, and responses to Congressional inquiries and other reports. Develop and/or maintain systems and standards to support STEM policy implementation, oversight, and assessment. Continue to enhance assessment and evaluation reporting to support investment decisions. Continue implementing STEM Advocate of the Quarter program. Continue implementing Communications Plan. 			
Accomplishments/Planned Programs Subtotals		52.837	69.345
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
<p>Current metrics listed are subject to ongoing evaluation and analysis of appropriateness and effectiveness of the metrics being performed.</p> <ul style="list-style-type: none"> The increase in the number of SMART scholars who are transitioned into the DoD workforce. The number of SMART scholars who are retained by DoD post-service commitment. The number of eligible SMART applicants from underrepresented groups, including HBCU/MIs. The number of SMART application reviewers from HBCU/MIs. The number of military-connected children that attended covered schools in the Military Child Pilot Program (MCPPI). 			

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<ul style="list-style-type: none"> • The number of covered schools impacted by the MCPP. • The number of teachers trained through the MCPP. • Matriculation of participants into college. • Participation by underserved populations; and, where applicable, course completions and credentials received. • Improvements in student educational assessments. • Infrastructure development and matching efforts by educational institutions or school districts. • Matching efforts by Component agency and alignment with DoD workforce needs. 		