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## DEFENSE ACQUISITIONS

# Future Ground-Based Vehicles and Network Initiatives Face Development and Funding Challenges

Statement of Belva M. Martin, Director  
Acquisition and Sourcing Management

U.S. Government Accountability Office



# Report Documentation Page

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Highlights of [GAO-12-181T](#), a testimony before the Subcommittee on Tactical Air and Land Forces, Committee on Armed Services, House of Representatives

## Why GAO Did This Study

After the Army canceled the Future Combat System in June of 2009, it began developing modernization plans, including developing a new Ground Combat Vehicle (GCV) and additional network capability. At the same time, the Army was considering options on how to improve its light tactical vehicles.

This statement addresses potential issues related to developing (1) the new GCV, (2) a common information network, and (3) the Joint Light Tactical Vehicle (JLTV) in a constrained budget environment. The statement is based largely on previous GAO work conducted over the last year in response to congressional requests and results of other reviews of Army modernization.

To conduct this work, GAO analyzed program documentation, strategies, and test results; interviewed independent experts and Army and Department of Defense (DOD) officials; and witnessed demonstrations of current and emerging network technologies.

DOD reviewed the facts contained in this statement and provided technical comments, which were incorporated as appropriate.

## What GAO Recommends

GAO is not making any recommendations with this statement; however, consistent with previous work, this statement underscores the importance of developing sound requirements and focusing up front on what modernization efforts will deliver and at what cost.

View [GAO-12-181T](#). For more information, contact Belva Martin at (202) 512-4841 or [martinb@gao.gov](mailto:martinb@gao.gov).

October 26, 2011

## DEFENSE ACQUISITIONS

### Future Ground-Based Vehicles and Network Initiatives Face Development and Funding Challenges

## What GAO Found

Delivering a feasible, cost-effective, and executable GCV solution presents a major challenge to the Army, with key questions about the robustness of the analysis of alternatives, the plausibility of its 7-year schedule, and cost and affordability. DOD and the Army have taken steps to increase oversight of the program, but resolving these issues during technology development will remain a challenge. For example, the Army has already reduced some requirements and encouraged contractors to use mature technologies in their proposals, but the 7-year schedule remains ambitious, and delays would increase development costs. Independent cost estimates have suggested that 9 to 10 years is a more realistic schedule. Over the next 2 years during the technology development phase, the Army faces major challenges in deciding which capabilities to pursue and include in a GCV vehicle design and determine whether the best option is a new vehicle or modifications to a current vehicle.

The Army's new information network strategy moves away from a single network development program to an incremental approach with which feasible technologies can be developed, tested, and fielded. The new strategy has noteworthy aspects, such as using periodic field evaluations to assess systems that may provide potential benefit and getting soldier feedback on the equipment being tested. However, the Army has not articulated requirements, incremental objectives, or cost and schedule projections for its new network. It is important that the Army proceed in defining requirements and expected capabilities for the network to avoid the risk of developing individual capabilities that may not work together as a network. With the cancellation last week of its ground mobile radio and continuing problems in developing technology to provide advanced networking capability, the Army will still need to find foundational pieces for its network.

The Army is reworking earlier plans to develop and acquire the JLTV and is planning to recapitalize some of its High Mobility, Multipurpose Wheeled Vehicles (HMMWV). These efforts have just begun, however, and their results are not yet assured. To reduce risk in the JLTV program, the services relied on multiple vendors during technology development to increase their knowledge of the needed technologies, determine the technology maturity level, and determine which requirements were achievable. As a result, the services identified trades in requirements to drive down the cost of the vehicle. For example, the services found that JLTV could not achieve both protection level and transportability goals, so the services are accepting a heavier vehicle. A potential risk for the services in allowing industry to build vehicles for testing is that the prototypes may not be mature; the Army will need to keep its options open to changes that may result from these tests. Both the Army and the Marine Corps have articulated a significant future role for their Up-Armored HMMWV fleets, yet the fleets are experiencing reduced automotive performance, the need for better protection as threats have evolved, and other issues. The Army is planning to recapitalize a portion of its Up-Armored HMMWV fleet to increase automotive performance and improve blast protection. The Marine Corps' plans to extend the service life of some of its HMMWVs used in light tactical missions are not yet known.

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Chairman Bartlett, Ranking Member Reyes, and Members of the Subcommittee:

I am pleased to be here today to discuss the Department of the Army's recent initiatives to acquire ground-based combat and tactical vehicles and an information network capability. In the wake of the June 2009 decision to cancel the Future Combat System, which included a new class of manned ground vehicles anchored by an advanced information network, the Army began developing plans for a new Ground Combat Vehicle (GCV) and an incremental tactical network capability. At about the same time, the Army began considering ways to improve its light tactical vehicles and developed the Joint Light Tactical Vehicle (JLTV) program with the U.S. Marine Corps. My statement today, based largely on work we have conducted over the last year in response to requests from this subcommittee and results of other reviews of Army modernization, will address potential issues that the Army faces as it prepares to make significant decisions on its GCV, network, and light tactical vehicle programs in this constrained budget environment.

To assess the GCV program, we analyzed program documentation, such as the Initial Capabilities Document and the Technology Development Strategy; interviewed Army and Department of Defense (DOD) officials; and interviewed independent experts and reviewed their analyses. We analyzed the Army networking and management strategy, and compared that strategy with DOD acquisition policy and best practices. We also observed demonstrations of current and emerging networking equipment, analyzed evaluation results, obtained soldier feedback, and met with Army and DOD officials who are involved in defining the tactical network. To assess JLTV, we analyzed documentation, interviewed Army and Marine Corps officials, and analyzed how the Mine Resistant Ambush Protected (MRAP) vehicle program, including the MRAP-All Terrain Vehicle (M-ATV), has influenced the JLTV program. We also obtained and reviewed JLTV test results and interviewed test officials. To assess the High Mobility, Multipurpose Wheeled Vehicle (HMMWV) recapitalization plan, we analyzed both services' respective plans for future recapitalization efforts, reviewed past efforts, and interviewed Army and Marine Corps officials.

We conducted work on these Army programs as part of performance audits from December 2010 to October 2011, in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions

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based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

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## Background

The Army's ground-based military operations generally use two kinds of vehicles: combat vehicles designed for a specific fighting function and tactical vehicles designed primarily for multipurpose support functions. Most combat vehicles move on tracks—including the Abrams tank and the Bradley Fighting Vehicle—but some move on wheels, such as the Stryker. Tactical vehicles generally move on wheels, including the HMMWV and the JLTV.

Most major defense acquisitions follow a structured acquisition process, which normally consists of three discrete phases: (1) technology development; (2) engineering and manufacturing development; and (3) production and deployment. Programs are expected to meet certain criteria at milestone decision points for entry into each phase.<sup>1</sup> For anticipated major defense acquisition programs,<sup>2</sup> like the GCV and the JLTV, the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD/ATL) generally serves as the Milestone Decision Authority. The Milestone Decision Authority is responsible for approving the programs' entry into the defense acquisition system, approving entry into subsequent phases, and documenting the various approvals through acquisition decision memorandums.

The Army's GCV program is intended to modernize the current ground combat vehicle fleet, replacing a portion of the Bradley Infantry Fighting Vehicles currently in inventory. In February 2010, the Army issued a request for proposals for the technology development phase of the GCV before completing the required analysis of alternatives (AOA), citing schedule urgency. In May 2010, the Army convened a "Red Team" to assess the risk of achieving the GCV schedule. The Red Team issued its

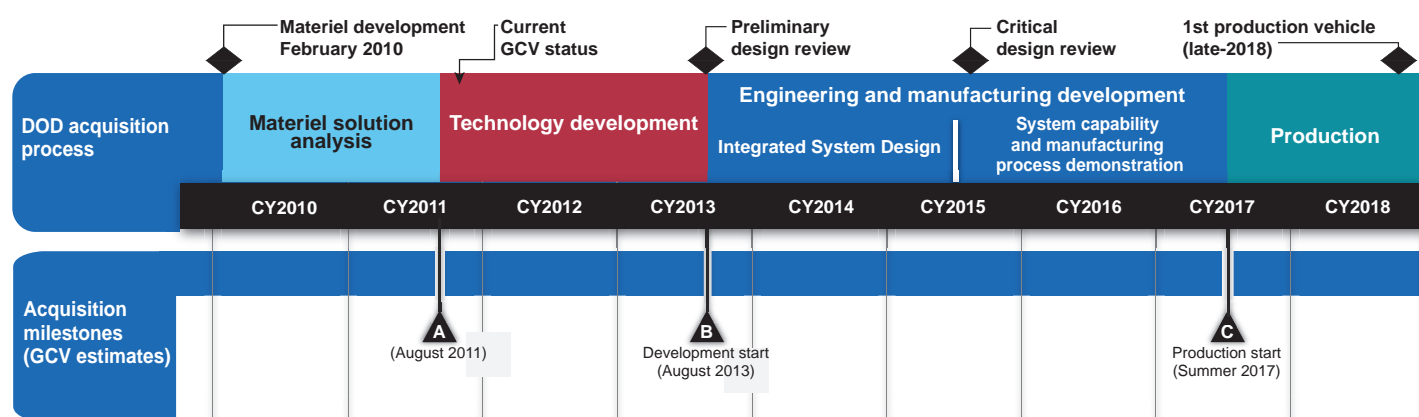
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<sup>1</sup>Milestone A is the point at which a program enters the technology development phase, milestone B is entry into the engineering and manufacturing development phase, and milestone C is entry into the production and deployment phase.

<sup>2</sup>Major defense acquisition programs are those identified by DOD that require eventual total research, development, test, and evaluation expenditures, including all planned increments, of more than \$365 million, or procurement expenditures, including all planned increments, of more than \$2.19 billion, in fiscal year 2000 constant dollars.

report in August 2010, citing major risk areas including schedule, technical maturity, and affordability of the system. The Army rescinded the original request for proposals and issued another in late 2010. The milestone A decision was expected in April 2011, but did not occur until August 2011 (see fig. 1). In August, the Army awarded technology development contracts to two contractor teams. A third contractor team submitted a proposal but did not receive a contract award and has filed a bid protest with GAO that is still being considered.

**Figure 1: GCV Program Events**



Source: GAO analysis of Army data and the DOD acquisition process.

The Army has been defining a strategy to develop, demonstrate, and field a common tactical information network across its forces. Generally, such a network is expected to act as an information superhighway to collect, process, and deliver vast amounts of information such as images and communications while seamlessly linking people and systems. The Army's current strategy is to better understand current Army networking capabilities, determine capabilities needed, and chart an incremental path forward. The Army plans regular demonstrations as the network grows and its capability improves.

The Army and Marine Corps generally define light tactical vehicles as capable of being transported by a rotary wing aircraft and with a cargo capacity of equal to or less than 5,100 pounds. Light tactical vehicles represent about 50 percent of the Army's tactical wheeled vehicle fleet and currently consist of the HMMWV family of vehicles. The Army's HMMWV program also provides vehicles to satisfy Marine Corps, Air Force, and other requirements. The JLTV is expected to be the next generation of light tactical vehicles and is being designed to provide the

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advances in protection, performance, and payload to fill the capability gap remaining between the HMMWV and MRAP family of vehicles.<sup>3</sup> JLTV is being designed to protect its occupants from the effects of mines and improvised explosive devices without sacrificing its payload capability or its automotive performance, which has not been the case with the other tactical wheeled vehicles.

The Army's recent history with its acquisition programs was the subject of a review by a panel chartered by the Secretary of the Army. In its January 2011 report,<sup>4</sup> the panel noted that the Army has increasingly failed to take new development programs into full-rate production. From 1990 to 2010, the Army terminated 22 major defense acquisition programs before completion. While noting many different causes that contribute to a program's terminations, the panel found that many terminated programs shared several of the same problems, including weak trade studies or analyses of alternatives; unconstrained weapon system requirements; underestimation of risk, particularly technology readiness levels; affordability reprioritization; schedule delays; and requirements and technology creep. The panel made a number of recommendations to help make the Army's requirements, resourcing, and acquisition processes more effective and efficient.

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<sup>3</sup>The HMMWV has served as DOD's primary wheeled vehicle for shelter carriers, command and control systems, light cargo and troop carriers, weapons carriers, and ambulances for over 25 years. MRAPs were acquired to support operations in Iraq and Afghanistan and are designed to better mitigate the effects of improvised explosive devices, underbody mines, and small arms fire threats.

<sup>4</sup>Office of the Secretary of the Army, *Army Strong: Equipped, Trained and Ready, Final Report of the 2010 Army Acquisition Review* (Washington, D.C.: Jan. 2011).

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## Army Faces Major Challenges to Identify a Feasible, Cost-Effective, and Executable GCV Solution

Over the next 2 years during the technology development phase, the Army faces major challenges to identify a feasible, cost-effective, and executable solution that meets the Army's needs. Among these are making choices on which capabilities to pursue and include in a GCV vehicle design and determining whether the best option is a new vehicle or a modified current vehicle. In our March 2011 testimony,<sup>5</sup> we identified key questions about GCV pertaining to how urgently it is needed, robustness of the analysis of alternatives, plausibility of its 7-year schedule, cost and affordability, and whether mature technologies would be used. Since that time, the Army has moved the CGV program into the technology development phase. DOD and the Army have taken positive steps to increase their oversight of the program; however, the timely resolution of issues surrounding the areas previously identified will be a major challenge.

- **Urgency of need:** The Army's recent combat vehicle capability portfolio review confirmed the Army's need for GCV as a Bradley Infantry Fighting Vehicle replacement and USD/ATL approved the GCV acquisition program.<sup>6</sup> USD/ATL agreed that the Army has a priority need for a GCV but the number of caveats in the approval decision (as discussed below) raises questions about the soundness of the Army's acquisition plans and time lines.
- **Analysis of alternatives:** After initially bypassing completion of the AOA process, the Army subsequently conducted an AOA but was directed by USD/ATL to conduct more robust analyses, throughout the technology development phase, to include design and capability trades intended to reduce technical risks and GCV production costs. We have reported that a robust AOA can be a key element in ensuring a program has a sound, executable business case prior to program initiation and that programs that conduct a limited AOA tended to experience poorer outcomes—including cost growth.<sup>7</sup> The

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<sup>5</sup>GAO, *Defense Acquisitions: Key Questions Confront the Army's Ground Force Modernization Initiatives*, [GAO-11-425T](#) (Washington, D.C.: March 9, 2011).

<sup>6</sup>Capability portfolio reviews are the Army's process for identifying and eliminating redundant systems, and ensuring that funds are properly programmed, budgeted, and executed for surviving systems in order to yield the most value to the Army.

<sup>7</sup>GAO, *Defense Acquisitions: Many Analyses of Alternatives Have Not Provided a Robust Assessment of Weapon System Options*, [GAO-09-665](#) (Washington, D.C.: Sept. 24, 2009).

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Army is expected to include sensitivity analyses in the AOA to explore trade-offs between specific capabilities and costs. These analyses will be supported by assessments of existing combat vehicles to determine whether they are adequate alternatives to a new vehicle, or whether some of the designs or capabilities of existing vehicles should be incorporated into a new GCV. Concurrently, the GCV contractor teams will conduct design trades and demonstrate technologies, the results of which will also be fed back into the AOA updates.

- **Plausibility of 7-year schedule:** The Army's plan to deliver the first production vehicles in 7 years still has significant risk. Since GCV was originally conceived in 2009, the Army has already reduced some requirements and encouraged interested contractors to use mature technologies in their proposals. However, the schedule remains ambitious and USD/ATL has stipulated that the Army will need to demonstrate that the schedule is both feasible and executable. According to an independent Army program evaluator, the next 2 years of technology development will require many capability and requirements trades in order to better define an acceptable solution at the same time that technology risks for that solution are to be identified and mitigated. Concurrent activities can lead to poor results, calling into question whether the 7-year schedule is executable. The independent cost estimate submitted for the milestone A review featured higher GCV development costs with the assumption that the Army would need 9 or 10 years to complete the program, instead of the assumed 7 years.
- **Cost and affordability:** Cost continues to be a challenge, as an independent cost estimate was at least 30 percent higher than the Army's estimate for GCV procurement. USD/ATL has directed that continued program approval depends on the Army's ability to meet the \$13 million procurement unit cost target. As for affordability, with the expectation that less funding will be available in coming years, the Army has made some trades within the combat vehicle portfolio. According to Army officials, the Army plans to proceed with GCV as currently planned, but several other combat vehicle programs—such as anticipated upgrades for the Bradley, Abrams, and Stryker vehicles—are being reshaped or delayed.
- **Use of mature technologies:** The Army encouraged interested contractor teams to use mature technologies in their GCV proposals. Due to the current bid protest, we do not have insight into what the contractor teams proposed in terms of specific critical technologies or their maturity. A DOD official stated, and we agree, that it will be

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important that technologies be thoroughly evaluated at the preliminary design review before the decision to proceed to the engineering and manufacturing development phase.

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## **Ambitious Army Information Network Strategy Has Noteworthy Aspects but Unresolved Issues Could Affect Long-Term Implementation**

The Army has taken a number of steps to put together a more realistic strategy to develop and field an information network for its deployed forces than the network envisioned for the Future Combat System program. However, the Army is proceeding without defining requirements for the network and articulating clearly defined capabilities. As a result, the Army runs the risk of developing a number of stovepipe capabilities that may not work together as a network, thus wasting resources. The Army has moved away from its plan for a single network development program under Future Combat System to an incremental approach with which feasible technologies can be developed, tested, and fielded. This planned approach reflects lessons learned and changes the way the Army develops, acquires, and fields network capabilities. Under this new approach, numerous programs will be developed separately and coordinated centrally, and network increments will be integrated and demonstrated in advance of fielding rather than the previous practice of ad hoc development and integration in the field. A key aspect of the implementation of the new approach will be aligning the schedules of the separate programs with the Army's planned, semiannual field events, called network integration evaluations, where emerging technologies are put in soldiers' hands for demonstration and evaluation.

Several key aspects of the Army's Network Strategy include:

- In our March 2011 testimony,<sup>8</sup> we pointed out that roles and responsibilities for network development were not clear. Since then, senior Army leadership issued a directive detailing the collective roles, responsibilities, and functions of relevant Army organizations involved with the network modernization effort.
- The Army is currently working to establish a comprehensive integrated technical baseline for the network and addressing prioritized capability gaps. With this baseline, the Army expects to build on elements of the network already in place with an emphasis on capturing emerging technologies that deliver capability incrementally

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<sup>8</sup>GAO-11-425T.

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to multiple units at the same time. This represents a significant departure from the previous practice of fielding systems individually and often to only one element of the operational force at a time (for instance, companies, battalions, or brigades).

- The network integration evaluations are a key enabler of the Army's new network strategy and assess systems that may provide potential benefits and value to the Army while identifying areas requiring additional development. The evaluation process provides the Army an opportunity to improve its knowledge of current and potential network capability. Additionally, it provides soldier feedback on the equipment being tested. For example, members of the Army's network test unit, the Brigade Modernization Command, indicated that a number of systems tested should be fielded and other systems that should continue development.

Several issues will need to be resolved as the Army implements its network strategy. For example,

- The Army has not yet announced requirements nor has it established cost and schedule projections for development and fielding of its network. Since the Future Combat System termination, the Army does not have a blueprint or framework to determine how the various capabilities it already has will fit together with capabilities it is acquiring to meet the needs of the soldier. Even with an incremental approach, it is important for the Army to clearly articulate the capabilities the system is attempting to deliver. Without this knowledge, the Army runs the risk of acquiring technologies that may work in a stand-alone mode but do not add utility to the broader network strategy.
- The network integration evaluation provided an extensive amount of data and knowledge on the current Army network and candidate systems for the network. However, since the network integration evaluation serves as an evaluation instrument, it is important to have test protocols that capture objective measures and data on the network's performance. Two independent Army test oversight agencies, reflecting on the evaluation results, expressed concern over not having proper instrumentation for the overall evaluations; in particular, not having the necessary instrumentation to conduct operational tests on large integrated networks and not having clear network requirements.

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- Army officials are developing a strategy to identify, demonstrate, and field emerging technologies in an expedited fashion. To date, the Army has developed an approach to solicit ideas from industry and demonstrate the proposed technologies in the network integration evaluation. However, the Army is still formulating its proposed approach for funding and rapidly procuring the more promising technologies.
  - Development of the Joint Tactical Radio System ground mobile radio, a software-defined radio that was expected to be a key component of the network has recently been terminated. In a letter to a congressional defense committee explaining the termination, the acting USD/ATL stated that the termination was based on growth in unit procurement costs. He added that it is unlikely that Joint Tactical Radio System ground mobile radio would affordably meet requirements and may not meet some requirements at all. The radio performed poorly during the network integration evaluation and was given a “stop development and do not field” assessment by the test unit. Based on the assessment that a competitive market had emerged with the potential to deliver alternate radios to meet the capability at a reduced cost, the acting USD/ATL also established a new program for an affordable; low-cost; reduced size, weight, and power radio product. At this point, it is not yet clear when and how that program will proceed or how these new radios will be able to fit within the Army’s network strategy.
  - The Army plans for the future tactical network to feature the use of the wideband networking and soldier radio waveforms and, in our March 2011 testimony,<sup>9</sup> we reported that the Army has had trouble maturing these waveforms for several years and they are still not at acceptable levels of maturity.<sup>10</sup> Although both waveforms experienced limited successes during the recent network integration evaluation testing, Army officials indicate that the wideband networking waveform continues to be very complex, and not fully understood, and there may be substantial risk maturing it to its full capability requirement. With the termination of the ground mobile radio, it is unclear how waveform maturation will continue.

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<sup>9</sup>[GAO-11-425T](#).

<sup>10</sup>A waveform is the representation of a signal that includes the frequency, modulation type, message format, and/or transmission system. The wideband networking and soldier radio waveforms provide key advanced networking capability.

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- Although the network integration kit—expected to be a fundamental part of the Army’s information network—was found to have marginal performance, poor reliability, and limited utility, the USD/ATL approved procurement of one additional brigade set of network integration kits. The decision made potential fielding of the kits—radios, waveforms, integrated computer system, and software—contingent on user testing that successfully demonstrates that it can improve current force capabilities. The network integration kit again performed poorly during the recent network integration evaluation and received a “stop development and do not field” assessment. Army network officials have indicated that a senior Army leadership memorandum will be forthcoming that will cancel further network integration kit development and fielding. Earlier, the Army concluded that the network integration kit was not a long-term, viable, and affordable solution.

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## Services to Rely on Industry to Provide Potential Solutions for Tactical Wheeled Vehicle Needs

To reduce risk in the JLTV program, the Army and Marine Corps entered a technology development phase with multiple vendors to help increase their knowledge of the needed technologies, determine the technologies’ maturity level, and determine which combination of requirements were achievable. The contractors delivered prototype vehicles in May 2010 and testing to evaluate the technical risks in meeting the proposed requirements, among other things, was completed on the vehicles in June 2011. Because of the knowledge gained through the technology development phase, the services have worked together to identify trades in requirements to reduce weight and to drive down the cost of the vehicle. A different outcome may have resulted if the services had proceeded directly to the engineering and manufacturing development phase, as had been considered earlier.

Based on the technology development results, the services concluded that the original JLTV requirements were not achievable and its cost would be too high. For example, the services found that JLTV could not achieve both protection levels and transportability, with weight being the issue. As a result, the services have adjusted the JLTV transportability requirement to a more achievable level and the Army and Marine Corps have decided that they would rely on HMWWVs for other missions initially intended for JLTV. In fact, the Army has chosen to proceed with even higher protection levels than planned earlier for JLTV. The Army now plans to have protection levels equal to the M-ATV, including underbody protection, while the Marine Corps will continue with the original protection level, similar to the MRAP family of vehicles except for the underbody protection, but plans to conduct more off-road operations to

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avoid mines and roadside bombs. As for armor protection, the services have found that development of lightweight, yet robust armor has not proceeded as rapidly as hoped and production costs for these new technologies are significantly higher than for traditional armor.

The services have established an average procurement cost target of \$350,000.<sup>11</sup> A key component of the average procurement cost is the average manufacturing unit cost which includes the cost of labor, materials, and overhead to produce and assemble the product. Achieving the average procurement cost target of \$350,000 would require an average manufacturing unit cost of \$250,000 to \$275,000. While one recent technology development projection of a fully armored JLTV average procurement cost exceeded \$600,000, the program office now estimates that, by implementing requirements trades and the cost savings from those trades, industry can meet the average manufacturing unit cost and average procurement cost targets. Nevertheless, meeting the JLTV cost targets will be a challenge and will also likely depend on what type of contract the services award. The services' current JTLV plan is to award a multiyear procurement contract with sizable annual quantities, once a stable design is achieved.

Originally, the services planned to follow a traditional acquisition approach for JLTV and enter the engineering and manufacturing development phase in January 2012. According to the Army program manager for light tactical vehicles, the services now plan to use a modified MRAP acquisition model in which industry would be asked to build a set of vehicles that would subsequently be extensively tested prior to a production decision. The Army has stated that industry had demonstrated several competitive prototypes whose performance and cost has been verified and believes that industry can respond with testable prototypes within about 1 year. Many details of the new strategy have yet to be worked out but a milestone B review is anticipated in April 2012. While this approach is seen as saving time and money, it will forgo the detailed design maturation and development testing process typically done early in the engineering and manufacturing development phase. A key risk is the potential for discovering late that the vehicles are still not mature.

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<sup>11</sup>The average procurement unit cost includes the average for such items as the costs of procuring technical data, training, support equipment, and initial spares. In addition, the cost of armor options would be an additional \$60,000 per unit.

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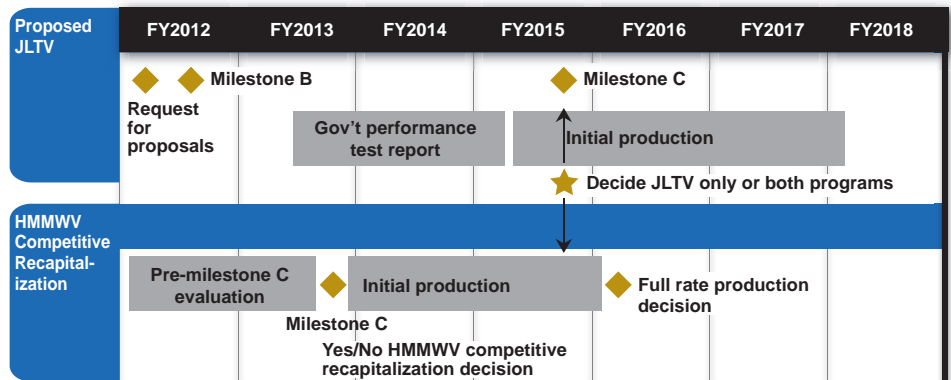
## HMWWV Recapitalization Effort

Both the Army and the Marine Corps have articulated a significant role for the Up-Armored HMMWV in combat, combat support, and combat service support roles beyond fiscal year 2025 but their fleets are experiencing reduced automotive performance, loss of transportability, higher operation and sustainment costs, and the need for better protection as the threats have evolved. The Army plans to recapitalize a portion of its Up-Armored HMMWV fleets by establishing requirements, seeking solutions from industry through full and open competition, and testing multiple prototype vehicles before awarding a single production contract. The Army's emerging effort—the Modernized Expanded Capacity Vehicle program—aims to modernize vehicles to increase automotive performance, regain mobility, extend service life by 15 years, and improve blast protection. The initial increment of recapitalized vehicles for the Army is expected to be about 5,700, but depending on the availability of funds, the quantity for the Army could increase. The Army plans a two-phased acquisition strategy for recapitalizing the Up-Armored HMMWV that includes awarding contracts to up to three vendors for prototype vehicles for testing and a production contract to a single vendor. The production decision is scheduled for late fiscal year 2013. The Army is anticipating a manufacturing cost of \$180,000 per vehicle, not including armor, based on the cost performance of similar work on other tactical platforms managed by the Army.

According to the Marine Corps developers, the Marine Corps has concluded a recapitalized HMMWV will not meet requirements for its fleet of 5,000 light combat vehicles. However, it will conduct research to find the most effective way to sustain the balance of the fleet—about 14,000 vehicles—until 2030. The Marine Corps plans to leverage components and subsystems from the Army-sponsored HMMWV recapitalization program. Detailed information on this effort is not currently available. Marine Corps and Army officials have said they intend to cooperate on the recapitalization effort and are sharing information on their individual plans to help maximize value for the available funding.

As the services proceed to implement their new JLTV and HMMWV strategies, they have identified a point in fiscal year 2015 (see fig. 2) where a decision will be made on whether to pursue JLTV only or both programs. By then, the technology and cost risks of both efforts should be better understood.

**Figure 2: JLTV and HMMWV Competitive Recapitalization Schedules**



Source: GAO analysis of program office information.

## Concluding Remarks

The Army continues to struggle to define and implement a variety of modernization initiatives since the Future Combat System program was terminated in 2009. The most recent example of this is the termination of the ground mobile radio, which will require the Army to develop new plans for relaying information to the soldier. The pending reductions in the defense budgets are having a significant impact on Army acquisition programs and the Army is already reprioritizing its combat vehicle investments. As plans for GCV move forward, it will be important for DOD, the Army, and the Congress to focus attention on what GCV will deliver and at what cost and how that compares to other needs within the combat vehicle portfolio. Beyond combat vehicles, DOD and the services will also be facing some tough decisions in the future on the tactical wheeled vehicle programs and the affordability of both the JLTV and the HMMWV recapitalization effort.

Over the last few years, the Army has been conducting capability portfolio reviews which have proven to be very helpful in identifying overlaps and setting priorities. The reviews were highlighted in the Army Acquisition Review and have been important in getting the Army to think more broadly and to look beyond the individual program. On both JLTV and GCV, as the requirements have been examined more closely, the services are finding that they can make do with less in terms of capabilities than originally anticipated and projected unit costs have been reduced significantly. It is important that the Army continue to use and improve on its capability portfolio review processes going forward and to consider a broad range of alternatives.

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Chairman Bartlett, Ranking Member Reyes, and Members of the Subcommittee, this concludes my prepared statement. I would be happy to answer any questions you may have at this time.

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## GAO Contact and Staff Acknowledgments

For future questions about this statement, please contact me at (202) 512-4841 or martinb@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this statement. Individuals making key contributions to this statement include William R. Graveline, Assistant Director; William C. Allbritton; Morgan DelaneyRamaker; Marcus C. Ferguson; Dayna Foster; Danny Owens; Sylvia Schatz; Robert S. Swierczek; Alyssa B. Weir; and Paul Williams.

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