RECORD VERSION

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INTRODUCTION

Chairman Norcross, Ranking Member Hartzler, and distinguished Members of the Tactical Air and Land Forces Subcommittee, thank you for your continued support and commitment to our Soldiers, our Civilians, and their Families. On behalf of the Acting Secretary of the Army, the Honorable John E. Whitley, and the Army Chief of Staff, General James C. McConville, thank you for the opportunity to speak before your committee on the topics of the Tactical Wheeled Vehicle (TWV) Fleet and the Electrification of Army Vehicles.

TACTICAL WHEELED VEHICLE FLEET

The Army's portfolio of over 200,000 Tactical Wheeled Vehicles (TWVs) consists of Light, Medium, and Heavy trucks from primarily three Original Equipment Manufacturers (OEMs), which include Oshkosh Defense, AM General, and Navistar Defense. The three major capabilities that make our military vehicles different from a straight commercial off-the-shelf vehicle are severe off-road mobility, crew protection, and the ability to burn JP8 or jet fuel. Two of our newest OEM partners are GM Defense, who is building the Infantry Squad Vehicle (ISV), and Mack Defense, who builds our Heavy Dump Truck.

The Army's priority for the Tactical Wheeled Fleet is the Joint Light Tactical Vehicle or JLTV. We currently have 4,142 in the inventory and expect to field another 2,797 this year. The Army's Procurement Objective is to buy a total of 49,099 JLTVs by 2041 with the next opportunity for competition in TWVs being the JLTV follow on contract with target award at the end of Fiscal Year (FY) 2022. However, given resource constraints, the Army recognizes it will continue to have a mixed Light Tactical Vehicle (LTV) fleet

that will include just over 50,000 High Mobility Multipurpose Wheeled Vehicles (HMMWVs), even after all of the JLTVs are purchased. Sustaining the entire LTV fleet through 2050 would benefit from limited procurement of new HMMWVs and retrofitting other HMMWVs with the Anti-Lock Brake System/Electronic Stability Control (ABS/ESC) kits to insure spare parts are available and we continue to improve safety.

The Army's second priority, with regard to the Tactical Wheeled Vehicle fleet, is to maintain a warm production base for the Family of Medium Tactical Vehicles (FMTV) and the Heavy Tactical Vehicle (HTV) fleets. The FMTV fleet has met its Acquisition Objective and is currently 66 percent modernized. Despite some reliability issues with the FMTV A2 over the past year, we have corrected those problems and testing has resumed. The phased approach we are taking will extend level production to approximately 1.5 vehicles a day.

As for the heavy fleet in the near term, the Army will continue to recapitalize (RECAP) heavy trucks that are approaching or exceeding their Economic Useful Life (EUL) through 2023. The RECAP program is critical to modernizing the aging fleet. RECAP will remanufacture and upgrade the 20+ year-old Heavy Expanded Mobility Tactical Truck (HEMTT) A0 and HEMTTA2 vehicles to the current A4 configuration. The RECAP also applies to the Palletized Load System (PLS) vehicles also approaching their EUL. The Army recently awarded a 3-year extension to the current Family of HTVs IV production contract. The contract extension will enable the Army (as well as other Services and Foreign Military Sales) to RECAP and procure new production vehicles. Lastly, United States Army Europe and Africa (USAREUR-AF) had a need to fill a capability gap to transport heavy tracked vehicles. As a result, the Army is fielding

modified M1070A1 tractors and procuring customized commercial-based trailers to achieve European road permits for 75 tons.

With the HTV fleet having reached its design maturity, the Army is exploring the concept of replacing the HEMTT, PLS, and the M915/M1088 Tractors with the Common Tactical Truck (CTT). The CTT would be a commercial based truck designed with a modular truck platform that leverages best commercial practices, lowers procurement costs (commercial economies of scale) and optimizes available and emerging technologies. This has the potential to “shift the cost curve,” saving 15 to 30 percent.

VEHICLE ELECTRIFICATION

Electrification provides land forces in Multi-Domain Operations (MDO) the ability to operate at longer distances without refueling and provides extended silent-watch capability. In addition, the combination of silent mobility, reduced thermal signature, and improved sprint speeds will allow greatly improved convergence of lethal and nonlethal effects. Finally, electrification provides the on-board electrical power and energy storage required for the sensors and mission payloads envisioned for land forces in MDO.

Under the auspices of Army Futures Command (AFC), the United States Army Combat Capabilities Development Command (DEVCOM) Ground Vehicle Systems Center (GVSC) is focusing its Science and Technology (S&T) funding for electrification primarily on addressing combat systems capabilities, conducted under the Platform Electrification and Mobility (PEM) project. PEM is aimed at technical gaps that commercial industry is not addressing as they develop electrification solutions for on-road, commercial, wheeled systems. The combination of tractive forces, operating temperatures, and duty cycles associated with combat vehicles prevent direct adoption

of commercial solutions. Although PEM is focused on combat systems, the architecture and some of the component technologies are also applicable to tactical vehicles, including anti-idle and hybrid electric architecture, high voltage modular battery design, and quiet JP-8 fuel cell range extender technology, generators, and electric drive motors.

GVSC is also leveraging the Office of the Secretary of Defense's Operational Energy Capability Improvement Fund, which funded the Tactical Vehicle Electrification Kit (TVEK), for an FY 2021 project. This jointly funded project by both Project Manager-JLTV and Marine Corps Systems Command will demonstrate a JLTV anti-idle system that is expected to achieve up to 25 percent fuel savings through reduction in engine idle time. TVEK retrofit illustrates progression toward an electrified ground vehicle fleet. In addition to significantly reducing fuel consumption, TVEK provides 80 percent reduction in idle time and nearly 60 percent reduction in engine run-time in some operational scenarios.

As an example of a potential utilization, there is also growing support for using the niche Scout mission to enter the Electric Vehicle (EV) market and field a capability quickly. There are a significant number of commercial production vehicles, in the pick-up truck class, that will be entering the market in the FY 2022-2023 timeframe. The Army's intent is to leverage the development and maturity of the commercial industry to field a capability. The ability to field a Mobile Recharging capability is a critical element to realize a full electric vehicle. As a result, the initial electric vehicle solution is likely to be a Hybrid drive (EV with range extender (generator)) due to the range requirement and concern with tactical edge recharging.

Finally, from a commercial sector standpoint, some of the opportunities from which the Army can leverage modified products include: common components, autonomy "ready," standard Vetronics architecture for interoperability, and electric or hybrid-electric vehicles. With minimal government research and development investments in this area, the Army will need to closely align with industry's timeline for introducing these capabilities while insuring conditions for competition. The best way for the Army to manage the modernization/readiness risk associated with a constrained budget is to maintain open contracts with warm production so the ability to surge is readily available when needed.

CONCLUSION

The Army would like to thank the committee for today's opportunity to discuss the current TWV fleet and the potential for incorporating electrification technologies. We look forward to your questions.