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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army **Date:** February 2018

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 4: Advanced Component Development & Prototypes (ACD&P)	R-1 Program Element (Number/Name) PE 0603801A / Aviation Advanced Development
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	7.702	14.055	10.793	-	10.793	21.690	54.367	185.304	222.394	Continuing	Continuing
B47: Future Vertical Lift Medium	-	7.702	14.055	10.793	-	10.793	21.690	54.367	185.304	222.394	Continuing	Continuing

A. Mission Description and Budget Item Justification

Future Vertical Lift (FVL) is an initiative to develop a family of vertical lift aircraft for the United States Armed Forces. FVL was established in 2009 by the Secretary of Defense to focus all Department of Defense (DoD) vertical lift capabilities and technology development, as well as retaining long-term engineering capabilities. In October 2011, the Deputy Secretary of Defense issued the FVL Strategic Plan to outline a joint approach for the next generation vertical lift aircraft for all military services. The Strategic Plan provided a foundation for replacing the current fleet with advanced capability by shaping the development of vertical lift aircraft for the next 25 to 40 years. In 2017, the FVL was identified as one of the Army's eight Cross Functional Team Pilots, derived from the six Chief of Staff, Army modernization priorities. The development and fielding of FVL will significantly improve vertical lift capabilities providing critical aviation support to the Joint warfighting community. Increases in maneuverability, range, speed, payload, survivability, reliability, and reduced logistical footprint can only be achieved through the FVL approach of developing a new aircraft design. FVL will integrate advancements in technologies and design configurations balanced with appropriate trades to ensure affordability.

PE 0603801A, Project B47, Future Vertical Lift funding provides for the development of a Capability Set 3 aircraft system within the FVL family of systems. FVL Capability Set 3 aircraft will conduct Air Assault, Amphibious Assault, Urban Assault/Security, Attack, Maritime Interdiction, Medical Evacuation (MEDEVAC), Humanitarian Assistance/Disaster Relief (HA/DR), Tactical Resupply, Direct Action (DA), Non-Combatant Evacuation Operation (NEO) and Combat Search and Rescue (CSAR) operations in support of Army, including Army Special Operations Command, Marine Corps and Joint forces. The FVL Capability Set 3 platform will significantly increase speed, range, mobility, and payload over current US Army H-60 and US Marine Corps H-1 aircraft and provide Combatant Commanders with tactical capabilities at greatly increased operational and strategic distances. The FVL Capability Set 3 Materiel Development Decision was approved in October 2016. FY 2017 funding provided for Analysis of Alternatives (AoA) modeling, simulation, and analysis. FY 2018 funding completes development and execution of the AoA and begins acquisition planning and strategy development. FY19 funding will support the completion of a Technical Readiness Assessment and acquisition planning and strategy development, systems engineering support to decompose the draft Capability Development Document (CDD), and the development of Milestone A documentation and Technology Maturation and Risk Reduction (TMRR) Contract Requirements Package.

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Appropriation/Budget Activity		R-1 Program Element (Number/Name)			
2040: Research, Development, Test & Evaluation, Army / BA 4: Advanced Component Development & Prototypes (ACD&P)		PE 0603801A / Aviation Advanced Development			
B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	10.014	14.055	10.909	-	10.909
Current President's Budget	7.702	14.055	10.793	-	10.793
Total Adjustments	-2.312	0.000	-0.116	-	-0.116
• Congressional General Reductions	-0.005	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-1.926	-			
• SBIR/STTR Transfer	-0.381	-			
• Adjustments to Budget Years	-	-	-0.116	-	-0.116

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603801A / Aviation Advanced Development				Project (Number/Name) B47 / Future Vertical Lift Medium			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
B47: Future Vertical Lift Medium	-	7.702	14.055	10.793	-	10.793	21.690	54.367	185.304	222.394	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
<p>Future Vertical Lift (FVL) is an initiative to develop a family of vertical lift aircraft for the United States Armed Forces. FVL was established in 2009 by the Secretary of Defense to focus all Department of Defense (DoD) vertical lift capabilities and technology development, as well as retaining long-term engineering capabilities. In October 2011, the Deputy Secretary of Defense issued the FVL Strategic Plan to outline a joint approach for the next generation vertical lift aircraft for all military services. The Strategic Plan provided a foundation for replacing the current fleet with advanced capability by shaping the development of vertical lift aircraft for the next 25 to 40 years. In 2017, the FVL was identified as one of the Army's eight Cross Functional Team Pilots, derived from the six Chief of Staff, Army modernization priorities. The development and fielding of FVL will significantly improve vertical lift capabilities providing critical aviation support to the Joint warfighting community. Increases in maneuverability, range, speed, payload, survivability, reliability, and reduced logistical footprint can only be achieved through the FVL approach of developing a new aircraft design. FVL will integrate advancements in technologies and design configurations balanced with appropriate trades to ensure affordability.</p> <p>PE 0603801A, Project B47, Future Vertical Lift funding provides for the development of a Capability Set 3 aircraft system within the FVL family of systems. FVL Capability Set 3 aircraft will conduct Air Assault, Amphibious Assault, Urban Assault/Security, Attack, Maritime Interdiction, Medical Evacuation (MEDEVAC), Humanitarian Assistance/Disaster Relief (HA/DR), Tactical Resupply, Direct Action (DA), Non-Combatant Evacuation Operation (NEO) and Combat Search and Rescue (CSAR) operations in support of Army, including Army Special Operations Command, Marine Corps and Joint forces. The FVL Capability Set 3 platform will significantly increase speed, range, mobility, and payload over current US Army H-60 and US Marine Corps H-1 aircraft and provide Combatant Commanders with tactical capabilities at greatly increased operational and strategic distances. The FVL Capability Set 3 Materiel Development Decision was approved in October 2016. FY 2017 funding provided for Analysis of Alternatives (AoA) modeling, simulation, and analysis. FY 2018 funding completes development and execution of the AoA and begins acquisition planning and strategy development. FY19 funding will support the completion of a Technical Readiness Assessment and acquisition planning and strategy development, systems engineering support to decompose the draft Capability Development Document (CDD), and the development of Milestone A documentation and Technology Maturation and Risk Reduction (TMRR) Contract Requirements Package.</p>												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2017	FY 2018	FY 2019	
Title: Future Vertical Lift (FVL) Analysis of Alternatives									2.430	3.338	-	
Description: FVL Analysis of Alternatives modeling, simulation, and analysis performed by U.S. Army TRADOC Analysis Center, U.S. Army Materiel Systems Analysis Activity and other supporting agencies.												
FY 2018 Plans:												

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Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603801A / Aviation Advanced Development	Project (Number/Name) B47 / Future Vertical Lift Medium		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
Complete Analysis of Alternatives Support to include risk, cost and affordability, sustainment and trades. Begin the development of reporting documentation and staffing.				
FY 2018 to FY 2019 Increase/Decrease Statement: AoA will be fully funded in FY18, with final report released in 1st Quarter FY19.				
Title: Engineering Services / Research Studies Description: Engineering research, planning, modeling, analyses and reviews supporting the FVL acquisition program. FY 2018 Plans: Continue to support FVL AoA modeling, simulation and analysis. Initiate Test Evaluation and Master Plan (TEMP) and Draft Capability Development Document (CDD) documentation. FY 2019 Plans: Conduct Initial Readiness Assessment, prepare Systems Engineering Decomposition and Translation of Draft Capability Development Documentation (CDD) into Weapon System Specification and initiate Milestone A documentation development. FY 2018 to FY 2019 Increase/Decrease Statement: Engineering Services will continue in FY19.		4.527	7.422	7.150
Title: Program Management Description: Oversight and management of FVL acquisition program. FY 2018 Plans: Develop Acquisition Strategy and Life Cycle Cost Estimate for the FVL program. Continue oversight and program management support for FVL Analysis of Alternatives and research studies. FY 2019 Plans: Complete Acquisition Planning and Strategy Development for FVL Capability Set 3 aircraft. Begin development of Milestone A documentation and TMRR Contracts Requirements Package. FY 2018 to FY 2019 Increase/Decrease Statement: Program Management funding will continue in FY19.		0.320	2.404	2.424
Title: Supportability Analysis and Acquisition Support Description: Acquisition and supportability planning and development of documentation on the FVL program. FY 2018 Plans:		0.425	0.891	1.219

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Appropriation/Budget Activity 2040 / 4				R-1 Program Element (Number/Name) PE 0603801A / Aviation Advanced Development				Project (Number/Name) B47 / Future Vertical Lift Medium				
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2017	FY 2018	FY 2019
Continue to support FVL AoA Supportability, development of Core Logistics Analysis Documentation, and consolidate results to be documented in the Life Cycle Sustainment Plan.												
FY 2019 Plans: Complete the development of the Life Cycle Sustainment Plan and participate in the development of the Contracts Requirements Package to support the TMRR Request for Proposal (RFP) release.												
FY 2018 to FY 2019 Increase/Decrease Statement: Acquisition and Logistics Support will increase to support the documentation required for the RFP release.												
Accomplishments/Planned Programs Subtotals										7.702	14.055	10.793
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost	
• 313: Aviation Advanced Technology	80.909	147.882	115.712	-	115.712	97.125	93.750	95.603	97.515	0.000	728.496	
Remarks PE 0603003A/313 Advanced Rotary-wing Vehicle Technology funds the Joint Multi-Role (JMR) Technology Demonstrator (TD) and other Army Science & Technology (S&T) projects to mature, demonstrate and integrate components, subsystems and systems for vertical lift and unmanned air vehicle technologies. This will enable Army aviation modernization and reduce risk for FVL. JMR TD is not an FVL prototyping effort nor indicative of an end state FVL performance requirement.												
D. Acquisition Strategy An Analysis of Alternatives (AoA) was initiated in 3rd Quarter FY 2017 to assess the technical feasibility, operational feasibility, technical risk, and affordability of potential materiel solutions. The AoA will be informed by previous studies, ongoing Advanced Technology Development S&T projects, and input from Government, Industry and Academia. The results of the AoA and Technology Readiness Assessments will be available to support a projected Milestone A Decision in 3rd Quarter FY 2021 and a Technology Maturation and Risk Reduction (TMRR) RFP Release in 3rd Quarter FY 2021. After a successful Source Selection Evaluation Board, the Army will award competitive TMRR contracts to complete preliminary design and risk reduction testing. At the end of TMRR, and after a successful Milestone B Decision, the Army will award an Engineering and Manufacturing Development (EMD) contract to complete development and testing of the system before entering the Production and Deployment phase in the FY 2030 timeframe.												
E. Performance Metrics N/A												

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army												Date: February 2018			
Appropriation/Budget Activity 2040 / 4						R-1 Program Element (Number/Name) PE 0603801A / Aviation Advanced Development				Project (Number/Name) B47 / Future Vertical Lift Medium					
Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management	MIPR	FVL Program Office : Redstone Arsenal, AL	-	0.320	Jun 2017	2.404	Nov 2017	2.424	Nov 2018	-		2.424	Continuing	Continuing	Continuing
Subtotal			-	0.320		2.404		2.424		-		2.424	Continuing	Continuing	N/A
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Analysis of Alternatives (AoA)	TBD	TRADOC Analysis Center : Fort Leavenworth, KS	-	2.430	Jun 2017	3.338	Nov 2017	-		-		-	0.000	5.768	-
Subtotal			-	2.430		3.338		-		-		-	0.000	5.768	N/A
Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering Services / Research Studies - Organic	MIPR	FVL Program Office : Redstone Arsenal AL	-	0.549	Jun 2017	4.091	Nov 2017	4.900	Nov 2018	-		4.900	Continuing	Continuing	Continuing
Engineering Services / Research Studies - Other	C/FFP	GSA : Atlanta, GA	-	3.978	Aug 2017	3.331	Aug 2018	2.250	Aug 2019	-		2.250	Continuing	Continuing	Continuing
Acquistion and Supportability Analysis	MIPR	Army Logistics Command / Army Contracting Command : Redstone Arsenal, AL	-	0.425	Jun 2017	0.891	Nov 2017	1.219	Nov 2018	-		1.219	Continuing	Continuing	Continuing
Subtotal			-	4.952		8.313		8.369		-		8.369	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army										Date: February 2018			
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0603801A / Aviation Advanced Development					Project (Number/Name) B47 / Future Vertical Lift Medium			
	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	7.702		14.055		10.793		-		10.793	Continuing	Continuing	N/A
Remarks													

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army			Date: February 2018		
Appropriation/Budget Activity 2040 / 4		R-1 Program Element (Number/Name) PE 0603801A / Aviation Advanced Development		Project (Number/Name) B47 / Future Vertical Lift Medium	

Event Name	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Materiel Development Decision	1 MDD																											
Analysis of Alternatives																												
Weapons System Specification Development																												
Milestone A Documentation and Contracts Requirements Package																												
Projected Milestone A																												
Request for Proposal Release																												
Proposal Preparation																												
Source Selection Evaluation Board																												
Technology Maturation and Risk Reduction Contract Award																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Army			Date: February 2018
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603801A / Aviation Advanced Development	Project (Number/Name) B47 / Future Vertical Lift Medium	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Materiel Development Decision	1	2017	1	2017
Analysis of Alternatives	3	2017	1	2019
Weapons System Specification Development	1	2019	3	2020
Milestone A Documentation and Contracts Requirements Package	1	2019	3	2021
Projected Milestone A	3	2021	3	2021
Request for Proposal Release	4	2021	4	2021
Proposal Preparation	4	2021	1	2022
Source Selection Evaluation Board	1	2022	1	2023
Technology Maturation and Risk Reduction Contract Award	1	2023	1	2023