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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2021 Office of the Secretary Of Defense **Date:** February 2020

<b>Appropriation/Budget Activity</b> 0400: Research, Development, Test & Evaluation, Defense-Wide I BA 1: Basic Research	<b>R-1 Program Element (Number/Name)</b> PE 0601228D8Z I Historically Black Colleges and Universities and Minority-Serving Institutions
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COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
Total Program Element	39.006	38.568	52.708	30.975	-	30.975	31.637	32.186	33.016	33.688	Continuing	Continuing
448: Historically Black Colleges and Universities and Minority-Serving Institutions	39.006	38.568	52.708	30.975	-	30.975	31.637	32.186	33.016	33.688	Continuing	Continuing

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

This program element (PE) provides support for Historically Black Colleges and Universities and Minority-Serving Institutions (HBCU/MI) in fields of science and engineering that are important to national defense. The Department of Defense (DoD) HBCU/MI program encourages participation of small minority schools as well as large minority research institutions. The program is authorized by 10 U.S.C. § 2362 and is funded by annual appropriations. This competitive program provides support through grants, cooperative agreements, or contracts for research, education assistance, and instrumentation purchases.

Work in this PE provides a foundation to enhance participation of HBCUs/MIs in DoD research. Programs are structured to: Build infrastructure; strengthen research and educational opportunities at HBCUs/MIs and increase the number of minority graduates in the science, technology, engineering, and mathematics (STEM) disciplines; and build a more diverse pool of scientists and engineers to meet future workforce needs.

Work in this PE is performed by the Services' Research Offices and DoD Laboratories (includes the Army Research Laboratory and the Air Force Research Laboratory) for Centers of Excellence (COE). Centers currently funded through cooperative agreements include Autonomy, Cyber Security, Research Data Analysis, STEM Scholars, and Minority Women in STEM.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>
Previous President's Budget	40.320	30.708	31.261	-	31.261
Current President's Budget	38.568	52.708	30.975	-	30.975
Total Adjustments	-1.752	22.000	-0.286	-	-0.286
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	22.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.649	-			
• SBIR/STTR Transfer	-1.096	-			
• Other Adjustments	-0.007	-	-0.256	-	-0.256
• Economic Assumption	-	-	-0.030	-	-0.030

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<b>Congressional Add Details (\$ in Millions, and Includes General Reductions)</b>	<b>FY 2019</b>	<b>FY 2020</b>
<b>Project:</b> 448: <i>Historically Black Colleges and Universities and Minority-Serving Institutions</i>		
Congressional Add: <i>HBCU/MI Program Increase</i>	10.000	22.000
Congressional Add Subtotals for Project: 448	10.000	22.000
Congressional Add Totals for all Projects	10.000	22.000

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<b>Appropriation/Budget Activity</b> 0400 / 1					<b>R-1 Program Element (Number/Name)</b> PE 0601228D8Z / <i>Historically Black Colleges and Universities and Minority-Serving Institutions</i>				<b>Project (Number/Name)</b> 448 / <i>Historically Black Colleges and Universities and Minority-Serving Institutions</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
448: <i>Historically Black Colleges and Universities and Minority-Serving Institutions</i>	39.006	38.568	52.708	30.975	-	30.975	31.637	32.186	33.016	33.688	Continuing	Continuing

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

The Historically Black Colleges and Universities and Minority-Serving Institutions (HBCU/MI) program provides support in fields of science and engineering that are important to national defense. The Department of Defense (DoD) HBCU/MI Program encourages participation of small minority schools and large minority research institutions. This competitive program provides support through grants or contracts for research, education assistance, instrumentation purchases, and technical assistance as described below.

- Research. The research grants further knowledge in the basic scientific disciplines through theoretical and experimental activities. Collaborative research allows university professors to work directly with military laboratories or other universities.
- Education. Education assistance funds are used by minority institutions to strengthen their academic programs in science, technology, engineering, and mathematics (STEM), thereby increasing the number of under-represented minorities obtaining undergraduate and graduate degrees in these fields. These grants provide equipment, scholarships, cooperative work/study opportunities, visiting faculty programs, summer internship programs, and a variety of other enhancements designed to support students and to encourage them to pursue careers in STEM.
- Instrumentation purchases. The program allows universities to purchase basic laboratory equipment, such as lasers and spectrometers, for enhancements to the basic research efforts.
- Technical assistance. The funds are used to design programs that enhance the ability of minority institutions to successfully compete for future Defense funding by assisting the HBCU/MI community in areas such as proposal writing and administration of grants and contracts.

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

	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>
<b>Title:</b> Historically Black Colleges and Universities and Minority-Serving Institutions (HBCU/MI)	28.568	30.708	30.975
<b>Description:</b> The HBCU/MI program provides support for research and collaboration with DoD facilities and personnel. The research grants further knowledge in the basic physical scientific and engineering disciplines through theoretical and empirical activities. Collaborative research allows university professors to work directly with DoD laboratories or other universities.			
<b>FY 2020 Plans:</b>			

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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>
<p>Continue efforts from FY 2019 which include supporting the Centers of Excellence in Artificial Intelligence/Machine Learning, Quantum Science, and Networked Command, Control, and Communications. Conduct annual competition of the HBCU/MI program for basic research, student support, and/or equipment/instrumentation. Continue research and educational collaboration with the DoD laboratories to include the DoD HBCU/MI Summer Intern and Faculty Fellows Program. Monitor established Centers of Excellence in support of the USD(R&amp;E) Science and Technology priorities in the areas of Cyber Security, Research Data Analysis, Autonomy, Center for STEM Scholars, and the Center for Minority Women in STEM, needed to expand STEM opportunities for underrepresented minorities. Conduct annual review of the Centers. Expand the HBCU/MI Program to develop three new Centers of Excellence using the FY 2020 congressional increase. The first Center is an Aerospace Research and Education Innovation Center as directed by Congress (\$2M congressional add). Additional program increase funding will be used to establish two new Centers to address R&amp;E priority areas to include Materials Science and Biotechnology. Conduct increased outreach activities, to include, one webinar and two technical assistance workshops to expose HBCUs/MIs to opportunities in DoD. Also continue MSI town hall series in partnership with the National Academies of Science to examine strategies to expand HBCU/MI STEM workforce preparedness and research &amp; education activities. Collaborated with the University Affiliated Research Center (UARC) for Applied Research Laboratory for Intelligence and Security at the University of Maryland – College Park to broaden HBCU/MI partnership portfolios. Projected to commit \$1.000 million towards the HBCU/MI and UARC partnership, supporting two HBCU/MI.</p> <p><b>FY 2021 Plans:</b> Continue efforts from FY 2020. Conduct annual competition of the HBCU/MI program for basic research, student support, and/or equipment/instrumentation. Continue research and educational collaboration with the DoD laboratories. Monitor established Centers of Excellence in support of the USD(R&amp;E) Science and Technology priorities in the areas of Cyber Security, Research Data Analysis, Autonomy, Center for STEM Scholars, and the Center for Minority Women in STEM, needed to expand STEM opportunities for underrepresented minorities. Conduct annual review of the Centers. Expand the HBCU/MI Program to develop new Centers of Excellence to address R&amp;E priorities in the areas of Artificial Intelligence/Machine Learning, Biotechnology, Quantum Science, and Fully Networked Command, Control, and Communications. Conduct outreach activities, to include one webinar and two technical assistance workshops to expose HBCUs/MIs to opportunities in DoD.</p> <p><b>FY 2020 to FY 2021 Increase/Decrease Statement:</b> The level of effort is consistent between FY 2020 and FY 2021. Small changes reflect minor budget fluctuations.</p>			
<b>Accomplishments/Planned Programs Subtotals</b>	28.568	30.708	30.975

	<b>FY 2019</b>	<b>FY 2020</b>
<b>Congressional Add:</b> HBCU/MI Program Increase	10.000	22.000

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		<table border="1"> <thead> <tr> <th>FY 2019</th> <th>FY 2020</th> </tr> </thead> <tbody> <tr> <td colspan="2"> <p><b>FY 2019 Accomplishments:</b> The FY 2019 congressional increase of \$10.000 million supports HBCU/MI program expansion and STEM efforts for minority women. Established the Center of Excellence for minority women in STEM at Spelman College, a Historically Black College for women. Established a minority women in STEM Artificial Intelligence/Machine Learning (AI/ML) Initiative at Spelman College. The Initiative is devoted to increasing STEM education and research capabilities in AI/ML through faculty and student training, coursework development, and research collaborations with DoD Service Components.</p> <p>Awarded 59 equipment/instrumentation grants for a total of \$23.200 million under the FY 2019 HBCU/MI Research and Education Core Program funding opportunity announcement. Placed 101 HBCU/MI student interns and 18 faculty fellows at Army, Navy, and Air Force research laboratories. Issued FY 2020 HBCU/MI funding opportunity announcement for basic research grants. Issued long range HBCU/MI Research and Education Program funding opportunity announcement aligned with USD(R&amp;E) priorities and National Defense Strategy. Hosted two technical assistance workshops collectively attended by 450 representatives from HBCUs/MIs, government, and industry. Collaborated with the OSD Cost Assessment and Program Evaluation Office to enhance HBCU/MI outreach with the intent to increase hiring graduates for DoD STEM-related positions. Monitored established Centers of Excellence in support of the USD(R&amp;E) Science and Technology priorities in the areas of Cyber Security, Research Data Analysis, Autonomy, and the Center for STEM Scholars, needed to expand STEM opportunities for underrepresented minorities. Conducted annual review of the Centers. Participated in congressional site visit to North Dakota Tribal Colleges funded under the HBCU/MI Program. Hosted a research colloquium and poster workshop for DoD summer interns and faculty fellows to showcase their research to principal investigators and DoD program sponsors at the laboratory facilities. Collaborating with the National Academy of Sciences (NAS) to support a series of town hall meetings to examine strategies to expand HBCU/MI STEM education and research activities. The town hall series is a result of NAS' 2019 Report titled, <i>Minority-Serving Institution: America's Underutilized Resource for Strengthening the STEM Workforce.</i></p> <p><b>FY 2020 Plans:</b> Expand the HBCU/MI Program to develop three new Centers of Excellence using the FY 2020 congressional increase. The first Center is an Aerospace Research and Education Innovation Center as directed by Congress (\$2.000 million congressional add). 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	<b>FY 2019</b>	<b>FY 2020</b>
increase funding will also be used to conduct increased outreach activities, additional student opportunities, and to conduct the mandated NAS study.		
<b>Congressional Adds Subtotals</b>	10.000	22.000

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

N/A

**Remarks**

**D. Acquisition Strategy**

N/A