

# UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Army										Date: March 2019		
Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0604642A / Light Tactical Wheeled Vehicles							
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
Total Program Element	-	3.619	1.276	10.465	-	10.465	1.977	1.976	0.000	0.000	0.000	19.313
E40: LTV Prototype	-	3.619	1.276	10.465	-	10.465	1.977	1.976	0.000	0.000	0.000	19.313
<b>Note</b> This project includes GMV (AGMV1.1, Infantry Squad Vehicle (ISV), & SOCOM GMV1.1), and Up-Armored High Mobility Multi-purpose Wheeled Vehicle (UAH HMMWV) Recapitalization Program.												
<b>A. Mission Description and Budget Item Justification</b> Funding supports modernization of the current Tactical Wheeled Vehicle fleets by investigating technology insertions including, but not limited to: condition based maintenance, vetronics, Victory Architecture, autonomous operations and other emerging technologies. Funding also supports developing initial prototypes to enable refinement of Operational Requirements and early user feedback to support future sustainment and operational movement operating concepts.  The Army Ground Mobility Vehicle (GMV) provides Infantry Battalions with motorized expeditionary mobility platforms to provide needed operational mobility for the infantry squad with their associated equipment to move quickly around the battlefield. This capability is required across the range of military operations facing IBCT units conducting crises response, initial entry, and selected decisive action missions. GMV deploys worldwide by sea, air, and land modes to support strategic deployment and operational maneuver in accordance with Army and Joint doctrine. This capability provides flexibility for entry operations (permissive and non-permissive) to counter threat anti-access strategies by using multiple austere entry points to bring in combined arms configured units.  The Up-Armored HMMWV (UAH) provides a light tactical wheeled vehicle for command and control, troop transport, light cargo transport, shelter carrier, towed weapons prime mover, and weapons platform throughout areas of the battlefield. The UAH Recapitalization program is focused on addressing readiness, obsolescence and safety improvements, rebalancing payload, protection automotive performance and air transportability based on available trade-offs and in accordance with user requirements. The HMMWV currently cannot meet its validated operational requirements due to add-on armor weight, and requires modernization to restore those lost capabilities, improve reliability and reduce related Operations and Support costs.  FY20 GMV budget activities include GMV test assets, performance and quality testing, contractor test support, and prototypes.  FY20 HMMWV UAH Recapitalization Program budget activities include prototyping (to address powertrain structure, cooling pack and transmission), program support, contractor test support, and travel.												

**UNCLASSIFIED**

Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Army				Date: March 2019	
Appropriation/Budget Activity		R-1 Program Element (Number/Name)			
2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)		PE 0604642A / Light Tactical Wheeled Vehicles			
B. Program Change Summary (\$ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Previous President's Budget	7.000	8.212	2.965	-	2.965
Current President's Budget	3.619	1.276	10.465	-	10.465
Total Adjustments	-3.381	-6.936	7.500	-	7.500
• Congressional General Reductions	-0.006	-0.002			
• Congressional Directed Reductions	-	-6.934			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-3.101	-			
• SBIR/STTR Transfer	-0.274	-			
• Adjustments to Budget Years	-	-	7.500	-	7.500
Change Summary Explanation					
FY 2019 decrease of \$6.934M is for excess GMV test funding (\$2.705M) and JLTV-RV test funding ahead of need (\$4.229M).					
FY 2020 increase of \$7.5M is for Up-Armored High Mobility Multi-purpose Wheeled Vehicle (HMMWV UAH) Recapitalization.					

**UNCLASSIFIED**

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army										Date: March 2019		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604642A / <i>Light Tactical Wheeled Vehicles</i>				Project (Number/Name) E40 / <i>LTV Prototype</i>			
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
E40: <i>LTV Prototype</i>	-	3.619	1.276	10.465	-	10.465	1.977	1.976	0.000	0.000	0.000	19.313
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note This project includes GMV (AGMV1.1, Infantry Squad Vehicle (ISV), & SOCOM GMV1.1), and Up-Armored High Mobility Multi-purpose Wheeled Vehicle (UAH HMMWV) Recapitalization Program. High Mobility Multi-purpose Wheeled Vehicle (UAH HMMWV) Recapitalization is a new start effort in FY20.												
A. Mission Description and Budget Item Justification Funding supports modernization of the current Tactical Wheeled Vehicle fleets by investigating technology insertions including, but not limited to: condition based maintenance, vetronics, Victory Architecture, autonomous operations and other emerging technologies. Funding also supports developing initial prototypes to enable refinement of Operational Requirements and early user feedback to support future sustainment and operational movement operating concepts.  The Army Ground Mobility Vehicle (GMV) provides enhanced tactical mobility for an Infantry Brigade Combat Team (IBCT) 9-Soldier infantry squad with their associated equipment to move quickly around the battlefield. This capability is required across the range of military operations facing IBCT units conducting crises response, initial entry, and selected decisive action missions. GMV deploys worldwide by sea, air, and land modes to support strategic deployment and operational maneuver in accordance with Army and Joint doctrine. This capability provides flexibility for entry operations (permissive and non-permissive) to counter threat anti-access strategies by using multiple austere entry points to bring in combined arms configured units.  The Up-Armored HMMWV (UAH) provides a light tactical wheeled vehicle for command and control, troop transport, light cargo transport, shelter carrier, towed weapons prime mover, and weapons platform throughout areas of the battlefield. The UAH Recapitalization program is focused on addressing readiness, obsolescence and safety improvements, rebalancing payload, protection automotive performance and air transportability based on available trade-offs and in accordance with user requirements. The HMMWV currently cannot meet its validated operational requirements due to add-on armor weight, and requires modernization to restore those lost capabilities, improve reliability and reduce related Operations and Support costs.  FY20 GMV budget activities include GMV test assets, performance and quality testing, contractor test support, and prototypes.  FY20 HMMWV UAH Recapitalization Program budget activities include prototyping (to address powertrain structure, cooling pack and transmission), program support, contractor test support, and travel.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2018	FY 2019	FY 2020	
Title: GMV Contract Test Support									-	-	0.263	
Description: Funding is provided for the contract award for Ground Mobility Vehicle (GMV) contractor test support.												

**UNCLASSIFIED**

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army		Date: March 2019		
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604642A / <i>Light Tactical Wheeled Vehicles</i>		Project (Number/Name) E40 / <i>LTV Prototype</i>
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2018	FY 2019	FY 2020
FY 2020 Plans: GMV contractor test support.				
FY 2019 to FY 2020 Increase/Decrease Statement: Increase in funding for contractor test support due to the initiation of the Army competitive production contract award.				
Title: GMV Test and Evaluation  Description: Funding is provided for Ground Mobility Vehicle (GMV) testing events.		0.135	1.013	2.164
FY 2019 Plans: GMV performance and quality testing.				
FY 2020 Plans: GMV performance and quality testing. (Production Qualification Testing (PQT), Low Velocity Air Drop ( LVAD), and operational testing)				
FY 2019 to FY 2020 Increase/Decrease Statement: Increase in funding due to the start of test events for the Army competitive production contract award.				
Title: GMV Prototypes  Description: Funding is provided for the support of Ground Mobility Vehicle (GMV) Prototypes.		3.370	-	-
Title: GMV Test Assets  Description: GMV Test Assets for Performance, Rollover, and Low Velocity Air Drop (LVAD) testing.		0.114	-	0.538
FY 2020 Plans: LVAD test assets for ISV.				
FY 2019 to FY 2020 Increase/Decrease Statement: Initiation of production representative test assets are required for LVAD testing.				
Title: HMMWV UAH Recapitalization Design  Description: Award contracts to address readiness, obsolescence and safety issues to include improved powertrain structure, cooling pack and transmission.		-	-	3.150
FY 2020 Plans:				

## UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army			Date: March 2019		
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604642A / <i>Light Tactical Wheeled Vehicles</i>	Project (Number/Name) E40 / <i>LTV Prototype</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>			<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>
Address readiness, obsolescence and safety issues.					
<b>FY 2019 to FY 2020 Increase/Decrease Statement:</b> New start effort in FY20.					
<b>Title:</b> HMMWV UAH Recapitalization Program Support <b>Description:</b> Funding is provided for Matrix support of the HMMWV UAH Recapitalization program  <b>FY 2020 Plans:</b> Issue funding for Matrix Support.  <b>FY 2019 to FY 2020 Increase/Decrease Statement:</b> New start effort in FY20.			-	-	1.502
<b>Title:</b> HMMWV UAH Recapitalization Travel <b>Description:</b> Funding is provided for HMMWV UAH Recapitalization program travel.  <b>FY 2020 Plans:</b> Fund program support travel.  <b>FY 2019 to FY 2020 Increase/Decrease Statement:</b> New start effort in FY20.			-	-	0.300
<b>Title:</b> HMMWV UAH Recapitalization Test Support Package <b>Description:</b> Funding is provided for contractor test support package to include FSR support and spares.  <b>FY 2020 Plans:</b> Issue funding for contractor support package including miscellaneous spares.  <b>FY 2019 to FY 2020 Increase/Decrease Statement:</b> New start effort in FY20.			-	-	0.566
<b>Title:</b> HMMWV UAH Testing <b>Description:</b> Funding is provided for destructive, crash and reliability testing.  <b>FY 2020 Plans:</b>			-	-	1.982

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2020 Army								<b>Date:</b> March 2019			
<b>Appropriation/Budget Activity</b> 2040 / 5				<b>R-1 Program Element (Number/Name)</b> PE 0604642A / <i>Light Tactical Wheeled Vehicles</i>				<b>Project (Number/Name)</b> E40 / <i>LTV Prototype</i>			
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>								<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	
Issue funding for destructive, crash and reliability testing.											
<b>FY 2019 to FY 2020 Increase/Decrease Statement:</b> New start effort in FY20.											
<b>Title:</b> FY 2019 SBIR / STTR Transfer								-	0.263	-	
<b>Description:</b> FY 2019 SBIR / STTR Transfer											
<b>FY 2019 Plans:</b> FY 2019 SBIR / STTR Transfer											
<b>FY 2019 to FY 2020 Increase/Decrease Statement:</b> FY 2019 SBIR / STTR Transfer											
<b>Accomplishments/Planned Programs Subtotals</b>								3.619	1.276	10.465	
<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020 Base</b>	<b>FY 2020 OCO</b>	<b>FY 2020 Total</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• D15505: <i>Ground Mobility Vehicles (Light) GMV (L)</i>	40.935	42.695	37.038	-	37.038	19.078	17.914	18.000	17.000	Continuing	Continuing
• DV0230: <i>HMMWV Recapitalization Program</i>	-	-	5.734	-	5.734	-	-	-	-	0.000	5.734
<b>Remarks</b>											
<b>D. Acquisition Strategy</b>											
Ground Mobility Vehicle (GMV) Phase I: Per AROC on 10 August 2018 the Army's new direction is to procure 127 vehicles for USASOC, and 168 for Army GMV 1.1 for 3 Airborne IBCTs.											
GMV Phase II: Pursue development of the GMV ISV to fulfill the requirements for IBCTs using a non-developmental item. A firm fixed priced contract will be awarded through full and open competition. Production contract award is anticipated to be in FY20.											
HMMWV UAH Recapitalization: Pursue a design, prototyping, logistics products, and testing to determine a solution to address readiness, obsolescence and safety improvements.											
<b>E. Performance Metrics</b>											
N/A											

## UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Army												Date: March 2019			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604642A / <i>Light Tactical Wheeled Vehicles</i>				Project (Number/Name) E40 / <i>LTV Prototype</i>					
Product Development (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
GMV Contractor Test Support	TBD	TBD : TBD	0.153	-		-		0.263	Mar 2020	-		0.263	0.000	0.416	-
GMV Test Assets	TBD	TBD : TBD	-	0.114	Jan 2019	-		0.538	Mar 2020	-		0.538	0.000	0.652	-
GMV Prototypes	TBD	TBD : TBD	-	3.370	Jun 2019	-		-		-		-	0.000	3.370	-
HMMWV UAH Recapitalization Design (powertrain structure, cooling pack and transmission)	C/TBD	To Be Determined : To Be Determined	-	-		-		3.150	Feb 2020	-		3.150	0.000	3.150	-
FY 2019 SBIR / STTR Transfer	TBD	TBD : TBD	-	-		0.263		-		-		-	0.000	0.263	-
Subtotal			0.153	3.484		0.263		3.951		-		3.951	0.000	7.851	N/A
Support (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
HMMWV UAH Recapitalization PM Support	MIPR	PD LTV : TACOM Warren, MI	-	-		-		1.502	Oct 2019	-		1.502	0.000	1.502	-
HMMWV UAH Recapitalization Travel	MIPR	PD LTV : TACOM Warren, MI	-	-		-		0.300	Oct 2019	-		0.300	0.000	0.300	-
Subtotal			-	-		-		1.802		-		1.802	0.000	1.802	N/A
Test and Evaluation (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
GMV performance and qualification testing	MIPR	Various : Various	0.323	0.135	Mar 2019	1.013	Jun 2019	2.164	Aug 2020	-		2.164	0.000	3.635	-
HMMWV UAH Recapitalization Contractor	C/TBD	TBD : TBD	-	-		-		0.566	Feb 2020	-		0.566	0.000	0.566	-

## UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Army													Date: March 2019		
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604642A / Light Tactical Wheeled Vehicles				Project (Number/Name) E40 / LTV Prototype					
Test and Evaluation (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Test Support Package (FSR support and spares)															
HMMWV UAH Testing (destructive, crash and reliability)	MIPR	TBD : TBD	-	-		-		1.982	Feb 2020	-		1.982	0.000	1.982	-
Subtotal			0.323	0.135		1.013		4.712		-		4.712	0.000	6.183	N/A
			Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.476	3.619		1.276		10.465		-		10.465	0.000	15.836	N/A
Remarks															



**UNCLASSIFIED**

<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2020 Army			<b>Date:</b> March 2019		
<b>Appropriation/Budget Activity</b> 2040 / 5		<b>R-1 Program Element (Number/Name)</b> PE 0604642A / <i>Light Tactical Wheeled Vehicles</i>		<b>Project (Number/Name)</b> E40 / <i>LTV Prototype</i>	

Event Name	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
	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
AGMV1.1 MS C			1 MS C																									
AGMV1.1 Hardware Contract			2 Contract Award																									
AGMV1.1 UMR Approval			3 UMR																									
AGMV1.1 Log Development																												
GMV ISV OTA Prototype Contract Award								4																				
GMV ISV OTA Run-off Testing																												
GMV ISV MS C													5															
GMV ISV Production Contract													7 Contract Award															
GMV ISV Production Qualification Testing (PQT)																												
GMV ISV Operational Testing																												
GMV ISV First Unit Equipped (FUE)																												
HMMWV UAH Recapitalization Contract Award													6 Contract Award															
HMMWV UAH Recapitalization Design, Test and Evaluation																												

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Army																Date: March 2019												
Appropriation/Budget Activity 2040 / 5										R-1 Program Element (Number/Name) PE 0604642A / Light Tactical Wheeled Vehicles										Project (Number/Name) E40 / LTV Prototype								
Event Name	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
	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
HMMWV UAH Recapitalization ECP Contract Award																	8 Contract Award											

**UNCLASSIFIED**

<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2020 Army			<b>Date:</b> March 2019
<b>Appropriation/Budget Activity</b> 2040 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604642A / <i>Light Tactical Wheeled Vehicles</i>	<b>Project (Number/Name)</b> E40 / <i>LTV Prototype</i>	

**Schedule Details**

<b>Events</b>	<b>Start</b>		<b>End</b>	
	<b>Quarter</b>	<b>Year</b>	<b>Quarter</b>	<b>Year</b>
AGMV1.1 MS C	3	2018	3	2018
AGMV1.1 Hardware Contract	3	2018	3	2018
AGMV1.1 UMR Approval	4	2018	4	2018
AGMV1.1 Log Development	1	2019	1	2020
GMV ISV OTA Prototype Contract Award	3	2019	3	2019
GMV ISV OTA Run-off Testing	4	2019	2	2020
GMV ISV MS C	2	2020	2	2020
GMV ISV Production Contract	2	2020	2	2020
GMV ISV Production Qualification Testing (PQT)	4	2020	2	2021
GMV ISV Operational Testing	4	2021	1	2022
GMV ISV First Unit Equipped (FUE)	2	2022	2	2022
HMMWV UAH Recapitalization Contract Award	2	2020	2	2020
HMMWV UAH Recapitalization Design, Test and Evaluation	2	2020	3	2021
HMMWV UAH Recapitalization ECP Contract Award	1	2022	1	2022