

DEPARTMENT OF DEFENSE

National Guard and Reserve Equipment Report for Fiscal Year 2023



JUNE 2022

**NATIONAL GUARD AND RESERVE EQUIPMENT REPORT FOR
FISCAL YEAR 2023**

(NGRER FY 2023)

(As requested in the Explanatory Statement for H.R. 2471)

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PERSONNEL AND
READINESS

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FOREWORD

Over the past year, the Reserve Components (RCs) have responded promptly and efficiently to a dynamic and unpredictable security environment that included the coronavirus disease 2019 pandemic, civil unrest, cyberattacks, climate emergencies, and the southwest border mission. They continue to stand ready to support civil authorities and to respond as an operational force for both planned rotations and short notice activations.

Equipment modernization and improved readiness are the key factors that allow the RCs to keep pace with future threats and preserve operational agility. The RCs are working closely with their parent Military Services to invest in the necessary resources to man, equip, sustain, and train their units.

As the Department builds the future force required to fight and win, enabler capabilities and capacities that primarily reside in the RC must still be considered. Reserve forces should be similar in capability and have compatibility across the force with regard to lethality, networking, and force protection. Recapitalization and investment in aging equipment, in addition to concurrent and balanced modernization, will improve functionality and availability while also reducing operating and maintenance costs.

This report describes the current equipping status of the individual RCs and their respective plans for improving equipment compatibility essential to achieve Total Force integration and to provide capacity to meet the National Defense Strategy objectives. Chapter one reviews the process for funding and equipping the RC and highlights the progress that is being made towards developing an institutionalized process that provides transparency and auditability while also maintaining the Military Services' flexibility to address changing priorities. Chapters two through six of the report provide detailed narratives and data for each RC for Fiscal Year (FY) 2023 and projected equipment data through FY 2025.

The RCs benefit from strong support provided by our Nation's elected representatives. This advocacy reflects the positive impact the RCs have on their communities and across the world.

A handwritten signature in black ink, appearing to read "Gilbert R. Cisneros, Jr.", is positioned above the printed name.

Gilbert R. Cisneros, Jr.

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Chapter 1

Overview

I. Introduction

Over the past year, the Reserve Components (RCs) have responded promptly and efficiently to a dynamic and unpredictable security environment that included the COVID-19 pandemic, Middle East tensions, civil unrest, cyberattacks, climate emergencies, and the southwest border mission. Demand for RC support to planned rotations and short notice activations is expected to remain extremely high.

Equipment modernization and improved readiness are the key factors that allow the RCs to keep pace with future threats and preserve operational agility. RCs work closely with their parent Military Services to invest in the necessary resources to man, equip, sustain, and train their units.

Ultimately, RCs need dedicated equipment that is interoperable and compatible with Active Component (AC) systems. An equipping strategy that balances investment between more technologically advanced weapon systems and strategic enablers will serve to increase interoperability, decrease operational risk, and reduce costs to maintain legacy equipment.

Processes for Equipping Reserve Components: The current method for equipping and modernizing the RCs relies on procurement appropriations (including the National Guard and Reserve Equipment Appropriation (NGREA) as well as specific directed appropriations) and redistribution (cascading).

Procurement Appropriations. Each parent Military Service administers equipment procurement decisions. Parent Military Services submit requests for RC procurement appropriations. The procurement request (P-1) reflects the Department's combined request for the AC and RC. The P-1R is a manually updated subset to the P-1 budget exhibit and contains the parent Military Services' procurement budget request for the RC.¹

NGREA. Originating in 1981, NGREA has been used to supplement the Military Services' budget request to provide for investments in RC equipment that have not met the Military Services' respective prioritization thresholds. RCs utilize NGREA for improving equipment on hand (EOH) status, mitigating key readiness shortfalls, and addressing compatibility issues.

Directed Appropriations. In previous years, Congress has specified funding for National Guard and Reserve programs. These directed appropriations historically include funding for major

¹ DoDD 1200.17, *Managing the Reserve Components as an Operational Force*, October 29, 2008 and DoDI 1225.06, *Equipping the Reserve Forces*, Incorporating Change 1, November 30, 2017 require the Secretaries of the Military Departments to manage their respective RCs as an operational force such that the RCs provide operational capabilities while maintaining strategic depth to meet U.S. military requirements across the full spectrum of conflict. To fulfill assigned missions, the RCs of each Military Department shall be consistently and predictably equipped. Further, RC resourcing plans shall ensure visibility to track resources from formulation, appropriation, and allocation through execution.

platforms. This level of congressional support results in a degree of concurrent fielding that would not be otherwise achieved. Directed appropriations enable the RCs to fill critical shortages, modernize equipment, and improve readiness. They also allow for increased transparency and positive oversight management.

Redistribution (Cascading).

Historically, the RC allocation of defense appropriations for equipment procurement, including congressional adds, makes up less than 8 percent of the total defense allocation (see Figure 1-1).² Rather than new procurement, the Military Services rely on a redistribution model commonly referred to as “cascading”—redistributing legacy items into RC units as new equipment is delivered to the AC—to equip their RCs.

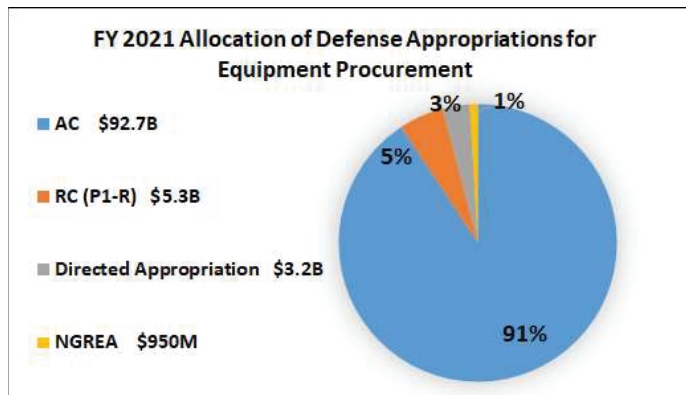


Figure 1-1. FY 2021 Allocation of Defense Appropriations for Equipment Procurement

II. Transparency Reform Update

Continual efforts are underway to improve RC equipment budget transparency, including but not limited to, advances in traceability within the financial systems. The Deputy Secretary of Defense directed the development of automated processes to track RC resourcing decisions made after appropriations are enacted. As envisioned, improvements in RC budget transparency empower increased confidence in senior leader decision-making; enable Congress to fulfill oversight responsibilities; and allow for Chief, National Guard Bureau (CNGB) equipment certification required by the National Defense Authorization Act (NDAA) for FY 2008.

III. Scope of the Report

The National Guard and Reserve Equipment Report (NGRER), was formerly required by section 10541 of Title 10 United States Code (U.S.C.). The reporting requirement in section 10541 was repealed by Congress in section 1061 of the NDAA for FY 2017; this report is generally consistent with the former reporting requirement in section 10541. Additionally, the Joint Explanatory Statement accompanying the Consolidated Appropriations Act for Fiscal Year 2022 requests that a report identified in section 10541 be submitted for the FY 2023 budget by May 30, 2022. The NGRER identifies major items of equipment in the RC inventories that are important to the Military Services, DoD, and Congress, and also outlines how that equipment is

² P-1 & P-1R values do not include Ammunition appropriations. P-1 values include only appropriations displayed in P-1R: Army: Aircraft, Missile, W&TCV, and Other Procurement, Navy & Air Force: Aircraft, Other Procurement, and Marine Corps. The directed appropriation figure of \$3.2B reflects the appropriations for nine P-8A for USNR, eight C-130 aircraft for AFR and ANG, and HMMWV modernization. The NGREA figure of \$950M is in addition to the \$3.2B of directed appropriations.

acquired and disposed of by the RCs for the budget year and the two succeeding years. Data on equipment included in the report consists of high-value, mission-essential equipment requirements, critical equipment shortages, Military Service procurements, and supplemental funding for the RC.

The FY 2008 NDAA directed new equipment reporting requirements for the National Guard's capability to perform its federal responsibilities in response to an emergency or major disaster. Appendix A highlights this guidance in its entirety and the National Guard Bureau responds to the requirements in Appendix B.

The FY 2019 NDAA amended section 10541(b) of title 10 U.S.C. by adding the requirement for a joint assessment by the Chief of Staff of the Army (CSA) and the CNGB on the efforts of the Army to achieve parity among the AC, the Army Reserve (AR), and the Army National Guard (ARNG) with respect to equipment and associated capabilities. The assessment includes a comparison of the inventory of high priority items of equipment. This includes: AH-64 Attack Helicopters; UH-60 Black Hawk Utility Helicopters; Abrams Main Battle Tanks; Bradley Infantry Fighting Vehicles; Stryker Combat Vehicles; and any other items of equipment identified as high priority by the CSA or the CNGB.

The four Tables in this section present a broad overview of previous major items reported in the NGRER, major item shortages in dollar amounts, and the recent tracking through the current budget year of procurement funding for the RC. These introductory tables are summary and historical in nature and do not indicate the comprehensive dollar requirement that would be needed to fully fund Reserve capabilities. Detail on potential costs, such as modernization of existing systems is contained, where appropriate, in the chapters of the respective individual RC.

RC inventories include thousands of different types of equipment. The FY 2023 NGRER highlights 869 major equipment types. This report presents the results of analysis of RC inventories based primarily on the dollar value of the equipment, which allows the aggregation, comparison, and summary of diverse types of equipment. The procurement costs are from the Military Services' official data and are either the latest procurement cost adjusted for inflation or the current replacement cost.

Table 1-1 shows the number of types of equipment included in previous NGRERs to Congress. These numbers are provided for perspective and comparison with previous reports and do not represent the entire inventory of RC major items.

Table 1-1. Items of Equipment Reported in Recent NGRERs

Reserve Component	FY 2018 NGRER	FY 2019 NGRER	FY 2020 NGRER	FY 2021 NGRER	FY 2022 NGRER	FY 2023 NGRER
ARNG	243	309	309	295	274	290
AR	390	236	167	180	176	171
MCR	168	165	157	156	190	196
NR	30	33	31	31	35	34
ANG	27	26	24	23	16	25
AFR	15	14	14	14	23	16
CGR	70	71	72	76	83	137
Total	943	854	774	775	797	869

IV. Equipment Shortages

Table 1-2 shows the dollar value of the current total major equipment requirements and inventories for each RC. The information in this table identifies requirements for new procurement for the RC; however, it does not show capabilities, shortfalls, or compatibility mismatch with the AC due to modernization requirements.

The ARNG and AR equipment shortage costs depicted in Table 1-2 show the cost based on requirements and on-hand inventories without recognition of authorized substitutes, per Congressional guidance. Table 1-2 indicates a \$12.4 billion total shortage cost for the ARNG and \$4.4 billion for the AR. More information on the Army’s equipping strategy and their use of authorized substitutions can be found in Chapter 2, Section I of this report.

The Marine Corps Reserve (MCR) reflects a \$2.6 billion shortage of its major items; however, the MCR is equipped to a home station training allowance only. More information on the Marine Corps equipping strategy and the MCR’s use of a training allowance can be found in Chapter 3 of this report.

The Navy Reserve reports a shortage of equipment value of approximately \$4.5 billion. Following the 2018 audit readiness review, the Navy refined processes for accurately calculating equipment shortage values which has led to a more accurate and consistent estimate. More information on the Navy’s equipping status can be found in Chapter 4 of this report.

The Air Force Reserve shortage cost of major equipment is approximately \$1.2 billion. The Air National Guard reported shortage is approximately \$4.5 billion. More information on the Air Force’s equipping strategy can be found in Chapter 5 of this report.

Table 1-2. Beginning FY 2022 Reserve Component Equipment Shortages

Reserve Component	Requirements (\$M)	On-hand (\$M)	Shortage (\$M)	Shortage (% of Reqd \$s)
ARNG	74,650.3	62,267.6	12,382.7	16.6%
AR	22,371.3	17,960.1	4,411.2	19.7%
MCR	11,739.0	9,154.1	2,584.9	22%
NR	9,995.9	5,516.9	4,479.0	44.8%
ANG	60,860.2	56,333.4	4,526.8	8.0%
AFR	23,119.3	21,948.7	1,170.3	5.1%
CGR	190.3	181.2	9.1	4.8%
Total	202,926.3	173,362.0	29,564.0	14.5%

Note: Requirements, on-hand, and shortage entries are total equipment value, excluding substitutes per Congressional Guidance.

V. Equipment Procurement

The RC procurement funding levels for the period FY 2013–FY 2022 are provided in Table 1-3. The RC portion of the base Military Service procurement funding is provided in the Service Procurement Programs–Reserve Components (P-1R), a budget exhibit in the annual defense budget request. Table 1-3 updates the P-1R values for past fiscal years as each new budget request is released. The P-1R funding for a given fiscal year appears in three successive budget requests, as the original budget request, followed by P-1R updates in two successive budget requests. The P-1R updates for a fiscal year reflect changes to the original request that may increase or decrease the procurement funding intended for the RCs. Those changes should include the actual appropriation enacted including supplemental funding and reprogramming actions.

Table 1-3 reflects the total RC P-1R and NGREA funding over the past decade. Table 1-4 shows the trend in the percentage of DoD procurement levels for RCs in recent years.

Table 1-3. Reserve Component Procurement Funding

FY	Procurement Funding Source	RC Procurement Funding (\$M)							Total	Grand Total
		ARNG	AR	USMCR	USNR	ANG	AFR			
2013	Service Appropriation (Actual)	1,643.9	667.0	19.2	376.1	276.8	310.9	3,293.9		
	NGREA	460.0	240.0	120.0	90.0	455.0	130.0	1,495.0		
	Total	2,103.9	907.0	139.2	466.1	731.8	440.9		\$4,788.9	
2014	Service Appropriation (Actual)	1,952.1	382.0	59.0	187.8	231.9	696.6	3,509.3		
	NGREA	315.0	175.0	60.0	65.0	315.0	70.0	1,000.0		
	Total	2,267.1	557.0	119.0	252.8	546.9	766.6		\$4,509.3	
2015	Service Appropriation (Actual)	1,851.2	551.8	59.1	145.3	361.4	254.8	3,223.5		
	NGREA	415.0	185.0	60.0	65.0	415.0	60.0	1,200.0		
	Total	2,266.2	736.8	119.1	210.3	776.4	314.8		\$4,423.5	
2016	Service Appropriation (Actual)	1,929.0	431.2	51.4	257.4	269.0	54.6	2,992.6		
	NGREA	330.0	140.0	10.0	50.0	330.0	140.0	1,000.0		
	Total	2,259.0	571.2	61.4	307.4	599.0	194.6		\$3,992.6	
2017	Service Appropriation (Actual)	1,953.5	417.7	32.6	394.1	298.9	67.0	3,163.8		
	NGREA	247.5	105.0	7.5	37.5	247.5	105.0	750.0		
	Total	2,201.0	522.7	40.1	431.6	546.4	172.0		\$3,913.8	
2018	Service Appropriation (Actual)	2,258.4	358.3	32.8	683.3	260.5	83.3	3,676.6		
	NGREA	429.0	169.0	13.0	65.0	429.0	195.0	1,300.0		
	Total	2,687.4	527.3	45.8	748.3	689.5	278.3		\$4,976.6	
2019	Service Appropriation (Actual)	2,034.7	308.6	140.5	311.6	273.0	65.5	3,133.9		
	NGREA	421.0	180.0	13.0	65.0	421.0	200.0	1,300.0		
	Total	2,455.7	488.6	153.5	376.6	694.0	265.5		\$4,433.9	
2020	Service Appropriation (Actual)	3,307.2	489.9	140.4	384.0	303.4	80.0	4,704.9		
	NGREA	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
	Total	3,307.2	489.9	140.4	384.0	303.4	80.0		\$4,704.9	
2021	Service Appropriation (Enacted)	3,842.5	458.9	54.3	510.4	364.9	113.9	5,344.9		
	NGREA	285.0	155.0	17.5	52.5	285.0	155.0	950.0		
	Total	4,127.5	613.9	71.8	562.9	649.9	268.9		\$6,294.9	
2022	Service Appropriation (Request)	3,399.9	410.8	18.2	826.7	302.5	84.0	5,042.1		
	NGREA	285.0	155.0	17.5	52.5	285.0	155.0	950.0		
	Total	7,149.7	948.8	194.7	894.4	668.3	193.9		\$5,992.1	

Note 1: Service Appropriation values reflect latest FY updated.. Actual, Enacted, and Request.
 Note 2: The above figures do not include Ammunition procured for the RC.
 Note 3: USNR figures include USMCR aircraft procurement funds.
 Note 4: \$1.3B of FY2020 NGREA was reprogrammed by DoD.

Table 1-4. Total Active and Reserve Component Procurement Funding

FY	P-1 Total (\$M)	AC Total (\$M)	RC Total (\$M)	RC %	P-1 & P-1R Funding Source
2003	54,187.0	52,202.6	1,984.4	3.7%	Actual
2004	55,685.8	54,188.3	1,497.5	2.7%	Actual
2005	71,951.7	70,022.9	1,928.8	2.7%	Actual
2006	75,380.8	72,701.4	2,679.4	3.6%	Actual
2007	101,308.4	93,414.8	7,893.6	7.8%	Actual
2008	125,306.0	119,191.7	6,114.3	4.9%	Actual
2009	98,081.3	89,915.2	8,166.1	8.3%	Actual
2010	97,601.1	92,150.5	5,450.6	5.6%	Actual
2011	92,146.2	86,331.0	5,815.2	6.3%	Actual
2012	81,205.3	76,289.9	4,915.3	6.1%	Actual
2013	68,465.1	65,171.1	3,293.9	4.8%	Actual
2014	67,496.4	63,987.1	3,509.3	5.2%	Actual
2015	69,700.3	66,476.8	3,223.5	4.6%	Actual
2016	80,285.0	77,292.4	2,992.6	3.7%	Actual
2017	83,050.0	79,886.2	3,163.8	3.8%	Actual
2018	98,820.5	95,143.9	3,676.6	3.7%	Actual
2019	99,433.3	96,299.4	3,133.9	3.2%	Actual
2020	97,792.2	93,087.3	4,704.9	4.8%	Actual
2021	98,070.5	92,725.4	5,344.9	5.5%	Enacted
2022	90,487.1	85,445.1	5,042.1	5.6%	Request

Note 1: P-1 and P-1R values reflect latest FY update in President's Budget (Request, Enacted, or Actual).

Note 2: P-1 & P-1R values do not include Ammunition appropriations.

Note 3: P-1 values include only appropriations displayed in P-1R:

Army: Aircraft, Missile, W&TCV, and Other Procurement Navy & Air Force: Aircraft, Other Procurement, and Marine Corps.

Note 4: FY 2023 P-1 and P-1R values were not available at the time of publication.

VI. Reserve Component Equipping Challenges

This section briefly summarizes the principal equipping challenges of each RC. The components' individual chapters address these challenges in more detail.

A. Army National Guard (ARNG)

The ARNG continues to make significant investments in modernization, in accordance with the Regionally Aligned Readiness and Modernization Model (ReARMM) and the 2018 Army Strategy and 2019 Army Modernization Strategy. ARNG stakeholders continue coordinating to ensure that equipment modernization initiatives are nested within the Army's pivot to Multi-Domain Operations (MDO) and balanced to meet critical requirements for domestic operations. The ARNG maintains visibility of critical weapon systems and aviation platforms using the Army's joint assessment of parity (Appendix D).

The ARNG's top focus areas are:

- Ensuring ARNG equipment is interoperable, sustainable, and deployable
- Implementing the Regionally Aligned Readiness and Modernization Model (ReARMM)
- Completing Blackhawk Helicopter Modernization
- Ensuring Intel/Mission Command Systems are interoperable for MDO
- Maintaining modernization in Soldier Systems.

Chapter 2, Section II of this report provides a more detailed discussion of these focus areas.

B. Army Reserve (AR)

The Army equipment modernization strategy concentrates equipping priorities on units identified as early entry and theater opening forces most critical to setting the conditions for and sustaining combat operations. Although the Army Reserve continues to advocate for consistent and predictable equipping, the AR is unable to fill all critical requirements. Slow production rates, reset issues, component reallocation of procured equipment, funding limitations, requirements approved in advance of resourcing, and deliberate Army decisions to procure less than the Army Acquisition Objective (AAO) have resulted in shortages. Replacement or recapitalization of aging critical equipment is required to preserve overmatch and ensure development of future capabilities.

The top AR focus areas are:

- Resourcing: Optimize processes and prioritization to deliver modern enabler capabilities that support MDO, including risk-informed divestiture of legacy equipment.
- Readiness: Invest in responsive capabilities to enhance equipping posture for day-to-day competition, large scale combat operations (LSCO), Homeland Defense (HD), and Defense Support of Civil Authorities (DSCA).

- **Modernizing:** Advocate for the development of future enabler capabilities to accelerate interoperability and holistically identify/forecast resource gaps.

Additional information about the AR focus areas can be found in Chapter 2, Section III of this report.

C. Marine Corps Reserve (MCR)

Major force structure changes are currently underway within the Marine Corps. These changes are the initial steps of resizing, reshaping, and re-equipping the force for success in the future operating environment. A focus on divesting of costly legacy equipment then reinvesting in equipment and technology modernization for the future fight will continue to help the MCR remain a force trained and equipped to augment and reinforce the Total Force. Horizontal (concurrent) fielding efforts and RC participation in the fielding conferences are having a positive impact on the status of RC equipment; however, the challenge of true horizontal (or concurrent) fielding remains and continues to affect the RC to AC equipment parity. Without concurrent fielding and RC equipment fielding prioritization on par with AC prioritization, full compatibility between AC and RC equipment is not possible.

The MCR's top focus areas remain:

- **Major Ground Equipment Modernization (JLTV and Amphibious Combat Vehicle (ACV)).** The Marine Corps is acquiring major ground equipment modernizations that will provide the RC with the latest generation of warfighting capabilities.
- **F-5N/F+ Block Upgrades**
- **Aviation and Ground Equipment Maintenance.** Delayed fielding increases equipment compatibility challenges and results in a requirement to concurrently maintain both new and legacy equipment, which has become increasingly costly and negatively affects overall readiness.

A more detailed discussion of these challenges can be found in Chapter 3, Section II of this report.

D. Navy Reserve (NR)

As part of the Navy Total Force, Reserve sailors provide operational capabilities, strategic depth, and the capacity to surge quickly. The NR continues to strive for AC and RC equipment compatibility to maintain strategic depth. Achieving equipment compatibility with the AC is critical to ensuring the RC can train to the same standards as, and seamlessly operate with, its AC counterparts.

To ensure the NR can support AC requirements requires dedicated funding for future investments in NR hardware.

The top NR focus areas are:

- Recapitalizing aging C/KC-130T fleet with modern C-130J aircraft
- Investing in Expeditionary Logistics Vertical Launch System Reload to support Distributed Maritime Operations
- Ensuring long-term adversary capability to provide the fleet with relevant, necessary tactics training.

Chapter 4, Section II of this report provides a more detailed discussion of these challenges.

E. Air National Guard (ANG)

The ANG's modernization efforts center on continuously improving readiness and capability to support future combat and domestic operations. However, because the ANG operates and maintains aging aircraft, it faces significant challenges to increasing aircraft availability. Concurrent and balanced modernization, as well as recapitalization and investment in aging aircraft support and test equipment, can improve availability while also reducing operating costs.

ANG equipment focus areas include:

- Mobility Fleet Modernization: C-130H engine upgrades, C-130J support equipment
- Combat Aircraft Sustainment: F-16 AESA radar, revitalize aging F-15C fleet.

Chapter 5, Section II of this report provides additional information about ANG equipment challenges.

F. Air Force Reserve (AFR)

The AFR accomplishes its mission with aging aircraft and an aging infrastructure. These will continue to present challenges absent necessary upgrades and replacements. The AFR is focused on solidifying readiness gains and continuing prioritized, cost-effective modernization. However, accepted risk in Weapons System Support (WSS), delayed recapitalization, and refocused priorities on the high-end fight, mean that fewer Air Force aircraft are available now. The AFR ability to deter, respond to, and eliminate threats relies on the continuous development of and investment in advanced air, space, and cyber capabilities.

The top equipment focus areas for the AFR are:

- Recapitalizing and modernizing aircraft to maintain parity and increase readiness, survivability, compatibility, and lethality to support Combatant Commanders
- Addressing how diminishing manufacturing sources negatively impact readiness due to increased downtime and lack of repair capability for obsolete components
- Reprioritizing vehicles and support equipment that have been chronically underfunded to accommodate other modernization efforts

- Updating training simulators to keep pace with aircraft modernization and force structure changes to best produce mission ready aircrew
- Upgrading Base Defense Security legacy systems at Air Force Reserve installations.

Chapter 5, Section II of this report provides a more detailed discussion of these challenges.

G. Coast Guard Reserve (CGR)

The CGR continues to be an invaluable force ready to perform the missions critical to maritime homeland security, national defense, and domestic disaster operations. Demand for CGR support to planned and unplanned operations remains extremely high.

Predictable and steady funding is critical to sustain CGR operational integration, which is essential to responding to various contingencies and fulfilling the security demands of the nation. As the CGR pursues replacement of its aging boat platforms, weapons, and other equipment, they will require additional training to become proficient and maintain operational readiness.

This year, the top CGR equipping challenges are:

- Recapitalization of Personal Protective Equipment (PPE)
- Increasing average age of the small boat fleet
- Equipment and PPE for the CGR Police Department Program.

Chapter 6, Section II of this report contains more information about the CGR equipping challenges.

Chapter 2

Equipping the Total Army

“Army must be manned, trained, equipped, and modernized to be ready to fight today, but also to meet the demands of an uncertain and unpredictable future.”

- Secretary of the Army Christine Wormuth, June 2021, first message to the force

I. Army Overview

A. Army Planning

The Army remains focused on transforming into the Multi-Domain Army of 2035, while maintaining readiness and prioritizing people first. To transform, the Army will continue to mature its concept for multi-domain operations; achieve positional advantage to ensure Army forces are properly postured to support joint force requirements; and gain capability advantage through continued focus on the Army’s six modernization priorities.¹

During transformation, the Army must maintain readiness to fulfill joint force requirements while ensuring modernization. The Army’s Regionally Aligned Readiness and Modernization Model (ReARMM) provides ready Army forces to combatant commanders while providing dedicated times for its units to modernize. ReARMM enables the Army to win in competition, crisis, and conflict today *and* in the future.

B. The Army Equipping Guidance

The 2019 Army Modernization Strategy² describes how the Total Army (Regular Army, National Guard, Army Reserve, and Army Civilians) will transform into a multi-domain force by 2035, meet its enduring responsibility as part of the Joint Force to provide for the defense of the United States, and retain its position as the globally dominant land power. The Army’s modernization approach will continue to test and refine operating concepts, draw on emerging technologies, and anticipate changes in the operational environment.

The Army modernization effort focuses on strategic readiness and force projection.³ These efforts prioritize investments to fill the most critical gaps for Large Scale Combat Operations (LSCO), set conditions for the Multi-Domain Operations (MDO)-capable force, and develop solutions to the Army’s modernization priorities.

¹ The Chief of Staff of the Army’s vision for the Multi-Domain Army of 2035 can be found in Headquarters, Department of the Army, *Army Multi-Domain Transformation*, Chief of Staff Paper #1, Unclassified Version (16 March 2021), <https://api.army.mil/e2/c/downloads/2021/03/23/eeac3d01/20210319-csa-paper-1-signed-print-version.pdf>.

² The 2019 Army Modernization Strategy can be accessed at https://www.army.mil/e2/downloads/rv7/2019_army_modernization_strategy_final.pdf

³ Ibid

Together, unit readiness (i.e., manning, organization, training, equipment, and leadership) and force projection (i.e., global posture, setting the theater, mobilization, deployment, employment, sustainment, and redeployment) define strategic readiness and remain some of the Army's top priorities. The Army will not sacrifice its near-term capabilities.

Strategic readiness requires an agile Army that is postured for and capable of global force projection. The Army must be able to compete with, deter, and defeat threats from near-peers to non-State actors in both conventional and asymmetric warfare. The Army Modernization Strategy states that the Army is to sustain a sufficient level of tactical readiness, build strategic readiness, and deliver the six modernization priorities and other modernization efforts.

The Army Modernization Strategy framework communicates how the Army must continuously modernize "how we fight, what we fight with, and who we are." The Army must prioritize which capabilities are vital to build the MDO-capable force and deter near-peer adversaries. Modernization efforts include delivering Cross Functional Teams, optimizing force structure, reducing critical capability gaps for LSCO, and maturing doctrine in support of next generation capabilities. The combination of sustaining operational readiness, enhancing strategic readiness, and successfully fielding the MDO Ready Force are the Army's primary focus.

C. The Army's Plan to Fill Mobilization Shortages in the Reserve Components

1. Equipping Units for Their Missions

The Army is committed to equipping and modernizing the Total Force based on the mission and available resources, while focusing efforts on deploying units to ensure Soldiers committed to combat are prepared and equipped properly regardless of component. The Army will continue to equip and modernize the Total Army in accordance with established priorities and available funding.

2. Increasing Readiness by Redistributing Equipment

The Army fills shortages within the Reserve Component (RC) as part of the Total Force according to Army priorities. Current and planned operations/missions are prioritized to inform fielding across the Army, in line with the National Defense Strategy (NDS).

a. Mission Focused Equipment

The Army operationalizes the RC by leveraging the capabilities of the Army National Guard (ARNG) and the U.S. Army Reserve (USAR) forces to support early- and mid-deploying forces identified in War Plans. ReARMM provides a framework to assess unit readiness based on directed levels required to perform regionally aligned geographical combatant command missions.

b. Readiness Redistribution

A deliberate equipment redistribution review process ensures the right equipment is at the right place. The Army is committed to meeting Department of Defense Instruction 1225.06 Equipping the Reserve Forces requirements to pay back ARNG and USAR equipment transferred from the Reserve Forces with fully capable equipment.

c. Efficiency

The Army seeks to streamline the sustainment process to ensure the most efficient utilization of sustainment resources. As such, the Army must divest older systems and excess equipment on-hand, while ensuring equipment distribution and redistribution is accomplished down to the lowest levels.

D. Initiatives Affecting RC Equipment

The Army fully supports transparency initiatives on equipping and modernizing the ARNG and USAR. The Army must prioritize equipping and modernizing the Total Force based on priorities established by the Army Senior Leadership as guided by the NDS. Priorities that affect equipping and modernization levels inside the RC are based on ReARMM. The Army's effort to ensure RC equipment is auditable and traceable, from the resourcing phase until delivery to particular units, is known as transparency. The current format for this tracking effort is the Equipment Transparency Report (ETR) and was standardized for all of the Military Services. The Army's ETR is provided semiannually to the Office of the Assistant Secretary of Defense for Readiness.

The ETR provides visibility over the procurement and delivery of equipment specified in procurement budget exhibits to the ARNG and USAR. Collecting the data remains a manual effort of cross-walking disparate information from the programming, budgeting, and execution phases of the Department of Defense (DoD) financial management information systems. While the DoD systems work to achieve financial auditability, the Army has worked to overcome this ETR challenge by better implementing the DoD requirement for "Item Unique Identification (IUID)." The applied unique item identifier on each procured item within the IUID process will provide the Army an automated means to cross-walk data from the specific appropriation through the delivery of procured equipment to the ARNG and USAR. The Transparency General Officer Steering Committee has recognized the significance of IUID implementation as a key tool to help automate the ETR. The Army is establishing policy and procedures for traceability through data management and analytics platforms to support the transparency certification process of RC equipment delivery.

The Army is exploiting the use of universal data transactions to provide discrete traceability to track delivered equipment to the Fiscal Appropriation. These improvements, in conjunction with the implementation of IUID, will provide the Chief, National Guard Bureau, the capability to "certify" in accordance with Title 10, Section 10541, receipt and non-receipt of expected items.

E. Army Plan to Achieve Compatibility between the Army's Active Component (AC) and Reserve Components (RC)

The Army reviews compatibility between the AC and the RC based on mission alignment. The Army leverages the unique capabilities of ARNG and USAR forces to support early- and mid-deploying forces as identified in Army War Plans by appropriately improving RC readiness as a key element of the Army's operational depth.

F. Army Component Equipment Modernization.

The United States' competitive advantage is eroding. It is being challenged in every domain of warfare (i.e., land, maritime, air, cyber, and space) and those challenges are growing in scale and complexity.

The Army's equipping approach categorizes equipment to help establish a modernization path. Over time, systems transition from developmental to legacy to obsolete. The Army's approach to meet mission requirements with a mix of new procurement and legacy items allows for good stewardship of taxpayer dollars. This strategy provides for more modern equipment to maintain unit readiness and technological overmatch over extended procurement periods.

II. Army National Guard Overview

“The Total Army being led by the Chief of Staff of the Army General James C. McConville, we are really focused on modernizing the Army and that’s a Total Army focus. That takes us all the way out to 2035. We are all involved in that process and that process is over several Army Headquarters and commands. What the Army is going to be, what our capabilities are going to be, and what component those capabilities are going to reside in, that’s being shaped right now.”

Lieutenant General Jon A. Jensen, Director Army National Guard, 2020 National Guard Association of the United States

A. Current Status of the Army National Guard

1. General Overview

Top ARNG Focus Areas:

- Ensuring ARNG equipment is interoperable, sustainable, and deployable
- Implementing Regionally Aligned Readiness and Modernization Model (ReARMM)
- Completing Blackhawk Helicopter Modernization
- Ensuring Intel/Mission Command Systems are interoperable for Multi-Domain Operations
- Maintaining modernization in Soldier Systems

The Army National Guard (ARNG), which is authorized 336,500 Soldiers (FY 2021), is a combat-tested and experienced operational force and the nation’s most capable and responsive disaster and crisis response force. The ARNG increases the capabilities and capacity of the Total Force, providing the Army with 39 percent of its Operating Forces and 22 percent of its Generating Forces and managing nearly 42 percent of its aircraft, both manned and unmanned. Its status as the combat reserve of the Army requires that the ARNG build readiness for the war-fight. As a domestic crisis response force, the nation’s governors call on the ARNG year-round to support domestic operations and emergencies within the states and territories and the District of Columbia. The ARNG exists in more than 2,500 communities across the nation, maintaining 2,278 readiness centers, 110 training centers, 54 regional training institutes, and 824 maintenance facilities. The ARNG’s Citizen Soldiers embody both civilian and military skill sets well-suited to understanding and operating in increasingly complex global and domestic environments.

a. ARNG Modernization Overview

As the Army prioritizes modernizing and fielding new equipment for the Total Force based on operational requirements, the ARNG fully partners and collaborates with the Army to maintain readiness while developing capabilities and ensuring interoperability for future Multi-Domain Operations (MDO).

ARNG Soldiers are also embedded within Army Futures Command, its eight Cross-Functional Teams, and its Program Executive Offices to ensure ARNG perspectives and mission requirements are incorporated into the Army's six top modernization priorities. Additionally, to account for the rapid pace of technological advances and the escalating speed of the Army Modernization Enterprise, the ARNG is posturing itself to ensure there is a well-balanced and synchronized modernization and organizational design approach to achieve the highest level of mission ready formations. Because the Army is fully focused on MDO and Large-Scale Combat Operations (LSCO) against near-peer adversaries while fiscally assessing modernization priorities, the ARNG will continue to advocate for modernizing its formations to safeguard its ability to remain interoperable, deployable, and sustainable with the Army. The ARNG continues to identify and leverage opportunities to participate in joint exercises and test and evaluation activities that demonstrate new weapon system platforms and technologies. The ARNG supports Army modernization efforts by providing soldiers touchpoints and ARNG venues for experimenting with and seeing demonstrations of new technologies and capabilities.

b. Status of the ARNG as an Operational Force

“Part of the transformation could include re-aligning formations and capabilities. Meanwhile the new Regionally Aligned Readiness and Modernization Model, or ReARMM is a deployment model designed to bring more predictability and stability to the force, including the Guard.”
General Joseph M. Martin, Army Vice Chief of Staff, 143rd General Conference & Exhibition

The ARNG today comprises 13 Division Headquarters, 2 Special Forces Groups, 1 Security Force Assistance Brigade, 27 Brigade Combat Teams (BCTs), 42 Multifunctional Brigades, and 54 Functional Brigades and Groups across all states and territories and the District of Columbia. As of September 27, 2021, 24,931 ARNG Soldiers were mobilized in a Title 10 status to provide Global Force Management Allocation Plan requirements supporting Combatant Commanders. In addition, 16,613 Citizen Soldiers were deployed for overseas training or to support Domestic Operations (DOMOPS), such as responding to COVID-19, wildfires, southern border activities, and hurricanes. The end strength and force structure balance of the Total Force necessary to respond to global threats requires the ARNG to remain tactically and technically proficient, while simultaneously modernizing and building toward becoming a MDO ready force. This requires a multi-year training cycle to build readiness through collective and individual training tasks to achieve required readiness levels and prepare for deployment in response to contingency operations. Conducting training rotations to national training centers and joint-multinational training venues validates the ARNG as a ready and relevant operational force. These large-scale training rotations provide the opportunity to hone warfighting skills and reduce post-mobilization timelines while ensuring units across the Total Force remain accessible, interoperable, deployable, and sustainable.

c. Domestic Operations and State Missions

ARNG supports a wide variety of mission sets, ranging from domestic operations to homeland defense/homeland security response that require specialized skills and equipment, including

Weapons of Mass Destruction–Civil Support Team (WMD-CST), Civil Disturbance, Counter Drug, Cyber and Disease Response as shown in Table 2-1.

Table 2-1. FY 2021 Domestic Operations and State Missions

Event Type	ARNG Events	Man-days	Event Type	ARNG Events	Man-days
Civil Disturbance	347	573,602	Law Enforcement Support	963	251,858
Counter Drug	361	550,568	MEDEVAC	7	24
Cyber	1,434	18,312	Other	773	23,160
Disease Response	361	7,066,832	Search and Rescue	95	108
Earthquake	2	40	Severe Weather	23	554
Environmental Disaster	1	10	Special Events	97	419,332
EOD	42	2	Water Support	77	732
Flood Support	276	8,499	Wildfires Support	1,290	149,106
Hurricanes - Tropical Storms	207	177,785	Winter Storm Response	136	23,187
Key Asset Protection	497	182,569	Total	6,989	9,446,280

In FY 2021, the ARNG contributed over 9.5 million man-days to the states and territories and the District of Columbia for nearly 7,000 various missions. In FY 2020, the ARNG responded to nearly 1,500 events, just 21 percent of the demand from FY 2021. With continued support for COVID response efforts, increased civil unrest, and upswing in wildfires across the western portions of the United States, the ARNG has answered the call for these critical missions. The ARNG provides civil authorities 10 critical core capabilities that save lives, protect property and help communities recover from catastrophic events. These “Essential-10” capabilities include Aviation/Airlift; Command and Control; Chemical, Biological, Radiological, Nuclear, and High-Yield Explosives (CBRNE); Engineering; Medical; Communications; Transportation; Security; Logistics; and Maintenance. The National Guard Chemical, Biological, Radiological, Nuclear Response Enterprise elements consist of the WMD-CSTs, Homeland Response Forces, and CBRNE Enhanced Response Force Packages. To be ready and available to respond to these missions, it is crucial the ARNG’s Essential-10 capabilities receive the most modern and capable equipment.

2. Status of Equipment

a. Equipment on Hand

The ARNG, in coordination with Headquarters, Department of the Army (HQDA) produces the biannual ARNG Equipment On-hand (EOH) Dashboard (referenced in Appendix B), which provides an overall percentage of EOH against requirements in the Modified Tables of Equipment (MOTE) for all states and territories and the District of Columbia. The EOH percentages are calculated without substitutions. The ARNG Dashboard also depicts equipment available for domestic operations, anticipated equipment deliveries, the percentage of modernized equipment, and Critical Dual Use (CDU) equipment divided into ARNG Essential-10 requirements. The CDU list comprises equipment critical to both domestic and warfighting missions, and is updated periodically by the Army in coordination with ARNG, to reflect

changes to current requirements and force structure. Each year, the Director, Army National Guard submits CDU list recommendations to HQDA for vetting and approval.

As of July 2021, without counting authorized substitutions, ARNG MTOE units have 88 percent of all required equipment requirement on hand and 95 percent of CDU equipment on hand. Accounting for operational readiness status, 83 percent of all MTOE unit equipment and 89 percent of equipment is available to governors for domestic operations. Table 2-2 provides an overview of the most significant ARNG CDU shortages in accordance with Essential-10 requirements to equip domestic missions. As CDU equipment is modernized, the Army’s strategy is to pure-fleet ARNG shortfalls by fielding the most modern equipment or cascading more modern equipment.

Table 2-2. ARNG Top Critical Dual Use Shortages

Capability	Nomenclature	Procurement Unit Cost (PUC)	Shortage	Shortage Value
Logistics	Load Handling System (LHS) 2,000 Gal Tank (HIPPO) ^a	\$131K	545	\$71.4M
Transportation	Semitrailer Flatbed: Container Transporter 34T ^b	\$106K	1,174	\$124M
Engineering	Tractor Full Tracked High Speed (DEUCE)	\$398K	8	\$3.2M
Transportation	Semitrailer Low Bed 25T 4 Wheel	\$180K	273	\$49.1M
Security	Cold Weather All-Terrain Vehicle	\$1093K	20	\$21.8M

^a Capability will be further addressed in Parity Assessment.

^b ARNG Pacing Item (i.e., mission critical equipment impacting readiness reporting).

Note: The quantity shortages depict the equipment shortfalls and total funding cost projected in FY 2023 as reported against the 2012 Structure and Composition System (SACS) File.

b. Average Age of Major Items of Equipment

The average of selected major equipment items at the beginning of FY 2021 is provided by ARNG *Table 2 Average Age of Equipment*. The Army continues to invest in manufacturing and recapitalization programs through FY 2022 to support strategic modernization. Changes to Army modernization priorities have required the Total Force to retain some enduring equipment past its Economic Useful Life (EUL), until funding is available to modernize or replace it. For example, the M872A4 Semitrailer flatbed, break-bulk container commercial 34-ton transporter supports transportation capabilities within the ARNG Essential-10. Additionally, the ARNG continues to modernize its mixed fleet of bridging assets, the 60 ton and 85 ton Brigade Armored Vehicle Launch Scissor, that support warfighting requirements.

Aging equipment degrades the quality of the Total Force as the Army competes globally across the engagement spectrum, but appropriated funding mitigates the effects of an aging ARNG fleet. For example, the Army’s High Mobility Multipurpose Wheeled Vehicle (HMMWV) Recapitalization Program has reduced the average fleet age from 28 years to less than 5 years for over 1,700 HMMWV ambulances and from 10 years to less than 5 years for over

2,200 Up-Armored HMMWVs. The recapitalized HMMWVs are now equipped with the Army’s most technologically advanced operational capabilities and safety upgrade features.

The convergence of the Logistics Information Warehouse Database with Program Manager (PM) Army Enterprise System Integration Program in FY 2018 rendered FY 2022 average equipment data irretrievable. The current system is unable to capture the age of equipment as items are divested or replaced by more modern equipment. This affects the validity of data in ARNG *Table 2 Average Age of Equipment*.

Table 2-3. Army National Guard Top Enduring Equipment

Nomenclature	Line Item Number (LIN)	Average Age (Years)	ARNG EOH	EUL (Years)
Launch M60 Series Tank Chassis Transporting: 40 & 60 ft.Bridge	L43664	36	88	17–25
Semitrailer Low-bed: 40-ton 6-Wheel	S70594	30	1246	20–25
Recovery Vehicle Full Tracked: Medium M88A1 ^a	R50681	43	175	25–30

^a ARNG Pacing Item (Mission Critical equipment impacting readiness reporting). Note: The Average Age (years) is an estimate using FY 2019 date data.

c. ARNG Modernization

The ARNG must maintain a balanced modernization strategy to meet requirements for Active and Reserve Component missions. Modern equipment is any Minimum Mission Essential Wartime Requirement (MMEWR) on a unit’s authorization document, including substitutions and last-generation equipment. The modernization of equipment always reflects the current Army Modernization Strategy and is primarily based on funded procurement objectives. The ARNG currently reports in the aggregate 89 percent EOH for modern equipment matching documented authorizations.

The first portion of Table 2-4 shows the FY 2022 forecast for the “Go to War” Equipment on Hand along with cross-sections of equipment that meet, exceed, or fall below requirements.

Table 2-4. Army National Guard 2021 MTOE Modernization Shortages

FY 2023 MTOE & Aug-TDA	Requirement	On-Hand Capped	Shortage	Percentage Shortage
Active Component	2,849,040	2,783,878	65,162	2.3%
Army National Guard	2,611,520	2,473,738	137,782	5.3%
US Army Reserves	1,088,585	1,030,135	58,450	5.4%
Total	6,549,145	6,287,751	261,394	4.0%

The second portion of Table 2-4 shows the FY 2022 requirement cost, on-hand inventory cost, and shortage cost, by COMPO, for MTOE and Aug-TDA equipment.

FY 2023 MTOE & Aug-TDA	Requirement Cost	On-Hand Capped Cost	Shortage Cost	Percentage Shortage
Active Component	\$ 136,257,926,812	\$ 105,838,486,548	\$ 4,391,426,711	3.2%
Army National Guard	\$ 74,650,321,280	\$ 66,445,492,555	\$ 2,271,212,642	3.0%
US Army Reserves	\$ 22,371,313,232	\$ 19,960,365,177	\$ 1,045,586,227	4.7%
Total	\$ 233,279,561,324	\$ 192,244,344,280	\$ 7,708,225,580	3.3%

% Fill is Equipment on Hand Percentage

Includes substitutions and deliveries/transfers/turn-ins through FY 2022

d. Maintenance

The age and condition of ARNG maintenance facilities is a concern. Forty-two percent of the 824 ARNG maintenance facilities are over 40 years old and do not effectively facilitate modern maintenance mission requirements. The significant increases to requirements for EOH within ARNG Armored Brigade Combat Teams (ABCTs), as well as technological advances and fleet modernization in some of their major combat systems have increased requirements for overhead lift, electrical power, and specialized diagnostics, necessitating additional facility floor space.

Military funding for the ARNG's long-range surface equipment maintenance facilities construction plan remains at \$2.8 billion, based on input from the Planning Resource for Infrastructure Development and Evaluation database. The level of maintenance performed at these facilities directly impacts maintenance readiness and units' ability to sustain operational readiness. ARNG maintenance facilities must keep pace with the increasing requirements of a technologically advanced fleet of combat and support equipment to perform assigned military missions and provide support during natural and man-made disasters.

The ARNG Surface Depot Maintenance Program (SDMP) executed by Army Materiel Command supports ARNG fleet strategic readiness. The ARNG SDMP provides reliable and sustainable readiness throughout the lifecycle overhaul of critical combat and support equipment. ARNG depot sustainment activities enable commanders to maximize fleet readiness and apply critical Operating Tempo (OPTEMPO) funding to sustain readiness at the unit level. The ARNG SDMP funding for FY 2021 was \$177 million, 78 percent of the ARNG's critical requirement of \$220.8 million for FY 2021.

In FY 2021, the ARNG Field-Level Home Station Reset Program restored 100,812 pieces of unit equipment returning from overseas deployments and contingency operations. The program returned this equipment to Technical Manual 10/20 (TM10/20) standards within 365 days of returning to home station, a vital step in restoring necessary operational readiness to support unit lifecycle timelines. Full or partial unit equipment deployments place increased importance on Field Level Home Station Reset to return equipment back to TM 10/20 standards so it can be available for the next federal or state mission. In FY 2022, the ARNG Field Level Home Station Reset Program will continue to perform Field Level Reset on ABCT Battalion Task Force (BTF) equipment sets along with other company and battalion sets of redeployed equipment. This requirement of ABCT BTF along with other comparable or smaller unit sets will continue each year for the foreseeable future.

e. Other Equipment Specific Concerns

Recent prioritization of funds from systems in procurement to more modern and LSCO-related initiatives has diminished the Army's ability to fully fund previously programmed Army Acquisitions Objectives (AAO) or Army Procurement Objectives for many systems. As a result, ARNG units not tied to "first to fight" or forward forces may not be authorized the most modern equipment. For example, the Army operates three Abrams Tank variants (M1A2 SEpv3, M1A2 SPEv2, and M1A1 AIMS-SA). By FY 2025, the Army will be pure-fleet, and will maintain a two variant fleet into the foreseeable future. This modernization strategy reflects the reality of resource prioritization, but also means that the ARNG must sustain less modern equipment at a potentially higher cost.

The objective of preserving Reserve Component (RC) equipment was launched when Department of Defense Directive 1225.06 was first published in 1970. The current Department of Defense Instruction (DoDI) 1225.6 *Equipping the Reserve Forces*, May 16, 2012, continues to ensure and preserve property accountability and transparency for withdrawals, reductions, or loans of any equipment from the RC. The ARNG, in conjunction with the Army Sustainment Command (ASC) and HQDA G-8, continues to monitor replacement pay back requirements established since 2003 and approved by the Secretary of Defense. Vigilance and coordination between all stakeholders preserves ARNG unit readiness.

The current DoDI 1225.06 ARNG register contains 15 types of equipment, totaling 460 pieces that require reconciliation. In FY 2022, the Army returned one Mine Clearing Line Charge item to ARNG. The ARNG continues to work closely with the ASC and HQDA to ensure equipment is returned and future transfers are properly coordinated and approved in accordance with DoD policy.

B. Changes Since the Last NGRER

ARNG *Table 1 Consolidated Major Item Inventory and Requirements* and ARNG *Table 7 Major Item of Equipment Substitution List* provide projected equipment inventories, shortfalls, and modernization requirements for the ARNG from FY 2021 through FY 2025. The projected requirements for the FY 2025 Total Army Equipment Distribution Plan (TAEDP) use the December 2020 SACS File.

The most notable change between past and current reports is the decreased ARNG EOH percentage with authorized substitutions. In the current report, the Army calculated ARNG EOH without authorized substitutions as a 6.71 percent shortage, as compared to a 3.64 percent shortage reported previously, which included authorized substitutions. The increase in EOH shortages is caused by the Army's updated authorized substitution definition. Although the Army mandates the use of on-hand authorized substitute equipment to fill capability gaps when there are delays in modernization, an authorized substitution is only valid for equipment at the same modernization level or higher. For example, if the ARNG is authorized the M1A2 SEpv2 Abrams Tank, only the M1A2 SEpv3 (more modern variant) may be used as an authorized substitution. Last year, the Army allowed the M1A1 AIM-SA (less modern variant) as an

authorized substitution for the M1A2 SEPv2 Abrams Tank. This change in methodology helps the ARNG more accurately track the modernization levels of formations.

C. Future Years Program (FY 2023–FY 2025)

1. FY 2025 Equipment Requirements

ARNG *Table 1 Consolidated Major Item Inventory and Requirements* provides the projected FY 2023–FY 2025 major equipment inventories and requirements. ARNG identified equipment items that are CDU and Pacing items (mission critical equipment impacting readiness reporting).

2. Anticipated New Equipment Procurements

The new Cold Weather All-Terrain Vehicle (CATV) will replace the aging Small Unit Support Vehicle (SUSV) starting in FY 2023. The SUSV is a lightweight, tracked vehicle with exceptional cross-country mobility, capable of operating in extreme environmental conditions and in terrain that is impassable to most other forms of vehicular transportation, such as snowy, marshy, amphibious, and mountainous terrain. ARNG units in Alaska, Vermont, Colorado, and Minnesota utilize the SUSV to perform disaster response and training support, including training at the Army Mountain Warfare School at Camp Ethan Allen in Jericho, VT. The SUSV is not a Program of Record (POR) with associated sustainment maintenance and reset funding provided, and this aging fleet has required significant amounts of funding to maintain operational readiness rates. However, in May 2019, the Army Requirements Oversight Committee approved the new CATV as a POR with a quarterly requirement of 92 vehicles for the ARNG.

3. Anticipated Transfers/Withdrawals from ARNG Inventory

ARNG *Table 5 Projected Equipment Transfer/Withdrawal Quantities* shows inventory excess to the Army that has the potential to fill shortages in the ARNG each year from FY 2023 to FY 2025. Transferred equipment that is provided to the RC once the Army receives more modern equipment is commonly called “cascaded equipment.”

The Army’s challenge will be balancing current and future readiness. ReARMM is built on the principles of predictability, stability, and synchronization, which allows Soldiers and leaders to know their Unit Lifecycle in detail 5 years out and generates and preserves sufficient levels of readiness to meet demand with modernization, training, and mission requirements. ReARMM enables Army transformational changes to multi-domain land power and focuses ARNG units regionally with predictable, habitual relationships to specific missions and theaters. Such focus enhances Army support to competition, synchronizes all Army components, and provides predictability to formations.

In FY 2021, the Army continued to cascade modernized equipment across the Major Capability Portfolios to fill readiness shortfalls. Although the equipment generally received is not the most modern, the items received fill capability gaps to promote readiness with combat capable equipment. Of note, the ARNG anticipated a large number of M1097 HMMWV to be cascaded from the Army as they field the Joint Light Tactical vehicle (JLTV) to their formations. The Army also identified additional potential cascades to increase EOH in Soldier Systems (M4A1

Rifles and PVS-14 Monocular Night Vision Device), as well as 1,485 Combat Support Systems (Mine Resistant Ambush Protected All-Terrain Vehicle).

4. Equipment Shortages and Modernization Shortfalls at the End of FY 2025

Table 8 Significant Major Items Shortages provides equipment inventories, shortfalls, and modernization requirements for the ARNG at the end of FY 2025. The primary equipment items of concern are Mission Command systems that ensure ARNG interoperability with the Army and the Joint Force. In addition, ARNG continues to seek modernization solutions in the Intelligence and Electronic Warfare, Engineering, and Mobility portfolios. ARNG *Table 8 Significant Major Items Shortages* excludes the five required systems discussed in the 2019 National Defense Authorization Act Parity Assessment (addressed in Appendix D) and other ARNG equipping shortfalls where sourcing solutions have been identified.

The quantity and funding shortages in the following major capability portfolios depict the equipment shortfalls and total funding cost from the ARNG MTOE and Augmentation Table of Distribution & Allowance (Aug-TDA) equipment requirements projected in FY 2023 as reported against the TAEDP using the 2012 SACS File.

a. Aviation Portfolio

The ARNG holds 42 percent of the Army's aviation force structure, which consists of rotary wing, fixed wing, unmanned aircraft systems; aviation ground support equipment; and air traffic control systems.

Investment in New Procurement and Modernization:

The ARNG has 360 of the most modern H-60(M) Blackhawk Helicopters and is on track to reach the acquisition objective of 535 by FY 2027. Ahead of schedule, in FY 2021, the ARNG began fielding the first 6 of an eventual total authorization of 386 H-60(V) Blackhawk Helicopters. By FY 2034, the ARNG's H-60 Helicopter Fleet is projected to have full glass cockpit capability with a mix of H-60(M) and H-60(V) aircraft. The ARNG's helicopter fleet will also be completely divested of UH-60(A) Blackhawks by the end of FY 2022.

The ARNG's Cargo Helicopter Fleet consists of 165 CH-47(F) rotary wing aircraft and is completely modernized. The ARNG's 212 UH-72(A) Lakota Light Utility Helicopter will require lifecycle modifications to sustain the fleet through the next decade.

The ARNG is also in the process of cascading 18 UH-72As to USAACE in exchange for 18 UH 72B aircraft, of which eight remain for transfer and 202 are on hand. The 18 UH-72B will enter the fleet beginning 2nd quarter FY 2022. The Army's plan to modernize the four ARNG Attack Reconnaissance Battalions (ARBs) with 24 AH-64E Apache aircraft in each ARB from FY 2022 through FY 2026 remains unchanged. ARNG ARBs are currently fielded with 18 AH 64D Apaches. The ARNG fixed-wing fleet is comprised of 57 aircraft (46 C-12 and 11 C-26) stationed in 52 locations.

The ARNG completed 100 percent of the version 2 fielding for the RQ-7B Shadow (most modern) UAS. 19th and 20th SFG units will receive the Block III RQ-7 Shadow. Future Tactical UAS (FTUAS) fielding will be determined through ReARMM. The RQ-11 Raven is currently equipped at 77 percent across ARNG formations. The Raven program for all components was capped at 85 percent. The high attrition rate of operators, currency requirements, system shortages, and funding for schools has left multiple units unable to adequately train and maintain proficiency in a pre-mobilization status. The Medium Range Recon UAS will replace the Raven beginning in FY 2022 and PM UAS will field ARNG units to full authorizations. Soldier Borne Sensor has been fielded to ARNG units beginning in 2018 through 2020 with 456 per year, decreasing each year, before reaching a total of 2,707 by FY 2025. Short Range Recon fielding starts FY 2023 for ARNG units, culminating with 676 systems by FY 2026.

b. Maneuver Portfolio

The Maneuver Portfolio encompasses families of combat systems including Abrams tanks, Bradley and Stryker Fighting Vehicles, and HERCULES Recovery Vehicles for ARNG ABCTs and Stryker Brigade Combat Teams.

Investment in New Procurement and Modernization:

The ARNG projects three ABCTs will be modernized through new procurement of Abrams (M1A2 SEPv3) and by cascading Bradleys (M2A3) from the active component. The cascades of equipment are expected to begin in FY 2023. ARNG maintains the only mixed fleet ABCT of both modernized M1A2 SEPv2 and less-modern M1A1 AIM-SA Abrams tanks in the Army Enterprise. A mixed fleet poses additional parts, logistics, and supply chain challenges that hamper an ABCT’s ability to maintain readiness for deployment. The shortfall of 14 of the most modern Abrams tanks listed in Table 2-5 reflects one cavalry troop in the 116th ABCT, which is scheduled to receive 14 M1A SEPv2 in FY 2022.

The Army increased funding to provide both active component and ARNG ABCTs with modernized M88A2 HERCULES recovery vehicles. The HERCULES allows single vehicle recovery of the 70 Ton SEPv2 Abrams tank. However, funding is unavailable to fill the remaining ARNG ABCT modernization requirement as reflected in Table 2-5. Lastly, the Army invested in four variants of Armored Multi-Purpose Vehicles (AMPVs) to modernize the M113 Armored Personnel Carriers within the ABCTs. The ARNG will begin receiving the AMPV in FY 2026 for top prioritized units.

Table 2-5. ARNG Top Maneuver Modernization Shortages

Nomenclature	Line Item Number	PUC	Total PUC Cost	Shortfall QTY
Tank Combat Full Tracked 120MM M1A2	T13305	\$7.6M	\$106.4M	14
Recovery Vehicle Full Tracked: Heavy M88A2	R50885	\$4.03M	\$20.2M	5

c. Soldier Portfolio

The Soldier Portfolio administers oversight of individual and crew-served weapons, thermal weapons sights, night vision, Improved Target Acquisition Systems (ITAS), mortars, Synthetic Training Environment (STE), and other weapon support items. The portfolio is fundamental to maintaining the ARNG as an operational force.

Investment in New Procurement and Modernization:

The Small Tactical Optical Rifle Mounted (STORM) Micro Laser Range Finder (MLRF) and the STORM II enable Soldiers to identify their targets at a range of 9,995 meters. The STORM is used both mounted on Tanks and other vehicles and dismounted by reconnaissance forces and snipers. The approximately 49 percent shortfall impacts ARNG warfighting capability (Table 2-6).

Table 2-6. ARNG Top Soldier Modernization Shortages

Nomenclature	Line Item Number	PUC	Total PUC Cost	Shortfall QTY
Small Tactical Optical Mounted (STORM) MLRF	J68653/Z05831	\$11.9M	\$30.44M	2495

d. Air and Missile Defense Portfolio

The ARNG Air and Missile Defense (AMD) portfolio supports seven Avenger Battalions (BNs), three Air Defense Brigades, one Army Air and Missile Command, one Air Defense Regional Training Institute, and 72 Air and Missile Airspace Management Operation Centers. The ARNG Army Air and Missile Defense Command has oversight of the ARNG units currently rotating into the National Capital Region to support the Integrated Air Defense System mission, as well as European Defense Initiative exercises. Additionally, ARNG Avenger BN Batteries are deploying in support of Operation Spartan Shield. ARNG Air Defense Units continue to support training at the National Training Center and Joint Readiness Training Center as well as multiple test exercises.

Investment in New Procurement and Modernization:

Beginning in FY 2023, the Army plans to activate additional Maneuver Short Range Air Defense (M-SHORAD) BNs with modernized AMD Planning and Control Systems (AMDPCS). The activations delay the modernization of six of the seven ARNG Avenger Battalions (originally planned to begin in FY 2018) into FY 2022–FY 2023, requiring sustainment of existing Avenger/AMDPCS systems beyond FY 2030.

The Army plans to modernize the ARNG with two BNs of M-SHORAD in FY 2027 and two in FY 2028, as well as 3 BNs of Indirect Fire Protection Capability (IFPC) in FY 2028. This modernization is dependent on the number of new M-SHORAD/IFPC BNs in the Army. ARNG modernization delays limit combatant commanders' available resources for the war fight.

e. Indirect Fires Portfolio

The Indirect Fires portfolio in the ARNG supports all BCTs and accounts for 70 percent of the Army’s Field Artillery Echelon above Brigade force structure. The Indirect Fires portfolio consists of Field Artillery platforms, munitions, sensors, and command and control systems. Major items include M119A3 and M777A2 Howitzers, Paladins, the Multiple Launch Rocket System (MLRS), the High Mobility Artillery Rocket System (HIMARS), the Q-50 Lightweight Counter Mortar Radar, and the Q-53 Counter Fire Target Acquisition Radar.

Investment in New Procurement and Modernization:

In FY 2023 through FY 2024, the ARNG is projected to modernize two MLRS BNs with the MLRS Launcher (M270A2) which will provide Soldiers with a higher survivability capability (see Table 2-7). In conjunction with this modernization, these two MLRS BNs will increase in size from two Batteries with eight launchers each to three Batteries with nine launchers each. The ARNG is fielding the M109A7 Self-Propelled Howitzer under the Paladin Integrated Management program and will continue fielding one ARNG ABCT per year until complete in FY 2025. The ARNG received 65 percent of its Q-53 targeting radar requirement and projects it will complete fielding in FY 2027.

Table 2-7. ARNG Top Indirect Fires Modernization Shortages

Nomenclature	Line Item Number	PUC	Total PUC Cost	Shortfall QTY
MLRS: M270A2	Z05503	\$5,353,000	\$172M	32
Counter Fire Target Acquisition Radar – Q53	R05016	\$8,500,000	\$178M	21

f. Mission Command Portfolio

The Mission Command portfolio encompasses data management Information Systems and Mission Command battle network enablers. This portfolio is heavily aligned with two Army Futures Command (AFC) Cross Functional Teams (CFT) signature modernization efforts: the Network CFT and the Assured Positioning, Navigation and Timing (A-PNT) CFT. The portfolio is also nested within the Chief of Staff of the Army’s 4th priority of, “An Army Network with hardware, software and infrastructure—sufficiently mobile and expeditionary—that can fight cohesively in any environment where the electromagnetic spectrum is denied or degraded.” The Army’s network modernization strategy focuses on those capabilities that improve network mobility and survivability, support Joint Force interoperability, and simplify the tactical network. New equipment fielding and training is organized by the PEO-C3T Program Office for units that meet the HQDA G-3/5/7 Prioritization List.

Investment in New Procurement and Modernization:

Resourcing prioritization for Mission Command Systems is governed by the ReARMM and Dynamic Army Requirements Priorities List (DARPL) modernization models. Modernization to support the Common Operating Environment (COE) must be maintained to ensure that the ARNG keeps pace with the Army and is capable of mitigating cyber vulnerabilities that attack

interoperability backbones. The Tactical Server Infrastructure (TSIv2 (Large/Small))/Command Post Computing Environment (CPCE) is the Army’s follow-on capability that is critical for Army implementation of SECRET/RELEASE (SEC/REL) and for setting the conditions for an enduring SEC/REL Mission Partner Environment (MPE).

Decreasing Size, Weight and Power (SWaP) is a priority across the Army, and TSIv2 brings several improvements over the current system. TSI is the server hardware platform that hosts CPCE and enterprise software in Army units from BN through Army Service Component Command levels. CPCE software enables commands to see themselves, the enemy, and the environment collaboratively in both Combined and Joint Environments. TSI is intended to provide a common hosting platform for mission command and other software-based capabilities such as intelligence, and will support future technological advances in computing. The Army projects Full Operational Capability (FOC) in the FY 2023 timeframe. Accelerating TSIv2/CPCE fielding would eliminate mixed Command Post of the Future/CPCE baselines in the Army inventory, providing newer hardware across the force and maximizing interoperability. Table 2-8 reflects the 331 and 1,041 shortfalls of the TSIv2 (Large) and TSIv2 (Small), respectively.

Table 2-8. ARNG Top Mission Command Modernization Shortfalls

Nomenclature	Line Item Number	PUC	Total PUC Cost	Shortfall QTY
Tactical Server Infrastructure (Large)	C05119	\$253K	\$83,743M	331
Tactical Server Infrastructure (Small)	C05120	\$37K	\$38,517M	1041

g. Force Protection

The Force Protection Portfolio consists of warfighter protection systems, including the Nuclear, Biological, and Chemical Reconnaissance Vehicle (NBCRV). The NBCRV is a pacing item within the Force Protection Portfolio. The ARNG ABCTs and IBCTs have 85 percent of authorized NBCRVs.

Investment in New Procurement and Modernization:

The ARNG will modernize the NBCRV fleet through a Sensor Suite Upgrade (SSU). The SSU uses mature technologies for standoff and proximate detection and identification (D/ID) of CBRN threats, manned-unmanned teaming, tip and queue functions, and autonomy. The first unit equipped for the NBCRV SSU is scheduled for fourth quarter FY 2023. The anticipated shortfall is 12 NBCRVs, as indicated in Table 2-9. Lethality in the ARNG maneuver formations is degraded without these required reconnaissance assets.

Table 2-9. ARNG Top Mission Command Modernization Shortfalls

Nomenclature	Line Item Number	PUC	Total PUC Cost	Shortfall QTY
Nuclear, Biological, and Chemical Reconnaissance Vehicle	N96543	\$4.5M	\$52M	12

h. Intelligence and Electronic Warfare Portfolio

The IEW Portfolio consists of systems to support military intelligence and electronic warfare activities. The portfolio enables the integration of dynamic, time-sensitive targeting from space, high altitude, aerial, and terrestrial layer sensors that provide targeting data directly to fires networks to identify threats in Anti-Access/Area denial (A2/AD) environments. The IEW Portfolio also provides commanders across the battlefield with intelligence, surveillance and reconnaissance; electronic warfare; and cyber capabilities tailored by echelon. These capabilities must be enabled by TOP SECRET transport connected to collection systems, bridging national to tactical intelligence to support deep sensing for long range precision fires in the contested deep maneuver, operational, and strategic fires areas.

Investment in New Procurement and Modernization:

The ARNG will have a 2–3 year capability gap following enduring MI equipment until projected modernized fielding. In FY 2022, 36 percent of units will have shortfalls—30 percent with non-Authority to Operate (ATO) compliant hardware/software and 6 percent with non-ATO hardware (Table 2-10). By FY 2024, approximately 45 percent of units will be operating non-ATO compliant software or hardware. The DCGS-A “family of systems” equipment are enduring/bridging items.

Table 2-10. ARNG Top Intelligence, Electronic Warfare (IEW) Modernization

Nomenclature	Line Item Number	PUC	Total PUC Cost	Shortfall QTY
Terrestrial Layer System/Echelon Above Brigade (EAB)	TBD	TBD	\$635.5M	TBD
Terrestrial Layer System/Brigade Combat Team (BCT)	TBD	TBD	\$752.9M	TBD
Tactical Intelligence Targeting Access Node (TITAN)	TBD	\$9–25M	\$631M	TBD
Intel Apps	Software Only	N/A	\$308.6M	TBD
Counterintelligence Human Intelligence Equipping Program – Army (CIHEP-A)	TBD	\$15–82K	\$186.3M	45

i. Engineering and Mobility Portfolio

The Assured Mobility Portfolio provides critical mobility, counter-mobility, and survivability capabilities facilitating freedom of maneuver to support the National Defense Strategy and AimPoint Force and Army Modernization priorities. Continued modernization will remove echelons above brigade engineers out of M113s by cascading the M2 Bradley and posture units for Joint Assault Bridge. Challenges include the EE PEGs limitations on funding capability gaps

in obstacle reduction and terrain shaping in MDO and the corresponding development of leading technological innovations relevant to the portfolio in the realm of robotics and materiel science.

Investment in New Procurement and Modernization:

For FY 2023, the Army’s base budget anticipates that procurement funding for the ARNG accounts for 15 percent (\$36 million) of the total Army Mobility portfolio (\$243 million), while RA procurement funding accounts for 48 percent (\$117 million). Modernization funding primarily reflects investments in improving Joint Assault Bridge (JAB), Construction Vertical Equipment, Bridge Support Systems, and Tactical Bridges. However, the failure to fund the Army’s modernization priorities in previous years seriously impacted the ARNG Engineering and Mobility portfolio (Table 2-11).

Table 2-11. ARNG Top Engineering and Mobility Modernization Shortfalls

Nomenclature	Line Item Number	PUC	Total PUC Cost	Shortfall QTY
Mounting Kit Air Defense Volcano UH-60 A/L Blackhawk	M78551	\$100K	\$1.3M	13
Loader Scoop Type 2 ½ CU YD	L76556	\$92K	\$1.9M	21
Loader Scoop Type 3 ¼ to 5 CU YD	L76522	\$140K	\$2.9M	21
Tractor Full Track High Speed (DEUCE)	T76541	\$433K	\$5.6M	13
HYEX	E27792	\$243K	\$16.3M	67
Surveying Instrument	S03726	\$55K	\$13.8M	251
All Terrain Crane Type I 40T	A05074	\$1.1M	\$47.3M	48
Detecting Set Mine: Mine AN/PSS-14	D03932	\$19.3K	\$82.6M	4280

j. Combat Service Support Sustainment Portfolio

This portfolio comprises maintenance, medical, quartermaster, and munitions capabilities that are essential to both the National Guard’s wartime mission and DOMOPS. The Load Handling System Compatible Water Tank Rack (HIPPO) and Modular Fuel System Tank Rack Module (MFS-TRM) offer increased fuel and water capability and capacity while decreasing personnel requirements. The Maintenance Support Device is used for troubleshooting, diagnostic testing, and hosting Interactive Electronic Technical Manuals.

Investment in New Procurement and Modernization:

The ARNG currently operates with over \$38 million worth of obsolete TMDE components. Similarly, the ARNG is projected to achieve only 65 percent of its HIPPO authorization, which hinders Fires Brigade units in Kentucky and Tennessee and Engineer units in Maine, Missouri, and other states supporting both wartime and DSCA missions for potable water.

The MFS-TRM provides a 2,500 gallon fuel storage and distribution capability. The procurement for this system will end in FY 2022, at which time the ARNG will only have 78 percent of required EOH. Lack of procurement for the remaining shortfall will limit the ARNG’s ability to transport and distribute fuel to support civil authorities in states such as Texas, Louisiana, Missouri, Iowa, and Nebraska or support the Total Army for Title 10 requirements.

The Next Generation Automatic Test System (NGATS) provides diagnostic maintenance support for all variants of the Abrams tank, Bradley fighting vehicle, Paladin artillery system, and Avenger Air Defense system. Without these NGATS in maintenance facilities, ARNG will have limited capability to support pass back maintenance. ABCTs are being fielded NGATS to perform maintenance. FY 2021 NGREA funds were used to procure 19 NGATS for TDA facilities. The resulting shortfall of 10 NGATS has been nominated for FY 2022 NGREA (Table 2-12).

Table 2-12. ARNG Top Sustainment Modernization Shortfalls

Nomenclature	Line Item Number	PUC	Total PUC Cost	Shortfall QTY
Load Handling System Compatible Water Tank Rack (HIPPO)	T32629	\$131K	\$98.3M	746
Modular Fuel System, Tank Rack Module (MFS-TRM)	T20131	\$95K	\$62.7M	661
Calibration Sets (CALSETS)	Multiple LINs	\$113K	\$8.93M	79
Next Generation Automatic Test Set (NGATS)	T05101	\$4.3M	\$43M	10

k. Combat Service Support Transportation Portfolio

The ARNG Tactical Wheel Vehicle (TWV) encompasses multiple vehicle types and variants to achieve myriad combat missions and provide support to HD and DSCA operations. TWV capabilities are essential to the Army’s mission and reside in almost every formation within the ARNG. The TWV fleet includes Light, Medium, and Heavy Tactical Vehicles with associated trailers, as well as the Mine Resistant Ambush Protected (MRAP) family of vehicles

Investment in New Procurement and Modernization:

The Family of Medium Tactical Vehicles (FMTV) A2 will replace the A0 (22 years old) and A1 (17 years old) versions. Divesting these older vehicles will reduce sustainment costs by approximately \$1 million per year. ARNG is projected to have less than 80 percent of required EOH by the end of FY 2026. The ARNG has significant FMTV shortages that impact IBCTs in all states and territories (Table 2-13).

Table 2-13. ARNG Top Modernization Shortfalls

Nomenclature	Line Item Number	PUC	Total PUC Cost	Shortfall QTY
TRUCK CARGO: LMTV	Z05606	\$305K	\$341M	1118
TRUCK TRACTOR	Z05597	\$630K	\$309.6M	491

5. Other: Funding for New and Displaced Equipment Training and NGREA

New Equipment Training (NET) and Displaced Equipment Training (DET) funding to activate ARNG Soldiers is based on new equipment quantities scheduled for fielding in any given year. In FY 2021, the ARNG received \$27.3 million for NET/DET events and activities, a slight decrease from FY 2020. In FY 2022, the ARNG will receive \$21.53 million for NET/DET

events and activities, a substantial decrease over the previous year. Historically, ARNG has executed all required NET/DET events by leveraging this dedicated funding line, as well as other National Guard Pay and Allowance funding lines. Decreasing funds will continue to significantly impact unit readiness as the states and territories and the District of Columbia increasingly leverage other limited pay and allowance funds to support new equipment training.

The ARNG continues to use NGREA funding to mitigate readiness shortfalls in equipment and modernization efforts. These purchases support the ARNG's priority funding areas outside of the normal base budget. In FY 2021, ARNG NGREA funded more than \$285 million in aviation, command and control, communications, engineering, force protection, logistics, maintenance, security, and training systems to support Homeland Defense (HD) and Defense Support of Civil Authorities (DSCA) missions.

D. Summary

ARNG equipment modernization efforts are informed by ReARMM and the 2018 Army Strategy and 2019 Army Modernization Strategy. Those strategies direct the Total Army transformation toward multi-domain Joint Force integration in a single theater by 2028 and all other theaters by 2035. To those ends, the ARNG remains fully committed to its role as an Operational Reserve. Interoperable, sustainable, and deployable are the tenets that guide equipment modernization into the future. Displaced equipment cascades are expected to rise and supplement new equipment procurements in the acquisition programs linked to the Army's Cross Functional Teams and Signature Efforts. The displaced equipment cascades represent a reduction in the quantity of authorized substitutions and last generation equipment. However, the full impact of displaced equipment cascades and generational interoperability of major end items is unknown. ARNG stakeholders will continue coordinating to ensure that equipment modernization initiatives are nested within the Army's pivot to MDO and balanced to meet critical requirements for domestic operations.

Consolidated Major Item Inventory and Requirements

NOTE: This table provides a comprehensive list of selected major equipment items. It provides the projected inventory quantity on-hand (QTY O/H) at the beginning/end of the selected fiscal year (FY). It also provides the quantity required (QTY REQ) to meet the full wartime requirements of the Reserve Component. In accordance with Title 10, the QTY REQ number provides the recommendation as to the quantity and type of equipment that should be in the inventory of each Reserve Component. FY 2022 unit cost estimates are provided by the Military Departments.

Nomenclature	Equip No.	Unit Cost	Begin FY 2023 QTY O/H	Begin FY 2024 QTY O/H	Begin FY 2025 QTY O/H	End FY 2025 QTY O/H	End FY 2025 QTY REQ
AIR DEFENSE							
FIRE UNIT VEHICLE MOUNTED: (AVENGER)	F57713	\$732,392	252	252	252	252	252
RAD ST ENHANCED AN/MPQ-64A3(V)1:	R05014	\$5,000,000	68	64	64	60	60
RADIO SET: AN/USQ-140(V)2(C)	R42399	\$300,000	78	78	78	78	104
Air Defense Airspace Management Battery CP	C17156	\$1,642,106	6	6	6	6	6
Air Defense Airspace Management Air Battle Management Operations Center (ABMOC)	C77942	\$5,191,648	1	1	1	2	2
Forward Area Air Defense Command & Control (FAAD C2) V5.5C-2.0	C91673	\$111,780	68	64	60	60	60
AIRCRAFT							
AIRPLANE CARGO-TRAN: C-12F*^	A30062	\$8,000,000	48	48	48	48	48
CH-47F IMPROVED CARGO HELICOPTER:*	C15172	\$30,000,000	156	156	156	156	156
HELICOPTER LIGHT UTILITY (LUH) UH-72A:*	H31329	\$5,393,572	192	192	192	192	192
HELICOPTER UTILITY: UH-60L*	H32361	\$7,908,000	478	408	400	400	400
HELICOPTER UTILITY: UH-60M*^	H32429	\$21,812,860	308	378	386	386	386
HELICOPTER: ATTACK AH-64D	H48918		72	48	48	48	48
MEDEVAC HELICOPTER: HH 60M*^	M33458	\$23,800,000	105	105	105	105	105
CH-47F IMPROVED CARGO HELICOPTER:	C15172	\$30,000,000	156	156	156	156	156
HELICOPTER ADVANCE ATTACK AH-64E: ^	H05006	\$35,690,000	24	48	48	48	48
SMALL UNMANNED AIRCRAFT SYSTEM (SUAS): RAVEN B (MIP)	S83835	\$168,000	717	717	717	717	798
TERMINAL VIDEO MULTIFUNCTIONAL REMOTE UAS: AN/USQ-210	T81951	\$448,000	1,295	1,296	1,299	1,299	1,299
UNMANNED AIRCRAFT RQ-7BV2:	U05012	\$2,864,373	116	116	116	116	116
AVIATION							
COMMAND SYSTEM: TACTICAL AN/TSQ-221*	C61597	\$24,000,000	24	24	24	24	24
COMPUTER SYS: DIGITAL	C18391	\$9,138,000	905	909	913	913	913
MOBILE TOWER SYSTEM: (MOTS)	M05009	\$900,000	16	16	16	16	16

Consolidated Major Item Inventory and Requirements

Nomenclature	Equip No.	Unit Cost	Begin FY 2023 QTY O/H	Begin FY 2024 QTY O/H	Begin FY 2025 QTY O/H	End FY 2025 QTY O/H	End FY 2025 QTY REQ
RADAR SET: AN/TPN31*	R17126	\$7,637,429	16	16	16	16	16
TEST STAND ENGINE: SEMITRAILER -MTD ACFT DIAGNOSTICS FLEX ENG	T00229	\$6,000,000	4	4	4	4	4
TESTER: PITOT AND STATIC SYSTEMSTS-4463/P*	T03597	\$66,784	158	158	158	158	158
TOOL KIT AIRCRAFT MAINTENANCE: MOS 68J/68M BASIC	W59034	\$5,893	247	247	247	247	247
TOOL SET AVIATION UNIT MAINTENANCE: SET NO 2 AIRMOBILE*	W60206	\$389,000	41	41	41	41	41
UH-60 KIT AEROMEDICAL EVACUATION:*	K40878	\$169,305	210	210	210	210	210
BATTLE CMD C2							
COMPUTER SET DIGITAL (JBC-P): AN/UYK-128B(V)3	C05036	\$21,706	15,707	15,819	15989	15989	15989
COMPUTER SET: DIGITAL (JBC-P LOG) AN/UYQ-90B(V)4	C05055	\$8,342	5,361	5,307	5311	5311	5311
COMPUTER SET: DIGITAL (JBC-P LOG) AN/UYQ-90B(V)5	C05054	\$19,997	986	1,002	1007	1007	1007
COMPUTER SET: DIGITAL (JBC-P) AN/GYK-62G	C05037	\$16,000	1,193	1,204	1214	1214	1214
COMPUTER SYSEM: DIGITAL*	C27963	\$5,700	5,258	5,253	5248	5248	5248
DISTRIBUTION SYSTEM ELEC: 120/208V 3PH 40AMP*	F55485	\$6,258	1,434	1,448	1462	1462	1462
DISTRIBUTION SYSTEM ELEC: 120V 1PH 60AMP*	F55553	\$4,901	2,231	2,231	2231	2231	2231
FEEDER SYSTEM ELECTRICAL: 3PH 100 AMP	F55621	\$5,799	469	471	473	473	473
FEEDER SYSTEM ELECTRICAL: 3PH 200 AMP	F55689	\$11,502	96	98	100	100	100
GEN SET DED TM: 10KW 60HZ MTD ONM116A2 PU-798*	G42170	\$25,757	830	791	739	739	739
GEN SET DED TM: 5KW 60HZ MTD ON M116A2 PU-797*	G42238	\$23,738	601	605	572	572	572
GEN SET DID 5KW 50/60HZ: SKID-MTD*	G42488	\$21,771	744	818	946	946	946
GEN SET: DED SKID MTD 10KW 400HZ*	G74779	\$15,304	8	0	0	0	0
GEN SET: DED SKID MTD 10KW 60HZ*	G74711	\$10,700	1,056	1,058	1062	1062	1062
GEN SET: DED SKID MTD 15KW 50/60HZ*	G12170	\$26,334	1	1	1	1	1
GEN SET: DED SKID MTD 30KW 50/60HZ*	G74575	\$26,705	19	17	17	17	17
GEN SET: DED SKID MTD 5KW 60HZ*	G11966	\$12,797	1,296	1,199	1042	1042	1042
GEN ST D 10KW 400HZ: SKID-MTD	G75018	\$28,549	68	72	68	68	68
GEN ST DE 30KWW 50/60HZ: SKID-MTD	G75200	\$30,074	62	65	67	67	67
GEN ST DED15KWW 50/60HZ: SKID-MTD*	G49966	\$26,412	308	309	309	309	309
GN ST DED 10KW 50/60HZ: SKID-MTD*	G07461	\$24,676	806	826	841	841	841
GENERATOR SET DIESEL ENGINE TM: PU-802	G53778	\$31,481	663	661	660	660	660
GENERATOR SET DIESEL ENGINE TM: PU-803	G35851	\$38,418	109	111	105	105	105

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GENERATOR SET: DIESEL TRL/MTD 60KW 50/60HZ PU805 CHASSIS W/FENDE	G78306	\$44,185	115	115	115	115	115
LTT TRAILER-MTD: PP-3001/5 KW/50/60 HZ	L27002	\$19,177	16	16	16	16	16
LTT TRAILER-MTD: PU-2001/5 KW/50/60 HZ	L26934	\$25,135	610	594	610	610	610
LTT TRAILER-MTD: PU-2002/10 KW/50/60HZ	L84622	\$19,177	650	654	672	672	672
LTT TRAILER-MTD: PU-2012/10 KW/400HZ	L84758	\$45,443	8	8	8	8	8
NAVIGATION SET: SATELLITE SIGNALS AN/GSN-13	N96180	\$39,152	4	4	4	4	4
NETT WARRIOR SYSTEM:	N05004	\$4,850	730	312	312	312	312
POWER PLANT ELEC DED TM: 5KW 60HZ AN/MJQ-35*	P28083		13	13			
POWER PLANT: DIESEL TRL/MTD 10KW60HZ AN/NJQ-37*	P42262	\$50,294	3	9	12	12	12
POWER PLANT: ELECTRIC TRAILER MTD 30KW 50/60HZ AN/MJQ 40*	P42126	\$85,594	28	27	26	26	26
POWER PLANT: ELECTRIC TRL/MTD 60KW 50/60HZ AN/MJQ 41*	P42194	\$96,819	19	23	23	23	23
TRAILER-MTD: PP-3102/10 KW/50/60HZ/M200A1	T39849	\$72,145	142	136	133	133	133
TRAILER-MTD: PP-3105/30 KW/50/60 HZ 2M200A1	T39917	\$47,006	60	58	58	58	58
TRAILER-MTD: PP-3106/60 KW/50/60 HZ/2M200A1	T93232	\$85,199	120	126	136	136	136
TRAILER-MTD: PU-2101/15 KW/50/60 HZ/M200A1	T40090	\$44,157	530	533	535	535	535
TRAILER-MTD: PU-2102/30 KW/50/60 HZ/M200A1	T39954	\$41,800	189	187	193	193	193
TRAILER-MTD: PU-2103/60 KW/50/60 HZ/M200A1	T60034	\$40,914	43	43	43	43	43
UTILITY RECEPTACLE:*	U89185	\$3,638	3,539	3,553	3567	3567	3567
BATTLE COMMAND TRANSPORT NETWORKS							
COMMUNICATION SYSTEM: AN/MRC-150	C05023	\$1,850,000	7	14	20	20	20
TRANSPORTABLE TACTICAL COMMAND: COMMUNICATIONS LITE V1	T05071	\$1,160,673	77	102	102	102	102
TRANSPORTABLE TACTICAL COMMAND: COMMUNICATIONS HEAVY V	T05073	\$503,294	26	32	38	38	38
BATTLESPACE AWARENESS							
CENTRAL: COMMUNICATIONS AN/TSQ-226(V)1	C43263	\$535,000	8	8	8	8	8
CENTRAL: COMMUNICATIONS AN/TSQ-226(V)3*	C43399	\$1,880,000	13	14	14	14	14
CENTRAL: COMMUNICATIONS AN/TSQ226(V)2	C43331	\$800,000	4	2	0	0	0
COMPUTER SYSTEM: DIGITAL AN/PYQ-3	C18312	\$50,000	393	343	323	323	237
COMPUTER: SYSTEM DIGITAL AN/PYQ-8	C77823	\$5,000	203	171	139	139	139
DETECTING SYSTEM COUNTRMEASURES: AN/MLQ-40(V)4 (Prophet Sensor)	D04182	\$1,100,000	75	71	69	69	97

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DATA ANALYSI CENTRAL: AN/MSW-24 (Prophet Control)	D77801	\$1,100,000	25	25	25	25	27
GROUND STATION TACTICAL INTELLIGENCE: AN/TSQ-179*	T37036	\$5,000,000	39	39	39	39	39
PROCESSING CENTER INTELLIGENCE VERSION 2: AN/TYQ-103(V)*	C18176	\$1,200,000	35	37	39	39	39
SERVER INTELLIGENCE FUSION: AN/TYQ-94(V)2*	A35397	\$56,000	388	378	368	368	368
WORKSTATION GEOSPATIAL INTELLIGENCE: AN/TYQ-71(V)*	D11498	\$250,000	227	224	221	221	221
WORKSTATION PORTABLE MULTIFUNCTION: AN/TYQ-93(V)*	A35329	\$4,000	2479	2469	2460	2460	2460
BATTALION COMMAND POST SWITCHING GROUP: OM-XXX*	B67234	\$8,838	462	440	418	418	418
CENTRAL OFFICE TELEPHONE ATOMATIC: AN/TTC-XXX	C18291	\$900,000	8	8	8	8	8
CENTRAL OFFICE: TELEPHONE AUTOMATIC	C20617	\$775,000	12	10	8	8	8
COMMUNICATION SYSTEM: TACTICAL TERMINAL CONTROL SYSTEM (TTCS)*	C59125	\$998,000	23	23	23	23	28
COMPUTER SET GENERAL: AN/GKY-33E	C18297	\$3,500	485	487	489	489	489
COMPUTER SYS DIGITAL: AN/PYQ-10©*	C05002	\$3,750	48795	48773	48742	48742	48742
ENCRYPTION-DECRYPTION EQUIP: KG-250X	E05011	\$9,900	144	203	263	263	263
ENCRYPTION-DECRYPTION EQUIPMEN: KG-175D	E05004	\$9,900	2938	2948	2948	2948	2948
JOINT NODE NETWORK (JNN) CENTRAL OFC TELEPHONE AUTO: AN/TTC*	J05001	\$925,000	142	134	126	126	126
RECEIVE SUITE: AN/TSR-8*	R30658	\$159,585	345	345	345	345	490
SATELLITE COMMUNICATION SYSTEM: AN/TSC-156*	S23268	\$2,000,000	29	29	29	29	48
TERMINAL: SATELLITE COMMUNICATION AN/TSC-154	T81733	\$825,000	116	119	122	122	122
CBT MOBILITY							
ANTI-PERSONNEL MINE CLEARING SYSTEM: REMOTE CONTROL (M160)	A05002	\$355,000	26	26	26	26	26
ASSAULT BREACHER VEHICLE: (ABV)^	A05001	\$5,200,583	30	30	30	30	30
BOAT BRIDGE ERECTION INBOARD ENGINE: SHALLOW DRAFT*	B25476		98	70			
BRIDGE ARMOR VEH LAUNCH SCISSOR TY: CL 60 ALUM 60 FT LG OF SPAN	C20414		0	0			
BRIDGE ARMORED VEHICLE LAUNCHED SCISSORS TY: 63 FT (AVLB) MLC 70*	B31098	\$304,952	86	86	86	86	86
BRIDGE FIXED: RAPIDLY	B24592	\$975,000	8	8	8	8	8
DETECTING SET MINE: PTBL METALLIC (AN/PSS-11)	G02341	\$2,450	221	221	221	221	221

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DETECTING SET: MINE AN/PSS-14	D03932	\$19,300	5956	5802	5730	5730	5730
DETECTING SET: MINE AN/PSS-14C	D05016	\$14,000	917	1021	1041	1041	1041
HIGH MOBILITY ENGINEER EXCAVATOR (HMEE): TYPE I*^	H53576	\$185,000	488	505	528	528	544
INSTRUMENT SET RECONNAISSANCE AND SURVEYING: AN/TKQ-5	D17191	\$62,000	826	820	815	815	1099
LAUNCH M60 SERIES TANK CHASS TRNSPTG: 40 AND 60 FT BRDGE TY CL60*	L43664	\$527,126	68	58	48	48	28
LOADER SCOOP TYPE: 2.5 CUBIC YARD*	L76897	\$99,515	111	111	111	111	111
LOADER SCOOP TYPE: DSL 2-1/2CU YD HINGE FRME W/MULTI PURP BUCKET*	L76556	\$92,895	41	41	41	41	41
MINE PROTECTED CLEARANCE VEHICLE:	M05004	\$971,923	78	78	78	78	78
MINE RESISTANT VEHICLE:	M74226	\$540,000	95	95	95	95	95
SOF DEMOLITION KIT: M303	S93791	\$30,709	203	203	203	203	338
SUPPLEMENTARY SET BRIDGE:	U60216	\$90,852	21	22	20	20	22
TRANSPORTER: COMMON BRIDGE (CBT) M1977A4	T05067	\$470,094	8	8	8	8	8
TOOL KIT: URBAN OPS	T30195	\$76,364	527	527	527	690	527
TRACTOR WHEELED: DSL 4X4 W/EXCAVATOR AND FRONT LOADER*	T34437	\$110,000	0	0	0	0	0
TRACTOR WHEELED: INDUSTRIAL*	T34505	\$78,000	194	194	194	194	194
TRANSPORTER COMMON BRIDGE.*	T91308	\$226,150	616	616	616	616	616
URBAN OPERATIONS: PLATOON KIT	U88092	\$177,553	395	395	395	395	485
VEHICLE MOUNTED MINE DETECTION (VMMD) SYS:	V05001	\$804,387	156	156	156	156	156
FIELD LOG							
ARMAMENT REPAIR SHOP SET (ARSS):	A05031	\$400,000	90	91	91	91	91
ASSAULT KTCHN: (AK)	A94943	\$65,000	800	798	798	798	798
CALIBRATION SET SECONDARY TRANSFER: STANDARDS	C72574	\$985,378	11	11	11	11	12
FORWARD AREA WATER POINT SUPPLY SYSTEM: (FAW SS)*	F42612	\$46,879	38	41	46	46	46
HYDRAULIC SYS TEST AND REPAIR UNIT (MX3):	H05002	\$153,417	252	248	244	244	244
KITCHEN: COMPANY LEVEL FIELD FEEDING	K28601	\$31,250	0	0	0	0	0
LIGHT CAPABILITY ROUGH TERRAIN FORKLIFT (LCRTF): 5K*	L05010	\$74,750	564	570	570	570	570
LOAD HANDLING SYS (LHS): 2000 GAL COMP WATER TANK-RACK (HIPPO)*	T32629	\$81,000	963	1062	1161	1161	1194
MACHINIST'S MEASURING TOOL SET: MMTS	M20190	\$5,492	983	983	983	983	983

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MAINTENANCE SUPPORT DEVICE:*	T92889	\$22,901	10383	10338	10320	10320	10320
MODULAR FUEL SYSTEM-TANK RACK MODULE: WITH RETAIL CAPABILITY	T20131	\$78,038	1453	1458	1460	1460	1460
PETROLEUM QUALITY ANALYSIS SYSTEM: ENHANCED (PQAS-E)	P25743	\$1,770,000	18	18	18	18	18
TEST KIT MASK PROTECTIVE: M41	T62350	\$7,000	844	846	841	841	841
TRAILER TANK WATER (CAMEL): 800 GAL 5 TON W/E	T05047	\$106,532	202	200	200	200	200
TRANSFER SET: STANDARDS (SUP/EQ) AN/GSM-439	T05046	\$151,469	12	12	12	12	12
TRANSFER: SET STANDARDS AN/GSM-440	T05045	\$1,087,000	12	12	12	12	12
WATER PURIFICATION: REVERSE OSM-OSIS 3000 GPH TRAILER MOUNTED*	W47225	\$748,000	72	72	72	72	72
FORCE PROTECTION							
ALARM BIOLOGICAL AGENT AUTOMATIC: (BIDS) M31A2*	A48680	\$1,118,000	98	98	98	98	98
DECONTAMINATING APPARATUS POWER DRIVEN SKID MOUNTED: MULTIPURPOS	F81880	\$29,500	84	84	84	84	84
JOINT SERVICE: TRANSPORTABLE DECONTAMINATION	J01197	\$29,750	1427	1425	1423	1423	1423
NUCLEAR BIO CHEM RECON VEH: (NBC RV)*	N96543	\$4,465,407	77	77	77	77	77
GEN ENGINEERING							
ALL TERRAIN CRANE TYPE II: (HEAVY)*	Z05089		0	0			
COMPACTOR HIGH SPEED: TAMPING SELF-PROPELLED (CCE)*	E61618	\$171,438	62	62	62	62	62
CRANE WHEEL MTD: HYDRAULIC LIGHT 7-1/2 TON W/CAB*	C36151	\$58,481	142	142	142	142	142
CRANE: WHEEL MOUNTED HYDRAULIC 25 TON ALL TERRAIN AT422T*	C36586	\$313,521	116	116	116	118	118
CRUSH SCREEN AND WASH PLANT: DSL/ELEC DRVN WHL MTD 150-225 TPH	F49673	\$1,543,579	7	7	7	7	7
EXCAVATOR: HYDRAULIC (HYEX) TYPE I MULTIPURPOSE CRAWLER MOUNT*	E27792	\$242,636	194	194	194	194	194
EXCAVATOR: HYDRAULIC (HYEX) TYPE II MLTIPURPOSE CRAWLER MOUNT*	E41791	\$435,755	7	7	7	7	7
EXCAVATOR: HYDRAULIC (HYEX) TYPE III MULTIPURPOSE CRAWLER MOUNT*	E27860	\$259,667	7	7	7	7	7
HYDRAULIC ELECTRIC PNEUMATIC PETROLEUM OPERATE EQUIP: (HEPPOE)	H05004	\$230,000	327	336	334	334	421

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MIXER CONCRETE MODULE: PLS 2600 GALLON	M81382	\$127,160	39	39	39	39	39
ROLLER MOTORIZED STEEL WHEEL: 2 DRUM TANDEM 10-14 TON (CCE)*	S11711	\$82,595	16	16	16	16	0
ROLLER MOTORIZED: VIBRATORY ROLLER TYPE II*	R11127	\$60,230	208	208	211	211	211
SCRAPER EARTH MOVING SELF-PROPELLED: 14-18 CU YD (CCE)*^	S56246		1	1			
SCRAPER EARTHMOVING: 14-18 CU YD^	S05029	\$796,100	298	298	298	298	298
SCRAPER ELEVATING: SELF PROPELLED 9-11 CU YD SECTIONALIZED*	S30039	\$324,218	94	94	94	94	132
SELF PROPELLED CONCRETE SAW	Z05126	\$100,000	1	1	1	1	26
TACTICAL WATER DISTRIBUTION EQUIP SET: (TWDS-RDF)*	T09094	\$660,000	4	4	4	4	4
TRACTOR FL TRKD: LOW SPD - T9 TYPE II W/RIPPE	T05016	\$254,383	189	186	189	189	160
TRACTOR FL TRKD: LOW SPD T-5 TYPE II W/RIPPER	T05026	\$188,638	68	68	68	68	72
TRACTOR FULL TRACKED HIGH SPEED: ARMORED COMBAT EARTHMOVER (ACE)*	W76473	\$887,050	0	0	0	0	0
TRACTOR FULL TRACKED HIGH SPEED: DEPLOYABLE LT ENGINEER (DEUCE)*^	T76541	\$432,799	118	118	118	118	124
TRACTOR FULL TRCKD LOW SPD: DSL MED DBP W/BULDOZ W/SCARIF RIPPER*	W83529	\$87,683	0	0	0	0	0
TRACTOR FULL TRCKD LOW SPD: DSL MED DBP W/BULDOZ W/SCARIF WINCH*	W76816	\$90,375	0	0	0	0	0
TRACTOR FULL TRCKD LOW SPD: T5	T05029	\$199,262	52	52	52	52	68
TRACTOR FULL TRKD LOW SPD: T9*	T05015	\$259,683	216	227	231	231	134
MANEUVER CBT VEH							
ANTI-TANK GUIDED MISSILE VEH: (ATGM)	A83852	\$4,669,225	18	18	18	18	18
CARRIER 120 MILLIMETER MORTAR: SELF PROPELLED ARMORED	C10990	\$318,308	90	90	90	90	90
CARRIER ARMORED COMMAND POST: FULL TRACKED^	C11158	\$374,086	415	418	416	416	416
CARRIER CARGO TRACKED: 1.5T M973	C11280	\$125,969	12	12	12	12	12
CARRIER COMMAND COMMUNICATION VEHICLE: ARTICULATED TRKD 1-1/2 T	C11651	\$209,490	0	4	4	4	4
CARRIER COMMAND POST: LIGHT TRACKED	D11538	\$17,980,924	57	58	59	59	59
CARRIER PERSONNEL FULL TRACKED: ARMORED (RISE)	C18234	\$405,815	566	531	509	509	509
COMMAND VARIANT VEH: (CV)	C41314	\$2,624,308	64	64	64	64	64

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ENGINEER SQUAD VEHICLE: (ESV)	J97621	\$3,839,417	24	24	24	24	24
FIGHTING VEHICLE: FULL TRACKED INFANTRY (IFV) M2A3	F60564	\$4,409,064	375	375	375	375	375
FIRE SUPPORT VEHICLE: (FSV)	F86821	\$3,070,668	26	26	26	26	26
INFANTRY CARRIER: VEHICLE (ICV)	J22626	\$2,910,189	260	260	260	260	260
KNIGHT: ARMORED	K29708	\$1,718,004	60	60	60	60	60
MEDICAL EVACUATION VEHICLE: (MEV)*	M30567	\$2,231,792	54	54	54	54	54
MOBILE GUN SYSTEM: (MGS)	M57720	\$9,854,854	24	24	24	24	24
MORTAR CARRIER VEHICLE: (MCV)	M53369	\$2,859,036	72	72	72	72	72
OPERATION DESERT STORM (ODS) SITUATIONAL AWARENESS (SA): M2A2	P19727	\$2,300,000	250	250	250	250	250
RECONNAISSANCE VEH: (RV)^	R62673	\$2,803,780	114	114	114	114	114
RECOVERY VEHICLE FULL TRACKED: HEAVY M88A2	R50885	\$4,022,474	217	216	214	214	214
RECOVERY VEHICLE FULL TRACKED: MEDIUM	R50681	\$1,210,755	100	100	101	101	101
TANK COMBAT FULL TRACKED: 120 MILLIMETER GUN	T13168	\$2,393,439	261	261	217	217	217
TANK COMBAT FULL TRACKED: 120MM GUN M1A2	T13305	\$4,445,399	174	87	87	87	87
MANEUVER SYSTEMS							
SURVEILLANCE SYSTEM: SCOUT LONG RANGE AN/TAS-8*	S02976	\$400,000	737	737	737	737	737
TARGET ACQUISITION SYSTEM: TOW IMPROVED ITAS M41	T24690	\$970,000	591	655	591	591	720
MEDICAL FIELD SYSTEMS							
ANALYZER BLOOD: (AB)	A83359	\$10,372	203	203	203	203	203
AUTOMATIC EXTERNAL DEFIBRILLATOR (AED) :	A05034	\$4,079	290	294	296	296	296
COMPUTER SET: DIGITAL AN/TYQ-106(V)1	C18345	\$1,300	1,959	1,957	1955	1955	1955
COMPUTER SET: DIGITAL AN/TYQ-107(V)1	C18277	\$1,300	1,486	1,486	1486	1486	1607
COMPUTER SET: DIGITAL AN/TYQ-107(V)2	C18209	\$1,300	311	311	321	321	323
COMPUTER SYSTEM: DIGITAL AN/TYQ-105(V)1	C27503		10,038	10,038			
COMPUTER SYSTEM: DIGITAL AN/TYQ-108(V)3	C27639	\$1,300	452	452	452	452	452
DEFIBRILLATOR MONITOR RECORDER: 120/230V 50/60HZ AC OR DC*	D86072	\$48,880	825	825	825	825	825
DENTAL FIELD TREATMENT OPERATING SYSTEM:	D44052	\$41,179	68	68	68	68	68
DENTAL FILMLESS IMAGING SYSTEM (DFIS):	D44302	\$15,752	67	67	67	67	67
ELECTROCARDIOGRAPH: SOLID STATE AMPLIFIER PORT115V 60HZ AC	E17591	\$4,295	73	73	73	73	73
MEDICAL EQUIPMENT SET AIR AMBULANCE:*	M29213	\$72,960	297	315	315	315	315

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MEDICAL EQUIPMENT SET GROUND AMBULANCE:*	M26413	\$90,782	1,746	1,776	1814	1814	1830
MEDICAL EQUIPMENT SET TACTICAL COMBAT MEDICAL CARE:*	M30499	\$175,527	870	872	874	874	874
MEDICAL EQUIPMENT SET WATER QUAL ANALYSIS PREVENTIVE MEDICINE:*	Y36849	\$20,580	47	48	49	49	50
MEDICAL FILMLESS IMAGING SYS:	M30817	\$135,911	76	76	76	76	76
MONITOR PATIENT VITAL SIGNS: (MVS)	M66626	\$19,621	314	314	314	314	314
OXYGEN GENERATOR: FIELD PORTABLE (OGFP)	P05027	\$4,257	642	642	642	642	1416
PUMP INTRAVENOUS INFUSION PIV:	P16161	\$10,420	793	839	851	851	888
REFRIGERATOR SOLID STATE BIO:*	R64126	\$9,671	181	181	181	181	181
SINK UNIT SURGICAL SCRUB AND UTENSIL HOSPITAL FIELD: 110V 60C AC*	T60464	\$7,094	118	118	108	108	140
STERILIZER SURG INSTR DRESS: PRES EXTR HTDCRS 12-1/2 BY 12-1/2IN	U39016	\$713	108	108	108	108	136
ULTRA SOUND DIAGNOSTIC SYSTEM: HAND-CARRIED	U26813	\$80,868	9	9	9	9	9
VENTILATOR VOLUME PTBL:*	V99788	\$24,852	680	680	680	680	680
X-RAY: APPARATUS DEN*	X38819	\$7,103	67	67	67	67	67
ROBOTICS							
Man Transportable Robotic System MTRS	M05002	\$182,154	64	64	64	64	261
Medium Flail	M05031		6	6	6	6	6
SOLDIER SYSTEMS							
ILLUMINATOR INTEGRATED: SMALL ARMS STORM MLRF	J68653	\$13,090	5,161	5,103	5103	5103	5103
LASER: TARGET LOCATOR MODULE	L05003	\$67,222	3,169	3,169	3169	3169	3169
MANEUVERABLE CANOPY 6 (MC 6): PERSONNEL PARACHUTE SYSTEM	A46878	\$4,596	7,866	7,866	7866	7866	7866
MILITARY: FREEFALL ADVANCED RAM AIR PARACHUTE SYSTEM	M05026	\$13,500	1,161	1,161	1161	1161	1161
SOLDIER WPNS							
CARBINE 5.56 MILLIMETER: M4A1	C06935	\$653	257,696	257,610	257255	257255	257255
M205: MACHINE GUN TRIPOD	X05002	\$3,000	21,689	21,724	21741	21741	21741
MOUNT TRIPOD MACHINE GUN: HEAVY CALIBER 50	M75577	\$379	969	990	990	990	990
RIFLE RECOILLESS: 84MM (MAAWS)	R45101	\$16,642	257	471	465	465	465
RIFLE 5.56 MILLIMETER: M16A2*	R95035	\$749	451	451	451	451	451
RIFLE 5 56 MILLIMETER: M4	R97234		0	0			
RIFLE: 5.56MM M16A4	R97175	\$749	0	0	0	0	0

Consolidated Major Item Inventory and Requirements

Nomenclature	Equip No.	Unit Cost	Begin FY 2023 QTY O/H	Begin FY 2024 QTY O/H	Begin FY 2025 QTY O/H	End FY 2025 QTY O/H	End FY 2025 QTY REQ
STRIKE							
A3 BFIST: W/FS3	A70576	\$1,500,000	65	65	65	65	65
HIGH MOBILITY ARTILLERY ROCKET SYSTEM: HIMARS	H53326	\$5,033,000	192	192	192	192	192
HOWITZER LT TOWED: M119A3^	H05007	\$1,400,000	240	240	240	240	240
HOWITZER MEDIUM SELF PROPELLED:	H57642	\$1,435,000	192	180	162	162	162
HOWITZER MEDIUM TOWED: M777	H57916	\$2,500,000	139	139	139	139	240
LIGHTWEIGHT COUNTER MORTAR RADR: AN/TPQ-50	L05007	\$1,203,140	130	134	138	138	138
MULTIPLE LAUNCH ROCKET SYSTEM: (MLRS) M270A1 IMPROVED LAUNCHER	M82581	\$5,353,000	16				
RADAR SET: AN/TPQ-36(V)10	R14284	\$7,977,850	4	4	4	4	4
RADAR SYSTEM: COUNTER FIRE TARGET ACQUISITION RADAR	R05016	\$14,231,348	68	72	76	76	76
SUPPORT SYSTEMS							
CONTAINER HANDLING:*	C27294	\$40,165	31	31	31	31	31
CONTAINER HANDLING: CONTAINER HANDLING UNIT (CHU)*	C84862	\$34,613	0	0	0	0	0
CONTAINER HANDLING: HEAVY EXP MOBIL TACT TRK (HEMTT)*	C84930	\$39,150	0	0	0	0	0
FIRING DEVICE DEMOLITION: MK152 MOD 0	F60336	\$18,000	365	358	354	354	354
JOINT PRECISION AIRDROP SYS: (JPADS) 10K	J05004	\$81,000	34	34	34	34	34
PLATFORM: CONTAINER ROLL IN/ROLL OUT*	B83002	\$8,250	17,235	17,207	17175	17175	17175
TRAILERS							
PALLETIZED LOAD SYSTEM: TRAILER-CTE^	P05025	\$55,131	627	629	629	629	629
SEMITRAILER FLAT BED: BREAKBULK/CONT TRANSPORTER 22-1/2 TON*	S70027	\$33,156	3,205	3,205	3205	3205	3406
SEMITRAILER FLATBED: BREAKBULK/CONTAINER TRANSPORTER CMRCIAL 34T*	S70159	\$105,069	3,960	3,960	3960	3960	3960

Consolidated Major Item Inventory and Requirements

Nomenclature	Equip No.	Unit Cost	Begin FY 2023 QTY O/H	Begin FY 2024 QTY O/H	Begin FY 2025 QTY O/H	End FY 2025 QTY O/H	End FY 2025 QTY REQ
SEMITRAILER LOW BED: 25 TON 4 WHEEL W/E*	S70517	\$179,778	251	244	295	295	506
SEMITRAILER LOW BED: 40 TON 6 WHEEL W/E	S70594	\$51,900	1,147	1,214	1244	1244	1244
SEMITRAILER LOW BED: 70 TN HEAVY EQUIPMENT TRANSPORTER (HET)	S70859	\$229,219	420	420	420	420	420
SEMITRAILER TANK: 5000 GAL BULK HAUL SELF-LOAD/UNLOAD W/E*	S10059	\$77,550	300	300	300	300	300
SEMITRAILER TANK: 5000 GAL FUEL DISPENSING AUTOMOTIVE W/E*	S73372	\$97,413	141	141	141	141	141
TRAILER CARGO: 1-1/2 TON 2 WHEEL W/E	W95811	\$10,245	75	63	57	57	57
TRAILER CARGO: 5 TON LIGHT ENGINER UTILITY TRAILER	Z05186		0	0			
TRAILER CARGO: MTV W/DROPSIDES M1095*	T95555	\$45,000	5,671	5,757	5796	5796	6009
TRAILER: PALLETIZED LOADING 8X20*^	T93761	\$88,639	5,363	5,283	5281	5281	5281
TRUCKS							
M-ATV UI W/CROW SYSTEM:	M05029		230	230	230	230	230
M-ATV UI W/OGPK: ^	M05030		639	609	609	609	609
TRACTOR LIN HAUL: M915A5*	T88858		1,860	1,860	1860	1860	1860
TRUCK AMBULANCE: 2 LITTER ARMD 4X4 W/E (HMMWV)	T38707	\$78,499	1	1	1	1	1
TRUCK AMBULANCE: 4 LITTER ARMD 4X4 W/E (HMMWV)*	T38844	\$294,867	1,619	1,621	1623	1623	1623
TRUCK CARGO: 2 1/2 TON 4X4 LMTV W/E W/W LAPES/AD	T42063	\$119,166	8	8	8	8	8
TRUCK CARGO: 4X4 LMTV W/E	T60081	\$176,428	2,102	2,117	2134	2134	2134
TRUCK CARGO: 5 TON 6X6 MTV W/E LAPES/AD	T41036	\$118,579	105	103	103	103	103
TRUCK CARGO: 5 TON 6X6 MTV W/E W/W LAPES/AD	T41104	\$119,265	19	17	17	17	17
TRUCK CARGO: 5 TON WO/WINCH*	T41515	\$205,000	6,814	6,743	6747	6747	6747
TRUCK CARGO: HEAVY PLS TRANSPORTER 15-16.5 TON 10X10*	T40999	\$360,139	354	351	347	347	347
TRUCK CARGO: HEAVY PLS TRANSPORTER 15-16.5 TON 10X10 W/MHE W/E*	T41067	\$288,015	71	71	71	71	71
TRUCK CARGO: MTV W/E*	T61908	\$184,333	492	496	500	500	500
TRUCK CARGO: MTV W/E W/W*	T41135	\$182,089	222	255	258	258	258
TRUCK CARGO: W/MHE WO/WINCH	T59584	\$280,000	750	732	732	732	732
TRUCK CARGO: WO/WINCH*	T59448	\$185,000	4,770	4,739	4700	4700	4700
TRUCK DUMP: 10 TON WO/WINCH*	T65342	\$240,000	1,075	1,039	991	991	991
TRUCK DUMP: 20 TON DSL DRVN 12 CU YD CAP (CCE)*	X44403	\$211,764	534	534	534	534	597
TRUCK DUMP: MTV W/E	T64911						

Consolidated Major Item Inventory and Requirements

Nomenclature	Equip No.	Unit Cost	Begin FY 2023 QTY O/H	Begin FY 2024 QTY O/H	Begin FY 2025 QTY O/H	End FY 2025 QTY O/H	End FY 2025 QTY REQ
TRUCK DUMP: MTV W/E W/W	T64979						
TRUCK PALLETIZED LOADING: M1074A1	T55236	\$986,000	193	199	199	199	199
TRUCK TRACTOR: M107A1	T05012	\$550,000	402	420	420	420	420
TRUCK TRACTOR: (LET)*	T60946	\$491,000	1,196	1,216	1238	1238	1238
TRUCK TRACTOR: LET 6X6 66000 GVW W/W C/S*	T91656	\$166,223	16	16	16	16	16
TRUCK TRACTOR: LINE HAUL C/S 50000 GVWR 6X4 M915*	T61103	\$162,968	180	180	180	180	180
TRUCK TRACTOR: M1088A1P2 W/WINCH	T61375						
TRUCK TRACTOR: MTV W/E*	T61239	\$167,746	462	472	472	472	472
TRUCK TRACTOR: MTV W/E W/W*	T61307	\$175,733	116	116	116	116	116
TRUCK TRACTOR: WO/WINCH*	T88983	\$205,000	2,546	2,533	2533	2533	2533
TRUCK UTILITY: ECV ARMAMENT CARRIER W/IAP ARMOR READY M1151A1*	T34704	\$216,297	5,209	5,246	5282	5282	5282
TRUCK WRECKER:*^	T94671	\$480,000	709	704	699	699	699
TRUCK WRECKER: M984A4*^	T63161	\$963,000	981	978	973	973	973
TRUCK WRECKER: MTV W/E W/W*	T94709	\$331,680	36	36	36	36	36
TRUCK WRECKER: TACTICAL 8X8 HEAVY EXPANDED MOBILITY W/WINCH*	T63093	\$503,382	73	72	72	72	72
TRUCK: PALLETIZED LOADING*	T81874	\$628,000	636	636	636	636	636
1. "*" indicates a Critical Dual Use (CDU) equipment item 2. "^" indicates a Pacing (ERC P) equipment Item impacting readiness reporting							

Average Age of Equipment

NOTE: "Logistics Information Warehouse Data Base (LIWDB) convergence with Program Manager (PM) Army Enterprise System Integration Program (AESIP) resulted in the inability to retrieve Average Age of Equipment data. This affects the validity of data in ARNG Table 2 Average Age of Equipment. ARNG has been working with Logistic Data Analysis Center (LDAC) to restore this functionality since FY2020."

Nomenclature	Equip No.	Average Age	Remarks
Aircraft			
Helicopter Cargo Transport: CH-47D	H30517	9	
Helicopter Light Utility (LUH): UH-72A	H31329	10	
Helicopter Utility: UH-60L	H32361	29	Past EUL
Helicopter Utility: UH-60M	H32429	14	
Helicopter Attack: AH-64D	H48918	17	
Helicopter Utility: UH-60A	K32293	38	Past EUL
Airplane Cargo Transport: C-12D	A29812	37	Past EUL
Airplane: Cargo Transport C-26	A46758	28	Past EUL
Airplane: Cargo Transport	BA108Q	28	Past EUL
Aviation			
Aviators Night Vision Imaging System: AN/AVS-6(V)1	A06352	18	Past EUL
Battle Command and Control (C2)			
Generator Set: DED Skid-mtd 5kW 60Hz	G11966	17	EUL
Generator Set: DED TM PU-803	G35851	17	EUL
Generator Set: DED: 60Hz AC MEP-531A	G36237	19	Past EUL
Generator Set: DED TM 10kW 60Hz	G42170	17	EUL
Generator Set: DED TM 5kW 60Hz	G42238	16	
Generator Set: DED Trailer-mtd (TM) PU-802	G53778	16	
Generator Set: DED Skid-mtd 10kW 60Hz	G74711	15	
Generator Set: DED TM 60kW 50/60Hz PU805 Chassis	G78306	20	Past EUL
Generator Set: DED TM 15kW 60Hz	G78374	16	
Power Plant: Electric TM 30kW 50/60Hz AN/MJQ-40	P42126	17	EUL
Power Plant: Diesel TM 10kW 60Hz AN/NJQ-37	P42262	20	Past EUL

Average Age of Equipment

Nomenclature	Equip No.	Average Age	Remarks
Combat Mobility			
Boat Bridge Erection Inboard Engine: Shallow Draft	B25476	25	Past EUL
Cradle: Improved Boat (IBC) M14	C33925	16	
Interior Bay Bridge Floating	K97376	18	Past EUL
Launch M60 Series Tank Chassis Transpt: 40/60ft Bridge	L43664	36	Past EUL
Loader Scoop Type: DSL 2-1/2 cu yd w/Multi Purp Bucket	L76556	36	Past EUL
Pallet: Bridge Adapter (BAP) M15	P78313	14	
Ramp Bay Bridge Floating	R10527	19	Past EUL
Tractor Wheeled: DSL w/Excavator & Front Loader	T34437	32	Past EUL
Transporter Common Bridge	T91308	20	Past EUL
Tractor FT HS: Armored Combat Earthmover (ACE)	W76473	29	Past EUL
Field Logistics			
Containerized Kitchen (CK)	C27633	13	
Truck Lift Fork: Variable Reach Rough Terrain	T73347	13	
Water Purification: Reverse Osmosis 3Kgph TM	W47225	26	Past EUL
General Engineering			
Crane: Whl-mounted Hydraulic 25-ton All Terrain AT422T	C36586	20	Past EUL
Distributor Water Tank Type: 6K-gal Semitrailer-mtd (CCE)	D28318	36	Past EUL
Excavator: Hydraulic (HYEX) Type I	E27792	21	Past EUL
Excavator: Hydraulic (HYEX) Type II	E41791	19	Past EUL
Compactor High Speed: Tamping Self-Propelled (CCE)	E61618	22	Past EUL
Grader Road Motorized: DED Heavy (CCE)	G74783	35	Past EUL
Fire Fighting Equipment Set: TM Multipurpose	H56391	36	Past EUL

Average Age of Equipment

Nomenclature	Equip No.	Average Age	Remarks
Scraper Elevating: SP 9-11 cu yd sectionalized	S30039	13	
Scraper Earth Moving: SP 14-18 cu yd (CCE)	S56246	36	Past EUL
Tractor FT HS: Deployable Lt Engineer (DEUCE)	T76541	19	Past EUL
Tractor FT LS: DSL Med DBP w/Buldoz w/Scarif Winch	W76816	41	Past EUL
Tractor FT LS: DSL Med DBP w/Buldoz w/Scarif Ripper	W83529	34	Past EUL
Maneuver Combat Vehicles			
Carrier Personnel Full Tracked: Armored (RISE)	C18234	35	Past EUL
Bradley Fighting Vehicle M2A2 ODS SA	P19727	25	Past EUL
Bradley Fighting Vehicle M2A3	F60564	29	Past EUL
Fire Support Vehicle (FSV)	F86821	16	
Infantry Carrier Vehicle (ICV)	J22626	14	
Engineer Squad Vehicle (ESV)	J97621	14	
Mortar Carrier Vehicle (MCV)	M53369	17	
Mobile Gun System (MGS)	M57720	14	
Recovery Vehicle Full Tracked: Medium M88A1	R50681	43	Past EUL
Recovery Vehicle Full Tracked: Medium M88A2	R50885	15	
Tank Combat Full Tracked M1A1	T13168	28	Past EUL
Tank Combat Full Tracked M1A2	T13305	28	Past EUL
Strike			
Carrier Ammunition Tracked Vehicle (CATV)	C10908	29	Past EUL
Howitzer Light Towed: M119A3	H05007	8	
Howitzer Medium Self Propelled M109A6	H57642	32	Past EUL
Howitzer Towed: M777	H57916	11	

ARNG
Average Age of Equipment

Table 2

Nomenclature	Equip No.	Average Age	Remarks
Support Systems			
Container Platform: Roll-In/Roll-Out	B83002	26	Past EUL
Container Handling Unit (CHU)	C84862	15	
Trailers			
Semitrailer Tank: 5K-gal Bulk Haul Self-Load/Unload	S10059	20	
Semitrailer Flatbed: Breakbulk/Cont Transporter 22-1/2-ton	S70027	26	
Semitrailer Flatbed: Breakbulk/Container Transporter 34-ton	S70159	30	
Semitrailer Low-bed: 40-ton 6-wheel	S70594	30	
Semitrailer Low-bed: 70-ton Heavy Equip Transporter (HET)	S70859	20	
Semitrailer Tank: 5K-gal Fuel Dispensing Automotive	S73372	26	Past EUL
Trailer Flatbed: 11-ton 4-wheel (HEMAT)	T45465	20	EUL
Trailer: Palletized Loading 8X20	T93761	14	
Trailer Cargo: MTV W/Dropsides M1095	T95555	10	
Trailer Cargo: High Mobility 1-1/4-ton	T95924	12	
Trailer: Light Tactical 3/4-ton	T95992	12	
Trailer Flatbed: M1082 Cargo LMTV w/Dropsides	T96564	12	
Trucks			
Truck Utility: Heavy Variant (HMMWV) 10K GVW	T07679	21	Past EUL
Truck Utility: ECV Armament Carrier M1151A1	T34704	12	
Truck Utility: M1152A1	T37588	11	
Truck Ambulance: 4 Litter Armored (HMMWV)	T38844	21	Full buy out, older vehicles to be divested upon receipt
Truck Cargo: Tactical HEMTT w/Lt Crane W/W	T39518	33	Past EUL

Average Age of Equipment

Nomenclature	Equip No.	Average Age	Remarks
Truck Cargo: Tactical HEMTT w/Med Crane	T39586	27	Past EUL
Truck Cargo: Tactical HEMTT w/Med Crane W/W	T39654	30	Past EUL
Truck Cargo: Heavy PLS Transporter 15-16.5 ton 10X10	T40999	17	
Truck Cargo: Heavy PLS Transporter 15-16.5 ton w/MHE	T41067	26	Past EUL
Truck Cargo: MTV W/W	T41135	16	
Truck Cargo: MTV w/MHE	T41203	16	
Truck Utility : M1165A1	T56383	11	
Truck Tank: Fuel Servicing 2500G HEMTT W/W	T58161	26	Past EUL
Truck Tank: Fuel Servicing 2500G HEMTT W/W M978A4	T58318	13	
Truck Tractor: Heavy Equipment Transporter (HET)	T59048	23	Past EUL
Truck Cargo: Tactical HEMTT w/Lt Crane	T59278	32	Past EUL
Truck Cargo: Tactical HEMTT w/Med Crane M985A4	T59380	15	
Truck Cargo: LMTV	T60081	16	
Truck Cargo: LMTV W/W	T60149	16	
Truck Tractor: Tactical HEMTT M983A4	T60946	9	
Truck Tractor: Line Haul C/S 50000 GVW 6X4 M915	T61103	25	Past EUL
Truck Tractor: MTV	T61239	11	
Truck Tractor: MTV W/W	T61307	16	
Truck Cargo: MTV LWB	T61704	16	
Truck Cargo: MTV	T61908	15	
Truck Wrecker: Tactical HEMTT W/W	T63093	22	Past EUL
Truck Wrecker: Tactical HEMTT W/W M984A4	T63161	14	Past EUL
Truck Dump: MTV	T64911	24	Past EUL
Truck Tank: Fuel Servicing 2500G HEMTT	T87243	22	Past EUL

Average Age of Equipment

Nomenclature	Equip No.	Average Age	Remarks
Truck Tractor: LET 6X6 66000 GVW W/W C/S	T91656	20	EUL
Truck Van: LMTV	T93484	15	
Truck Wrecker: MTV W/W	T94709	15	
Truck Cargo: Tactical 8X8 HEMTT w/LHS	T96496	15	
Truck Dump: 20-ton DED 12 cu yd Cap (CCE)	X44403	28	Past EUL

Service Procurement Program - Reserve (P-1R)

NOTE: This table provides a comparison of the dollar value of the FY 2020 request, the FY 2020 enacted amount; and, the actual amount spent on procurement for specific categories of RC equipment. All values are costs in millions. Deliveries of procured equipment normally take one to two years before they arrive in the inventory; e.g., items procured in FY 2022 are expected to arrive in RC inventories in FY 2023 or FY 2024.

Nomenclature	Request	Enacted	Actual
Rotary	1,428	1,933	2,019
Modification of Tracked Combat Vehicles	385	370	332
Tactical Vehicles	326	140	209
Elect Equip - Tactical Surv. (Tac Surv)	197	33	78
Engineer (Non-Construction) Equipment	49	19	69
Bridging Equipment	36	53	57
Modifications	74	52	56
Modification of Aircraft	118	62	52
Elect Equip - Tact Int Rel Act (TIARA)	63	52	52
Construction Equipment	40	37	47
Training Equipment	40	44	43
Comm - Combat Communications	36	14	27
Maintenance Equipment	29	28	26
Petroleum Equipment	21	21	25
Generators	13	10	21
Comm - Base Communications	10	0	20
Test Measure and Dig Equipment (TMD)	8	8	19
Weapons & Other Combat Vehicles	23	18	18
Elect Equip - Automation	17	17	17
Other Support	28	18	15
Information Security	19	19	15
Combat Service Support Equipment	41	24	14
Medical Equipment	9	0	11
Mod of Weapons and Other Combat Veh	15	11	11
Other Support Equipment	2	2	9
Comm - Joint Communications	36	0	9
Anti-Tank/Assault Missile Sys	8	8	8
Elect Equip - Tactical C2 Systems	16	11	8
Material Handling Equipment	4	4	7

Service Procurement Program - Reserve (P-1R)

Nomenclature	Request	Enacted	Actual
Chemical Defensive Equipment	10	8	6
Comm - Satellite Communications	13	1	4
Comm - C3 System	13	0	2
Elect Equip - Audio Visual Sys (A/V)	2	1	1
Non-Tactical Vehicles	1	0	0
Grand Total	3,132	3,015	3,307

National Guard and Reserve Equipment Appropriations (NGREA) Procurements

<i>NOTE: This table identifies the dollar value of planned equipment procurements with the National Guard and Reserve Appropriation (NGREA). These funds are available for a three-year period from the year of appropriation. Deliveries of procured equipment normally take one to two years from the date of procurement before they arrive in the inventory.</i>			
Army National Guard Defense Appropriations Act NGREA	FY 2020¹	FY 2021	FY 2022²
Aviation			
Aircraft Training Device (UH-60): Cockpit Academic Procedural Tool (UH-60M)		517,134	
Aircraft Training Device (AH-64): Attack Helicopter Gunnery Trainer (AH-64D)		750,000	
Aircraft Safety System (UH-60): Mobile Aircraft Restraint System (UH-60); External Rescue Hoist System System		27,596,626	
Aircraft maintenance equipment: Milling Machine, 5 Axis; Printer, 3D		2,723,207	
Fire-fighting Equipment: Fire Suppression Water Buckets		2,979,200	
Aircraft Fuel Support Systems: Reduced Size Extended Range Fuel Roller Systems		1,245,412	
Command and Control			
Tactical signal systems: Joint Battle Command-Platform (JBCP); Joint Enabling Team Portable Accessibility Kit		1,325,788	
Communications			
DOMOPS Communications Systems: Unified Network/Executive Communication Platform; High Frequency Radio Communication System and Universal Secure Phone		10,977,558	
Engineering			
Construction Equipment: Tractor Wheeled: Industrial Backhoe; Loader Scoop: Heavy Type II; Grader, Road Motorized; Tractor FL Trucked Low speed-W/Hoist & W/Ripper; ND Excavator: Hydraulic Type I Multipurpose Crawler Mount		38,611,498	
EOD Equipment: Surveying Instrument; Detecting Set: Mine		18,851,971	
Force Protection			
DOMOPS Common Operating Picture: CBRN Response Enterprise Information Management System		4,195,200	
Detection System; Chemical Detector; Radiation Portal; Radiac Set Replacement-Robot; Unmanned Aerial Vehicle		10,025,337	
Logistics			
Tactical Fuel Systems: Modular Fuel System-Tank Rack Module Y		9,177,285	

National Guard and Reserve Equipment Appropriations (NGREA) Procurements

Army National Guard Defense Appropriations Act NGREA	FY 2020¹	FY 2021	FY 2022²
Tactical Water systems: Load Handling System: 2000 Gal Water Tank-Rack (HIPPO)		20,039,528	
Transportation Equipment: Light Capability Rough Terrain Forklift-5K; Semi-Trailer Low bed: 40 TON		5,615,462	
Fire-fighting Equipment: Aqueous Fire Fighting Truck Foam Test System; Truck, Firefighting		7,885,641	
Installation Support Equipment: Snow Removal Equipment (Heavy Duty Rotary Fan Type Snow Blower, Snow Plow); Truck, Telescoping Bucket		7,441,954	
Maintenance			
Maintenance Support Equipment: Next Generation Automatic Test System; TMDE Calibration Sets, Secondary Transfer Standards; Metal Working and Machine Shop Set Type I; Metal Working and Machine Shop Set Type II		76,519,650	
Security			
Secure Intelligence Processing Equipment: Sensitive Compartmented Information Facility IT Sets		3,325,000	
Intelligence Training Systems: Intelligence and Electronic Warfare Tactical Proficiency Trainer		598,500	
Training			
Cyber Training Systems: Cybertropolis Cyber Range-Hackable Mini-Energy Grid Cyber Environment		1,045,000	
Small Arms Training Systems: Mobile Marksmanship Training Simulator		11,747,700	
Transportation			
Transportation Equipment: Cold-Weather All Terrain Vehicle		21,805,350	
Total ARNG NGREA	0	285,000,000	
1. NGREA funds for FY 2020 were reallocated by DoD. 2. FY 2022 data was not available at time of publication.			

ARNG

Projected Equipment Transfer/Withdrawal Quantities

NOTE: This table portrays the planned equipment transfers (Active to Reserve), withdrawals (-), and decommissioning (-). Transferred equipment is commonly called "cascaded equipment," or equipment that is provided to the RC once the AC receives more modern equipment. Although this table highlights a three-year period, many Services will not know exact quantities of transfers or withdrawals until year of execution, due to the uncertainty of the procurement/delivery cycle of new equipment.

Nomenclature	Equip No.	FY 2023 Qty	FY 2024 Qty	FY 2025 Qty	Remarks
AIRCRAFT					
HELICOPTER ADVANCE ATTACK AH-64E	H05006	0	0	0	
HELICOPTER UTILITY: UH-60L	H32361	31	0	0	
HELICOPTER UTILITY: UH-60M	H32429	0	0	0	
MEDEVAC HELICOPTER: HH 60M	M33458	0	0	0	
BATTLE COMAND C2					
FREQ HOPING MLTIPLEX: TD-1456VRC	F99520	0	0	0	
AN/TSC-183, AN/TSC-183A CSS VSAT:	J97857	0	0	0	
RADIO SET: AN/VSQ-2D(V)2	P99724	0	0	0	
MANEUVER COMBAT VEHICLE					
FIGHTING VEHICLE: FULL TRACKED INFANTRY (IFV) M2A3	F60564	0	0	0	
TRUCK UTILITY ECV TOW/ITAS CARRIER WITH IAP ARMOR READY: M1167	T34840	0	0	0	
COMBAT MOBILITY					
TRUCK UTILITY: ECV ARMAMENT CARRIER W/IAP ARMOR READY M1151A1	T34704	0	0	0	
TRUCK UTILITY EXPANDED CAPACITY ENHANCED 4X4: M1165A1	T56383	0	0	0	
TRUCK CARGO: M985A4	T59380	0	0	0	
TRUCK UTILITY: EXPANDED CAPACITY 4X4 W/E HMMWV M1113	T61630	0	0	0	
FIELD LOGISTICS					
AVENGER UNIT: DSMA1 MAINTENANCE SHOP SET	A09153	0	0	0	
CMPUTER SET DIGITAL: AN/TYQ-151(V)1 ULLS-A(E)	C61191	0	0	0	
DISTRIBUTION SYSTEM ELEC: 120/208V 3PH 40AMP	F55485	0	0	0	
KITCHEN: COMPANY LEVEL FIELD FEEDING	K28601	0	0	0	
SHOP EQUIPMENT: CONTACT MAINTENANCE ORD/ENG TRUCK MOUNTING	S25681	0	0	0	
TRUCK LIFT: FORK VARIABLE REACH ROUGH TERRAIN	T73347	0	0	0	
GENERAL ENGINEERING					
CONTROL REMOTE LANDMINE SYSTEM: M71	C96840	0	0	0	
INSTRUMENT SET RECONNAISSANCE AND SURVEYING: AN/TKQ-5	D17191	0	0	0	
ENGINEER MISSION MODULE-WATER DISTRIBUTO (EMM-WD): TYPE II	E05007	0	0	0	
TRANSPORTER COMMON BRIDGE:	T91308	0	0	0	

ARNG

Projected Equipment Transfer/Withdrawal Quantities

Nomenclature	Equip No.	FY 2023 Qty	FY 2024 Qty	FY 2025 Qty	Remarks
MEDICAL FIELD SYSTEMS					
DEFIBRILLATOR MONITOR RECORDER: 120/230V 50/60HZ AC OR DC	D86072	0	0	0	
PUMP INTRAVENOUS INFUSION PIV:	P16161	0	0	0	
SINK UNIT SURGICAL SCRUB AND UTENSIL HOSPITAL FIELD: 110V 60C AC	T60464	0	0	0	
VENTILATOR VOLUME PTBL:	V99788	0	0	0	
SOLDIER SYSTEMS					
ILLUMINATOR INTEGRATED: SMALL ARMS STORM MLRF	J68653	0	0	0	
LASER TARGET LOCATOR MODULE, INFRA-RED SYSTEMS:	L05021	0	0	0	
MAST: AB-1339A/G	M13833	0	0	0	
MINI EYESAFE LASER INFRARED OBSERVATION SET (MELIOS): AN/PVS-6	M74849	0	0	0	
TARGET LOCATOR MODU:	T27471	0	0	0	
ARMAMENT SUBSYSTEM: REMOTELY OPER	A90594	0	0	0	
CARBINE 5.56 MILLIMETER: M4A1	C06935	0	0	0	
LASER: TARGET LOCATOR MODULE	L05003	0	0	0	
MORTAR: 120 MILLIMETER TOWED	M68326	0	0	0	
TRAILERS					
SEMITRAILER FLATBED: BREAKBULK/CONTAINER TRANSPORTER CMRCIAL 34T	S70159	0	0	0	
TRAILER TANK: WATER 400 GALLON 1-1/2 TON 2 WHEEL W/E	W98825	0	0	0	

FY 2019 Planned vs Actual Procurements and Transfers

NOTE: This table compares planned Service procurements and transfers to the RC in FY 2019 with actual procurements and transfers. FY 2019 is selected as these are the most recent funds to expire. Because the procurement cycle is normally one to two years from funding to delivery, this table identifies only deliveries through the end of 2021. Procurement and NGREA columns reflect cost values in dollars.

Nomenclature	Equip. No.	FY 2019 Transfers (# of items)		FY 2019 Procurements (\$s)		FY 2019 NGREA (\$s)	
		Plan	Actual	Plan	Actual	Plan	Actual
FY 2019 Planned Transfers & Withdrawals							
Soldier Systems							
Laser: Target Locator Module	L05003	4					
FY 2019 Service Procurement Programs – RC (P-1R) Equipment							
Aircraft							
UH-60 Blackhawk M Model (MYP)				139,764,000	614,640,000		
UH-60 Black Hawk A and L Models				81,188,000	0		
UH-60 Black Hawk L and V Models				0	82,299,000		
RQ-11 (RAVEN)				0	6,480,000		
Modification of Aircraft							
CH-47 Cargo Helicopter Mods (MYP)				1,744,000	1,744,000		
Network and Mission Plan				46,973,000	33,748,000		
Comms, Nav Surveillance				65,357,000	64,693,000		
GATM Rollup				10,834,000	10,733,000		
RQ-7 UAV MODS				4,000,000	4,000,000		
UAS MODS				3,600,000	3,600,000		
Modification of Missiles							
Stinger Mods				55,115,000	55,115,000		
Avenger Mods				28,309,000	18,656,000		
Himars Modifications				5,752,000	5,752,000		
Other Missiles							
MLRS Reduced Range Practice Rockets (RRPR)				6,249,000	6,249,000		
Weapons and Other Combat Vehicles							
M777 Mods				1,308,000	0		
M4 Carbine Mods				14,336,000	14,336,000		
M2 50 Cal Machine Gun Mods				16,927,000	2,618,000		
M119 Modifications				2,792,000	2,792,000		
Multi-Role Anti-Armor Anti-Personnel Weapon				1,043,000	2,707,000		
Compact Semi-Automatic Sniper System				17,468,000	13,699,000		
Carbine				10,847,000	10,847,000		
Handgun				6,048,000	12,296,000		
Tracked Combat Vehicles							
Bradley Program (MOD)				0	19,000,000		
M109 FOV Modifications				10,593,000	10,593,000		

FY 2019 Planned vs Actual Procurements and Transfers

Nomenclature	Equip. No.	FY 2019 Transfers (# of items)		FY 2019 Procurements (\$s)		FY 2019 NGREA (\$s)	
		Plan	Actual	Plan	Actual	Plan	Actual
Paladin Integrated Management (PIM)				259,490,000	162,502,000		
Assault Breacher Vehicle				26,003,000	31,203,000		
Joint Assault Bridge				71,128,000	56,902,000		
Tactical and Support Vehicles							
Tactical Trailers/Dolly Sets				8,502,000	4,514,000		
Nontactical Vehicles, Other				272,000	0		
Joint Light Tactical Vehicle				101,476,000	0		
Truck, Dump, 20t (CCE)				3,240,000	0		
Family of Medium Tactical Veh (FMTV)				7,504,000	21,933,000		
Firetrucks & Associated Firefighting Equ				434,000	0		
Family of Heavy Tactical Vehicles (FHTV)				25,821,000	25,821,000		
Modification of In Svc Equip				81,162,000	3,351,000		
Communications and Electronics Equipment							
Communications Security (COMSEC)				7,740,000	9,156,000		
Sentinel Mods				18,299,000	34,722,000		
Night Vision Devices				60,331,000	12,885,000		
Small Tactical Optical Rifle Mounted MLR				8,466,000	5,835,000		
Radiation Monitoring Systems				5,768,000	1,768,000		
Indirect Fire Protection Family of Systems				3,541,000	29,900,000		
Family of Weapon Sights (FWS)				22,486,000	10,642,000		
Joint Battle Command - Platform (JBC-P)				150,003,000	150,000,000		
JOINT EFFECTS TARGETING SYSTEM (JETS)				26,630,000	26,586,000		
Signal Modernization Program				16,580,000	2,068,000		
Joint Incident Site Communications Capability				13,895,000	13,895,000		
Transportable Tactical Command Communications				10,000,000	0		
Computer Ballistics: LHMCB XM32				2,320,000	2,100,000		
Handheld Manpack Small Form Fit (HMS)				30,000,000	0		
Radio Terminal Set, Mids Lvt(2)				1,829,000	1,829,000		
COE Tactical Server Infrastructure (TSI)				7,191,000	3,400,000		
Counterfire Radars				156,083,000	28,463,000		
Lightweight Counter Mortar Radar				3,278,000	0		
Spider Family of Networked Munitions Inc				2,852,000	1,468,000		
Unified Command Suite				16,307,000	0		
Fire Support C2 Family				0	571,000		
AIR & MSL Defense Planning & Control Sys				1,107,000	0		
Home Station Mission Command Centers (HSMCC)				5,000,000	4,479,000		
DCGS-A (MIP)				62,200,000	62,200,000		
TROJAN (MIP)				150,000	150,000		

FY 2019 Planned vs Actual Procurements and Transfers

Nomenclature	Equip. No.	FY 2019 Transfers (# of items)		FY 2019 Procurements (\$s)		FY 2019 NGREA (\$s)	
		Plan	Actual	Plan	Actual	Plan	Actual
Network Management Initialization				2,894,000	0		
Maneuver Control System (MCS)				19,008,000	9,909,000		
SHF Term				4,000,000	0		
Family of Med Comm for Combat Casualty C				7,197,000	2,748,000		
Smart-T (SPACE)				2,750,000	6,000,000		
Global Brdcst Svc - GBS				3,000,000	4,472,000		
Reserve Component Automation Sys (RCAS)				16,738,000	0		
Tactical Digital Media				1,000,000	770,000		
Items Less Than \$5M (Surveying Equipment				667,000	201,000		
Other Support Equipment							
Heaters and ECU'S				4,000,000	1,799,000		
Calibration Sets Equipment				2,321,000	2,321,000		
Grader, Road Mtzd, Hvy, 6x4 (CCE)				25,308,000	33,295,000		
Test Equipment Modernization (TEMOD)				30,971,000	12,000,000		
Mobile Maintenance Equipment Systems				3,637,000	1,518,000		
Quality Surveillance Equipment				8,871,000	6,311,000		
Training Devices, Nonsystem				1,509,000	4,845,000		
Synthetic Training Environment (STE)				7,595,000	17,848,000		
Family of Non-Lethal Equipment (FNLE)				1,224,000	1,252,000		
Handheld Standoff Minefield Detection Sy				3,793,000	5,282,000		
Grnd Standoff Mine Detectn Syste (GSTAMID				2,500,000	1,274,000		
Area Mine Detection System (AMDS)				7,051,000	3,236,000		
HUSKY MOUNTED DETECTION SYSTEM (HMDS)				2,087,000	0		
Tactical Bridge, Float-Ribbon				22,920,000	11,200,000		
Bridge Supplemental Set				31,479,000	23,132,000		
CBRN Defense				23,958,000	26,288,000		
Tractor, Full Tracked				5,136,000	10,056,000		
All Terrain Cranes				5,105,000	4,656,000		
Robotic Combat Support System (RCSS)				2,910,000	2,910,000		
EOD Robotics Systems Recapitalization				1,773,000	1,752,000		
Explosive Ordnance Disposal Eqpmt (EOD E				2,126,000	2,126,000		
Close Combat Tactical Trainer				3,601,000	697,000		
Gaming Technology In Support of Army Training				4,629,000	6,229,000		
High Mobility Engineer Excavator (HMEE)				2,838,000	2,838,000		
Combat Support Medical				16,262,000	13,282,000		
Family of Boats and Motors				12,130,000	27,333,000		
Ground Soldier System				2,269,000	1,542,000		
Mobile Soldier Power				30,000,000	0		

FY 2019 Planned vs Actual Procurements and Transfers

Nomenclature	Equip. No.	FY 2019 Transfers (# of items)		FY 2019 Procurements (\$s)		FY 2019 NGREA (\$s)	
		Plan	Actual	Plan	Actual	Plan	Actual
Enhanced Rapid Airfield Construction Capability				7,267,000	0		
Field Feeding Equipment				12,830,000	17,846,000		
Cargo Aerial Del & Personnel Parachute Sys				4,587,000	2,475,000		
Items Less Than \$5.0M (Const Equip)				6,960,000	3,946,000		
Family of Engr Combat and Construction Sys				4,630,000	4,630,000		
Items Less Than \$5.0M (Maint Eq)				5,500,000	3,173,000		
				1,105,000	0		
Support Equipment and Facilities							
Common Ground Equipment				19,266,000	17,946,000		
Aircrew Integrated Systems				11,122,000	2,240,000		
Air Traffic Control				13,331,000	28,336,000		
Total				2,159,190,000	2,034,654,000		
FY 2019 National Guard and Reserve Equipment Appropriation (NGREA) Equipment							
Aviation							
Removable Door Pins UH-72						652,536	369,813
External Rescue Hoist UH-60M						24,750,000	24,730,270
Firefighting Bucket Kits						15,960,000	18,228,476
Hydraulic Test Equipment						918,600	8,321,912
Deployment Support Kits (Tool Kits) UH-60M						11,020,000	11,008,522
Communication							
Phase I and II JISCC Block 2 Modernization						18,200,000	\$18,324,376
ARNG Armory SIPR Expansion						13,392,000	\$13,392,000
Armory-Level Commercial Wireless Access						13,872,000	\$13,872,000
High-Frequency Radio						3,016,000	\$3,599,319
Radio Set: HandHeld Radio						21,000,000	\$26,127,517
Tactical Media Acquisition Kit						9,200,000	\$7,832,031
Domestic Operations							
WMD-CST TOC Trailer						4,410,000	\$4,740,442
STORZ Video Laryngoscope						941,127	\$1,372,191
Portable Ventilator						991,126	\$1,032,649
Physiological Monitors						3,420,000	\$3,475,099
Small Unit Support Vehicles						800,000	\$0
Intelligence							
Sensitive Compartmented Information Facility (SCIF) Equipment						6,000,000	\$4,940,782
Foundry STRAP						5,100,000	\$10,702,419
Stratomist						4,500,000	\$4,500,000
Versatile Radio Observation & Direction (VROD) System						2,000,000	\$2,000,000
Field Docking Station, Intermec Tethered						5,221,900	\$40,208,447

FY 2019 Planned vs Actual Procurements and Transfers

Nomenclature	Equip. No.	FY 2019 Transfers (# of items)		FY 2019 Procurements (\$s)		FY 2019 NGREA (\$s)	
		Plan	Actual	Plan	Actual	Plan	Actual
Engineering							
Surveying Set General Purpose						1,929,600	0
All-Terrain Crane, Type II (50T Heavy)						30,360,000	\$31,938,349.81
Hydraulic Excavator						5,800,000	\$5,903,991.21
VSECK Type II Carpenter Supplemental Tool Kit						3,979,400	\$3,080,502.94
VSECK Type VI Plumbers and Pipefitters Tool Kit						9,390,300	\$8,227,484.66
Installations							
Truck, Firefighting: Powered Pumper 750 to 1250GPM						4,059,600	\$2,427,706
Truck, Firefighting: Pumper and Rescue						1,718,740	\$2,070,149
TRK FF Airfield Crash/Rescue 4x4						581,400	\$647,585
Heavy-Duty Snow Plow						346,500	\$401,034
Truck FF 100F Ladder W/Pump Backhoe						2,024,572	\$4,967,888
Fire Truck, Bulldog 4x4 Production Brush Truck						3,852,500	\$6,797,464
Logistics							
Modular Fuel System-Tank Rack Module						93,000	\$19,381,293
Maintenance							
Maintenance Support Device						136,152,016	\$59,580,788
Training							
Ground-Based Air Surveillance Radar System S200H						745,000	639,168
Target Fire Ranges						6,739,600	6,673,476
Laser Live Fire Range						995,000	0
Training/Aviation							
Black Hawk Maintenance Trainer (BHMT-M) UH-60M						8,289,765	\$8,017,753
Transportation							
HEMTT Wrecker M984A4						24,077,718	\$23,862,986
Semi-Trailer Flatbed, 34 Ton						14,500,000	\$15,996,307
Total						421,000,000	\$419,392,191

**ARNG
Major Item of Equipment Substitution List**

NOTE: This table identifies equipment authorized by the Service to be used as a substitute for a primary item of equipment. The table also identifies whether or not the item is able to be deployed in wartime. This data meets the Title 10 requirement to identify equipment that is not the most desired item of equipment.

Required Item Nomenclature	Reqd Item Equip No.	LIN Req	FY22 LIN OH QTY	Substitute Item Nomenclature	Substitute Item Equip No.	SUBLIN Req	SUBLIN OH	Deployable?	
								Yes	No
BATTLE COMMAND C2									
AIR CONDITIONER 9000 BTUH HORIZONTAL:	A05047	272	7	AIR CONDITIONER: FLWALL A/C AC 115V 1PH 50-60CY 9000BTU CMP HZ	A23828	146	210	X	
AIR CONDITIONER 9000 BTUH HORIZONTAL:	A05048	498	8	AIR CONDITIONER: FLWALL A/C AC 230V 1PH 60CY 18000 BTU CMP HZ	A24017	74	269	X	
AIR CONDITIONER 18000 BTUH HORIZONTAL:	A05049	172	0	AIR CONDITIONER: FLWALL A/C AC 208V 3PH 60CY 18000 BTU CMP HZ	A24463	470	774	X	
AIR CONDITIONER 18K IEUC HORIZONTAL:	A05050	177	3	AIR CONDITIONER: FLWALL A/C AC 208V 50-60CY 3PH 36000BTU CMP HZ	A24763	181	326	X	
AIR CONDITIONER 36000 BTUH HORIZONTAL:	C13866	360	651	COMPUTER SET: DIGITAL (JBC-P) AN/GYK-62G	C05037	1188	936	X	
COMPUTER SET DIGITAL: AN/GYK-62	C18278	4113	4001	COMPUTER SET: DIGITAL (JBC-P LOG) AN/UYQ-90B(V)4	C05055	5383	4063	X	
COMPUTER SYSTEM: DIGITAL AN/UYQ-90(V)2	C18378	11124	11084	COMPUTER SET DIGITAL (JBC-P): AN/UYK-128B(V)3	C05036	15690	14910	X	
COMPUTER SET DIGITAL: AN/UYK-128	C78804	55	113	COMPUTER SET DIGITAL: AN/GYK-62	C13866	360	651	X	
COMPUTER SET DIGITAL: AN/GYK-65	C78851	68	721	COMPUTER SET: DIGITAL (JBC-P LOG) AN/UYQ-90B(V)5	C05054	906	500	X	
COMPUTER SYSTEM: DIGITAL AN/UYQ-90(V)3	F55553	2224	2170	DISTRIBUTION SYSTEM ELEC: 120/208V 3PH 40AMP	F55485	1424	1183	X	
DISTRIBUTION SYSTEM ELEC: 120V 1PH 60AMP	G07461	780	608	GEN SET: DED SKID MTD 10KW 60HZ	G74711	1059	1625	X	
GN ST DED 10KW 50/60HZ: SKID-MTD	G18358	5982	6499	GEN SET: DED SKID MTD 5KW 60HZ	G11966	1550	1753	X	
GEN SET: DED SKID MTD 3KW 60HZ	G18358	5982	6499	GENERATOR SET DIESEL: 60HZ AC MEP-531A	G36237	2566	2461	X	
GEN SET: DED SKID MTD 3KW 60HZ	G18358	5982	6499	GEN SET DED TM: 5KW 60HZ MTD ON M116A2 PU-797	G42238	584	889	X	
GEN SET: DED SKID MTD 3KW 60HZ	G42488	505	347	GEN SET: DED SKID MTD 5KW 60HZ	G11966	1550	1753	X	
GEN SET DID 5KW 50/60HZ: SKID-MTD	G49966	150	87	GEN SET: DED SKID MTD 15KW 50/60HZ	G12170	158	200	X	
GEN ST DED15KWW 50/60HZ: SKID-MTD	G63256	52	28	GEN SET: DED SKID MTD 60KW 50/60HZ	G12034	107	185	X	
GEN SET DE 60KWW 50/60HZ: SKID-MTD	G75018	72	63	GEN SET: DED SKID MTD 10KW 400HZ	G74779	8	83	X	
GEN ST D 10KW 400HZ: SKID-MTD	G75200	33	17	GEN SET: DED SKID MTD 30KW 50/60HZ	G74575	46	62	X	
GEN ST DE 30KWW 50/60HZ: SKID-MTD	L26934	547	510	GEN SET DED TM: 5KW 60HZ MTD ON M116A2 PU-797	G42238	584	889	X	
LTT TRAILER-MTD: PU-2001/5 KW/50/60 HZ	L84622	696	543	GEN SET DED TM: 10KW 60HZ MTD ONM116A2 PU-798	G42170	818	1144	X	
LTT TRAILER-MTD: PU-2002/10 KW/50/60HZ	L84690	83	69	GENERATOR SET: DIESEL ENG TRLR -MTD 15KW 60HZ	G78374	46	89	X	
LTT TRAILER-MTD: PU-2003/15 KW/50/60 HZ	N96180	4	0	SURVEYING SET: AN/GSN-16	S05053	13	18	X	
NAVIGATION SET: SATELLITE SIGNALS AN/GSN-13	P28083	#N/A	#N/A	GEN SET DED TM: 5KW 60HZ MTD ON M116A2 PU-797	G42238	584	889	X	
POWER PLANT ELEC DED TM: 5KW 60HZ AN/MJQ-35	P38588	#N/A	#N/A	POWER SUPPLY: PP-6224/U	P40750	10251	5437	X	
POWER SUPPLY: PP-2953/U	S01427	159	182	SHELTER: NONEXPD LTRW MP RIGID -WALL S788 102LX84WX67H MTD HMMWV	S01563	68	139	X	
SHELTER: NONEXPANDABLE S250	T39917	60	43	POWER PLANT: ELECTRIC TRAILER MTD 30KW 50/60HZ AN/MJQ 40	P42126	28	56	X	
TRAILER-MTD: PP-3105/30 KW/50/60 HZ 2M200A1	T39954	192	147	GENERATOR SET DIESEL ENGINE TM: PU-803	G35851	108	213	X	
TRAILER-MTD: PU-2102/30 KW/50/60 HZ/M200A1	T40090	523	436	GENERATOR SET DIESEL ENGINE TM: PU-802	G53778	669	856	X	
TRAILER-MTD: PU-2101/15 KW/50/60 HZ/M200A1	T60034	43	10	GENERATOR SET: DIESEL TRL/MTD 60KW 50/60HZ PU805 CHASSIS W/FENDE	G78306	115	173	X	
TRAILER-MTD: PU-2103/60 KW/50/60 HZ/M200A1	T93232	110	91	POWER PLANT: ELECTRIC TRL/MTD 60KW 50/60HZ AN/MJQ 41	P42194	19	37	X	
TRAILER-MTD: PP-3106/60 KW/50/60 HZ/2M200A1	T93368	#N/A	#N/A	GENERATOR SET: DIESEL TRL/MTD 60KW 400HZ PU806 CHASSIS W/FENDER	G17460	1	4	X	
BATTLESPACE AWARENESS									
CENTRAL: COMMUNICATIONS AN/TSQ-226(V)3	C43399	21	47	CENTRAL: COMMUNICATIONS AN/TSQ-226(V)1	C43263	8	7	X	
DIG TOPOGRAPH SYS: AN/TYQ-67(V)	D10281	4	38	WORKSTATION GEOSPATIAL INTELLIGENCE: AN/TYQ-71(V)	D11498	225	241	X	
BATTLE COMMAND TRANSPORT NETWORKS									
	C05017	46	30	SECURITY DATA SYSTEM: AN/GYK-72(V)1 (KMI MGC)	S05038	108	46	X	
CRYPTOGRAPHIC SPEECH EQUIPMENT: MTU TSEC/KY 100 AIRTERM	C52700	1228	1242	SPEECH SECURITY EQUIPMENT 28V RED: TSEC/KY58	S01441	1044	2046	X	
KY-99: MINTERM	K47623	183	343	SPEECH SECURITY EQUIPMENT: TSEC/KY-57	S01373	553	556	X	
MBMMR: AN/PSC-5D	M27420	#N/A	#N/A	RADIO SET: AN/PSC-5	R57606	3866	1135	X	
RADIO SET: AN/VRC-89F(C)	R44999	4384	4680	RADIO SET: AN/VRC-91F(C)	R68146	10660	11104	X	
RADIO SET: AN/PRC-104A	R55200	192	47	RADIO SET: AN/VRC-104(V)6 150 WATT W/ PRC-150 HF RADIO	R87139	4417	3233	X	
RADIO SET: AN/PSC-5	R57606	3866	1135	RADIO SET: AN/PRC-117F(V)2(C)	R87207	203	1291	X	
RADIO SET: AN/VRC-87F(C)	R67296	706	681	RADIO SET: AN/VRC-88F(C)	R67330	738	1147	X	
RADIO SET: AN/VRC-91F(C)	R68146	10660	11104	RADIO SET: AN/VRC-89F(C)	R44999	4384	4680	X	
RADIO SET: AN/PRC-119F(C)	R83141	8746	9291	RADIO SET:	R55336	14023	10961	X	
RADIO SET: AN/PRC-119F(C)	R83141	8746	9291	RADIO SET: AN/VRC-88F(C)	R67330	738	1147	X	
SPEECH SECURITY EQUIPMENT: TSEC/KY-57	S01373	553	556	KY-99: MINTERM	K47623	183	343	X	
COMBAT MOBILITY									
BOAT BRIDGE ERECTION INBOARD ENGINE: SHALLOW DRAFT	B25476	#N/A	#N/A	BOAT: BRIDGE ERECTION	B05006	154	70	X	
DETECTING SET: MINE AN/PSS-14	D03932	6186	2648	DETECTING SET MINE: PTBL METALLIC (AN/PSS-11)	G02341	224	3023	X	
DETECTING SET MINE: PTBL METALLIC (AN/PSS-11)	G02341	224	3023	DETECTING SET: MINE AN/PSS-14	D03932	6186	2648	X	
LOADER SCOOP TYPE: DSL 2-1/2CU YD HINGE FRME W/MULTI PURP BUCKET	L76556	41	88	LOADER SCOOP TYPE: 2.5 CUBIC YARD	L78897	111	123	X	
LOADER SCOOP TYPE: 2.5 CUBIC YARD	L78897	111	123	LOADER SCOOP TYPE: DSL 2-1/2CU YD HINGE FRME W/MULTI PURP BUCKET	L76556	41	88	X	
TRANSPORTER COMMON BRIDGE:	T91308	616	553	TRANSPORTER: COMMON BRIDGE (CBT) M1977A4	T05067	8	112	X	
FIELD LOGISTICS									
CONTAINERIZED KITCHEN: CK	C27633	262	395	FORWARD AREA REFUELING EQUIPMENT: (FARE)	L28351	583	553	X	
FORWARD AREA REFUELING SYSTEM: ADVANCED AVIATION (AAFARS)	F42611	121	117	LOAD HANDLING SYS (LHS): 2000 GAL COMP WATER TANK-RACK (HIPPO)	H94824	40	17	X	
FORWARD AREA WATER POINT SUPPLY SYSTEM: (FAW SS)	F42612	46	237	ELECTRONIC SHOP SHELTER MOUNTED AVIONICS: AN/ASM-146 LESS POWER	T32629	1194	464	X	

**ARNG
Major Item of Equipment Substitution List**

Required Item Nomenclature	Reqd Item Equip No.	LIN Req	FY22 LIN OH QTY	Substitute Item Nomenclature	Substitute Item Equip No.	SUBLIN Req	SUBLIN OH	Deployable?	
								Yes	No
ELECTRONIC SHOP SEMITRAILER MOUNTED: AN/ASM-189 LESS POWER	H01855	102	143	ELECTRONIC SHOP SEMITRAILER MOUNTED: AN/ASM-189 LESS POWER	H01907	801	664	X	
ELECTRONIC SHOP SHELTER MOUNTED AVIONICS: AN/ASM-146 LESS POWER	H01907	801	664	ELECTRONIC SHOP SEMITRAILER MOUNTED: AN/ASM-190 LESS POWER	H01855	102	143	X	
ELECTRONIC SHOP SHELTER MOUNTED AVIONICS: AN/ASM-147 LESS POWER	H01912	178	192	ASSAULT KITCHEN: (AK)	H01857	26	34	X	
KITCHEN: COMPANY LEVEL FIELD FEEDING	K28601	#N/A	#N/A	CONTAINERIZED KITCHEN: CK	A94943	801	716	X	
KITCHEN FIELD TRAILER MOUNTED: MTD ON M103A3 TRAILER	L28351	583	553	OSCILLOSCOPE: OS-303 G (TEMOD)	C27633	262	395	X	
OSCILLOSCOPE DC-100MHZ: AN/USM-488	P30693	4	307	FORWARD AREA WATER POINT SUPPLY SYSTEM: (FAW SS)	P32409	18	118	X	
LOAD HANDLING SYS (LHS): 2000 GAL COMP WATER TANK-RACK (HIPPO)	T32629	1194	464	ROUGH TERRAIN CONTAINER HANDLER (RTCH): KALMAR RT240	F42612	46	237	X	
TRUCK LIFT FORK: DED 50000 LB CONT HDLR ROUGH TERRAIN 48 IN LC	T48941	#N/A	#N/A	LIGHT CAPABILITY ROUGH TERRAIN FORKLIFT (LCRTF): 5K	R16611	41	27	X	
TRUCK LIFT FORK: DSL DRVN 4000 LB CAP ROUGH TERRAIN	T49255	22	114	TRUCK TRACTOR: LINE HAUL C/S 50000 GVWR 6X4 M915	L05010	573	377	X	
TRUCK TRACTOR: YD 46000 GVW 4X2	T60353	#N/A	#N/A	WATTMETER TEST SET: TS-3793/U	T61103	180	1103	X	
TEST SET RADIO FREQUENCY POWER: AN/USM-491	T89944	338	62	SHOP EQUIPMENT: AUTOMOTIVE VEHICLE	W39339	7	53	X	
SHOP EQUIPMENT AUTO MAINT AND REPAIR: OM COMMON NO 2 LESS POWER	W32730	#N/A	#N/A	TRUCK LIFT FORK: DSL DRVN 4000 LB CAP ROUGH TERRAIN	S25885	874	786	X	
TRUCK LIFT FORK: GAS 4000LB 144 IN LH 68 IN COLLAPS HGT	X51585	#N/A	#N/A		T49255	22	114	X	
FORCE PROTECTION									
ALARM: CHEMICAL AGENT AUTOMATIC M22	A33020	3	52	JOINT CHMCL AGENT: DETECTOR	J00697	21789	20757	X	
MASK CHEMICAL BIOLOGICAL: M40	M12418	736	1571	MASK CHEMCL BIOLOGICL JOINT SERVICE GENERAL PURPOSE: FIELD M50	M12986	269493	281704	X	
MASK CHEMICAL BIOLOGICL JOINT SERVICE GENERAL PURPOSE: FIELD M50	M12986	269425	281704	MASK CHEMICAL BIOLOGICAL: M40	M12418	736	1571	X	
GENERAL ENGINEERING									
X	E27792	194	135	EXCAVATOR: HYDRAULIC (HYEX) TYPE III MULTIPURPOSE CRAWLER MOUNT	E27860	7	14	X	
EXCAVATOR: HYDRAULIC (HYEX) TYPE III MULTIPURPOSE CRAWLER MOUNT	E27860	7	14	EXCAVATOR: HYDRAULIC (HYEX) TYPE I MULTIPURPOSE CRAWLER MOUNT	E27792	194	135	X	
GRADER ROAD MOTORIZED: DSL DRVN HVY (CCE)	G74783	15	81	MOTORIZED GRADER:	M05001	370	362	X	
MOTORIZED GRADER:	M05001	370	362	GRADER ROAD MOTORIZED: DSL DRVN HVY (CCE)	G74783	15	81	X	
SCRAPER EARTH MOVING SELF-PROPELLED: 14-18 CU YD (CCE)	S56246	#N/A	#N/A	SCRAPER EARTHMOVING: 14-18 CU YD	S05029	298	242	X	
TRACTOR FULL TRCKD LOW SPD: DSL MED DBP W/BULDOZ W/SCARIF WINCH	W76816	#N/A	#N/A	TRACTOR FULL TRCKD LOW SPD: T9	T05015	219	235	X	
MANEUVER COMBAT VEHICLE									
CARRIER ARMORED COMMAND POST: FULL TRACKED	C11158	411	356	CARRIER COMMAND POST: LIGHT TRACKED	D11538	56	132	X	
CARRIER PERSONNEL FULL TRACKED: ARMORED (RISE)	C18234	585	600	CARRIER COMMAND POST: LIGHT TRACKED	D11538	56	132	X	
CARRIER COMMAND POST: LIGHT TRACKED	D11538	56	132	CARRIER ARMORED COMMAND POST: FULL TRACKED	C11158	411	356	X	
FIGHTING VEHICLE: FULL TRACKED INFANTRY HI SURVIVABILITY (IFV)	F40375	#N/A	#N/A	OPERATION DESERT STORM (ODS) SITUATIONAL AWARENESS (SA): M2A2	P19727	250	376	X	
OPERATION DESERT STORM (ODS) SITUATIONAL AWARENESS (SA): M2A2	P19727	250	376	FIGHTING VEHICLE: FULL TRACKED INFANTRY (IFV) M2A3	F60564	375	250	X	
RECONNAISSANCE VEH: (RV)	R62673	114	103	INFANTRY CARRIER: VEHICLE (ICV)	J22626	260	278	X	
TANK COMBAT FULL TRACKED: 120MM GUN M1A2	T13305	174	160	TANK COMBAT FULL TRACKED: 120 MILLIMETER GUN	T13168	261	275	X	
MANEUVER SYSTEMS									
LAUNCHER GRENADE ARMAMENT SUBSYSTEM: M257	L44031	1260	1982	LAUNCHER GRENADE ARMAMENT SUBSYSTEM: SCREEN RP M259	L44748	449	575	X	
LAUNCHER GRENADE SMOKE: SCREENING RP M250	L44680	486	472	LAUNCHER GRENADE ARMAMENT SUBSYSTEM: SCREENING RED PHOSPHO M239	L44612	403	483	X	
MEDICAL FIELD SYSTEMS									
ANALYZER NON-INVAS BLOOD PRESS: (ANBP)	A27104	22	20	MEDICAL VITAL SIGNS SIMULATOR (MVSS):	M05038	5	0	X	
MONITOR PATIENT VITAL SIGNS: (MVS)	M66626	314	562	MONITOR PATIENT VITAL SIGNS:	M66558	2	7	X	
SIMULATOR MEDICAL FUNCTIONS: BATTERY OP PORT SELF-CONTAINED	S56720	27	22	MEDICAL VITAL SIGNS SIMULATOR (MVSS):	M05038	5	0	X	
SIMULATOR PULSE OXIMETRY:	S57953	24	29	MEDICAL VITAL SIGNS SIMULATOR (MVSS):	M05038	5	0	X	
SOLDIER SYSTEMS									
BAYONET MULTIPURPOSE SYSTEM: XM9	B49004	153829	165653	BAYONET-KNIFE: W/SCABBARD FOR M16A1 RIFLE	B49272	89579	79176	X	
BAYONET-KNIFE: W/SCABBARD FOR M16A1 RIFLE	B49272	89564	79176	BAYONET MULTIPURPOSE SYSTEM: XM9	B49004	153873	165653	X	
BINOCULAR: M25	B67907	5152	5770	M25A1: STABILIZED BINOCULAR	M05036	453	64	X	
M25A1: STABILIZED BINOCULAR	M05036	453	64	BINOCULAR: M25	B67907	5152	5770	X	
MINI EYESAFE LASER INFRARED OBSERVATION SET (MELIOS): AN/PVS-6	M74849	2414	1979	TARGET LOCATOR MODU:	T27471	3437	1256	X	
MOUNT TRIPOD MACHINE GUN: HEAVY CALIBER 50	M75577	836	6203	M205: MACHINE GUN TRIPOD	X05002	21747	20118	X	
MONOCULAR NIGHT VISION DEVICE: AN/PVS-14	M79678	37113	188682	NIGHT VISION: GOGGLE	N05482	176135	30376	X	
NIGHT VISION SIGHT CREW SERVED WEAPON: AN/TVS-5	N04596	24	242	MEDIUM WEAPON THERMAL SIGHT (MWTS): AN/PAS-13(V)2	S90535	26810	26915	X	
NIGHT VISION SIGHT CREW SERVED WEAPON: AN/TVS-5	N04596	24	242	HEAVY WEAPON THERMAL SIGHT (HWTS): AN/PAS-13(V)3	S90603	23424	26320	X	
NIGHT VISION SIGHT INDIVIDUAL SERVED WEAPON: AN/PVS-4	N04732	9	0	SIGHT: THERMAL AN/PAS-13B(V)1	S60356	13886	14869	X	
NIGHT VISION: GOGGLE	N05482	176135	30376	MONOCULAR NIGHT VISION DEVICE: AN/PVS-14	M79678	37113	188682	X	
PARACHUTE PERSONNEL TROOP BACK: 35 FT TYPE T-10	N67925	#N/A	#N/A	T-11: PERSONL PARACHT SYSTM	T91035	1399	1602	X	
SIGHT: REFLEX COLLIMATOR	S60288	225809	224914	SIGHT BORE OPTICAL: M150	S45729	57702	61894	X	
SIGHT: THERMAL AN/PAS-13B(V)1	S60356	13886	14869	NIGHT VISION SIGHT INDIVIDUAL SERVED WEAPON: AN/PVS-4	N04732	9	0	X	
MEDIUM WEAPON THERMAL SIGHT (MWTS): AN/PAS-13(V)2	S90535	26810	26915	NIGHT VISION SIGHT CREW SERVED WEAPON: AN/TVS-5	N04596	24	242	X	
HEAVY WEAPON THERMAL SIGHT (HWTS): AN/PAS-13(V)3	S90603	23424	26320	NIGHT VISION SIGHT CREW SERVED WEAPON: AN/TVS-5	N04596	24	242	X	
M205: MACHINE GUN TRIPOD	X05002	21747	20118	MOUNT TRIPOD MACHINE GUN: HEAVY CALIBER 50	M75577	836	6203	X	
SOLDIER WEAPONS									
CARBINE 5.56 MILLIMETER: M4A1	C06935	257373	244195	RIFLE 5.56 MILLIMETER: M16A2	R95035	451	10287	X	
MACHINE GUN CALIBER .50: HB FLEXIBLE (GROUND AND VEHICLE) W/E	L91975	60	547	MACHINE GUN: CALIBER 50	M39331	15018	14228	X	
MACHINE GUN 5.56 MILLIMETER: M249	M09009	24083	26205	MACHINE GUN: LIGHT 5.56MM M249	M39263	6462	5141	X	
MACHINE GUN: LIGHT 5.56MM M249	M39263	6462	5141	MACHINE GUN 5.56 MILLIMETER: M249	M09009	24083	26205	X	
MACHINE GUN: CALIBER 50	M39331	15018	14228	MACHINE GUN CALIBER .50: HB FLEXIBLE (GROUND AND VEHICLE) W/E	L91975	60	547	X	

**ARNG
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Required Item Nomenclature	Reqd Item Equip No.	LIN Req	FY22 LIN OH QTY	Substitute Item Nomenclature	Substitute Item Equip No.	SUBLIN Req	SUBLIN OH	Deployable?	
								Yes	No
MACHINE GUN 7.62 MILLIMETER: M240L	M92454	4050	3545	MACHINE GUN: 7.62MM M240B	M92841	10789	11623	X	
PISTOL 9 MILLIMETER: M11	P47365	177	183	PISTOL, MODULAR : XM-18 COMPACT	P05042	129	221	X	
PISTOL 9 MILLIMETER: M11	P47365	177	183	PISTOL 9MM AUTOMATIC: M9	P98152	29885	22405	X	
PISTOL 9MM AUTOMATIC: M9	P98152	29884	22405	PISTOL, MODULAR : XM-17	P05043	30011	42669	X	
RIFLE: 5.56MM M16A4	R97175	#N/A	#N/A	RIFLE 5.56 MILLIMETER: M16A2	R95035	451	10287	X	
RIFLE 5 56 MILLIMETER: M4	R97234	#N/A	#N/A	CARBINE 5.56 MILLIMETER: M4A1	C06935	257438	244195	X	
RIFLE 5 56 MILLIMETER: M4	R97234	#N/A	#N/A	RIFLE 5.56 MILLIMETER: M16A2	R95035	451	10287	X	
SHOTGUN: 12 GAGE	S40541	2198	2521	SHOTGUN 12 GAUGE RIOT TYPE: 20 INCH BARREL	T39223	6856	6822	X	
STRIKE									
HOWITZER LIGHT TOWED: M119A2	H57505	#N/A	#N/A	HOWITZER LT TOWED: M119A3	H05007	240	240	X	
RANGE FINDER-TARGET DESIGNATOR: AN/PED-1B (LLDR 2H)	R05028	391	377	RANGE FINDER-TARGET DESIGNATOR: LASER AN/PED-1	R60282	566	439	X	
SUPPORT SYSTEMS									
CONTAINER HANDLING: CONTAINER HANDLING UNIT (CHU)	C84862	#N/A	#N/A	CONTAINER HANDLING:	C27294	31	555	X	
CONTAINER HANDLING: HEAVY EXP MOBIL TACT TRK (HEMTT)	C84930	#N/A	#N/A	CONTAINER HANDLING:	C27294	31	555	X	
SPECIAL SEARCH DOG: (SSD)	S05024	#N/A	#N/A	DOG PATROL: EXPLOSIVES DETECTOR	G33732	5	5	X	
TRAILERS									
SEMITRAILER TANK: 5000 GAL BULK HAUL SELF-LOAD/UNLOAD W/E	S10059	300	321	SEMITRAILER TANK: 5000 GAL FUEL DISPENSING AUTOMOTIVE W/E	S73372	139	189	X	
SEMITRAILER FLAT BED: BREAKBULK/CONT TRANSPORTER 22-1/2 TON	S70027	3406	3488	SEMITRAILER FLATBED: BREAKBULK/CONTAINER TRANSPORTER CMRCIAL 34T	S70159	3960	2789	X	
TRAILER CARGO: HIGH MOBILITY 1-1/4 TON	T95924	5877	6075	LIGHT TACTICAL TRAILER: 3/4 TON	T95992	8636	9829	X	
LIGHT TACTICAL TRAILER: 3/4 TON	T95992	8636	9829	TRAILER CARGO: HIGH MOBILITY 1-1/4 TON	T95924	5877	6075	X	
TRAILER FLAT BED: M1082 TRLR CARGO LMTV W/DROPSIDES	T96564	3195	3696	TRAILER CARGO: 1-1/2 TON 2 WHEEL W/E	W95811	81	36	X	
TRAILER FLATBED: 5 TON 4 WHEEL GENERAL PURPOSE	T96883	#N/A	#N/A	TRAILER CARGO: MTV W/DROPSIDES M1095	T95555	6002	6065	X	
TRAILER CARGO: 1-1/2 TON 2 WHEEL W/E	W95811	81	36	TRAILER CARGO: MTV W/DROPSIDES M1095	T95555	6002	6065	X	
TRAILER CARGO: 1-1/2 TON 2 WHEEL W/E	W95811	81	36	TRAILER FLAT BED: M1082 TRLR CARGO LMTV W/DROPSIDES	T96564	3195	3696	X	
TRUCKS									
TRUCK UTILITY: HEAVY VARIANT HMMWV 4X4 10000 GVW W/E	T07679	17477	12065	TRUCK UTILITY EXPANDED CAPACITY ENHANCED: M1152A1	T37588	4405	7146	X	
TRUCK UTILITY: M1152-EXPANDED CAPACITY ENHANCED	T11588	#N/A	#N/A	TRUCK UTILITY EXPANDED CAPACITY ENHANCED: M1152A1	T37588	4405	7146	X	
TRUCK AMBULANCE: 2 LITTER ARMD 4X4 W/E (HMMWV)	T38707	1	2	TRUCK AMBULANCE: 4 LITTER ARMD 4X4 W/E (HMMWV)	T38844	1617	1805	X	
TRUCK AMBULANCE: 4 LITTER ARMD 4X4 W/E (HMMWV)	T38844	1617	1805	TRUCK AMBULANCE: 2 LITTER ARMD 4X4 W/E (HMMWV)	T38707	1	2	X	
TRUCK UTILITY: EXPANDED CAPACITY ENHANCED M1165	T38873	#N/A	#N/A	TRUCK UTILITY EXPANDED CAPACITY ENHANCED 4X4: M1165A1	T56383	4655	7448	X	
TRUCK CARGO: TACTICAL 8X8 HEAVY EXPANDED MOBILITY W/MED CRANE	T39586	102	157	TRUCK CARGO: M985A4	T59380	408	361	X	
TRUCK CARGO: TACTICAL 8X8 HEAVY EXPANDED MOBILITY W/W MED CRANE	T39654	#N/A	#N/A	TRUCK CARGO: TACTICAL 8X8 HEAVY EXPANDED MOBILITY W/MED CRANE	T39586	102	157	X	
TRUCK CARGO: TACTICAL 8X8 HEAVY EXPANDED MOBILITY W/W MED CRANE	T39654	#N/A	#N/A	TRUCK CARGO: M985A4	T59380	408	361	X	
TRUCK CARGO: HEAVY PLS TRANSPORTER 15-16.5 TON 10X10	T40999	357	543	TRUCK CARGO: HEAVY PLS TRANSPORTER 15-16.5 TON 10X10 W/MHE W/E	T41067	65	133	X	
TRUCK CARGO: HEAVY PLS TRANSPORTER 15-16.5 TON 10X10	T40999	357	543	TRUCK: PALLETIZED LOADING	T81874	636	582	X	
TRUCK CARGO: 5 TON 6X6 MTV W/E LAPES/AD	T41036	103	69	TRUCK CARGO: 5 TON 6X6 MTV W/E W/W LAPES/AD	T41104	17	13	X	
TRUCK CARGO: HEAVY PLS TRANSPORTER 15-16.5 TON 10X10 W/MHE W/E	T41067	65	133	TRUCK PALLETIZED LOADING: M1074A1	T55236	187	137	X	
TRUCK CARGO: 5 TON 6X6 MTV W/E W/W LAPES/AD	T41104	17	13	TRUCK CARGO: 5 TON 6X6 MTV W/E LAPES/AD	T41036	103	69	X	
TRUCK CARGO: MTV W/E W/W	T41135	212	359	TRUCK CARGO: 5 TON 6X6 MTV W/E LAPES/AD	T41036	103	69	X	
TRUCK CARGO: MTV W/E W/W	T41135	212	359	TRUCK CARGO: 5 TON WO/WINCH	T41515	6871	5238	X	
TRUCK CARGO: MTV W/E W/W	T41135	212	359	TRUCK CARGO: W/MHE WO/WINCH	T59584	759	611	X	
TRUCK CARGO: MTV W/E W/W	T41135	212	359	TRUCK CARGO: MTV W/E	T61908	516	2479	X	
TRUCK CARGO: MTV W/MHE W/E	T41203	181	297	TRUCK CARGO: W/MHE WO/WINCH	T59584	759	611	X	
TRUCK VAN: EXPANSIBLE MTV W/E M1087A1	T41271	9	70	TRUCK: EXPANDABLE VAN WO/WINCH	T67136	664	755	X	
TRUCK CARGO: 5 TON WO/WINCH	T41515	6871	5238	TRUCK CARGO: LWB WO/WINCH	T93271	982	1202	X	
TRUCK CARGO: 2 1/2 TON 4X4 LMTV W/E LAPES/AD	T41995	114	114	TRUCK CARGO: 2 1/2 TON 4X4 LMTV W/E W/W LAPES/AD	T42063	8	3	X	
TRUCK CARGO: 2 1/2 TON 4X4 LMTV W/E W/W LAPES/AD	T42063	8	3	TRUCK CARGO: 2 1/2 TON 4X4 LMTV W/E LAPES/AD	T41995	114	114	X	
TRUCK TANK: FUEL SERVICING 2500 GALLON 8X8 HEAVY EXP MOB W/WINCH	T58116	#N/A	#N/A	TRUCK TANK: WO/WINCH	T58318	1884	1438	X	
TRUCK CARGO: TACTICAL 8X8 HEAVY EXPANDED MOBILITY W/LT CRANE	T59278	1	32	TRUCK CARGO: TACTICAL 8X8 HEAVY EXPANDED MOBILITY W/MED CRANE	T39586	102	157	X	
TRUCK CARGO: TACTICAL 8X8 HEAVY EXPANDED MOBILITY W/LT CRANE	T59278	1	32	TRUCK CARGO: M977A4	T59532	84	122	X	
TRUCK TRACTOR W/MAIN RECOVERY WINCH: M983A2 LET	T59415	#N/A	#N/A	TRUCK TRACTOR: (LET)	T60946	1176	1256	X	
TRUCK CARGO: M977A4	T59532	84	122	TRUCK CARGO: M985A4	T59380	408	361	X	
TRUCK CARGO: 4X4 LMTV W/E	T60081	2056	2783	TRUCK CARGO: 2 1/2 TON 4X4 LMTV W/E LAPES/AD	T41995	114	114	X	
TRUCK CARGO: 4X4 LMTV W/E	T60081	2056	2783	TRUCK CARGO: 2 1/2 TON 4X4 LMTV W/E W/W LAPES/AD	T42063	8	3	X	
TRUCK CARGO: 4X4 LMTV W/E	T60081	2056	2783	TRUCK CARGO: WO/WINCH	T59448	4857	4005	X	
TRUCK CARGO: 4X4 LMTV W/E	T60081	2056	2783	TRUCK CARGO: 4X4 LMTV W/E W/W	T60149	144	343	X	
TRUCK CARGO: 4X4 LMTV W/E W/W	T60149	144	343	TRUCK CARGO: 2 1/2 TON 4X4 LMTV W/E W/W LAPES/AD	T42063	8	3	X	
TRUCK CARGO: 4X4 LMTV W/E W/W	T60149	144	343	TRUCK CARGO: WO/WINCH	T59448	4857	4005	X	
TRUCK CARGO: 4X4 LMTV W/E W/W	T60149	144	343	TRUCK CARGO: 4X4 LMTV W/E	T60081	2056	2783	X	
TRUCK TRACTOR: LINE HAUL C/S 50000 GVWR 6X4 M915	T61103	180	1103	TRACTOR LIN HAUL: M915A5	T88558	1860	988	X	
TRUCK TRACTOR: MTV W/E	T61239	464	1205	TRUCK TRACTOR: MTV W/E W/W	T61307	117	96	X	
TRUCK TRACTOR: MTV W/E	T61239	464	1205	TRUCK TRACTOR: WO/WINCH	T88983	2555	2123	X	
TRUCK TRACTOR: MTV W/E W/W	T61307	117	96	TRUCK TRACTOR: MTV W/E	T61239	464	1205	X	
TRUCK TRACTOR: MTV W/E W/W	T61307	117	96	TRUCK TRACTOR: WO/WINCH	T88983	2555	2123	X	

ARNG
Major Item of Equipment Substitution List

Table 7

Required Item Nomenclature	Reqd Item Equip No.	LIN Req	FY22 LIN OH QTY	Substitute Item Nomenclature	Substitute Item Equip No.	SUBLIN Req	SUBLIN OH	Deployable?	
								Yes	No
TRUCK TRACTOR: M1088A1P2 W/WINCH	T61375	#N/A	#N/A	TRUCK TRACTOR: MTV W/E W/W	T61307	117	96	X	
TRUCK TRACTOR: M1088A1P2 W/WINCH	T61375	#N/A	#N/A	TRUCK TRACTOR: WO/WINCH	T88983	2555	2123	X	
TRUCK UTILITY: EXPANDED CAPACITY 4X4 W/E HMMWV M1113	T61630	1584	710	TRUCK UTILITY: HEAVY VARIANT HMMWV 4X4 10000 GWW W/E	T07679	17477	12065	X	
TRUCK UTILITY: EXPANDED CAPACITY 4X4 W/E HMMWV M1113	T61630	1584	710	TRUCK UTILITY EXPANDED CAPACITY ENHANCED: M1152A1	T37588	4405	7146	X	
TRUCK CARGO: MTV LWB W/E W/W	T61772	#N/A	#N/A	TRUCK CARGO: MTV W/E W/W	T41135	212	359	X	
TRUCK CARGO: MTV W/E	T61908	516	2479	TRUCK CARGO: 5 TON 6X6 MTV W/E LAPES/AD	T41036	103	69	X	
TRUCK CARGO: MTV W/E	T61908	516	2479	TRUCK CARGO: 5 TON 6X6 MTV W/E W/W LAPES/AD	T41104	17	13	X	
TRUCK CARGO: MTV W/E	T61908	516	2479	TRUCK CARGO: MTV W/E W/W	T41135	212	359	X	
TRUCK CARGO: MTV W/E	T61908	516	2479	TRUCK CARGO: 5 TON WO/WINCH	T41515	6871	5238	X	
TRUCK WRECKER: TACTICAL 8X8 HEAVY EXPANDED MOBILITY W/WINCH	T63093	67	418	TRUCK WRECKER: M984A4	T63161	991	774	X	
TRUCK DUMP: MTV W/E	T64911	#N/A	#N/A	TRUCK DUMP: 10 TON WO/WINCH	T65342	1129	1298	X	
TRUCK DUMP FMTV: 10 TON	T65047	#N/A	#N/A	TRUCK DUMP: 10 TON W/WINCH	T65274	298	324	X	
TRUCK DUMP FMTV: 10 TON	T65047	#N/A	#N/A	TRUCK DUMP: 10 TON WO/WINCH	T65342	1129	1298	X	
TRUCK DUMP (FMTV) 10 TON: M1157	T65115	#N/A	#N/A	TRUCK DUMP: 10 TON W/WINCH	T65274	298	324	X	
TRUCK DUMP (FMTV) 10 TON: M1157	T65115	#N/A	#N/A	TRUCK DUMP: 10 TON WO/WINCH	T65342	1129	1298	X	
TRUCK TANK: FUEL SERVICING 2500 GALLON 8X8 HEAVY EXP MOB	T87243	#N/A	#N/A	TRUCK TANK: WO/WINCH	T58318	1884	1438	X	
TRUCK TRACTOR: LET 6X6 66000 GWW W/W C/S	T91656	16	160	TRUCK TRACTOR: (LET)	T60946	1176	1256	X	
TRUCK CARGO: LWB W/WINCH	T93339	#N/A	#N/A	TRUCK CARGO: LWB WO/WINCH	T93271	982	1202	X	
TRUCK VAN: LMTV W/E	T93484	1	127	TRUCK VAN: M1079A1P2 WO/WINCH	T62359	665	732	X	
TRUCK WRECKER: MTV W/E W/W	T94709	34	184	TRUCK WRECKER: TACTICAL 8X8 HEAVY EXPANDED MOBILITY W/WINCH	T63093	67	418	X	
TRUCK WRECKER: MTV W/E W/W	T94709	34	184	TRUCK WRECKER:	T94671	727	650	X	
TRUCK CARGO: TACTICAL 8X8 HEAVY EXPANDED MOB W/LHS	T96496	#N/A	#N/A	TRUCK PALLETIZED (LHS): M1120A4	T55054	2641	2103	X	

ARNG
Significant Major Item Shortfalls

<i>NOTE: This table provides a RC prioritized (PR) shortage list for major equipment items required for wartime missions. It lists the total quantity required, the total shortfall, the individual item cost, and the cost of the shortfall. This data is consistent with other equipment data submitted by the Service.</i>						
PR	Nomenclature	Total Req'd	# Items Short	Item Cost	Total Shortage Cost	Rationale/Justification
1	NIGHT VISION: GOGGLE, PVS-7 N05482	176,583	145,801	\$2,748	\$400,661,148	Shortage is made up using PVS-14s and 20s
2	HOWITZER MEDIUM TOWED: M777	265	2	\$2,300,000	\$4,600,000	PPT shows 101 O/H this is an error, ARNG has 263/265 O/H (Shortage is in TDA)
3	TARGET ACQUISITION SYSTEM: TOW IMPROVED ITAS M41	726	1	\$970,000	\$970,000	WP8JD0 needs to order a replacement
4	AIRPLANE CARGO-TRAN: C-12F					OSA to provide
5	COMMAND LAUNCH UNIT: (JAVELIN) 13305405-119	2660	13	\$133,063	\$1,729,819	WPWR, 134 IN BN will be fielded Feb 22
6	WARNING RECEIVER SYSTEM COUNTERM: AN/AAR-57					Only required when Unit is Mobilizing
7	LOAD HANDLING SYS (LHS): 2000 GAL COMP WATER TANK-RACK (HIPPO)	1,217	743	\$131,839	\$97,956,377	Program has been plagued by production issues causing significant delays in procurement.
8	SEMITRAILER FLATBED: BREAKBULK/CONTAINER TRANSPORTER CMRCIAL 34T	4,008	1,176	\$105,069	\$123,561,144	Significant corrosion caused critical shortage of the fleet.
9	SEMITRAILER LOW BED: 25 TON 4 WHEEL W/E	499	322	\$179,778	\$57,888,516	Combination of increase in force structure as well as low funding in the POM.

III. Army Reserve Overview

A. Current Status of the Army Reserve

1. General Operational Overview

America’s Army Reserve is a community-based, global operational force with a presence in all states and territories and in 30 countries. It spans the globe with nearly 200,000 Soldiers and Civilian employees and more than 2,000+ units in 20 different time zones. The Army Reserve comprises nearly 65 percent of the Army’s sustainment capabilities; 20 percent of its organized units; nearly half its total maneuver support; and a quarter of its mobilization base expansion capacity. With the mantra of “READY NOW! SHAPING TOMORROW...”, the priorities of the Chief of Army Reserve and Commanding General, U.S. Army Reserve Command are People, Readiness, and Modernization. The Army Reserve is focused on manning, equipping, and training formations to support our Combatant Commanders by deploying critical enabling capabilities within days or weeks and developing the future capabilities required to support Multi-Domain Operations (MDO) Capable Force (2028); and MDO Ready Force (2035). Put simply, America’s Army Reserve supports U.S. national security interests by providing key and essential capabilities that the Total Army and the Joint Force need to compete and win.

Top Army Reserve Focus Areas

- **Resourcing:** Optimize processes and prioritization to deliver modern enabler capabilities to support Multi-Domain Operations, including risk-informed divestiture of legacy equipment
- **Readiness:** Invest in responsive capabilities to enhance equipping posture for day-to-day competition, large-scale combat operations, Homeland Defense, and Defense Support to Civil Authorities
- **Modernizing:** Advocate for the development of future enabler capabilities to accelerate interoperability and holistically identify/forecast resource gaps

a. The Army Reserve as an Operational Force

“In an era of great power competition, the Army needs forces able to compete with adversaries, respond to crises, win in conflict, and prepare for the future. To accomplish this mission, the Army needs a dedicated Federal Reserve force that is ready today and prepared to meet the challenges of tomorrow. That force is the United States Army Reserve.”
– **LTG Jody J. Daniels, Chief of Army Reserve & Commanding General, U.S. Army Reserve**

The Army Reserve provides quick access to the mission-capable forces and capabilities the Army needs to build expeditionary combat power and sustain a campaign-capable force. Through its storied history of service in wars, contingency operations, and domestic emergencies, the Soldiers of America’s Army Reserve have never failed to answer the nation’s call. Evolving from a small corps of medical professionals to what is today a global operational reserve force, the Army Reserve has developed into a relevant and skilled operational reserve. As the Army Reserve looks to the challenges of the future, modernization and lifecycle sustainment of critical equipment is imperative to fully support MDO on multiple fronts. The Army Reserve must remain compatible with the Total Army and fully capable of providing enabling functions in MDO. The Army equipment modernization strategy focuses on developing next generation combat

vehicles, aerial platforms, network communications, precision fires, and Soldier systems. However, enabler capabilities and capacities will also need to evolve for the Army to achieve the transformation goals required to fight and win on a complex battlefield against near-peer competitors.

Our strategy is to concentrate equipping priorities on units identified as early entry and theater opening forces most critical to setting the conditions for and sustaining combat operations. Other Army Reserve units will remain sized, trained, and postured to provide operational and strategic depth for the full scope of contingency missions. As part of the Joint Force, rapidly generating and deploying capable units requires the most modern equipment available to close interoperability gaps and ensure the same level of survivability, lethality, mobility, and network connectivity.

Predictable and balanced resourcing for equipment modernization is required to meet these objectives, particularly as the Army seeks to harness the rapid pace of technological advancements. As an example, the 75th Innovation Command (IC) that was established in January 2018 provides a “screening force” to accelerate innovation within the Army and provide access to private sector innovators and technology leaders through Army Reserve Soldiers employed in those fields. The 75th IC continues to increase in relevance and criticality as the USAR modernizes its force in concert with Department of Defense and Army modernization priorities.

b. Homeland Defense and Defense Support of Civil Authorities

America’s Army Reserve is uniquely postured with Soldiers and equipment in over 1,100 communities to employ capabilities critical to Homeland Defense (HD) and Defense Support of Civil Authorities (DSCA), including search and rescue, aviation, engineer, transportation, medical, water and fuel distribution, and communications support. The Army Reserve provides an immediate and deliberate response to DSCA demands. The Army Reserve responds to these demands under differing authorities and sources of support requests.

Over the past year, the Army Reserve provided personnel and equipment to support numerous natural disaster response and search and rescue missions. Highlights include:

- Provided 183 Army Reserve Emergency Preparedness Liaison Officers (EPLOs) for a combined 21,910 mission days to support COVID-19 response efforts.
- Validated 1,295 Soldiers for the Chemical, Biological, Radiological, and Nuclear (CBRN) Response Enterprise (CRE) Mission.
- Mobilized eight CRE Soldiers to support Operations Allies Refuge/Welcome (OAR/OAW).
- Provided 30 Army Reserve EPLOs and approximately 1,500 service members to support OAR/OAW.
- Conducted three missions at the request of civil authorities under Immediate Response Authority (IRA). Total equipment use in the response were two excavators, four M149 “water buffalos,” four Light Medium Tactical Vehicles (LMTVs), and one High Mobility Multipurpose Wheeled Vehicle (HMMWV).

- Provided 34 Army Reserve EPLOs to support responses to the 2020 Atlantic and Pacific hurricane seasons (CRISTOBAL, ISAIAS, LAURA, and DELTA) and wildland fires.
- Provided 10 Army Reserve EPLOs to support responses to the 2021 Atlantic and Pacific Hurricane seasons (HENRI and IDA to date) and wildland fires.
- Conducted multiple CH-47 Chinook rescue missions alongside the National Park Service on Mount Rainier.
- Conducted more than a dozen training events supporting CBRN and DSCA.

Readiness and availability of Army Reserve Critical Dual Use (CDU) equipment is essential to responding to HD and DSCA events. CDU equipment on-hand posture is 96 percent including substitutes and 87 percent without substitutes, with a shortfall exceeding \$1 billion. The Army Reserve cannot perform some of its wartime missions with the current CDU posture, but can support HD and DSCA missions. The Army identified liquid logistics capability shortfalls during large-scale combat operations, primarily driven by storage capability shortfalls of fuel and water systems in the Army Reserve, as major drivers of operational risk. The lack of these systems reduces the capability of our petroleum and water units, but these units can still perform missions at a reduced capacity. Table 2-14 highlights the top Army Reserve CDU equipment shortage values by capability.

Table 2-14. Army Reserve Top CDU Shortages

Capability	Equipment Type	Shortage Value
Engineering	Semitrailer Low Bed: (40 Ton)	\$81M
Engineering	Heavy Dump Truck	\$69M
Logistics	3K Gallon Reverse Osmosis Water Purification Unit	\$56M
Logistics	Load Handling System (LHS) 2000 Gal Tank (HIPPO)	\$34M
Transportation	M872A4 Semitrailer Flatbed: Transporter (34 Ton)	\$13M

2. Status of Equipment

“Modernization is not just about equipment – the Army does not man equipment, the Army equips Soldiers.”

– Army Modernization Strategy

Although the Army Reserve continues to advocate for consistent and predictable equipping, we are unable to fill all critical requirements. **Slow production rates, reset issues, component reallocation of procured equipment, funding limitations, requirements approved in advance of resourcing, and deliberate Army decisions to procure less than the Army Acquisition Objective (AAO) have resulted in shortages.** The result is units not achieving required equipment readiness levels until at/near deployment. As the Army overhauls their acquisition process to ensure we keep pace with our near-peer competitors, the Army Reserve will likely see additional negative impacts to readiness levels caused by equipment shortages.

Army decisions to prioritize modernizing over investing in legacy systems have created disproportional risk in enabler systems. The Army has identified capability gaps in its ability to conduct Large Scale Combat Operations (LSCO). Among the LSCO gaps are liquid logistics capabilities that are partially caused by the shortage of fuel and water systems in the Army Reserve. The Army has also taken risk in the procurement and modernization of mobility and force protection systems that will cause continued LSCO capability gaps in maneuver enhancement and terrain shaping.

a. Equipment On-hand

As an aggregate, the Army Reserve's Equipment on Hand (EOH) without substitute items is 83 percent. When substitute items are included, the EOH climbs to 95 percent. This is unchanged from last year. The 12 percent of substitute, in-lieu equipment creates two issues: 1) Substitutes can mask interoperability issues creating a false picture of readiness. 2) The equipment tends to be of a legacy and outdated variety, requiring comparatively more resources to sustain and crowding out other investments. The Army Reserve posture illustrates the inventory-based management approach of filling shortages via redistribution against legacy requirements, which places emphasis on aggregated quantities over documenting new requirements in advance to identify future capability gaps. The data is also indicative of the current resource prioritization model that slows the modernization rate for enabler systems by means of new procurement, creating mixed fleets that are more difficult to maintain and employ. In the near-term, developing future enabler systems will remain a low priority, creating modernization and readiness challenges for key Army Reserve capabilities.

b. Average Age of Major Items of Equipment

The average age of Army Reserve Top Legacy Equipment is provided in Table 2-15. The average age of the majority of our top legacy equipment exceeds the Economic Useful Life (EUL). In some instances, the Army Reserve's equipment dates back to the Cold War era. As identified in previous years' NGRERs, equipment age has a direct correlation with higher failure rates, increases operational and maintenance costs, impacts unit readiness, and could affect whether a mission succeeds or fails. Rather than receiving fully modern ("most modern") equipment via direct procurement, the Army Reserve received most equipment from cascading actions, and the equipment transferred was often already at or near the end of its planned service life. Programmed replacements and rebuilding efforts cannot keep up with the needs of the Army Reserve's critical mission requirements.

Resourcing recapitalization and rebuild programs remain essential for incrementally replacing legacy systems and decreasing the average age of Army Reserve equipment. The Army Reserve continues to divest aging and obsolete equipment to reduce the average age and sustainment cost. Although the Army has improved the compatibility and modernization of Army Reserve equipment, some units will continue to have legacy equipment. Finding the right balance of divesting legacy equipment to save resources while maintaining at least some level of on-hand equipment will continue to be a challenge.

Table 2-15. Army Reserve Top Legacy Equipment

Nomenclature	Line Item Number	Average Age (years)	Economic Useful Life (years)
Armored Vehicle Launched Bridge	L43664	42	25–30
M113A3 Armored Personnel Carrier	C18234	36	25–30
Semitrailer Flatbed 34-Ton	S70159	32	17–25
Trailer Tank Bulk Petroleum 7.5K	S73119	29	17–25
Heavy Dump Truck 20-Ton	X44403	27	20–25

c. Maintenance

A consistent yearly decrease in depot maintenance spending prevents aging fleets, including large amounts of CDU equipment, from being rebuilt. Over the past 10 years, the USAR’s depot maintenance funding provided by HQDA has decreased 85 percent while the per unit cost has increased significantly. This reduction in funding and increase in cost is highly disruptive to the Army Reserve fleet modernization effort. As a result, readiness rates are suffering and safety concerns have increased. Increasing the emphasis on depot maintenance ensures equipment is available and ready for all missions, especially since near-peer/great power competitors continue to modernize their forces. The Army Reserve must be adequately resourced to maintain a ready force to meet today’s challenges while implementing a transformational modernization effort to ensure the Army is prepared for future threats. The Army Reserve will prioritize maintaining equipment for units designated to support the highest priority missions, while essentially suspending lower priority stock and leaving certain units with deliberate shortages.

The Army’s and the Army Reserve’s Organic Industrial Base (OIB) manufactures, repairs, upgrades, and modernizes the Army’s equipment, and is absolutely critical to both Strategic and Tactical Readiness. The OIB is assigned three primary missions: support current unit readiness across the force; maintain the ability to meet wartime surge requirements; and modernize and retool to sustain the next generation of Army equipment. The Army Reserve’s Depot Maintenance program is key to maintaining the readiness of the Army Reserve fleet. As an integral part of the Army Reserve’s sustainment activities, the depot overhaul and rebuild programs sustain Reserve EOH and extend the service life of its fleet. The Army Reserve’s sustainment activities help to decrease operational tempo spending. The current Army Reserve Depot Maintenance Program funding level is \$38.6 million. This is 46 percent of the Army Reserve’s critical requirement of \$83.8 million in FY 2022. Planned reductions in the Depot Maintenance program in FY 2022 and across the FY 2023–FY 2027 budget will significantly affect the program.

d. Compatibility of Current Equipment with the Active Component

Over the past several years, the Army has greatly improved the interoperability and modernization of Army Reserve equipment. However, a large percentage of units will continue to retain legacy equipment. While the Army Reserve has explored initiatives to mitigate these interoperability differences for deploying units using internal cross-leveling during

pre-mobilization preparations, redistributing equipment is not an affordable or cost-effective solution because it consistently consumes limited financial resources. For the Army Reserve to remain a ready and operational force, it must be funded and equipped appropriately. A lack of adequate resources risks the Army Reserve's ability to conduct effective, timely, sustained operations.

In the current threat environment, ground forces must fully integrate with the other Military Services to project power from land into all domains. Joint force interoperability especially from a Mission Command perspective, is the essential bedrock to enabling MDO. Moreover, Joint Force interoperability, particularly within the Joint Logistics Enterprise, is crucial to fully integrate Army Reserve capabilities. It drives a need for concurrent fielding of modern equipment to units that will deploy early to contested, non-permissive environments. The Army's goal is to improve readiness by achieving higher levels of interoperability across all formations while minimizing platform generational gaps.

e. Equipment Modernization

The Army realigned over \$33 billion from FY 2020–FY 2024 to fund the six material modernization priorities, new organizations, training upgrades, facilities improvements, and other associated modernization efforts. Although important, the costs of modernizing while maintaining readiness will continue to grow as systems enter low-rate initial production and then procurement. In an effort to find savings to ensure we have the resources available to develop and scale systems, the Army appears set to take a deliberate approach to transitioning equipment to sustainment based on business case analyses. This entails assessing its capability needs, acquisition programs, and existing systems to determine the best and most economical sustainment approach. This can lead to forgoing additional incremental upgrades to legacy systems. The Army could divest legacy programs to free up resources for modernization priorities. However, the timelines for divestiture and comparable modernization are on a separate glide path. Risk to Army Reserve readiness increases as the gap between divestiture and modernization efforts continues to grow.

The Army's Modernization Strategy (AMS) builds on the efforts to reduce that risk by maintaining clearly identified modernization priorities, and making difficult, but necessary choices to ensure sufficient funding for priority materiel solutions. While the AMS mitigates those risks, it introduces others, such as:

- 1) Readiness—risk increases as resources are prioritized toward modernization efforts, depleting resources available for near-term needs.
- 2) Capability—risk to the Army Reserve increases as we transition legacy systems to sustainment and introduce new combat systems, normally through the continued receipt of cascaded equipment years into EUL; capability risk also increases if modernization initiatives are delayed.

- 3) Infrastructure—risk increases if the Army does not modernize facilities at pace with new weapons systems and formations; prioritization is vital as unplanned infrastructure requirements will stress the system and put fielding timelines at risk.
- 4) Budget—risk increases if funding decisions are delayed, risking early industry commitment to identified programs and competition and potentially increasing costs or postponing investments.

The Army’s modernization efforts build on consistent priorities and a correspondingly aligned budget. For the FY 2022 budget, in-depth program reviews identified \$9.1 billion in programs that will be delayed, reduced, or eliminated. The impact to the Army Reserve equipping and modernization efforts will reverberate throughout the component.

The Army defines equipment modernization as the procurement or modification of a piece of equipment (component, sub-system, system) to fill a capability gap or replace it because of obsolescence. Continuous or incremental modernization allows us to fill capability gaps quickly through the indefinite service life of our platforms. The Army often refers to modernization in terms of “wartime requirements.” Applying this type of modernization practice inadvertently, and misleadingly, indicates that the Army Reserve’s modernization levels are higher than defined. This creates confusion for leadership both within DoD and in Congress that do not fully follow the Army’s tiered modification system that delineates “modern” equipment and “most modern” equipment and then aggregates them into a single “modern equipment” level for wartime requirements. This methodology results in the Army calling a piece of equipment modern when it does not meet the regulatory definition of modernized equipment. “Modern” equipment is defined as equipment in the sustainment phase (Modernization Level 3, ML3). “Most modern” equipment is defined as equipment in full-rate production (ML4) and equipment approaching the end of Engineering, Manufacturing and Development (EMD) or in low rate initial production (LRIP) (ML5).

For example, when the M16A2 was a fifth generation rifle and was replaced with the M4A1, the Army’s modernization levels rated the M16A2 as modern. The M4 and M4A1 rifles were considered most modern. However, by the Army’s modernization level business rules, the M16A2 was “not modern” because it was on the Army’s Divesture List. This practice of applying “modern” and “most modern” remains in place today and impacts much of the Army Reserve’s equipment. From this example we see that the Army no longer uses the term “modern” to describe a piece of equipment in the understood sense of the word by Headquarters Department of the Army (HQDA) and Congressional leaders. By conflating the terms “modern” and “most modern” into an aggregate grade of “modern,” the Army is effectively categorizing old and past useful life equipment as modernized, which is not an accurate representation.

3. Transparency

Transparency refers to the accountability, traceability, and reporting of requirements regarding the programming, funding, contracting, production and delivery of procurement items. The ongoing Army initiative to implement Item Unique Identification (IUID) technology as a supply chain management efficiency is expected to establish a link between developed requirements

through the acquisition cycle to the delivery of equipment. This path enables systematic and auditable traceability of quantities to fiscal year appropriations for each item delivered. However, IUID will not deliver the capability to connect planning data captured in the P-1 and P-1R submissions to actual post-appropriation adjusted procurements, preventing the Army from completely validating funding in a manner consistent with Congressional intent.

Further work remains to capture and maintain accurate data across the planning, procurement, and equipment delivery phases of the budgetary process to accomplish end-to-end transparency. As such, the Army Reserve will actively participate in efforts to improve business processes relative to adjusted component splits based on enacted funding. This includes improving data accuracy and reliability by fully transitioning to an automated system capable of capturing fielding plan adjustments and accounting for items programmed, but not received.

4. Army Reserve Equipping Strategy

Our goal is to ensure Army Reserve Soldiers are ready to mobilize, deploy, fight, and win as an integrated part of the Army team anywhere in the world. We equip this force to support the Total Force in the joint, multi-domain operational environment at scale and speed. The Army Reserve remains committed to the National Security Strategy pillar “Preserve Peace through Strength” and the National Defense Strategy line of effort “Build a More Lethal Force.”

The Army Reserve's equipping strategy will nest with the Army's Regionally Aligned Readiness and Modernization Model (ReARMM) and the Army Response Force concept. Accordingly, we will prioritize the lead capability sets and formations with a sustained level of focus over a period of years. In the near term, our focus remains on equipping early deploying formations, or units required within the first 0 to 90 days of an operation. This construct rationalizes equipping and modernization strategies to improve interoperability, sustainability, and lethality.

5. Equipping Successes

USAR received \$456 million of base funded new equipment during FY 2021. This is an increase of \$251 million over FY 2020. The USAR completed obligation of \$180 million of above base FY 2019 National Guard and Army Reserve Equipment Account (NGREA) funds, mitigating USAR equipment shortfalls and enabling the modernization of key enablers required to support LSCO. Several of the equipping highlights include:

- Leveraging base and NGREA funds, the USAR fielded 4,157 additional Joint Battle Command–Platform (JBC-P) systems, increasing the USAR on-hand from 26 percent to 55 percent. JBC-P is required for interoperability and this shortfall was the USAR's top equipping challenge.
- USAR fielded our first units with the Joint Light Tactical Vehicle (JLTV). The United States Army Civil Affairs and Psychological Operations Command (USACAPOC) has received 202 JLTVs and will receive approximately 500 per year until fully equipped.

- USAR Military Police units received all 510 required Mine Resistant Armor Protected (MRAP) All-Terrain Vehicles (M-ATV). M-ATVs have increased mobility and protection over the legacy HMMWV they are replacing.

B. Future Years Program (FY 2023–FY 2025)

1. FY 2025 Equipment Requirements

a. Base Budget

Sustaining the readiness of Army Reserve capabilities requires consistent and predictable funding. The Army Reserve must replace or recapitalize aging critical equipment to support MDO. We expect inventories to remain a mix of fully modernized equipment and acceptable legacy substitute items. However, the Army Reserve must be adequately and consistently funded to be equipped with platforms and systems capable of global deployment and seamless integration in support of the full range of MDO. Difficult resource decisions have forced tough choices to accept near-term risk in enabler systems to support the development of higher priority programs. All formations will not modernize at the same rate because of the fiscal realities that drive resource prioritization. Since FY 2013, the Army Reserve portion of the base budget has declined to less than 3 percent annually and is projected at less than 2 percent annually through FY 2025. The budgetary outlook reflects the shift to a resource prioritization strategy that will slow investments for enabler systems, while increasing the reliance on redistributing assets and sustainment funding for legacy fleets.

2. Anticipated Transfers from Active Component (AC) to Reserve Component (RC)

Table 5 Projected Equipment Transfer/Withdrawal Quantities reflects planned equipment transfers from the AC to the RC in FY 2023–FY 2025.

3. Anticipated Withdrawals from Army Reserve Inventory

Currently, there is one pending transfer of a single Secure Mobile Anti-Jam Reliable Tactical Terminal (SMART-T) system, captured under DoDI 1225.06.

4. Equipment Shortages and Modernization Shortfalls

Army Reserve equipment shortages and modernization shortfalls are based on data derived from the Army's end strength force structure analysis. The following portfolio funding narratives highlight the Army Reserve's equipment shortages. Army business rules do not allow for advance documentation of validated equipping requirements before resourcing and fielding. The embedded data tables include both documented and validated Basis of Issue Plans (BOIP) requirements.

a. Aviation Portfolio

The Army Reserve owns 6 percent of the total Army aviation structure with a fleet consisting of both fixed-wing and rotary-wing aircraft. All Army Reserve aircraft are considered a CDU capability suitable for both contingency operations and HD/DSCA missions. With no projected additional funding, Army Reserve aviation will continue to lose parity with COMPO 1 through

2030; creating second-order mission command, modernization, maintenance, and logistics considerations.

Investments in New Procurement and Modernization: In FY 2020 and FY 2021, base budget funding (\$23 million) accounted for 100 percent of total AVN portfolio investments. NGREA funding was not used to fill critical modernization gaps. Increased funding in FY 2022–FY 2025 (\$37.6 million) reflects investments focused on ground support equipment (see Table 2-16).

Table 2-16. Aviation Procurement Funding

Funding Source	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Base Budget (P-1R)	\$12.2	\$10.8	\$14.4	\$8.8*	\$7.9*	\$6.5*
NGREA Investment	\$0	\$0				

* Projected

The Army Reserve is reliant on base funding for aircraft procurement and modernization programs. The Army reprioritized 100 percent of USAR modernization funding through FY 2027 away from Blackhawk L to V model conversions. The Army Reserve’s top critical documented shortages within the Aviation Portfolio are listed in Table 2-17.

Table 2-17. Aviation Top Equipment Shortages

Capability	Required	On-Hand	Shortage	FY 2025 On-Hand Projected	Unfunded Requirement
HH-60M Black Hawk MEDEVAC*	60	29	31	29	\$510M
C-12 Airplane*	32	30	2	30	\$16M

* Critical Dual Use Equipment

Aviation Focal Points:

- The Army Reserve MEDEVAC capability is not pure fledged; two of four Air Ambulance Companies are equipped with the most-modern HH 60M Blackhawk models. The remainder are equipped with UH-60L and HH-60L models. UH-60V is an affordable means to provide a HH-60M-like digital avionics architecture to remaining analog platforms and provides interoperability and enhanced situational awareness.
- Analog UH-60L models are not scheduled for RECAP to UH-60V models until after FY 2027. This increases risk to the USAR as new aviation mechanics are trained to maintain digital UH-60M/V variants.
- There is no projected new procurement of H-60M platforms through FY 2027.
- Army Reserve aviation funding is key to support DSCA missions, such as our partnership with the National Park Service to conduct rescue operations.

b. Mission Command Portfolio

The Mission Command portfolio consists of four capability areas that facilitate joint interoperability: transport, applications, enablers, and integration. The rate of technology advancement is outpacing the ability of the Army to resource modern systems evenly across the total force. The Army Reserve remains multiple generations behind in the most modern mission command systems, creating communication compatibility gaps with the Total Force. The Army Reserve continues to work with HQDA to sufficiently prioritize units within fielding plans to achieve battlefield commonality.

Investments in New Procurement and Modernization: In FY 2020 and FY 2021, base budget funding (\$115.1 million) accounted for a **significant amount** of Mission Command portfolio investments (\$131 million), with NGREA funding (\$15.9 million) critical modernization gaps (see Table 2-18).

Table 2-18. Mission Command Procurement Funding

Funding Source	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Base Budget (P-1R)	\$22.7M	\$92.4M	\$113.1M	\$104.7M*	\$103.3M*	\$156.5M*
NGREA Investment	\$0	\$15.9M				

* Projected

The Army Reserve's top critical documented shortages within the Mission Command Portfolio are listed in Table 2-19.

Table 2-19. Mission Command Top Equipment Shortages

Capability	Required	On-Hand	Shortage	FY 2025 On-Hand Projected	Unfunded Requirement
Joint Battle Command–Platform (JBC-P)	14,651	8,424	6,227	14,651	0
Command System Tactical: TSlv2 Large	143	0	143	55	\$42.8M
Command System Tactical: TSlv2 Small	541	0	541	143	\$14.7M
Terrestrial Line of Sight (TRILOS (V)2)	183	0	183	72	\$12.5M

Mission Command Focal Points:

- Resource prioritization for Mission Command systems favor maneuver units making it difficult to field the total force or keep pace with the replacement of obsolete equipment.
- The Army investment strategy accelerated procurement to address legacy system network compatibility challenges and seeks complete modernization by FY 2025. As noted earlier, the USAR fielded 4,157 additional JBC-Ps, increasing the USAR On-Hand from 26 percent to 55 percent.
- Actual fielding quantities by component, by year, will vary depending on how units are prioritized on the HQDA G3 Unit Set Fielding list.

c. Transportation Portfolio

The transportation portfolio consists of motor transport and watercraft platforms. The Army Reserve provides over 43 percent of motor transport units, comprising light, medium, and heavy Tactical Wheeled Vehicles (TWV) for the Army. To that end, the majority of the Army’s Echelons Above Brigade (EAB) transportation capability resides within the Army Reserve.

Investments in New Procurement and Modernization:

In FY 2020 and FY 2021, base budget funding (\$472.6 million) accounted for 91 percent of total TWV portfolio investments (\$515.7 million), with NGREA funding critical modernization gaps (\$43.1 million). FY 2022–FY 2025 (\$206.7 million) reflects reduced investments in trailers, Medium Tactical Vehicle modernization, and JLTV production (see Table 2-20).

Table 2-20. Tactical Wheeled Vehicles Procurement Funding

Funding Source	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Base Budget (P-1R)	\$282.6	\$190.0	\$90.4	\$45.2*	\$27.7*	\$43.4*
NGREA Investment	\$0	\$43.1*				

* Projected

The current fiscal environment creates funding gaps for fleet modernization in the near to mid-term, but provides a funding solution to upgrade 50 percent of legacy fleets to meet armor-capable strategy goals. The Army Reserve used NGREA funding to exceed the 50 percent armor capable goal with most fleets at or above 70 percent. JLTV fielding in FY 2021 will help increase the armor capable LTV fleet, but it will remain less than 40 percent armor capable. Delayed investments in new procurement and recapitalization programs will continue to increase sustainment costs required to maintain readiness levels of the legacy TWV fleet and risks interoperability with the Total Force. Top unfunded shortfalls are listed in Table 2-21.

Table 2-21. Tactical Wheeled Vehicles Top Equipment Shortages

Capability	Required	On-Hand	Shortage	FY 2024 On-Hand Projected	Unfunded Requirement
Joint Light Tactical Vehicle (JLTV)	15,585	0	15,585	1,635	\$50B
M915A5*	2,414	985	1,429	985	\$500M
M872A4 Semitrailer Flatbed (34 Ton)*	1,700	813	887	1,109	\$10.2M

* Critical Dual Use Equipment

Transportation Focal Points:

- The current Army Reserve LTV fleet will remain HMMWV-centric and approximately 36 percent armor-capable through at least FY 2022. As a result of fielding delays, the Army Reserve will have 10 percent of the current JLTV requirement on-hand by the close of FY 2024.
- Production of the Common Tactical Tractor, which is to replace the armor-capable M915A5 Line-Haul Tractor is not expected until FY 2027, resulting in continued Army Reserve fleet

shortages and modernization challenges for this critical theater-opening capability. Only 985 of the 2,414 trailers in the Army Reserve line haul fleet (41 percent) are capable of global deployment to a non-permissive threat environment.

- Because of production and fielding delays, the M872A4 Semitrailer (34 Ton) investment strategy is limited to modernizing approximately 65 percent (1,109 of 1,700) of the total Army Reserve legacy fleet by FY 2024.

d. Mobility and Engineering Portfolio

The Army Reserve provides 36 percent of the Army’s echelons above brigade (EAB) mobility structure. The portfolio consists of construction, tactical bridging, engineer support, command and control, mines and munitions, counter explosive hazard, and armored vehicle systems.

Investments in New Procurement and Modernization:

In FY 2020 and FY 2021, the Army’s base budget procurement funding (\$175 million) accounts for 83 percent of the total Mobility portfolio investments (\$211 million), with NGREA funding critical modernization gaps (\$40 million). Increased funding in FY 2022–FY 2025 (\$285.3 million) reflects investments in Army Reserve combat mobility systems, particularly the Joint Assault Bridge (see Table 2-22).

Table 2-22. Mobility Procurement Funding

Procurement Source	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Base Budget (P-1R)	\$85.6M	\$89.8M	\$82M	\$127.6M*	\$60.2M*	\$15.5M*
NGREA Investment	\$0M	\$40M*				

* Projected

The Army’s near to mid-term base budget strategy remains focused on resetting and modernizing engineer capabilities resident in Brigade Combat Teams and assumes greater risk in EAB enabler equipment acquisition. Continued extension of procurement timelines for mission essential Mobility equipment is directly impacting Army Reserve readiness posture by placing a greater burden on maintaining less optimal legacy platforms well beyond their EUL and creating capability gaps with the Total Force. Top Mobility unfunded equipment modernization shortages are listed in Table 2-23.

Table 2-23. Mobility Top Equipment Shortages and Modernization Challenges

Capability	Required	On-Hand	Shortage	FY 2025 On-Hand Projected	Unfunded Requirement
Joint Assault Bridge (JAB)*	36	0	36	23	\$126.5M
High Mobility Engineer Excavator*	206	183	23	48**	\$43M
Heavy Dump Truck (20 Ton)*	357	0	357	139**	\$109M
Semitrailer Low Bed (40 Ton)*	880	693	187	98**	\$105M
Light Engineer Utility Trailer (12T)	166	0	166	124	\$2.5M

* Critical Dual Use Equipment ** Most modern variant

Mobility and Engineering Focal Points:

- The Joint Assault Bridge (JAB) replaces the legacy 60-year old Armored Vehicle Assault Bridge platform. The Army Reserve is projected to begin fielding in FY 2023. The Army Reserve is projected to field the full complement of systems between FY 2023 and FY 2028. The Combat Engineer Company Force Design Update adjusted the Army Reserve requirement to 36 beginning in FY 2021.
- The High Mobility Engineering Excavator (HMEE) Type I replaces the Small Emplacement Excavator (SEE), providing increased capability for light earthmoving, loading, and excavation. The latest HMEE variant features Electronic Over Hydraulic (EOH) technology for robotic interoperability with Conditional Materiel Release (CMR) in 4th quarter FY 2021. Combat Engineer Company (CEC) FDU increases the Army Reserve requirement by 68 systems. FY 2018 NGREA was used to purchase eight systems to bring O/H quantity to 90 percent (including legacy systems). Projected FY 2025 fleet contains 85 percent legacy and 15 percent modernized. The remaining unfunded requirement represents pure fleet full modernization. Current base budgeting does not address shortfalls until FY 2026 and FY 2027.
- The Heavy Dump Truck (20 Ton) investment strategy is limited to modernizing approximately 14 percent (49 of 357) of the total Army Reserve legacy fleet to an armor-capable variant by FY 2023. FY 2019 NGREA funding was obligated to modernize an additional 25 percent (90 of 357) to an armor capable variant by FY 2022.
- Semitrailer Low Bed (40 Ton) M870A0 and A1 variants are beyond economic useful life. The average age of the fleet is 34 years and 89 percent (617 of 693) of the Army Reserve Fleet are A0 and A1 models requiring upgrade to the M870A4 variant.
- The Light Engineer Utility Trailer (LEUT) provides Engineer Units transport capability for designated prime movers. Current base budget profile funds the program to 75 percent (124 of 166) with zero funding in out years.

d. Field Logistics Portfolio

This portfolio comprises maintenance, medical, bulk supply, and liquid logistics capabilities; the majority of which are CDU items. Nearly 65 percent of the Army's sustainment capabilities reside in the Army Reserve. Unique capabilities include 92 percent of the Total Army's bulk petroleum support, 88 percent of general supply, 49 percent water storage/distribution, and 59 percent of medical capabilities.

Investments in New Procurement and Modernization: FY 2020 and FY 2021 Army base budget procurement funding (\$79.1 million) accounted for 66 percent of total Field Logistics portfolio investments (\$119.1 million), with NGREA funding (\$40 million) critical modernization gaps. Decreased funding in FY 2022–FY 2025 (\$225.9 million) reflects reduced investment focus on modernizing medical systems, water logistics, storage, distribution and analysis systems (BISON, HIPPO and 3k TWPS), and maintenance tool/diagnostic sets. The Water Logistics, Storage, Distribution, and Analysis program is underfunded to support key logistic water gaps under the Army Reserve, as the Army Reserve provides 80 percent or more of EAB support (see Table 2-24.)

Table 2-24. Logistics Procurement Funding

Procurement Year	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Base Budget (P-1R)	\$35.4	\$43.7	\$64.4	\$52.7*	\$47.3*	\$61.5*
NGREA Investment	\$0	\$40*				

* Projected

Field Logistics portfolio funding has slightly increased. However, challenges continue to impact readiness and interoperability due to funding decreases in areas of field service, maintenance, and medical. The Army Reserve still has significant amounts of critical shortages and modernization gaps within water and petroleum delivery/storage capabilities, field service, maintenance, and medical that will persist until planned FY 2023 and beyond funds are executed. The lack of a more near-term investment to modernize water purification, storage, and distribution platforms at the EAB level degrades early entry and theater-opening storage capacity and bulk distribution required to support joint forces in a non-permissive environment. The consequence is a move toward “pull” distribution, which slows advancing tactical movement and adversely affects combat lethality. In addition, the lack of investment in field service, maintenance and medical equipment continues to create significant shortfalls for the Army Reserve to support homeland DSCA missions and overseas MDO. Top equipment modernization shortages are listed in Table 2-25.

Table 2-25. Field Logistics Critical Equipment Shortages

Capability	Required	On-Hand	Shortage	FY 2025 On-Hand Projected	Unfunded Requirement
Water Tank – 2000 Gal (HIPPO)*	484	51	433	285	\$28M
3000 GPH Reverse Osmosis Water Purification Unit (ROWPU)*	78	42	36	42	\$25M
3000 GPH Tactical Water Purification System (TWPS)	78	0	78	0	\$70M
Water Bison	1528	0	1528	43	\$62M
Rough Terrain Forklift – 5K*	957	506	451	701	\$27M
Bulk Fuel Distribution System	1200	0	1200	665	\$55M
Mobile Tactical Retail Refueling System (MTRRS)	1183	0	1183	206	\$58M

* Critical Dual Use Equipment

Field Logistics Focal Points:

- Investments in the 2,000 gallon Load Handling System (LHS)-Compatible Water Tank Rack System (HIPPO) are delayed due to contract implementation problems and resources. A new contract was awarded on August 3, 2021 and fielding is expected to resume in FY 2023.
- The Army Reserve owns 50 percent of the Water Support Company Structure in the Army. The current 3,000 GPH Reverse Osmosis Water Purification Unit (ROWPU) is fielded at 57 percent with repair parts obsolescence resulting in operational ready rates below 60 percent. There is currently no new contract in place for the new 3K Tactical Water

Purification System (TWPS). TWPS is funded for research, development, test, and evaluation beginning in FY 2023 and procurement is expected to begin in FY 2025.

- The Army will begin modernizing the legacy 400 gallon bulk Water Buffalo (M149) trailer that is beyond economic useful life with a new 500 gallon Water Bison starting in FY 2024. The Army Reserve has 70 percent of the legacy Water Buffalo on-hand, with an operational readiness rate of 87 percent. The U.S. Army Tank-Automotive and Armament Command (TACOM) is inspecting the Water Buffalo fleet for corrosion. Army Reserve is only projected to receive 2 percent of the Water Bison requirement by FY 2025.
- The Army will begin modernizing the legacy 7,500 gallon bulk fuel trailer that is beyond economic useful life with a new 8,500 gallon trailer (bulk fuel distribution system) that began research, development, test, and evaluation in FY 2021. The Army Reserve owns 100 percent of the requirement for this critical theater opening capability. This new trailer will also modernize the 5,000 gallon line haul bulk fuel trailers (M967 5K Tanker).

Medical Focal Points:

- Three new Forward Resuscitative and Surgical Teams (FRSTs) have been created and fielded required equipment as the Army Reserve continues to convert remaining Forward Surgical Teams (FSTs) to FRST configurations.
- Both Ground and Air Ambulance require one MES per system to be fully mission capable. Currently, the main objective is to fill required equipment to ensure both ground and air ambulances are fully mission capable.
- Continuing medical device shortages in MES kits caused by obsolete equipment prevent the U.S. Army Medical Materiel Development Activity (USAMMDA) from fielding the kits.

e. Force Protection and Soldier Portfolios

The Force Protection portfolio consists of CBRNE Defense, Civil Affairs and Military Information Support Operations, and Military Police. The Soldier portfolio consists of individual and crew items required for combat.

Investments in New Procurement and Modernization:

FY 2020 and FY 2021, Army base budget procurement funding (\$20.7 million) accounts for 100 percent of the total Force Protection and Soldier portfolio investments, as NGREA is not currently slated to fund any critical modernization gaps. Increased funding in FY 2022–FY 2025 (\$58.2 million) reflects investments focused on modernizing individual Soldier weapons and Nuclear, Biological, and Chemical (NBC) protection equipment as depicted in Table 2-26.

Table 2-26. Force Protection and Soldier Procurement Funding

Funding Source	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Force Protection Base Budget (P-1R)	\$0.7	\$1.1	\$3.4	\$3.5*	\$3.3*	\$3.9*
Soldier Base Budget (P1-R)	\$17.9	\$1.0	\$22.9	\$3.8*	\$10.7*	\$6.7*
NGREA Investment	\$0	\$3.4*				

* Projected

Limited funding for force protection modernization programs increases the risk to biological detection and protection capabilities required to provide responsive support for HD and DSCA missions and limits abilities to bolster force protection posture. The Army Reserve’s top critical shortages within the Force Protection and Soldier portfolios are listed in Table 2-27.

Table 2-27. Force Protection and Soldier Top Equipment Shortages

Capability	Required	On-Hand	Shortage	FY 2024 On-Hand Projected	Unfunded Requirement
Rifle 5.56mm: M4A1	138,715	109,106	29,647	138,715	\$0M
Pistol M17: Piston 9mm	30,506	17,933	12,573	23,933	\$4M

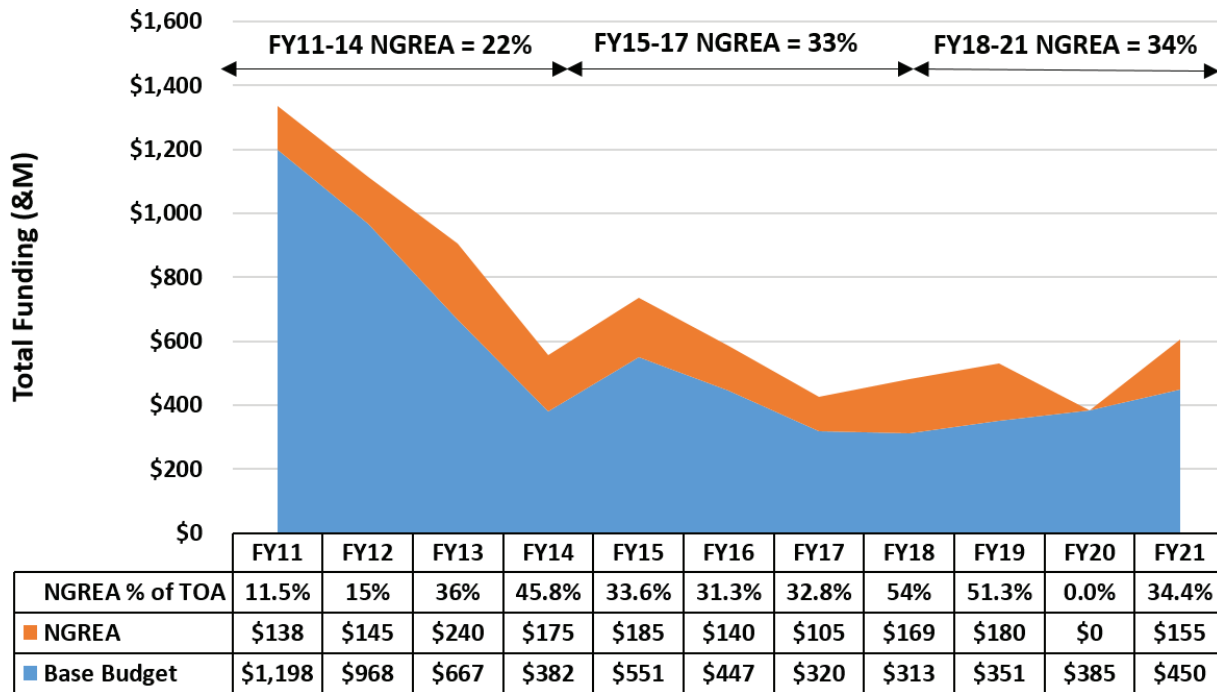
Force Protection and Soldier Focal Points:

- 79 percent of current on-hand carbines are M4A1. However, the current Army plan is funded and projected to be pure fleet by 4th quarter FY 2022.
- 59 percent of current on-hand pistols are obsolete M9 models identified for divestment. However, the current Army plan is funded and projected to be pure fleet with M17 models by 3rd quarter FY 2022.

C. National Guard and Reserve Equipment Appropriation (NGREA)

Figure 2-1 provides a comparison between base and above base funding, depicting the positive impact of NGREA. The FY 2019 total NGREA of \$180 million provided investments of \$118 million in Tactical Wheeled Vehicles; \$7.52 million in Field Logistics; and \$55 million in Mission Command Systems, with the remaining dispersed among training devices and CDU items. FY 2019 NGREA accounts for 53 percent of the total equipment budget allocated to the Army Reserve. FY 2021 NGREA dispersion is being determined. However, the Army Reserve anticipates receiving \$205 million in NGREA.

Figure 2-1. Army Reserve Base vs NGREA Funding



D. Summary

To prepare for future challenges, the Army Reserve will continue to optimize processes and prioritize delivering modern enabler capabilities to support MDO; invest in responsive capabilities to enhance equipping posture for LSCO, HD, and DSCA; and advocate for the development of future enabler capabilities to accelerate interoperability and holistically identify and forecast resource gaps. The Army Reserve supports the Army Campaign Plan (ACP) through a concept of operations that will lead us toward the Chief of Army Reserve’s vision of the Army Reserve by 2028. The Army Reserve of 2028 will provide trained and equipped units and personnel at the scale and speed required to support the Total Force in the joint, multi-domain operational environment. Moving toward our vision, the Army Reserve will continue to build the most capable, combat-ready reserve in the history of the nation to provide mission-critical forces and capabilities the Army needs to fight, survive, and win on the battlefield from day one. The U.S. faces a new era of great power competition and new concepts of warfare that challenge us across every domain—land, sea, air, space, and cyber space—and thus new threats to U.S. freedom and security. Purposefully designed to enable forces, the Army Reserve remains committed to achieving readiness objectives that allow seamless integration with the Total Force.

Consolidated Major Item Inventory and Requirements

NOTE: This table provides a comprehensive list of selected major equipment items. It provides the projected inventory quantity on-hand (QTY O/H) at the beginning/end of the selected fiscal year (FY). It also provides the quantity required (QTY REQ) to meet the full wartime requirements of the Reserve Component. In accordance with Title 10, the QTY REQ number provides the recommendation as to the quantity and type of equipment that should be in the inventory of each Reserve Component. Unit cost estimates are provided by the Military Departments.

Nomenclature	Equip No.	Unit Cost	Begin FY 2023 QTY O/H	Begin FY 2024 QTY O/H	Begin FY 2025 QTY O/H	End FY 2025 QTY O/H	End FY 2025 QTY REQ
Air Defense							
Center: Communications Operations	C18033	\$3,648,500	5	5	5	5	5
Radio Set: AN/USQ-140(V)2(C)	R42399	\$300,000	3	3	3	3	5
Aircraft							
Airplane Cargo Transport: C-12F	A30062	\$3,068,422	30	30	30	30	32
CH-47F Improved Cargo Helicopter	C15172	\$30,000,000	42	42	42	42	24
Helicopter Utility: UH-60L	H32361	\$7,908,000	114	114	114	114	106
MEDEVAC Helicopter: HH-60M	M33458	\$18,300,000	29	29	29	29	30
Small Unmanned Aircraft System: Raven B	S83835	\$180,000	71	71	71	71	67
Utility Cargo Aircraft: UC-35A	U05004	\$35,300,817	9	9	9	9	16
Aviation							
Battle Damage Assessment and Repair Sys: BDAR	B85617	\$110,000	14	14	14	14	16
Command System: Tactical AN/TSQ-221	C61597	\$3,000,000	2	2	2	2	2
Communication System: Tactical Terminal Control System (TTCS)	C59125	\$998,000	4	4	4	4	4
Power Unit Auxiliary: Aviation Multi-Output Gted (AGPU)	P44627	\$1,000,000	22	22	22	22	22
Radar Set: AN/TPN-31	R17126	\$3,701,502	2	2	2	2	2
UH-60 External Stores Subsystem (ESSS)	E21985	\$676,111	14	14	14	14	0
Battle Command Command and Control (C2)							
Command System Tactical	C40996	\$870,000	7	7	7	7	14
Battlespace Awareness							
Central: Communications AN/TSQ-226(V)2	C43331	\$800,000	1	1	1	1	0
Detecting System Countermeasures: AN/MLQ-40(V)4	D04182	\$1,100,000	10	10	10	10	0
Digital Topographic System: AN/TYQ-67(V)	D10281	\$800,000	6	6	6	6	24
Battle Command Transport							
Antenna: BB-1404/TRC	A81826	\$1,066,695	18	18	18	6	6
Central Office: Telephone Automatic	C20617	\$775,000	6	6	6	2	2
Joint Node Network (JNN) Central Office Telephone Auto	J05001	\$925,000	34	34	34	34	17
Radio Terminal Set: AN/TRC-170 (V)3	R93035	\$2,233,375	21	21	21	21	34
Radio Terminal: Line of Sight Multi-channel AN/TRC-190E(V)1	R90451	\$2,472,271	125	125	125	125	138
Radio Terminal: Line of Sight Multi-channel AN/TRC-190F(V)3	R90587	\$2,472,271	42	42	42	22	22
Satellite Communication System: AN/TSC-156	S23268	\$4,000,000	27	27	27	27	36
Teleconference System: AN/TYQ-122	T43146	\$5,282	42	43	43	41	41
Terminal: Satellite Communication AN/TSC-155	T81733	\$825,000	8	8	8	8	18

Consolidated Major Item Inventory and Requirements

Nomenclature	Equip No.	Unit Cost	Begin FY 2023 QTY O/H	Begin FY 2024 QTY O/H	Begin FY 2025 QTY O/H	End FY 2025 QTY O/H	End FY 2025 QTY REQ
Combat Mobility							
Boat Bridge Erection Inboard Engine: Shallow Draft	B25476	\$224,258	102	102	102	0	0
Boat: Bridge Erection	B05006	\$826,128	79	126	126	126	126
Bridge Armored Veh Launched Scissors: 63-ft (AVLB) MLC 70	B31098	\$7,645,450	41	36	36	36	36
Bridge Heavy Dry: Supt (HDSB) 40M MLC96	B26007	\$1,869,741	36	36	36	36	36
High Mobility Engineer Excavator (HMEE) Type I	H53576	\$458,000	178	178	178	178	277
Interior Bay Bridge Floating	K97376	\$435,703	270	270	270	270	270
Launch M60 Series Tank Chass Trnsptg: 40 & 60 ft Bridge Ty CL60	L43664	\$527,126	36	36	36	30	30
Launcher Heavy Dry Support Bridge (HDSB)	L67660	\$2,480,000	36	36	36	36	36
Loader Scoop Type: 2.5 Cubic Yard	L76897	\$99,515	31	31	31	31	31
Loader Scoop Type: DSL 2-1/2 cu-yd Hinge Frame w/Multipurpose Bucket	L76556	\$141,500	17	17	17	17	25
Loader Scoop Type: Heavy Type II Loader	L15041	\$250,000	68	68	68	68	78
Loader Skid Steer: Type III	L77147	\$53,548	174	174	174	174	174
Loader Skid Steer: Type III	L77215	\$349	353	338	338	329	329
Medium Flail	M05031	\$664,971	24	24	24	24	24
Mine Protected Clearance Vehicle	M05004	\$1,451,707	72	72	72	72	72
Ramp Bay Bridge Floating	R10527	\$525,068	115	115	115	115	120
Tractor Wheeled: Industrial	T34505	\$328,201	168	167	167	167	167
Transporter Common Bridge M1977A4	T05067	\$550,000	336	336	336	336	336
Transporter Common Bridge	T91308	\$550,000	168	168	168	168	168
Vehicle Mounted Mine Detection (VMMD) System	V05001	\$804,387	144	144	144	144	156
Field Logistics							
Assault Kitchen	A94943	\$65,000	94	99	99	99	115
Force Provider Module: Houses 550 Soldiers Transportable	F28973	\$4,650,000	1	1	1	1	0
Forward: Repair System (FRS)	F64544	\$285,591	206	198	198	198	205
Fuel System Supply Point: FSSP Type 3 120K	F04898	\$33,000	85	82	82	82	82
Kitchen Field Trailer-mtd: mtd on M103A3 Trailer	L28351	\$351,688	555	529	529	529	621
Laundry Advanced System (LADS): Trailer-mtd	L70538	\$1,022,444	110	102	102	102	108
Modular Fuel System-Tank Rack Module with Retail Capability	T20131	\$78,038	42	34	34	34	38
Petroleum Quality Analysis System: Enhanced	P25743	\$1,770,000	23	21	21	21	21
Rough Terrain Container Handler: Kalmar RT240	R16611	\$868,103	349	349	349	349	381
Shower: Portable 12 Head	S62898	\$1,200,000	132	121	121	121	132
Tactical Water Purification System (TWPS) 1500 gph	T14017	\$455,871	41	41	41	40	40
Trailer Tank Water (Camel): 800 gal 5-ton W/E	T05047	\$106,532	2	2	2	1	1
Trailer Tank Water: 400-gal 1.5-ton 2-wheel	W98825	\$85,825	1054	1054	1054	1054	1886
Water Purification: Reverse Osmosis 3000-gph Trailer-mtd	W47225	\$455,871	42	42	42	42	78
Force Protection							
Alarm Biological Agent Automatic: (BIDS) M31A2	A48680	\$1,408,429	322	266	266	210	210
CBRN Dismounted Reconnaissance: (SKO)	C05051	\$1,410,000	32	32	32	32	32

Consolidated Major Item Inventory and Requirements

Nomenclature	Equip No.	Unit Cost	Begin FY 2023 QTY O/H	Begin FY 2024 QTY O/H	Begin FY 2025 QTY O/H	End FY 2025 QTY O/H	End FY 2025 QTY REQ
JBAIDS Augumentation Set:	J05007	\$500,000	3	3	3	3	40
Mask Chemical-Biological: M45	M12736	\$466	1,401	1,283	1,283	1,283	1,283
Mask Chem-Bio Joint Service General Purpose: Field M50	M12986	\$400	160,007	152,857	152,857	152,857	159,788
Mask Chem-Bio Joint Service General Purpose: Combat Vehicle Crewman M51	M13236	\$400	1,667	2,948	2,948	2,213	2,213
Nuclear Biological Chemical Recon Vehicle (NBCRV)	N96543	\$4,465,407	56	56	56	56	64
General Engineering							
All Terrain Crane Type II: (Heavy)	A05074	\$1,628,875	9	9	9	9	9
Crane Wheel-mtd: Hydraulic Light 7.5-ton w/Cab	C36151	\$165,922	26	25	25	25	25
Crane: Wheel Mounted Hydraulic 25-ton All Terrain AT422T	C36586	\$382,000	87	78	78	78	81
Engineer Mission Module-Water Distributor (EMM-WD): Type II	E05007	\$668,953	141	141	141	141	172
Excavator: Hydraulic Type I Multipurpose Crawler Mount	E27792	\$348,371	110	110	110	110	138
Hydraulic Electric Pneumatic Petroleum Operated Equip (HEPPOE)	H05004	\$230,000	237	219	219	219	229
M1158 Truck: HEMTT Based Water Tender	M31997	\$668,953	42	42	42	42	42
Motorized Grader	M05001	\$253,000	159	159	159	159	169
Paving Machine: Bituminous Material	P05023	\$152,451	6	6	6	6	6
Scraper Earthmoving: 14-18 Cu Yd	S05029	\$796,100	160	160	160	160	198
Scraper Elevating: Self Propelled 9-11 Cu Yd Sectionalized	S30039	\$441,923	29	29	29	29	36
Tactical Water Distribution Equip Set: (TWDS-RDF)	T09094	\$350,000	5	5	5	5	6
Tractor Full Tracked Low Speed: T9 Type II w/Ripper	T05016	\$325,000	128	111	111	111	132
Tractor FT LS: T-5 Type II W/Ripper	T05026	\$311,000	12	12	12	12	12
Tractor FT HS: Armored Combat Earthmover (ACE)	W76473	\$887,050	0	4	4	4	48
Tractor FT HS: Deployable LT Engineer (Deuce)	T76541	\$398,000	9	9	9	9	12
Tractor Full Tracked Low Speed: T5	T05029	\$311,000	11	11	11	11	12
Tractor Full Tracked Low Speed: T9	T05015	\$316,096	241	241	241	241	317
Truck: Tactical Firefighting 8X8 Hvy Exp Mov	T82180	\$878,461	70	70	70	70	70
Maneuver							
Carrier Armored Command Post: Full Tracked	C11158	\$374,000	25	25	25	25	25
Carrier Command Post: Light Tracked	D11538	\$345,787	6	6	6	6	6
Carrier Personnel Full Tracked: Armored (RISE)	C18234	\$511,343	132	132	132	110	110
Recovery Vehicle Full Tracked: Medium	R50681	\$1,210,755	39	46	46	31	31
Medical							
Computerized Tomography Scanner Field	C79284	\$1,284,215	0	0	0	0	24
Dental Materiel Set Oral: Maxillofacial Surgery	D65925	\$1,253,538	3	3	3	3	12
Medical Materiel Set Central Materiel Service	M08417	\$1,953,635	10	101	10	10	36
Medical Materiel Set Maxo -Facial head Neck Surg Augmentation	M09098	\$1,247,818	5	5	5	5	6
Medical Materiel Set Medical Supply: 164 Bed CSH Co	M14585	\$986,686	0	0	0	0	20
Medical Materiel Set Neurosurgery Augmentation: DEPMEDS	M48305	\$211,674	5	5	5	5	6
Medical Materiel Set Pharmacy: 84 Bed CSH Co	M73254	\$287,517	3	3	3	3	16

Consolidated Major Item Inventory and Requirements

Nomenclature	Equip No.	Unit Cost	Begin FY 2023 QTY O/H	Begin FY 2024 QTY O/H	Begin FY 2025 QTY O/H	End FY 2025 QTY O/H	End FY 2025 QTY REQ
Medical Materiel Set Post-Op/ICU Ward	M09576	\$1,445,922	22	22	22	22	64
Medical Materiel Set Radiology Computerized Tomography	M09826	\$908,000	4	4	4	4	24
Medical Materiel Set Triage/Emergency/Pre-Op	M73050	\$975,265	29	23	23	23	24
MES Forward Surgical Team:	M45375	\$1,951,907	25	22	22	22	25
Soldier Systems							
Armament Subsystem: Remotely Operated	A90594	\$236,751	624	415	415	415	680
Mini Eyesafe Laser IR Observation Set (MELIOS): AN/PVS-7	M74849	\$22,015	61	93	93	67	67
Soldier Weapons							
Carbine 5.56mm: M4A1	C06935	\$1,772	111,759	111,759	111,759	111,759	122,111
Command Launch Unit: (Javelin) 13305405-119	C60750	\$243,732	90	66	66	66	115
Launcher Grenade: M320A1	L69080	\$4,876	7,450	6,949	6,949	6,949	7,239
Machine Gun 5.56mm: M249	M09009	\$4,298	11,950	11,249	11,249	11,249	11,891
Machine Gun: 7.62mm M240L	M92454	\$14,404	192	132	132	132	222
Machine Gun 7.62mm: M240H	M92591	\$11,597	276	224	224	224	224
Machine Gun Caliber .50: HB Flexible (Ground & Vehicle) W/E	L91975	\$11,005	201	719	719	719	719
Machine Gun: Caliber .50 Heavy Fixed Turret Type	L91701	\$15,259	105	105	105	105	120
Machine Gun Grenade 40mm: MK19 Mod III	M92362	\$17,085	1,783	1,569	1,569	1,569	1,609
Machine Gun: 7.62mm M240B	M92841	\$14,404	7,395	7,127	7,127	7,127	7,301
Machine Gun: Caliber .50	M39331	\$12,786	4,199	4,199	4,199	4,199	5,647
Machine Gun: Light 5.56mm M249	M39263	\$4,298	2,557	2,557	2,557	2,557	3,147
Pistol 9mm: M11	P47365	\$426	545	0	0	0	0
Pistol 9mm Automatic: M9	P98152	\$426	18,642	18,685	18,685	18,685	20,892
Strike							
Command and Control System: AN/TSQ-284 (HCCC)	C05019	\$2,000,000	0	0	0	0	5
Trailers							
Light Tactical Trailer: 3/4 ton	T95992	\$27,859	5,383	5,514	5,457	5,077	5,077
Palletized Load System: Trailer-CTE	P05025	\$109,794	316	311	311	311	322
Semitrailer Flatbed: Breakbulk/Container Transporter 34-ton	S70159	\$105,069	1,292	1,292	1,292	1,292	1,720
Semitrailer Low Bed: 25-ton 4-wheel W/E	S70517	\$179,778	96	94	94	94	97
Semitrailer Low Bed: 40-ton 6-wheel W/E	S70594	\$104,444	701	701	701	701	934
Semitrailer Low Bed: 70-ton HET	S70859	\$610,664	486	480	480	480	484
Semitrailer Tank: 5000-gal Bulk Haul Self-Load/Unload	S10059	\$85,000	1,034	1,034	1,034	1,034	1,320
Semitrailer Tank: 5K gal Fuel Dispensing Automotive W/E	S73372	\$97,000	437	433	433	433	433
Semitrailer Tank: Petroleum 7500-gal Bulk Haul	S73119	\$198,020	383	383	383	383	420
Semitrailer Van: Supply 12-ton 4-wheel W/E	S75175	\$84,466	57	57	57	57	58
Trailer Bolster: General Purpose 4-ton 4-wheel W/E	W94536	\$9,618	184	192	192	172	172
Trailer Cargo: 1-1/2 ton 2-wheel W/E	W95811	\$50,433	9	9	9	4	4
Trailer Cargo: High Mobility 1-1/4 ton	T95924	\$9,615	2,030	2,214	2,214	2,214	2,518
Trailer Cargo: MTV W/Drop sides M1095	T95555	\$50,433	2,364	2,264	2,264	2,264	2,342
Trailer Flat Bed: M1082 Trailer Cargo LMTV W/Drop sides	T96564	\$38,200	1,583	1,557	1,557	1,538	1,538

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Table 1

Consolidated Major Item Inventory and Requirements

Nomenclature	Equip No.	Unit Cost	Begin FY 2023 QTY O/H	Begin FY 2024 QTY O/H	Begin FY 2025 QTY O/H	End FY 2025 QTY O/H	End FY 2025 QTY REQ
Trailer: Flat Bed	T64618	\$55,875	12	12	12	12	56
Trailer: Palletized Loading 8X20	T93761	\$88,639	2,996	2,902	2,902	2,745	2,745
Trucks							
Armored Security Vehicle (ASV): Wheeled	A93374	\$809,500	5	39	39	39	105
Tractor Line Haul: M915A5	T88858	\$162,968	972	960	960	960	1,020
Truck Ambulance: 4-Litter Armored HMMWV	T38844	\$96,466	549	498	498	498	510
Truck Cargo: 5-ton 6X6 MTV W/E LAPES/AD	T41036	\$210,180	5	5	5	5	5
Truck Cargo: 5-ton WO/Winch	T41515	\$301,989	2,881	2,706	2,706	2,706	3,386
Truck Cargo: LWB WO/Winch	T93271	\$309,428	321	207	207	207	348
Truck Cargo: M985A4	T59380	\$575,000	96	108	108	78	78
Truck Cargo: Tactical 8X8 HEMTT w/LHS	T96496	\$367,575	0	100	100	100	0
Truck Cargo: WO/Winch	T59448	\$157,982	1,993	1,993	1,993	1,993	2,155
Truck Dump: 10-ton W/Winch	T65274	\$383,892	104	83	83	83	87
Truck Dump: 10-ton WO/Winch	T65342	\$322,656	500	498	498	498	521
Truck Dump: 20-ton DED 12 cu-yd Cap (CCE)	X44403	\$211,764	232	232	232	232	357
Truck Materials Handling-Container Hoisting: M1148A1P2	T54516	\$899,231	49	14	14	14	14
Truck Palletized (LHS): M1120A4	T55054	\$550,000	599	599	599	599	634
Truck Tank: Fuel Servicing 2500-gal 8X8 HEMTT	T87243	\$499,182	2	67	67	67	1
Truck Tank: WO/Winch	T58318	\$597,000	365	309	309	309	384
Truck Tractor: M107A1	T05012	\$550,000	360	288	288	288	484
Truck Tractor: LET	T60946	\$616,000	906	843	843	843	931
Truck Tractor: Heavy Equipment Transporter (HET)	T59048	\$667,821	0	87	87	87	192
Truck Tractor: LET 6X6 66000 GVW W/W C/S	T91656	\$250,614	70	12	12	12	12
Truck Tractor: Line Haul C/S 50000 M915	T61103	\$162,698	1,474	1,440	1,440	1,440	1,440
Truck Tractor: MTV W/E	T61239	\$262,509	320	364	364	319	319
Truck Tractor: WO/Winch	T88983	\$294,508	816	816	816	816	876
Truck Utility ECV TOW/ITAS Carrier - Armor Ready: M1167	T34840	\$207,760	8	8	8	8	8
Truck Utility Expanded Capacity Enhanced 4X4: M1165A1	T56383	\$153,760	1,553	1,553	1,553	1,553	1,764
Truck Utility Expanded Capacity Enhanced: M1152A1	T37588	\$153,760	1,542	1,582	1,582	1,524	1,524
Truck Utility: ECV Armament Carrier - Armor Ready M1151A1	T34704	\$129,376	2,599	3,816	3,816	3,330	3,330
Truck Utility: Heavy Variant HMMWV 10000 GVW W/E	T07679	\$94,171	8,798	8,243	8,243	8,075	8,075
Truck Van: M1079A1P2 WO/Winch	T62359	\$280,000	191	191	191	191	191
Truck Wrecker	T94671	\$480,000	174	164	164	152	152
Truck Wrecker: M984A4	T63161	\$963,000	469	442	442	442	444
Truck Wrecker: MTV W/E W/W	T94709	\$331,680	21	51	51	45	45
Truck Wrecker: Tactical 8X8 HEMTT W/Winch	T63093	\$503,382	14	3	3	3	6
Truck: Expandable Van WO/Winch	T67136	\$455,000	271	271	271	271	338
Truck: Palletized Loading System (PLS)	T81874	\$628,000	114	114	114	114	300

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Average Age of Equipment

Table 2

NOTE: This table provides the most approximate average age of selected major equipment items. The average age provides a projected average age of the fleet at the start of FY 2021. Logistics Information Warehouse Data Base (LIWDB) convergence with Program Manager (PM) Army Enterprise System Integration Program (AESIP) resulted in the inability to retrieve Average Age of Equipment data. This affects the validity of data in the USAR Table 2 Average Age of Equipment. While another method had been proposed for determining the current average age, none had been ratified.

Nomenclature	Equip No.	Average Age	Remarks
Aircraft			
Airplane, Utility, UC-35B	A05015	20	Not on Table 1
CH-47F Improved Cargo Helicopter	C15172	10	
Helicopter Utility, UH-60L	H32361	27	
Helicopter, Medevac, HH-60M	M33458	10	
Utility Cargo Aircraft UC-35A	U05004	24	
Combat Mobility			
Boat Bridge Erection Inboard Engine: Shallow Draft	B25476	23	
Armored Vehicle Launched Bridge (AVLB) Scissors: 63-ft MLC 70	B31098	25	
Interior Bay Bridge Floating	K97376	12	
Launch M60 Series Tank Chassis Transport: 40/60ft Bridge	L43664	42	
Loader Scoop Type: DSL 2-1/2 cu yd w/Multipurpose Bucket	L76556	35	
Ramp Bay Bridge Floating	R10527	11	
Tractor Wheeled: DSL w/Excavator & Front Loader	T34437	31	
Transporter Common Bridge	T91308	19	
Field Logistics			
Kitchen Field Trailer-mounted Mtd on M103A3 Trailer	L28351	28	
Laundry Advanced System (LADS) Trailer-mounted	L70538	16	
Water Purification: Reverse Osmosis 3000-gph Trailer mtd	W47225	26	
Trailer Tank Water: 400-gal 1-1/2 ton	W98825	43	
General Engineering			
Crane: Whl-mounted Hydraulic 25-ton All Terrain AT422T	C36586	20	
Tractor FT HS: Deployable Lt Engineer (DEUCE)	T76541	21	
Excavator: hydraulic Type 1 Multipurpose Crawler	E27792	25	
Maneuver Combat Vehicles			
Carrier Personnel Full Tracked: Armored (RISE)	C18234	36	
Carrier Armored Command Post: Full Tracked	C11158	35	
Trailers			
Semitrailer Tank: 5K-gal Bulk Haul Self-Load/Unload	S10059	28	
Semitrailer Flatbed: Breakbulk/Container Transporter 34-ton	S70159	32	
Semitrailer Low Bed: 25-ton 4-wheel	S70517	51	
Semitrailer Low-bed: 40-ton 6-wheel	S70594	29	
Semitrailer Low-bed: 70-ton Heavy Equip Transporter (HET)	S70859	23	
Semitrailer Tank: Petroleum 7500-gal Bulk Haul	S73119	29	
Trailer Cargo: High Mobility 1-1/4-ton	T95924	12	

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Average Age of Equipment

Table 2

Nomenclature	Equip No.	Average Age	Remarks
Trucks			
Truck Ambulance: 4-Litter Armored HMMWV	T38844	12	
Truck Dump: 20 Ton DSL 12 cu yd Capacity (CCE)	X44403	27	
Truck Tractor: Heavy Equipment Transporter (HET)	T59048	25	
Truck Tractor: Line Haul C/S 50000 M915	T61103	27	
Truck utility: Cargo/Troop Carrier HMMWV	T61494	28	Not on Table 1
Truck Utility: Expanded Capacity Up-armored HMMW	T92446	17	Not on Table 1
Truck Tank: Fuel Servicing 2500-gal 8x8 Heavy Expanded Mob	T87243	25	
Truck Tractor: MTV W/E	T61239	19	
Truck Wrecker: Tactical 8x8 Heavy Expanded Mobility w/ Winch	T63093	22	

Service Procurement Program - Reserve (P-1R)

NOTE: This table provides a comparison of the dollar value of the FY 2020 request, the FY 2020 enacted amount; and, the actual amount spent on procurement for specific categories of RC equipment. All values are costs in millions. Deliveries of procured equipment normally take one to two years before they arrive in the inventory; e.g., items procured in FY 2022 are expected to arrive in RC inventories in FY 2023 or FY 2024.

Nomenclature	Request	Enacted	Actual
Generators	7	5	7
Maintenance Equipment	6	5	6
Material Handling Equipment	7	6	6
Elect Equip - Tact Int Rel Act (TIARA)	5	5	5
Modification of Tracked Combat Vehicles	0	5	5
Elect Equip - Tactical Surv. (Tac Surv)	43	1	4
Comm - Combat Communications	2	2	4
Other Support	16	2	3
Petroleum Equipment	9	14	3
Test Measure and Dig Equipment (TMD)	3	4	3
Combat Service Support Equipment	4	2	2
Elect Equip - Tactical C2 Systems	5	4	2
Comm - Joint Communications	0	0	1
Comm - Satellite Communications	3	0	1
Mod of Weapons and Other Combat Veh	1	1	1
Comm - C3 System	8	0	1
Elect Equip - Audio Visual Sys (A/V)	2	1	1
Other Support Equipment	1	1	0
Chemical Defensive Equipment	2	2	0
Grand Total	423	363	490

National Guard and Reserve Equipment Appropriation (NGREA) Procurements

NOTE: This table identifies the dollar value of planned equipment procurements with the National Guard and Reserve Appropriation (NGREA). These funds are available for a three-year period from the year of appropriation. Deliveries of procured equipment normally take one to two years from the date of procurement before they arrive in the inventory.

Army Reserve Defense Appropriations Act NGREA	FY 2020 ¹	FY 2021	FY 2022 ²
Command and Control Systems		6,175,000	
Radio Platforms		510,000	
Tactical Networking System		2,000,000	
Satcom System		1,500,000	
Tactical Digital Media		160,000	
Crane		4,250,000	
Heavy Dump Truck		22,500,000	
High Mobility Engineer Excavator (HMEE)		5,400,000	
Vertical Skills Construction Kit		1,400,000	
Hydraulic Excavator		2,000,000	
Assault Craft		95,000	
Assault Craft Motors		135,000	
Material Handling Equipment		3,750,000	
Mobile Tactical Retail Refueling System		1,360,000	
Load Handling System: 2000G Water (HIPPO)		3,500,000	
Tracked Vehicle Diagnostic Shop Set		7,500,000	
Liquid Logistics Production and Storage		1,000,000	
Logistics Support Area Package Bulk Fuel Distribution		350,000	
Bulk Fuel Distribution System		12,150,000	
Medical Support Equipment		3,750,000	
Medical Equipment Sets		2,350,000	
Shop Equipment Welding		3,250,000	
Maintenance Support Device		990,000	
Light Tactical Vehicle Modernization (JLTV&HMMWV)		8,250,000	
Palletized Loading System		5,700,000	
HEMTT Modernization		10,000,000	
Load Handling System		3,750,000	
Medium Tactical Truck		8,250,000	
Heavy Trailer		2,000,000	

National Guard and Reserve Equipment Appropriation (NGREA) Procurements

Army Reserve Defense Appropriations Act NGREA	FY 2020¹	FY 2021	FY 2022²
Medium Utility Trailer		1,000,000	
Light Utility Trailer		4,125,000	
Fuel Efficient/Clean Power Generators		1,600,000	
Power Distribution Systems		3,500,000	
Environmental Control Units		450,000	
Small Unmanned Ground Vehicle		1,200,000	
Individual Tactical/Safety Equipment		1,000,000	
Night Vision Device		450,000	
Shelters		500,000	
Intrusion Detection System		250,000	
Drivers Trainer		7,200,000	
Marksmanship Trainer		1,600,000	
Space Trainer		7,500,000	
Maintenance Trainer		100,000	
Total USAR NGREA	0	155,000,000	
1. NGREA funds for FY 2020 were reallocated by DoD. 2. FY 2022 data was not available at time of publication.			

Projected Equipment Transfer/Withdrawal Quantities

NOTE: This table portrays the planned equipment transfers (Active to Reserve), withdrawals (-), and decommissioning (-). Transferred equipment is commonly called "cascaded equipment," or equipment that is provided to the RC once the AC receives more modern equipment. Although this table highlights a three-year period, many Services will not know exact quantities of transfers or withdrawals until year of execution, due to the uncertainty of the procurement/delivery cycle of new equipment.

Nomenclature	Equip No.	FY 2023 Qty	FY 2024 Qty	FY 2025 Qty
Aircraft				
Airplane Cargo - Tran: C-12F	A30062			
CH-47F Improved Cargo Helicopter	C15172			
Helicopter Utility: UH-60L	H32361			
Small Unmanned Aircraft System (USAS) Raven B (MIP)	S83835	+1	+1	
Aviation				
Power Unit Auxiliary: Aviation Multi-Output GTED (AGPU)	P44627			
Battle Command and Control				
Command System: Tactical	C40996			
Battlespace Awareness				
Central Communication/AN/TSQ226(V)2	C43331			
Detecting System Countermeasures; AN/MLQ-40(V)4	D04182			
Dig Topograph Sys: AN/TYQ-67(V)	D10281			
BC TRANSPORT NETWORKS				
Antenna: AB-1404/TRC	A81826			
Radio Terminal: Line of Sight Multi Channel AN/TRC-190e(V)1	R90451			
COMBAT MOBILITY				
Bridge Armored Vehicle Launched Scissors Ty: 63 Ft (AVLB) MLC 70	B31098	-5	-59	
Loader Scoop Type: 2.5 Cubic Yard	L76897			
Loader Scoop Type: Dsl 2-1/2cu Yd Hinge Frme w/ Multipurpose Bucket	L76556			
Transporter Common Bridge	T91308			
FIELD LOGISTICS				
Rough Terrain Container Handler (Rtch): Kalmar Rt240	R16611			
Shower: Portable 12 Head	S62898	-2		
Water Purification: Reverse OSM-OSIS 3000 Gph Trailer Mounted	W47225			
FORCE PROTECTION				
Nuclear Bio Chemical Recon Vehicle (NBC-RV)	N96543			
MEDICAL FIELD SYSTEMS				
Dental Materiel Set Oral: Maxillofacial Surgery	D65925			
Medical Materiel Set Pharmacy: 84 Bed CSH Company	M73254			
SOLDIER SYSTEMS				
Mini Eyesafe Laser Infrared Observation Set (MELIOS): AN/PVS-6	M74849	-19		
SOLDIER WPNS				

Projected Equipment Transfer/Withdrawal Quantities

Nomenclature	Equip No.	FY 2023 Qty	FY 2024 Qty	FY 2025 Qty
Launcher Grenade: M320A1	L69080	+54	-64	-64
Machine Gun: 7.62MM M240B	M92841	+12	-20	-24
Machine Gun: CALIBER 50	M39331			
STRIKE				
Computer System Digital: AN/GYK-56 (AFATDS)	C05018			
TRAILERS				
Trailer Flat Bed; M1082 TRLE Cargo LMTV w/ Dropsides	T96564	+7	-1	-1
TRUCKS				
Tractor Line Haul: M915A5	T88858	+24		
Truck Cargo; Tactical 8x8 Heavy Expanded mob w/ LHS	T96496	-6		
Truck Palletized (LHS): M1120A4	T55054			
Truck Tractor: Heavy Equipment Transporter (HET)	T59048			
Truck Tractor: Line Haul C/B 50000 GVWR 6x4 M915	T61103			
Truck Tractor; MTV W/E	T61239		+1	+2

FY 2019 Planned vs Actual Procurements and Transfers

NOTE: This table compares planned Service procurements and transfers to the RC in FY 2019 with actual procurements and transfers. FY 2019 is selected as these are the most recent funds to expire. Because the procurement cycle is normally one to two years from funding to delivery, this table identifies only deliveries through the end of 2021. Procurement and NGREA columns reflect cost values in dollars.

Nomenclature	Equip. No.	FY 2019 Transfers (# of items)		FY 2019 Procurements (\$s)		FY 2019 NGREA (\$s)	
		Plan	Actual	Plan	Actual	Plan	Actual
FY 2019 Planned Transfers & Withdrawals							
Aircraft							
Helicopter Utility: UH-60L	H32361	9	n/d				
CH-47F Improved Cargo Helicopter	C15172	12	n/d				
Airplane Cargo – Transport: C-12F	A30062	3	14				
Small Unmanned Aircraft System:	S83835	3	9				
Raven B							
Aviation							
Power Unit Auxiliary: Aviation Multi-Output	P44627	2	n/d				
GTED							
Battle Command C2							
Command System Tactical	C40996	8	n/d				
Battlespace Awareness							
Digital Topographic System:	D10281	3	n/d				
AN/TYQ-67(V)							
Central: Communications AN/TSQ226(V)2	C43331	2	n/d				
Detecting System Countermeasures:ANMLQ-40	D04182	11	n/d				
Battle Command Transport Networks							
Antenna: AB- 1404/TRC	A81826	3	n/d				
Radio Terminal: Line of Sight: Multi Channel An/TRC-190E(V)1	R90451	2	n/d				
Radio Terminal: Line of Sight: Multi Channel An/TRC-190E(V)3	R90587	2	n/d				
Combat Mobility							
Bridge Armored Vehicle Launched Scissors TY: 63 Ft (AVLB) MLC 70	B31098	4	n/d				
Loader Scoop Type: 2.5 cubic yard	L76897		n/d				
Loader Scoop Type: DSL 2-1/2cu yd Hinge Frame W/Multipurpose Bucket	L76556		n/d				
Transporter Common Bridge	T91308	165	n/d				
Field Logistics							
Force Provider Module: Houses 550 Soldiers Transportable	F28973,	5	n/d				
Rough Terrain Container Handler (RTCH):	R16611,	12	n/d				
Kalmar RT240							

FY 2019 Planned vs Actual Procurements and Transfers

Nomenclature	Equip. No.	FY 2019 Transfers (# of items)		FY 2019 Procurements (\$s)		FY 2019 NGREA (\$s)	
		Plan	Actual	Plan	Actual	Plan	Actual
Food Sanitation Center	S33399,	36	24				
Load Handling System (LHS) Compatible, 2000-gal Water Tank Rack (HIPPO)	T32629,	8	1				
Truck Tractor: Yard 46000 GVW 4X2	T60353,	10	n/d				
Truck Lift: Fork Variable Reach Rough Terrain	T73347,	64	n/d				
Water Purification: Reverse Osmosis 3000-gph Trailer-mtd	W47225,	4	1				
Hoseline Outfit Fuel Handling: 4-in Diameter Hose	K54707	14	2				
Trailer Tank: Water 400-gal 1.5-ton 2-wheel W/E	W98825,	1	n/d				
Force Protection							
Mask Chemical-Biological Joint Service General Purpose: Field M50	M12986	129	7,108				
NBC Reconnaissance Vehicle (NBCRV)	N96543	31	n/d				
Radiac Set: AN/PDR-75A	R30925	226	n/d				
General Engineering							
Comp Unit Rty: Air Trailer-mounted DED 250-cfm 100-psi	E72804	2	3				
Mixer Concrete Module: PLS 2600-gal	M81382	2	1				
Scraper Elevating: Self-propelled 8-11 cu yd Non-Sectionalized	S29971	1	n/d				
Tractor FT High-speed: Deployable Lt Engineer (DEUCE)	T76541	3	n/d				
Maneuver Systems							
Drivers Enhancers: AN/VAS-5	D41659	651	163				
Medical Field Systems							
Computer Set: Digital AN/TYQ-106(V)1	C18345	222	n/d				
Soldier Systems							
Night Vision Goggle	N05482	7,445	32				
Soldier Weapons							
Launcher Grenade: M320A1	L69080	1,757	78				
Support Systems							
Platform: Container Roll-in/Roll-out Trailers	B83002	2,801	154				
Semitrailer Tank: 5000-gal Bulk Haul Self-Load/Unload W/E	S10059	3	n/d				

FY 2019 Planned vs Actual Procurements and Transfers

Nomenclature	Equip. No.	FY 2019 Transfers (# of items)		FY 2019 Procurements (\$s)		FY 2019 NGREA (\$s)	
		Plan	Actual	Plan	Actual	Plan	Actual
Semitrailer Tank:	S73119	33	n/d				
Petroleum 7500-gal Bulk Haul							
Trailer: Palletized Loading 8X20	T93761	59	n/d				
Trailer Cargo: MTV W/Dropsides M1095	T95555	135	26				
Trailer Cargo: High Mobility 1-1/4 ton	T95924	108	6				
Trucks							
Armored Security Vehicle:	A93374	30	n/d				
Wheeled w/Mount							
Truck Utility: ECV Armament Carrier	T34704	168	4				
w/IAP Armor-ready M1151A1							
Truck Utility Expanded Capacity Enhanced:	T37588	52	15				
M1152A1							
Truck Cargo: 5-ton WO/Winch	T41515	274	46				
Truck Cargo: 2.5-ton 4X4 LMTV	T42063	8	1				
W/E W/W LAPES/AD							
Truck Palletized (LHS): M1120A4	T55054	317	n/d				
Truck Utility Expanded Capacity Enhanced:	T56383	159	14				
M1165A1							
Truck Tank: WO/Winch	T58318	17	16				
Truck Cargo: M985A4	T59380	20	3				
Truck Cargo: WO/Winch	T59448	251	150				
Truck Utility: Cargo/Troop Carrier	T61494	108	1				
1-1/4 ton 4X4 W/E (HMMWV)							
Truck Wrecker: M984A4	T63161	72	18				
Truck: Palletized Loading	T81874	23	n/d				
Truck Tractor: WO/Winch	T88983	4	4				
Truck Wrecker: MTV W/E W/W	T94709	10	n/d				
FY 2019 Service Procurement Programs – RC (P-1R) Equipment							
Modification of Aircraft							
Utility/Cargo Airplane Mods				8,054,000	11,297,000		
Network and Mission Plan				4,945,000	10,851,000		
Comms, Nav Surveillance				8,170,000	8,396,000		
GATM Rollup				1,354,000	2,691,000		
Support Equipment and Facilities							
Common Ground Equipment				1,512,000	1,227,000		
Air Traffic Control				1,694,000	1,636,000		
Weapons and Other Combat Vehicles							

FY 2019 Planned vs Actual Procurements and Transfers

Nomenclature	Equip. No.	FY 2019 Transfers of items (#)		FY 2019 Procurements (\$s)		FY 2019 NGREA (\$s)	
		Plan	Actual	Plan	Actual	Plan	Actual
M4 Carbine Mods				1,592,000	1,592,000		
Multi-Role Anti-Armor Anti-Personnel Weapon				0	712,000		
Compact Semi-Automatic Sniper System				241,000	189,000		
Carbine				20,084,000	20,084,000		
Handgun				3,116,000	5,082,000		
Tactical and Support Vehicles							
Tactical Trailers/Dolly Sets				6,422,000	3,451,000		
Truck, Dump, 20t (CCE)				1,080,000	0		
Family of Medium Tactical Vehicle (FMTV)				7,845,000	19,523,000		
Modification of In Svc Equip				88,208,000	3,984,000		
Communications and Electronics Equipment							
Communications Security (COMSEC)				5,161,000	6,170,000		
Radiation Monitoring Systems				3,040,000	1,040,000		
Joint Battle Command - Platform (JBC-P)				56,251,000	50,000,000		
COE Tactical Server Infrastructure (TSI)				4,089,000	2,100,000		
DCGS-A (MIP)				4,665,000	4,665,000		
TROJAN (MIP)				150,000	150,000		
Network Management Initialization and Se				1,537,000	0		
Maneuver Control System (MCS)				19,007,000	4,372,000		
SHF Term				1,000,000	0		
Family of Med Comm for Combat Casualty C				10,069,000	1,434,000		
Smart-T (SPACE)				250,000	1,000,000		
Global Broadcast Svc - GBS				1,000,000	2,394,000		
Reserve Component Automation Sys (RCAS)				11,158,000	0		
Reconnaissance and Surveying Instrument				1,018,000	0		
Tactical Digital Media				1,000,000	770,000		
Items Less Than \$5M (Surveying Equipment)				667,000	335,000		
Other Support Equipment							
Heaters and ECU'S				3,000,000	898,000		
Integrated Family of Test Equipment (IFT				1,136,000	465,000		
Generators and Associated Equip				10,691,000	800,000		
Test Equipment Modernization (TEMOD)				1,966,000	920,000		
Mobile Maintenance Equipment Systems				3,802,000	2,387,000		
Scrapers, Earthmoving				7,961,000	8,061,000		
Modification of In-Svc Equipment (OPA-3)				7,797,000	7,064,000		
Training Devices, Nonsystem				27,600,000	17,347,000		
Protective Systems				431,000	431,000		

FY 2019 Planned vs Actual Procurements and Transfers

Nomenclature	Equip. No.	FY 2019 Transfers (# of items)		FY 2019 Procurements (\$s)		FY 2019 NGREA (\$s)	
		Plan	Actual	Plan	Actual	Plan	Actual
Family of Non-Lethal Equipment (FNLE)				868,000	2,868,000		
Handheld Standoff Minefield Detection Sy				2,500,000	1,260,000		
Ground Standoff Mine Detection System (GSTAMID				4,929,000	1,416,000		
Area Mine Detection System (AMDS)				1,855,000	0		
Tactical Bridge, Float-Ribbon				32,959,000	18,107,000		
Army Watercraft Esp				9,976,000	0		
Common Bridge Transporter (CBT) Recap				9,395,000	29,104,000		
CBRN Defense				4,000,000	2,514,000		
Distribution Systems, Petroleum & Water				780,000	730,000		
All Terrain Cranes				4,578,000	4,578,000		
Robotic Combat Support System (RCSS)				725,000	0		
Family of Forklifts				6,031,000	6,031,000		
< \$5m, Countermine Equipment				4,228,000	570,000		
Aviation Combined Arms Tactical Trainer				5,786,000	7,786,000		
Gaming Technology In Support of Army Tra				1,703,000	1,703,000		
High Mobility Engineer Excavator (HMEE)				15,747,000	12,824,000		
Combat Support Medical				8,093,000	4,928,000		
Family of Boats and Motors				876,000	670,000		
Construction Equip Esp				12,830,000	9,893,000		
Items Less Than \$5.0M (Construction Equip)				1,473,000	100,000		
Family of Engineer Combat and Construction S				2,687,000	0		
Items Less Than \$5.0M (Maintenance Equipment)				1,000,000	0		
Total				471,782,000	308,600,000		
<u>FY 2019 National Guard and Reserve Equipment Appropriation (NGREA) Equipment</u>							
Command and Control System						11,700,000	20,511,293
Tactical Radio Platform						240,000	0
Tactical Networking System						1,600,000	12,237,761
Satcom System						3,000,000	9,692,259
Tactical Digital Media						2,700,000	0
First Responder Communication System						1,000,000	0
Hydraulic, Electric, Pneumatic, Petroleum Operated Equipment (HEPPOE)						2,300,000	0
Heavy Crane						7,500,000	0
High Mobility Engineer Excavator (HMEE)						1,300,000	0
T-9 Dozer						1,080,000	0
Scraper						6,400,000	0
Vertical Skills Construction Kit						7,000,000	0
Assault Craft						80,000	0

FY 2019 Planned vs Actual Procurements and Transfers

Nomenclature	Equip. No.	FY 2019 Transfers (# of items)		FY 2019 Procurements (\$s)		FY 2019 NGREA (\$s)	
		Plan	Actual	Plan	Actual	Plan	Actual
Assault Craft Motors						120,000	0
Truck Lift Fork						4,500,000	3,340,803
Mobile Tactical Retail Refueling System						3,400,000	0
Modular Fuel System Tank Rack Module						2,000,000	0
Load Handling System: 2000G Water (HIPPO)						7,000,000	0
Water Production and Storage						2,000,000	0
Expeditionary Shower Facility						800,000	0
Field Laundry System						200,000	0
Logistics Support Area Package						260,000	0
Light Equipment Kit						40,000	0
Pressurized Storage Unit						30,000	0
Bulk Fuel Distribution System						1,680,000	0
Medical Support Equipment						9,000,000	2,250,139
Medical Equipment Sets						7,250,000	0
Maintenance Support Device						3,500,000	5,791,554
Light Tactical Vehicle Modernization (JLTV&HMMWV)						13,200,000	1,957,509
Gunner Protection Kits						700,000	0
Palletized Loading System						1,900,000	28,270,609
HEMTT Modernization						8,000,000	36,904,080
HEMTT Load Handling System						3,000,000	16,262,999
Heavy Dump Truck						12,500,000	34,193,409
Truck Tractor- Yard						600,000	0
Medium Tactical Truck						8,800,000	0
Medium Utility Trailer						10,000,000	2,031,491
Light Utility Trailer						1,400,000	0
Fuel Efficient/Clean Power Generators						2,400,000	0
Power Distribution Systems						3,500,000	0
Environmental Control Unit						150,000	0
M4A1 Carbine						10,000,000	0
Tactical Shelters						750,000	0
Individual Tactical Equipment						2,000,000	0
Upturned Exhaust Systems						900,000	0
Modular Small Arms Range (MSAR)						7,000,000	0
Marksmanship Trainer						4,000,000	0
Medical Simulation						1,000,000	0
Maintenance Trainer						20,000	0
Transportation Reserve						500,000	6,187,980

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Table 6

FY 2019 Planned vs Actual Procurements and Transfers

Nomenclature	Equip. No.	FY 2019 Transfers (# of items)		FY 2019 Procurements (\$s)		FY 2019 NGREA (\$s)	
		Plan	Actual	Plan	Actual	Plan	Actual
Total						180,000,000	179,631,886

Major Item of Equipment Substitution List

NOTE: This table identifies equipment authorized by the Service to be used as a substitute for a primary item of equipment. The table also identifies whether or not the item is able to be deployed in wartime. This data meets the Title 10 requirement to identify equipment that is not the most desired item of equipment.

Required Item Nomenclature	Reqd Item Equip No.	Substitute Item Nomenclature	Substitute Item Equip No.	FY 2023 Qty	Deployable?	
					Yes	No
Aircraft						
Utility Cargo Aircraft: UC-35A	U05004	Airplane: Utility: UC-35B	A05015	8	X	
Combat Mobility						
Bridge, Heavy Assault Scissoring	B31098	Bridge Armor Veh Launch Scissor TY: CL 60 ALUM 60 FT L	C20414	91	X	
Loader Scoop Type: DSL 2-1/2CU YD Hinge Frame	L76556	Loader Scoop Type: 2.5 Cubic Yard	L76897	34	X	
TRANSPORTER COMMON BRIDGE:	T91308	TRANSPORTER, COMMON BRIDGE (CBT) M1977A4	T05067	173	X	
Tractor Wheeled: DSL 4X4 w/ Excavator & Front Loader	T34437	Tractor Wheeled: Industrial	T34505	5	X	
Field Logistics						
Rough Terrain Container Handler (RTCH): Kalmar RT240	R16611	Truck Lift Fork: DED 50K lb Container Handler Rough Terrain 48-in LC	T48941	29	X	
TRAILER TANK: WATER 400 GALLON 1-1/2 TON 2 WHEEL	W98825	TRAILER TANK WATER (CAMEL): 800 GAL 5 TON W/E	T05047	3	X	
Force Protection						
Chem-Bio Protective Shelter	C7506	Chem Bio Protective Shelter	C05093	68	X	
General Engineering						
Excavator; Hydraulic (HYEX) Multipurpose Crawler mount	E27792	Tractor Full Tracked Low Speed: DSL MED DBP w/ BULDOZ W/ SCARIF WINCH	W76816	63	X	
Tractor Full Tracked High Speed: Deployable LT Engineer	T76541	Tractor full racked low Speed: DSL MED DBP W/ BULDOZ W/ SCARIF WINCH	W76816	9	X	
ALL TERRAIN CRANE TYPE II: (HEAVY)	Z05089	CRANE: WHEEL MOUNTED HYDRAULIC 25 TON ALL TE	C36586	7	X	
ENGINEER MISSION MODULE-WATER DISTRIBUTO (EMM	E05007	DISTRIBUTOR WATER TANK TYPE: 6000 GL SEMITRAIL	D28318	8	X	
SCRAPER EARTHMOVING: 14-18 CU YD	S05029	SCRAPER EARTH MOVING SELF-PROPELLED: 14-18 C	US56246	86	X	
Soldier Weapons						
Machine Gun: Caliber 50	M39331	Machine Gun Caliber 50: HB Flexible (Ground 7 Vehicle) W/E	L91975	5227	X	
Trailers						
Palletized Load System: Trailer-CTE	P05025	Trailer: Palletized Loading 8x20	T93761	782	X	
Semitrailer Tank: 5000gal Bulk Haul Self-Load/Unload W/E	S10059	Semitrailer Tank: 5K-gal Fuel Dispensing Automotive W/E	S73372	1090	X	
Trailer Cargo: 1-1/2 ton 2-wheel W/E	W95811	Trailer Flat Bed: M1082 Trailer Cargo LMTV w/ Dropsides	T96564	59	X	
Trailer Cargo: High Mobility 1-1/4 ton	T95924	Light Tactical Trailer; 3/4 ton	T92992	2923	X	
Trucks						

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Table 7

Major Item of Equipment Substitution List

Truck Tractor: heavy Equipment Transporter (HET)	T59048	Truck Tractor: M107A1	T05012	444	X	
Truck: Expandable Van WO/Winch	T67136	Truck Van; Expansible MTV W/E M1087A1	T41271	315	X	
TRUCK PALLETIZED (LHS): M1120A4	T55054	TRUCK CARGO: TACTICAL 8X8 HEAVY EXPANDED MO	T39518	722	X	
TRUCK WRECKER: M984A4	T63161	TRUCK WRECKER: TACTICAL 8X8 HEAVY EXPANDED	T63093	481	X	

Significant Major Item Shortages

NOTE: This table provides the top ten prioritized (PR) shortage list for major items of equipment required for wartime missions which are currently not funded in the FYDP. It lists the total quantity required, the total shortage, the individual item cost, and the total cost of the shortfall. This data is consistent with other equipment data submitted by the Service.

PR	Nomenclature	Total Req'd	# Items Short	Item Cost	Shortage Cost	Rationale / Justification
1	Load Handling System Compatible Water Tank Rack System (HIPPO)	490*	439	\$130K	\$57M	Army Reserve owns 50% of the EAB Water Support Units. The HIPPO provides the Army with the capability to receive, store and distribute potable water. Water production was eliminated from the BCT's, increasing distribution requirements from EAB units. Current O/H represents ~10% of total COMPO 3 requirement. COMPO 1 is currently fielded to ~88% and COMPO 2 is currently fielded to ~40%. Army Reserve requires 130 to support current Ready Force requirements.
2	3000 GPH Reverse Osmosis Water Purification System	78	23	\$748K	\$17M	Army Reserve owns 50% of the EAB Water Support Units. The 3K ROWPU provides the Army with the capability to purify fresh, salt and contaminated water. Water production was eliminated from the BCT's, increasing distribution requirements from EAB units. 3K ROWPU is past economical useful life and the readiness rate of the system in 63%.
3	Joint Battle Command - Platform (JBC-P)	15,263*	11,869	\$28K	\$332M	Planned vs actual distribution by component varies within the year of execution based on the HQDA Unit Set Fielding (USF) prioritization model. As an enabler centric force, the Army Reserve does not historically compete well for resource prioritization. Since program inception in FY??, the Army Reserve has received ~5,000 (33% required items). Projected procurement & delivery time horizons extend into FY25.
4	Line Haul Tractor - M915A5; 7.5K Petroleum Semitrailer	2820*	1,835	Varies	\$533M	The Army Reserve owns 50% of the total Army line haul capability, to include 90% of the bulk petroleum transportation assets. The M915 contract expired in FY14 before Army Reserve completed fielding the M915A5 armor capable variant. Only 42% (985/2340) of the existing Army Reserve M915 fleet is armor capable. The entire 7,500 gallon tanker semitrailer fleet (480) exceeds economic useful life. Army investment strategy to replace 7.5K tankers begins in FY22 and the no current plan to replace the tractor before FY26.
5	Joint Assault Bridge (JAB)	36*	36	\$5.77M	\$207M	The Joint Assault Bridge is a modified M1 tank platform replacement for the legacy Armored Vehicle Launched Bridge (AVLB) M60 tank chassis capability. A pending Force Design Update will transform six of the Army Reserves Mobility Augmentation Companies to Combat Engineer Companies (Armored). Each of these six companies will require six JABs for a total requirement of 36. Based on the projected procurement plan & fielding time horizon, the Army Reserve will begin fielding in FY22 with an anticipated completion in FY26.

Significant Major Item Shortages

PR	Nomenclature	Total Req'd	# Items Short	Item Cost	Shortage Cost	Rationale / Justification
6	Heavy Dump Truck 20T	357	227	\$500K	\$65M	The M917A3 Heavy Dump Truck is a 27T vehicle based off of a commercial platform. It is procured with an armor solution that is in compliance with the Long Term Armor Strategy but can be operated with or without armor. Army will receive 49 with base funds.
7	Common Bridge Transport (CBT) - M1977A4	504*	224	\$370K	\$67M	The CBT is the prime mover for mobility engineer bridging equipment used for spanning wet gap obstacles. The M1977A4 model replaces legacy vehicles that exceed economic useful life & provides an armor variant capable of global deployment to a non-permissive environment. Army Reserve will field 6 of 9 companies (56 systems each) by 4QFY20 with no additional procurements thru FY23.
8	Medical	3160*	1,420	Varies	\$67M	In accordance with the Army Equipping and Modernization Strategy and Army Medicine Equipping Strategy, only 4 of the 16 248 bed Army Reserve Combat Support Hospitals are fully equipped. This equipping risk is mitigated through the maintenance of three Army Reserve Regional Training Sites - Medical that support multi-component and Joint collective training requirements. These sites require equipment upgrades to support on-going medical force design updates.
9	Mission Command Transport, Command Post & Enabler Systems	38,512*	12,328	Varies	\$358M	The majority of the current budget shortfall is based on emerging command post & enabler systems. Incremental investments are needed to prevent an insurmountable funding challenge and widening network interoperability gaps. Failure to stay current will impact the ability to communicate, visualize the battle space, and synchronize the elements of combat power.
10	Joint Light Tactical Vehicle (JLTV)	14,687*	11,479	\$335K	\$3.85B	The current Army Reserve light tactical vehicle fleet is composed of 64% non-armor capable & 36% armor variants, limiting the ability to globally deploy organic equipment to non-permissive threat environments. The JLTV will provide enhanced force protection & mobility for employment across the full spectrum of operations. The Army Reserve is scheduled to field 3,208 JLTV platforms through FY26, but will remain less than 50% armor capable across the entire fleet beyond FY30.
<p>*Quantities not limited to documented requirements; includes validated requirements captured in Basis of Issue Plan documents & Army Acquisition / Procurement Objectives.</p>						

Chapter 3

United States Marine Corps Reserve (USMCR)

I. Marine Corps Overview

The Marine Corps is a warfighting organization. We exist The Marine Corps remains the nation’s most ready force.¹ It is abundantly clear that a future operating environment characterized by a maturing and proliferating precision strike regime will place heavy demands on our nation’s Naval Services. We are not yet organized, trained, equipped, or postured to meet those demands and support fleet operations. However, there is an ongoing, healthy debate about how and what we should change across the Armed Services, and very few are lining up to defend the status quo.²

“Our competitors no longer wait to see what America does and follow suit; they have embarked on their own trajectory, which currently outpaces ours. Force Design 2030 addressed this problem by forcing the competitor to adapt to us through tactical, operational, and strategic challenges a truly modern force presents. . . . We must recognize that incrementally better versions of the current Marine Corps are not going to be enough for real great power competition. As noted in the House Armed Services Committee’s *Future of Defense Task Force Report 2020*, our acquisition process is too sluggish to work effectively at scale with many technology companies, as they need to innovate and compete daily to survive their dynamic industry. We need a process that better bridges the ‘valley of death’ to transition critical prototype equipment into full-scale fielding without taking years through the traditional planning, programming, budgeting, and execution process.”³

A. Marine Corps Planning Guidance

1. Strategic Concept of the Marine Corps

We are committed to optimizing our force structure for crisis response and forward presence.

Our principal challenge remains to be effective as the nation’s Naval Expeditionary Force in readiness, while we simultaneously modernize the force for the future operating environment with available resources. A force-in-readiness is not simply the most available force, but as described by the 82nd Congress, one that can prevent small disturbances from becoming regional conflicts. A naval expeditionary force-in-readiness must be able to compete, deter, and facilitate horizontal escalation. It is imperative that we comprehensively adapt our force to the demands of competition and conflict in multiple domains. . . . The intersection of threat, technology, and a changing operating environment necessitate wide ranging changes to the capabilities our expeditionary force in readiness must provide to Naval and Joint force commanders.⁴

¹ Commandant of the Marine Corps, *Statement before House Appropriations Committee Subcommittee on Defense*, March 4, 2020, p. 36–37.

² Commandant of the Marine Corps, *Statement before House Appropriations Committee Subcommittee on Defense*, April 29, 2021, p. 2–3.

³ Commandant of the Marine Corps, *Statement before House Appropriations Committee Subcommittee on Defense*, April 29, 2021, p. 22–23.

⁴ Commandant of the Marine Corps, *Force Design 2030 Annual Update*, April 2021, p. 2.

2. Marine Corps Total Force Concept

The Active Component (AC) and Reserve Component (RC) are integrated as one Marine Corps—a Total Force Marine Corps. The Marine Corps Reserve, as part of the Total Force Marine Corps, stands ready to provide forces for employment across the full spectrum of crisis and global engagement. While the Marine Corps Reserve is supporting the current Service and Combatant Command requirements, we are also participating in the Marine Corps' efforts to redesign our force and our warfighting capabilities to deter pacing threats as prescribed by the National Defense Strategy (NDS). Throughout the past year, the Marine Corps Reserve has continued global deployments that support Combatant Commander (CCDR) requirements despite the unprecedented challenges presented by COVID-19. The Marine Corps Reserve continues to meet the increased demand as an Operational Reserve, but this remains a challenge to our readiness and ability to meet strategic requirements.⁵ Moving forward to FY 2023 and beyond, the AC and RC Marine Corps will adjust to the direction provided by the Commandant's Planning Guidance and Force Design implementation.

B. Marine Corps Equipping Policy

Marine Corps Systems Command (MARCORSYSCOM) acquires ground equipment for the RC in accordance with the Total Force Approved Acquisition Objective (AAO). The Marine Corps develops the AAO for new equipment based on the approved capability requirement via the Joint Capabilities Integration and Development System (JCIDS) process. The AAO is the quantity of an item authorized to equip and sustain the Military Service in accordance with current DoD policies and plans. The Marine Corps develops the Total Force AAO using an integrated system of dynamic processes that capitalize on operational experience to identify, define, and meet the emerging needs of Marine forces to support the CCDRs. This materiel management approach ensures that equipment sourced for the RC is consistent with the Marine Corps' equipping strategy, deployment schedule, and the Commandant of the Marine Corps' guidance. In addition, it reduces distribution latency and improves the visibility and transparency of the equipment distribution process. RC units remain interoperable with their AC counterparts because of the Marine Corps' Total Force approach to equipment fielding and management. RC Forces are manned, trained, and equipped to standards that facilitate the seamless integrated employment of forces to meet the CCDRs' requirements.⁶

C. Plan to Fill Equipment Shortages in the RC

Reserve units maintain equipment based on the unit's Training Allowance (TA), which is the portion of the unit's full Table of Equipment (T/E) kept for training at the Reserve Training Centers. This method maintains the necessary amount of equipment to train, maintain, and store the TA within personnel and facility constraints. All equipment above the TA (the difference between the TA and the T/E) is stored at Marine Corps Logistics Bases and other "in stores" locations. The use of globally pre-positioned equipment brings RC units to full T/E equipping levels should the need arise. The Marine Corps has used this methodology, known as "global

⁵ Commander, Marine Forces Reserve, *Statement before the Senate Appropriations Committee Subcommittee on Defense Concerning The Guard and Reserve*, May 18, 2021, p. 1–2.

⁶ *Ibid*, p. 7.

sourcing,” effectively to satisfy RC and AC unit equipment shortfalls. The most recent examples of successful “global sourcing” that supports the RC filling rotational Infantry Battalion Unit Deployment Program (UDP) requirement are the UDP 19.1 and 20.1 rotations.

D. Initiatives Affecting RC Equipment

Equipment modernization and improved readiness are the key factors that allow the Marine Corps to keep pace with future threats and preserve operational agility. Delays in investment funding have affected the Marine Corps’ modernization efforts, as well as its ability to divest legacy equipment. The Marine Corps Reserves’ cost to maintain its legacy equipment continues to increase, which adversely effects unit training and overall readiness. However, continued involvement by the RC in fielding conferences is having a positive impact on the status of RC equipment. Reabsorbing Overseas Contingency Operations (OCO) funding into the baseline budget without subsequent increase in baseline funding, will negatively impact the RC. In previous years, OCO funding enabled Marine Corps Logistics Command mobile maintenance support teams to travel to Reserve Training Centers and augment the limited organic maintenance capacity. This initiative increased RC equipment readiness and has received Congressional support in the past. Continued support for this capability is paramount to MARFORRES’s continued success in sustaining equipment and maintenance readiness.

The challenge of not receiving the equipment concurrently with the AC counterparts continues to affect the RC to AC equipment parity and readiness until late in the fielding process. Major force structure changes are currently underway; these changes are the initial steps of resizing, reshaping, and reequipping the force for success in the future operating environment.⁷ True readiness, which is defined as unit readiness to be deployed against a peer threat “to achieve decisive tactical and operational outcomes, requires investment in modern capabilities commensurate with those of the threat.”⁸ In line with published Force Design initiatives, the Marine Corps is increasing its focus on readiness as it relates to relative warfighting advantage. A ready capability in the future must be one that is available when it is needed and that creates a strategic warfighting advantage against a specific threat in great power competition and conflict.⁹

E. Plan to Achieve Full Compatibility between AC and RC

The Marine Corps continues to strive for horizontal (concurrent) fielding of new ground equipment to the AC and RC to maintain common and interchangeable capability sets within the Total Force. The Marine Corps Total Force fielding approach and push fulfillment sustainment policies contribute to RC units remaining interoperable with their AC counterparts. As the Marine Corps’ force structure changes move forward, they must be accomplished within the provided fiscal resources. “Fiscal realities dictate that we must first divest of legacy programs in

⁷ Commandant of the Marine Corps, *Force Design 2030 Annual Update*, April 2021, p. 5.

⁸ Commandant of the Marine Corps, *Statement before House Appropriations Subcommittee on Defense*, March 4, 2020, p. 38.

⁹ Commandant of the Marine Corps, *Statement before House Appropriations Committee, Subcommittee on Defense*, April 29, 2021, p. 24–25.

order to generate the resources needed to invest in future capabilities. This may create near term risk that we must manage in order to obtain the 2030 force that we require.”¹⁰

Historically, the Marine Corps Reserve has leveraged National Guard and Reserve Equipment Appropriation (NGREA) to supplement funding deficiencies, which has also assisted with improving efforts to achieve greater parity between the RC and AC. However, numerous programs are still fielded using a vertical (cascading) rather than horizontal (concurrent) fielding model, affecting the parity of RC to AC equipment (for example, the current fielding plan for the Amphibious Combat Vehicle). Most disconcerting is the RC’s individual combat clothing and equipment (ICCE) deficiencies, specifically ballistic protection and load-bearing equipment. “In the event of a large-scale wartime mobilization, to include any sizable call-up of the Individual Ready Reserve, individual combat clothing and equipment deficiencies may become a strategic risk to mission.”¹¹ Adjustments are needed on all fielding models with consideration given to the RC’s actual operational commitments. Without horizontal fielding and RC equipment fielding prioritization on plane with AC prioritization, full compatibility between AC and RC equipment is not possible. Continued Congressional support for Reserve funding in FY 2023 budget is paramount to the Marine Corps Reserves’ success in sustaining our equipment and maintenance readiness.

¹⁰ Commandant of the Marine Corps, Force Design 2030 Annual Update, April 2021, p. 5.

¹¹ Commander, Marine Forces Reserve, *Statement before the Senate Appropriations Committee Subcommittee on Defense Concerning The Guard and Reserve*, May 18, 2021, p. 10.

II. Marine Corps Reserve Overview

A. Current Status of the Marine Corps Reserve

1. General Overview

The Marine Corps Reserve is an integral part of the Total Force. It is organized and trained to the same standards as its AC counterparts, facilitating the seamless employment of Reserve Forces to meet CCDR requirements. However, AC to RC equipment parity remains a challenge in key platforms. The Marine Corps Reserve provides critical

capabilities to the Total Force, which increases the lethality of the Corps and contributes to the competitive advantage maintained over our adversaries. The Marine Corps Reserve is relevant, ready and responsive to answer the nation’s call and support CCDRs’ requirements.

Top RC Focus Areas
<ul style="list-style-type: none">• Major ground equipment modernization (JLTV, etc.)• F-5N+ block upgrades• Aviation and ground equipment maintenance

The Marine Corps Reserve continues to support CCDR requirements with global deployments despite the unprecedented challenges presented by COVID-19:

In addition to the Marines already activated and deployed, 2020 saw an additional 1,044 Reserve Marines mobilized to support 20 operational requirements across six geographic Combatant Commands. . . . In 2021, the Marine Corps Reserve [was] slated to support Combatant Commanders by mobilizing in excess of 966 Reservists supporting 28 formations. These operations greatly increase the RC’s interoperability with the AC, Joint Forces, our allies, and coalition partners.¹²

The demand for Reserve Marines continues to grow. In 2020, “the Marine Corps Reserve activated more than 500 Reserve Marines and Sailors to augment and reinforce the Marine Corps Recruit Depots at Parris Island and San Diego. These Marines ensured the recruits awaiting training maintained proper quarantine protocols, enabling assimilation into training platoons with minimal risk of a COVID-19 outbreak during training.”¹³ Following the 2020 decrease in Innovative Readiness Training (IRT) program events caused by COVID-19, the Marine Corps Reserve participated in 16 IRT events in 2021. These events provide key services with lasting benefits in our American communities, while providing valuable training for the participating units.

The top procurement priority for the Marine Corps Reserve involves the transition to the Joint Light Tactical Vehicle (JLTV). The AC began receiving the JLTV in 3rd Quarter of FY 2019, but the RC did not receive its first shipment until 3rd Quarter of FY 2021. Because of the delayed JLTV fielding to RC units, the RC will continue to operate the legacy High Mobility Multipurpose Wheeled Vehicle (HMMWV) to support exercises and operational training.

¹² Commander, Marine Forces Reserve, *Statement before Senate Appropriations Committee Subcommittee on Defense Concerning Guard and Reserve*, May 18, 2021, p. 4.

¹³ Ibid.

Modernization efforts currently underway, including block upgrades for the F-5N/F adversary aircraft and procurement of meteorological equipment, will increase safety, add capability, and increase overall unit readiness. The transition from the AH-1W attack helicopter to the AH-1Z platform was completed in FY 2020 and the F/A 18A++ aircraft are transitioning to the updated F/A 18C+ modification with anticipated completion in FY 2023. For ground vehicles, transition to the Amphibious Combat Vehicle (ACV) will begin as the program reaches full-rate production. Lastly, the AC is currently seeking to replace the equipment sets for the Low Altitude Air Defense (LAAD) Battalions and establish an RC LAAD Battery (REIN). The RC LAAD capability is scheduled to come online in FY 2025. The addition of an RC LAAD Battery will further modernize the RC equipment set and expand RC capabilities.

2. Status of Equipment

Marine Forces Reserve (MARFORRES) units maintain and account for the Reserve Component equipment. The unique geographic dispersion of Marine Corps Reserve units, coupled with a limited number of full-time personnel and limited storage capacity, make the proper accountability of equipment and validation of the Training Allowance (TA) essential to maintaining overall readiness. By continually refining the TA, MARFORRES's goal is to balance the amount of equipment necessary to conduct training with the amount of equipment that can be maintained within personnel, facility, and fiscal constraints. MARFORRES is critically deficient in ICCE. The FY 2022 Unfunded Priority List (UPL) included \$45.9 million to address this deficiency. The slow procurement and fielding of the updated/modernized ICCE requires MARFORRES to maintain legacy equipment, causing the bulk of the ICCE shortfall. The legacy ICCE equipment is increasingly non-deployable; resulting in an increased cost to the RC and AC to support the ICCE requirements within global force management obligations. The sustainment capability has historically been limited because the equipment is not available for procurement with baseline funds via Global Combat Support System-Marine Corps (GCSS-MC).

However, the shortfall recently started to decrease as updated equipment was fielded throughout FY 2021. MARFORRES was able to procure \$3.1 million in ICCE using unobligated OCO funding, with deliveries projected through FY 2022. With the exception of legacy equipment, the RC maintains equipment to the same standards as the AC, which facilitates a seamless employment in support of CCDRs. The ICCE shortfall is also being addressed by including MARFORRES in the Marine Corps Enterprise Consolidated Storage Program (CSP). The change to include MARFORRES in the CSP was reviewed and approved by a Headquarters Marine Corps Deputy Commandant for Installations and Logistics (DC I&L) Marine Corps Requirements and Oversight Council (MROC) study. The study shows inclusion in the CSP provides significant sustainment cost savings/avoidance and improved inventory efficiency, access, visibility, and sustainability over the current process. To date, the change to include MARFORRES in the CSP has not been funded. This initiative would provide a significant positive impact on the ICCE availability to the RC and achieve ICCE parity with the AC. It will also reduce the burden placed on the AC to support RC mobilizations.

Lastly, the majority of the new ICCE fielded cannot be sustained at the Unit level within MARFORRES because Units lack access to adequate laundry and repair facilities and cannot

order sustainment parts or whole item replacements. Because the items are in a “fielding” status, MARFORRES is unable to order replacements via the standard supply sustainment process. The time delay between fielding and sustainment contracts being available is approximately 2 years from completion of fielding to award of the sustainment contract through Defense Logistics Agency. Without these contracts in place, MARFORRES must contract through MARCORSSYSCOM for replacement items; delaying order processing and shortfall item receipt.

a. Equipment On-hand

The MARFORRES equipment on hand (EOH) consists of the TA which is the minimum amount of equipment required to train to Core Mission Essential Tasks (METs) at the Reserve Training Centers. Currently, the functionality to display and track TA is not in an Accountable Property System of Record (APSR). MARFORRES is working with DC I&L, Deputy Commandant for Combat Development & Integration (DC CD&I), Marine Corps Logistics Command (MARCORLOGCOM), and the respective program offices to make the required system changes to add the TA to the Total Force Structure Management System (TFSMS) update. In April 2021, the GCSS-MC Program Office installed a change request, which created an Equipment Density Listing/Training Allowance (EDL/TA) field within the system. This EDL/TA allowance replaces the Table of Equipment (T/E) allowance feed, allowing the unit to override the T/E to account for equipment allowances approved by the chain of command. For MARFORRES, this field enhances the ability to manage equipment allowances and inventory from a single field. The new field also provides Headquarters Marine Corps, MARCORSSYSCOM, and MARCORLOGCOM with accurate allowances to plan for fielding and distributing equipment. MARFORRES is executing a TA review and anticipates having the TA in GCSS-MC by 3rd Quarter FY 2022. By storing the T/E delta (the equipment that MARFORRES does not need for training or have adequate resources to store and maintain) at Marine Corps Logistics Bases and other “in stores” locations, MARFORRES maintains a high EOH posture for mission essential equipment.

Table 1 Consolidated Major Item Inventory and Requirements reflects the combined projected equipment inventories and requirements of Marine Corps Reserve units for the period FY 2023–FY 2025. These quantities are an aggregate of the EOH and equipment maintained by Marine Corps Logistics Command. Marine Forces Reserve mission essential equipment readiness levels are sufficient and capable of supporting all home station training requirements, as well as current operational deployments. Congressional support is essential to our ability to maintain the readiness of multiple legacy equipment platforms that have been critical to supporting ongoing operations.

b. Average Age of Major Items of Equipment

The equipment listed in *Table 2 Average Age of Equipment* provides the average age of selected major equipment items at the start of FY 2021. The average age of RC equipment is currently consistent with the age of equipment in the AC except for legacy equipment such as the KC-130T, F/A-18 A++, and Assault Amphibious Vehicle. Maintaining legacy equipment creates significant challenges as equipment approaches the end of its lifecycle and supply parts become less available. These legacy systems are either in upgrade or modification programs that will extend the lifecycle of the equipment or have fielding of replacement equipment planned. For

example, the F/A-18A++ is being replaced/upgraded to the F/A-18C+, with completion scheduled for FY 2023, and the KC-130T airframe sundown was completed in February 2021.

c. Compatibility of Current Equipment with Active Component

The RC remains near parity with its AC counterpart due to the Total Force approach to equipment fielding. However, delays in appropriating funds continue to disrupt our ability to program long-term activities and challenges our efforts to improve current and future readiness. To continue to meet operational commitments and maintain a ready force, the Marine Corps requires greater fiscal stability and continued congressional support. Fielding new ICCE in the RC is improving support and sustainment. A DC I&L MROC study regarding the addition of MARFORRES to the Marine Corps Enterprise CSP determined it was fiscally advantageous for MARFORRES to be included and to move forward with inclusion. While not yet implemented, this initiative would provide a significant positive impact on the ICCE availability to the Reserve Component and achieve ICCE parity with the AC. Given the nature of the current manufacturing and logistics environments, this change would facilitate providing current ICCE for each RC Marine before departure to support CCDR requirements, while reducing the administrative burden on supported and supporting units.

d. Maintenance Challenges

Several factors continue to affect maintenance efforts and priorities across the RC. These include limited personnel resources to perform preventative maintenance, identify corrective maintenance, and operate and exercise the equipment sets; fiscal resourcing decisions; and increased operational tempo (mobilizations and exercises). RC units are limited to the small full-time support staffs at each Reserve Training Center that are augmented by Reserve Marines during the monthly drill and 2-week annual training period. The AC maintenance personnel, in many cases, do not possess the knowledge and experience necessary for independent duty assignment at Reserve Training Centers. The majority of MARFORRES unit locations (below the battalion level) have Non-Commissioned Officers with little more than one enlistment worth of experience leading the maintenance section. This experience shortfall (no fault of the Marines) results in decreased maintenance readiness and inefficient performance of ground equipment maintenance. An improved Inspector Instructor (I&I) screening before an order to a Reserve I&I billet would improve this challenge.

The personnel and fiscal resourcing decisions exacerbate the maintenance challenges. These constraints require maintenance efforts be focused on corrective maintenance for Mission Essential Equipment. This focus constrains routine preventative and corrective maintenance on the remaining equipment, further exasperating the maintenance challenges within the RC. Additionally, the consistently high cost of Secondary Repairable parts without a corresponding increase to authorizations compounds the maintenance challenges annually.

In recent years, the Marine Corps' demand for unique capabilities has increased, requiring more RC activations of units and ad-hoc formations. This increased employment of RC forces has generated excessive wear on combat equipment. Consequently, maintenance requirements, the exponential increase in secondary repairable cost, and the replenishment of gear have outpaced

previous forecasts. The cost increase in repair and replacement parts adversely affects the maintenance readiness of the RC ground equipment on hand. Additionally, the GAO found the Marine Corps needs to implement its masterwork schedule into the baseline work schedule to facilitate performance assessments against the planned maintenance work.¹⁴ Finally, aviation readiness challenges across the Marine Corps enterprise, caused by a combination of aging aircraft, maintenance backlogs, and unresponsive supply chains, have adversely affected MARFORRES aviation units. The result is a mission capable status of 55 percent for 4th Marine Aircraft Wing flight line aircraft; AC aircraft wings maintain 61 percent average readiness.

e. Modernization Programs and Shortfalls

Marine Corps modernization programs are designed to keep pace with the changing requirements of current and future operations. The RC uses various funding sources such as the baseline procurement budget and NGREA to execute these programs and fill equipment shortfalls for both aviation and ground forces.

- **Aviation Modernization:** The RC is included in the Marine Corps Aviation Plan. During the current Future Year Defense Program (FYDP) and out years planning profile, the RC squadrons will continue the transition to several new aircraft platforms (KC-130J, F/A-18C+, and AH-1Z). The RC has historically used NGREA funding to procure aviation-training simulators to facilitate the transition to the new aircraft (for example the KC-130J fuselage trainer).
- **Combat Equipment Modernization:** The Marine Corps is acquiring major ground equipment modernizations that will provide the RC with the latest generation of warfighting capabilities. These initiatives are delayed because of force structure changes occurring with Force Design. As Force Design decisions are released, updated requirements and new fielding plans will be published to support the updated requirements.

f. Overall Equipment Readiness

Equipment readiness for RC units remains consistent with AC readiness reporting levels. The RC continues to maintain its TA in a high state of operational readiness. Aviation readiness in the RC faces similar challenges as the AC and is consistent with readiness levels across the Marine Corps enterprise.

B. Changes Since the Last NGRER

Several major changes since last year's NGRER have had a significant impact on the RC achieving interoperability with the AC. The Mobile Integrated Remains Collection System (MIRCS) became a Marine Corps Program of Record for procurement and was procured with FY 2019 NGREA. The RC is preparing for delivery of nine MIRCS in FY 2022 with the first arriving in February 2022 and an additional three systems to be purchased in the out years. 4th MAW was able to purchase two Block upgrade packages for the F-5N with FY 2021 NGREA. The RC also began the procurement process for updated maintenance stands for the MV-22. The

¹⁴ GAO-20-401, *Army and Marine Corps Need to Improve Efforts to Address Challenges in Measuring Performance and Planning Maintenance Work*.

updated stands reduce maintenance hours and ease access for maintenance on the MV-22 engine nacelles. Additionally, the GCSS-MC change request to allow for an editable TA field has been implemented. MARFORRES anticipates an updated TA to be input in the field by 3rd quarter FY 2022. Continued Force Design efforts are adjusting Marine Corps Reserve equipment requirements and priorities to posture the RC to augment, support, and reinforce the AC in a near peer environment.

C. Future Years Program (FY 2023–FY 2025)

1. FY 2023 Equipment Requirements

The Marine Corps will continue to pursue current and emerging ground and aviation equipment requirements to modernize the Total Force. During this effort, the RC will strive to maintain equipment parity with its AC counterparts to the maximum extent possible.

a. Light Armored Vehicle (LAV)

Based on the Commandant’s Planning Guidance and in line with Force Design initiatives, the LAV Authorized Acquisition Objective (AAO) for all AC and RC Battalions has changed. The RC requirement has been adjusted to increase by six LAV-Anti-Tank Modules and decrease by six LAV-Mortars. This change does not require new procurements from PM-LAV or MARCORLOGCOM. The entire Family of LAVs will undergo numerous modifications in the coming years to upgrade or replace internal and external communications systems, turrets, and the electrical system. The fielding schedule for these modifications was scheduled to begin the 1st quarter of FY 2022 and is anticipated to reach Final Operational Capability (FOC) in the 4th quarter of FY 2023. MARFORRES is scheduled to receive the modifications late in the fielding plan.



2. Anticipated New Equipment Procurements

a. Joint Light Tactical Vehicle (JLTV)

The number one procurement priority for the Marine Corps Reserve is the JLTV, a joint Army/Marine Corps program to procure the next generation of light tactical vehicles and companion trailers. The program’s objectives are to improve the mobility and payload of the light tactical vehicle fleet while providing increased survivability through modular protection within the weight constraints of the expeditionary force. JLTVs are configured to support multiple mission packages, derived from two base vehicle configurations, the four-door Combat Tactical Vehicle and two-door Combat Support Vehicle. The commonality of



components, maintenance procedures, and training among all vehicle configurations minimize total ownership costs. This program minimizes maintenance costs through increased reliability and provides improved fuel efficiency over the current light tactical vehicle. The vehicle design provides the warfighter with increased protection through the use of scalable armor solutions, while restoring payload capabilities lost due to the armoring of the HMMWV fleet. Full rate production and fielding began in August 2019 with Full Operational Capability occurring in FY 2021. The Marine Corps plans to procure 12,500 JLTVs. The RC began receiving its allocation of 2,196 JLTVs in 3rd quarter FY 2021. However, Force Design decisions have suspended additional fielding of JLTV's for MARFORRES. A severe change in the funding profile for the JLTV has further delayed fielding throughout the FYDP. Of the 157 assets that were projected to be delivered to the RC by the end of FY 2022 only four have been received. Modernizing the HMMWV to the JLTV will reduce the maintenance burden the aging fleet of HMMWV currently in operation places on the RC. The RC needs its full T/E to be procured and fielded to support the training and war time requirement for light tactical vehicles. Pending final decision on the Commandant's Planning Guidance (CPG) and Force Design, the final requirement for the RC may be adjusted. The new RC Low Altitude Air Defense equipment set may introduce more JLTVs to the RC once the final capability is selected and sourced.

b. F-5 N/F+ Block Upgrade

Updating and modernizing the adversary aircraft fleet provides increased flight safety, as well as tactical capability, facilitating effective training for the current fourth generation and increasing number of fifth generation fighters while maintaining a low operation cost. The upgrades are necessary to ensure an interoperable fleet not only within the Marine Corps, but also with the Navy Reserve. The FY 2020 budget provided the purchase of 22 F-5s from the Swiss. This purchase directs 11 aircraft to the Marine Corps Reserve and they will be upgraded on delivery. The RC is anticipating receiving (1) F-5N/F-5F in FY 2022; (1) F-5N/ F-5F in FY 2023; and (1) F-5F and (3) F-5N in FY 2024. A mixed fleet of aircraft creates a disparity in training, cockpit familiarity, safety, and in some cases system operation.

Upgrading the existing aircraft in the Marine Corps fleet is necessary for increased safety and equipment parity across the adversary fleet. The additional aircraft will facilitate stationing aircraft on the East Coast to support adversary requirements. This change will provide cost savings over the current structure with all adversary aircraft based on the West Coast. Additionally, the block upgrades will increase aircraft availability by reducing maintenance hours. The safety of flight, communication system, and aircraft configuration upgrades will provide valuable and cost-effective adversary support to the Marine Corps while the transition to 5th Generation aircraft continues.



c. Ultra Light Tactical Vehicle (ULTV)

The ULTV Family of Vehicles (FoV) enhances infantry and reconnaissance mobility and sustainability during distributed and heli-borne operations. The capability provides infantry, reconnaissance, and logistics elements enhanced mobility and sustainability through a lightweight MV-22 internally transportable vehicle for use in an anti-access/area denial (A2AD) environment. The anticipated future operating environments are expected to require lighter weight, high mobility equipment. The ULTV provides mobility and transportability in environments where current equipment may be unsuitable due to size, weight, and transportability limitations. The USMC enterprise AAO is currently 792 total systems to be fielded between FY 2022 and FY 2026 with 162 planned for the RC Infantry and Reconnaissance units.



3. Anticipated New Equipment Requirements

a. Amphibious Combat Vehicle (ACV)

The Marine Corps established the ACV program as a way to acquire an enhanced capability to transport Marines from ship-to-shore under hostile conditions. The Marine Corps has used the AAV-7A1 series amphibious assault vehicle to move Marines from ship to shore since 1971 and expects to continue to use it until replaced by the ACV. As part of a service initiative to minimize the maintenance challenges associated with the age of equipment, a portion of the existing AAV fleet will go through depot level maintenance to extend the vehicles' service lifecycle to FY 2035. However, no RC vehicles are scheduled to receive these depot level upgrades. The ACV Programs acquisition approach consists of two increments. Increment 1 will field a personnel carrier (ACV-P) with ship-to-shore capability. Increment 2 will enhance the personnel carrier capabilities over Increment 1 by increasing the number of battalions of lift by procuring more vehicles, and deliver the ACV-C, ACV-R, and ACV-30 Mission Role Variants (MRVs). The ACV MRVs are derivatives of the ACV-P base vehicle platform. The ACV-C will serve as a tactical-echelon command post for the regiment or battalion. The ACV-C provides the embarked commander with the platform to command and control the battlefield from under armor. The ACV-R is an armored amphibious wheeled vehicle that provides field maintenance, recovery, and limited repair capabilities to the AA battalion. The ACV-R is organic to the AA company and battalion, as well as the maintenance battalion of the Marine Logistics Group (MLG). The ACV-30 carries a medium caliber weapon system capable of supporting dismounted maneuver while still embarking Marines. Each MRV will have its own initial operating capability (IOC). IOC for the ACV-P occurred 1st quarter FY 2021. IOC for the ACV-C is planned to occur in



4th quarter FY 2024. IOC for the ACV-30 is planned to occur in 4th quarter FY 2025. IOC for the ACV-R is planned to occur in 4th quarter FY 2026. All MARFORRES ACV deliveries are currently scheduled for FY 2027. MARFORRES is scheduled to receive: 26 ACV-P, 12 ACV-30, 2 ACV-C, and 2 ACV-R variants. ACV FOC quantities will be determined pending final decision on Force Design.

b. F-5N/F MAXDRFM (MAX Digital Radio Frequency Memory) Jamming Pod

The MAXDRFM Pod is a significant upgrade over the current ALQ-237 Filthy Badger jammer. This upgrade will improve the adversary electronic attack capability to support Red Air training provided before fleet deployments. MAXDRFM provides modern electronic jamming techniques and an updated operating system with the capacity for future upgrades. The upgradability of this system is invaluable because of the continued expansion and fielding of 5th Generation fighter aircraft in the fleet. Additionally, this upgrade will bring the USMCR F-5's to a common configuration with the USNR aircraft. This system is specific to the F-5 airframe and is sought by the RC because the AC does not operate the F-5.

4. Anticipated Transfers from AC to RC

MARFORRES is slated to provide one HIMARS UDP rotation in FY 2022 and another one in FY 2023. MARFORRES is providing equipment for both rotations and will be transferring RC equipment to support RC personnel.

5. Anticipated Withdrawals from RC Inventory

The last KC-130T aircraft was removed from the RC inventory in February 2021 as part of the transition to the KC-130J. The RC is preparing a transfer notification for 4 KC-130J from the RC to the AC as part of the Force Design 2030 effort. Furthermore, as the RC continues the transition to the F/A-18C+ aircraft, additional F/A-18A++ aircraft will be removed from the inventory as part of the platform “sundown” plan. The transition is expected to be complete in FY 2023. The HMMWV phase out and divestment will begin as JLTVs are fielded to MARFORRES.

6. Equipment Shortages and Modernization Shortfalls at the End of FY 2023

The RC wartime requirements are addressed in *Table 1 Consolidated Major Item Inventory and Requirements*, which delineates the major item shortfalls that are anticipated to exist at the end of FY 2023. *Table 8 Significant Major Item Shortages*, presents the RC's highest priority unfunded equipment and modernization shortfalls affecting Reserve unit training allowances.

D. Summary

As stated by the Commandant of the Marine Corps in the Commander's Intent, “The principal challenge facing the Marine Corps today lies in continuing to fulfill our role as the naval expeditionary force-in-readiness, while simultaneously modernizing the force in accordance with the NDS—and doing both within the fiscal resources provided.”¹⁵ Horizontal (concurrent)

¹⁵ Commandant of the Marine Corps, *The 38th Commandant's Intent*, p. 1.

fielding efforts and RC participation in the fielding conferences are having a positive impact on the status of RC equipment, but the challenge of true horizontal (or concurrent) fielding remains and continues to affect the RC to AC equipment parity. Key examples for this challenge are the JLTV, ACV, and ICCE fielding. Without horizontal fielding across the Total Force and RC equipment fielding prioritization on par with AC prioritization, full compatibility between AC and RC equipment is not possible.

Equipment accountability and readiness within the RC TA continues to be a challenge. The implementation of the GCSS-MC change request, including an editable TA field with the ongoing TA review by MARFORRES will provide increased equipment visibility and transparency, while improving inventory management and overall unit readiness. This action will also help accomplish the CPG task to invest in modernization by divesting of legacy equipment. Additionally, the addition of MARFORRES to the Marine Corps Enterprise CSP for ICCE support provides increased visibility of enterprise inventory, improved fielding efficiency, and significant cost savings over the current management process. Fiscal unpredictability over the past several years continues to disrupt our ability to program long-term activities and challenges our efforts to improve current and future readiness. Fiscal and personnel resourcing decisions generate a maintenance program focused on Mission Essential Equipment (MEE) and constrains routine preventative and corrective maintenance for non-MEE, which further exasperates maintenance challenges within the RC.

A focus on divesting costly legacy equipment and reinvesting in equipment and technology modernization for the future fight will help the Marine Corps Reserve remain a force trained and equipped to augment and reinforce the Total Force. Additionally, the ongoing improvements are in keeping with the Commandants Guidance and Force Design 2030. Pending anticipated CPG task and Force Design decisions, additional fidelity and clarity on the equipment challenges in the RC will be available. The Marine Corps Reserve is, and will continue supporting CCDRs' requirements while forward deployed, participating in Service and Joint level exercises at home and abroad, and serving as the face of the Marine Corps in our local communities. As part of the Total Force, we remain focused on Force Design, readiness, and manpower to maintain and enhance the Marine Corps' ability to deter pacing threats as prescribed by the NDS.¹⁶

¹⁶ Commander, Marine Forces Reserve, *Statement before Senate Appropriations Committee Subcommittee on Defense Concerning Guard and Reserve*, May 18, 2021, p. 29.

Consolidated Major Item Inventory and Requirements

NOTE: This table provides a comprehensive list of selected major equipment items. It provides the projected inventory quantity on-hand (QTY O/H) at the beginning/end of the selected fiscal year (FY). It also provides the quantity required (QTY REQ) to meet the full wartime requirements of the Reserve Component. In accordance with Title 10, the QTY REQ number provides the recommendation as to the quantity and type of equipment that should be in the inventory of each Reserve Component. FY 2021 unit cost estimates are provided by the Military Departments.

Nomenclature	Equip No.	Unit Cost	Begin FY 2023 QTY O/H	Begin FY 2024 QTY O/H	Begin FY 2025 QTY O/H	End FY 2025 QTY O/H	End FY 2025 QTY REQ
Aircraft							
AIRCRAFT, FIGHTER/ATTACK, F/A-18A++	F/A-18A++	\$36,100,000	6	6	6	6	6
AIRCRAFT, FIGHTER/ATTACK, F/A-18C+	F/A-18C+	\$38,500,000	12	12	12	12	12
AIRCRAFT, FIGHTER, F-5F	F-5F	\$19,100,000	2	3	4	4	4
AIRCRAFT, FIGHTER, F-5N	F-5N	\$5,000,000	12	13	16	16	16
AIRCRAFT, REFUELING/CARGO, KC-130J	KC-130J	\$92,152,561	16	16	20	28	28
AIRCRAFT, UTILITY/CARGO, UC-12W	UC-12W	\$15,500,000	2	2	2	2	2
AIRCRAFT, UTILITY/CARGO, UC-35C	UC-35C	\$33,500,000	2	2	2	2	2
AIRCRAFT, UTILITY/CARGO, UC-35D	UC-35D	\$33,500,000	4	4	4	4	4
HELICOPTER, ATTACK, AH-1Z	AH-1Z	\$30,450,000	26	26	26	26	26
HELICOPTER, UTILITY, UH-1Y	UH-1Y	\$25,240,000	22	22	22	22	22
HELICOPTER, CARGO, CH-53E	CH-53E	\$56,900,000	8	8	8	8	8
TILT-ROTOR, CARGO, MV-22B	MV-22B	\$104,027,000	24	24	24	24	24
RQ-21A BLACKJACK SYSTEM	RQ-21A	\$12,789,000	2	2	2	2	2
FLIGHT TRAINING DEVICE, KC-130J WEAPONS SYSTEM TRAINER (WST)	KC-130J FTD (WST)	\$33,267,089	1	1	1	1	1
FUSELAGE TRAINER, KC-130J	KC-130J FUT	\$17,078,182	1	1	1	1	1
COCKPIT PROCEDURES TRAINER, KC-130J	KC-130J CPT	\$4,937,258	1	1	1	1	1
OBSERVER TRAINING AID, KC-130J	KC-130J OTA	\$3,278,150	1	1	1	1	1
AIRCREW PROCEDURES TRAINER, AH-1W	AH-1W APT	\$4,500,000	1	1	1	1	1
FLIGHT TRAINING DEVICE, UH-1Y	UH-1Y FTD	\$16,400,000	2	2	2	2	2
FLIGHT TRAINING DEVICE, CH-53E	CH-53E FTD	\$10,611,000	1	1	1	1	1
CONTAINERIZED FLIGHT TRAINING DEVICE, MV-22B	MV-22B CFTD	\$9,239,000	2	2	2	2	2
Communications & Electronics							
TRSS DAY/NIGHT IMAGER, V2 (IMAGER 2)	A0003	\$49,383	102	102	102	102	102
THEATER BATTLE MANAGEMENT CORE SYSTEMS	A0013	\$342,866	1	1	1	1	2
AIR COMMAND & CONTROL SYSTEM (AC2S)	A0031	\$1,634,368	5	5	5	5	9
COMMUNICATIONS SYSTEM	A0032	\$1,503,497	12	11	11	11	11

Consolidated Major Item Inventory and Requirements

Nomenclature	Equip No.	Unit Cost	Begin FY 2023 QTY O/H	Begin FY 2024 QTY O/H	Begin FY 2025 QTY O/H	End FY 2025 QTY O/H	End FY 2025 QTY REQ
METEOROLOGICAL MOBILE FACILITY (REPLACEMENT) NEXT GENERATION V1 (METMF(R) NEXGEN V1)	A0036	\$4,318,576	1	1	1	1	1
HIGH FREQUENCY VEHICLE SYSTEM	A0067	\$53,234	150	152	207	207	207
VIDEO SCOUT REMOTE VIDEO EXPLOITATION TERMINAL (RVET)	A0091	\$87,400	414	69	0	0	0
LCMR MOBILE	A0108	\$581,000	0	0	5	5	5
HUB MODEM PACKAGE (HMP)	A0136	\$107,297	0	0	0	0	3
RADIO SET	A0139	\$47,828	87	87	87	87	123
RADIO SET	A0153	\$224,839	34	34	34	34	63
NOTM-AIRBORNE NETWORK AND COMMUNICATIONS	A0157	\$1,200,000	0	0	0	0	2
METEOROLOGICAL MOBILE FACILITY (REPLACEMENT) NEXT GENERATION V2 (METMF(R) NEXGEN V2)	A0166	\$1,922,657	1	1	1	1	1
POWER MODULE	A0172	\$5,955	17	17	17	17	27
COMM SECURITY MODULE (CSM)	A0173	\$44,550	70	70	70	70	95
LAN SERVICE MODULE (LSM)	A0174	\$92,330	38	38	38	38	46
COMPUTER DIGITAL DATA TRANSFER	A0175	\$2,615	86	86	86	86	116
LAN EXTENSION MODULE	A0176	\$27,930	285	285	285	285	377
APPLICATION SERVER MODULE(ASM)	A0177	\$14,980	70	70	70	70	95
DATA PROCESSING MODULE	A0183	\$16,375	36	36	36	36	71
CIHEP COMMERCIAL SATCOM SET (CSCS)	A0188	\$21,032	64	64	64	64	64
VEHICLE ACCESSORY MODULE	A0193	\$2,164	18	18	18	18	18
COMMON GEOINT WORKSTATION-R (CGW-R)	A0221	\$28,491	0	0	0	34	34
VERY SMALL APERTURE TERMINAL-SMALL (VSAT-S)	A0234	\$80,000	27	27	27	27	33
VERY SMALL APERTURE TERMINAL-MEDIUM (VSAT-M)	A0241	\$90,000	10	10	10	10	13
VERY SMALL APERTURE TERMINAL-LARGE (VSAT-L)	A0242	\$295,000	11	11	11	11	26
MASTER REFERENCE TERMINAL (MRT)	A0244	\$105,000	11	11	11	11	13
MARINE CORPS WIDEBAND SATELLITE COMMUNICATIONS TERMINAL EXPEDITIONARY (MCWS-X)	A0245	\$250,000	0	27	27	27	27
HF VEHICLE RADIO SYSTEM	A0266	\$50,755	52	52	52	52	148
ENTERPRISE SWITCH MODULE (ESM)	A0269	\$159,400	9	9	9	9	15
WAN SERVICE MODULE (WSM) (V)1	A0276	\$75,470	7	7	7	7	9
WIRELESS POINT TO POINT LINK (WPPL) T	A0278	\$100,000	31	31	31	31	60
INFORMATION ASSURANCE MODULE (IAM) DDS-M	A0304	\$50,000	25	25	25	25	25
WAN SERVICES MODULE (WSM) V2	A0312	\$41,850	73	73	73	73	75
SCA MULTIBAND NETWORKING RADIO	A0336	\$28,908	594	592	590	590	711

Consolidated Major Item Inventory and Requirements

Nomenclature	Equip No.	Unit Cost	Begin FY 2023 QTY O/H	Begin FY 2024 QTY O/H	Begin FY 2025 QTY O/H	End FY 2025 QTY O/H	End FY 2025 QTY REQ
SCA MULTIBAND NETWORKING VEHICULAR RADIO SYSTEM - SINGLE MOUNT (RF-300M-V150)	A0352	\$17,900	288	287	286	286	318
SMG-L	A0358	\$72,527	6	6	6	6	6
VERY SMALL APERTURE TERMINAL-EXPEDITIONARY (VSAT-E)	A0364	\$236,575	6	6	6	6	6
SENSITIVE COMPARTMENTALIZED INFORMATION KIT (SCIK)	A0366	\$191,000	1	1	1	1	1
NOTM POINT OF PRESENCE (POP) VEHICLE KIT, HMMWV/MRAP	A0387	\$1,700,000	23	23	23	23	23
NOTM STAFF VEHICLE KIT, HMMWV/MRAP	A0388	\$184,000	46	46	46	46	46
NOTM TEP MODEM KIT	A0395	\$150,000	7	7	7	7	7
AN/MRC-145B (RADIO SET)	A0403	\$109,111	149	149	149	149	176
TACTICAL COP WORKSTATION	A0932	\$1,348	0	0	0	0	151
HAND-HELD, PROGRAMMER MONITOR (HHPM)	A1221	\$15,000	36	36	36	36	36
RADAR SET, FIREFINDER	A1440	\$7,500,000	4	4	4	4	4
RADIO SET, MULTIBAND (MARITIME)	A2044	\$7,431	125	125	125	125	381
TERMINAL, RADIO, TROPOSCATTER, DIGITAL	A2179	\$1,500,000	18	18	18	18	28
TRSS RADIO REPEATER SET	A2300	\$22,687	96	96	96	96	96
ADVANCED FIELD ARTY TACTICAL DATA SYSTEM	A2555	\$2,844	122	122	122	122	163
TRACKING NETWORK, COMPOSITE (CTN)	A2600	\$3,698,025	1	1	1	1	2
SECURE MOBILE ANTI-JAM RELIABLE TACTICAL-TERMINAL (SMART-T)	A3232	\$825,000	6	6	6	6	9
SENSOR, GROUND, UNATTENDED	A3255	\$867,264	6	6	6	6	6
INTERROGATOR COMPUTER	A8018	\$1,499	4	4	4	4	11
TRANSPONDER COMPUTER	A8019	\$1,254	4	4	4	4	9
Engineer							
AIR CONDITIONER, 18K, 60HZ, R-410A	B0003	\$10,021	0	0	6	7	7
ENVIRONMENTAL CONTROL UNIT, 5-TON R-407C, 5T, 60K R-407C	B0008	\$20,251	47	47	47	47	58
ENVIRONMENTAL CONTROL UNIT, 3-TON R-407C	B0014	\$15,092	187	187	187	187	270
DISTRIBUTION SYSTEM, MOBILE ELECT PWR, 5KW (INDOOR)	B0027	\$4,500	121	121	121	121	216
DISTRIBUTION SYSTEM, MOBILE ELECT PWR, 5KW (OUTDOOR)	B0028	\$7,500	245	245	245	245	298
DISTRIBUTION SYSTEM, MOBILE ELECT PWR, 15KW	B0029	\$8,800	91	91	91	91	192
DISTRIBUTION SYSTEM, MOBILE ELECT PWR, 30KW	B0030	\$16,100	84	84	84	84	142
DISTRIBUTION SYSTEM, MOBILE ELECT PWR, 100KW	B0031	\$28,500	51	51	51	51	74

Consolidated Major Item Inventory and Requirements

Nomenclature	Equip No.	Unit Cost	Begin FY 2023 QTY O/H	Begin FY 2024 QTY O/H	Begin FY 2025 QTY O/H	End FY 2025 QTY O/H	End FY 2025 QTY REQ
DISTRIBUTION SYSTEM, MOBILE ELECT PWR, 300KW	B0032	\$22,100	18	18	18	18	20
ALL TERRAIN CRANE (ATC) MAC-50	B0038	\$1,771,758	11	11	11	11	20
AIRFIELD DAMAGE REPAIR (ADR) KIT	B0039	\$922,022	5	5	5	5	8
GENERATOR SET, 15 KW, 60 HZ, AMMPS, SKID MOUNTED	B0043	\$20,949	72	72	72	72	160
MEDIUM CRAWLER TRACTOR (JOHN DEER)	B0060	\$354,673	24	24	24	24	34
TRACTOR, RUBBER TIRE, ARTICULATED STEERING, MP	B0063	\$181,376	57	57	57	57	67
LIGHT WEIGHT WATER PURIFICATION SYSTEM	B0071	\$213,507	27	27	27	27	53
AIR CONDITIONER, 60HZ, 9K 1-PH, R-410A	B0074	\$9,510	14	14	14	14	17
GENERATOR SET, 5KW, 60HZ, AMMPS, SKID MOUNTED	B0077	\$19,878	91	91	91	91	91
GRADER, ROAD, MOTORIZED	B0078	\$341,423	11	11	11	11	14
LOW METALLIC SIGNATURE MINE DETECTOR	B0102	\$24,993	162	162	162	162	162
LIGHT WEIGHT CARBON ROD DETECTOR	B0105	\$3,886	404	404	404	404	414
EXCAVATOR, HYDRAULIC (HYEX)	B0119	\$242,636	9	9	9	9	12
MEPDIS-R ECU POWER DISTRIBUTION BOX (PDB)	B0143	\$12,632	35	35	35	35	35
CONTAINER HANDLER, RT, KALMAR	B0392	\$1,262,344	4	4	4	4	8
TACTICAL AIRFIELD FUEL DISPENSING SYSTEM (TAFDS) (FIRESTONE)	B0675	\$1,300,000	1	1	1	1	9
AMPHIBOUS ASSAULT FUEL SYSTEM (AAFS)	B0685	\$3,600,000	6	6	6	6	9
GENERATOR SET, 3KW, 60HZ, SKID-MTD	B0730	\$9,922	122	122	122	122	191
GENERATOR SET, 10 KW, 60 HZ, AMMPS, SKID MTD.	B0891	\$19,912	184	184	184	184	209
GENERATOR SET, SKID MTD, 10KW/400HZ, TQG	B0921	\$15,304	5	5	5	5	5
GENERATOR SET, 30 KW, 60 HZ, AMMPS,SKID MTD.	B0953	\$29,000	254	254	254	254	287
GENERATOR SET, 60 KW, 60 HZ, AMMPS, SKID-MTD.	B1021	\$31,000	110	110	110	110	211
REFUELING SYSTEM, EXPEDIENT, HELO	B1135	\$112,049	9	9	9	9	9
PUMP MODULE, FUEL (SIXCON)	B1580	\$23,350	111	109	107	107	119
ROLLER, COMPACTOR, VIBRATORY,SELF-PROPELLED	B1785	\$191,542	6	6	6	6	8
SCRAPER-TRACTOR, WHEELED	B1922	\$708,597	15	15	15	15	20
STORAGE TANK MODULE, FUEL (SIXCON)	B2085	\$26,000	313	310	307	307	399
STORAGE TANK MODULE, WATER (SIXCON)	B2086	\$46,000	259	259	259	259	295
SWEEPER, ROTARY, VEHICLE MOUNTING	B2127	\$316,575	0	0	0	0	6
LOADER, BACKHOE (BHL)	B2483	\$142,910	20	20	20	20	22
EXTENDABLE BOOM FORKLIFT - MODERNIZED (EBFL-M)	B2561	\$99,245	37	37	37	37	58

Consolidated Major Item Inventory and Requirements

Nomenclature	Equip No.	Unit Cost	Begin FY 2023 QTY O/H	Begin FY 2024 QTY O/H	Begin FY 2025 QTY O/H	End FY 2025 QTY O/H	End FY 2025 QTY REQ
FORKLIFT, RT, LT CAPABILITY (LRTF)	B2566	\$97,532	53	53	53	53	64
PURIFICATION SYSTEM, WATER, TACTICAL (TWPS)	B2605	\$337,000	10	10	0	0	12
20K TANK ASSEMBLY, WATER, FABRIC, COLLAPSIBLE	B2632	\$6,837	0	0	0	0	30
General Supply							
EXPEDITIONARY FIELD KITCHEN	C0034	\$419,830	5	5	5	20	20
EOD GENERAL PURPOSE (GP) DRSKO SET	C0042	\$838,668	3	3	3	2	3
MAGTF CBRN DISMOUNTED RECONNAISSANCE SET, KIT, OR OUTFIT (DR SKO)	C0069	\$1,630,000	2	2	2	9	2
ESCALATION OF FORCE-MISSION MODULES (EOF-MM)	C0104	\$422,707	9	9	9	86	9
RAIDING CRAFT, CMBT, RUBBER, INFLATABLE (CIRC)	C5901	\$32,751	35	35	35	10	54
TANDEM OFFSET RESUPPLY DELIVERY SYSTEM(TORDS)	C6375	\$20,000	5	5	5	5	10
AMAL 631, SHOCK SURGICAL TRIAGE EQUIPMENT	C8624	\$429,651	10	10	10	10	10
AMAL 645, RESUS SURGERY SYS, FORWARD (FRSS)	C8745	\$851,493	10	10	10	10	10
Motor Transport							
EQUIPMENT TRANSPORTER, SEMI-TRLR, LOWBED, 50T	D0002	\$105,308	2	2	2	2	5
TRUCK, ARMORED, CARGO 7 TON, W/O WINCH REDUCIBLE	D0003	\$1,038,258	177	175	173	173	445
TRUCK, ARMORED,XLWB W/O WINCH, REDUCIBLE	D0005	\$967,505	11	11	11	11	37
TRUCK,ARMORED,DUMP 7-TON W/O WINCH REDUCIBLE	D0007	\$909,255	8	8	8	8	45
TRUCK, RTAA, TRACTOR, 7 TON, W/O WINCH	D0009	\$553,981	14	14	14	14	20
TRUCK, ARMORED, TRACTOR, 7 TON, W/O WINCH, REDUCIBLE	D0013	\$991,148	9	9	9	9	44
TRUCK, ARMORED, WRECKER, 7 TON, W/ WINCH, NON-REDUCIBLE	D0015	\$941,695	46	46	46	46	51
TRUCK, UTILITY: EXPANDED CAPACITY, ENHANCED, FULLY ARMORED (2-DOOR)	D0033	\$177,000	229	0	0	0	0
TRAILER, PALLETIZED LOADING SYSTEM	D0035	\$96,063	75	73	71	71	90
P-19R AIRFIELD RESCUE AND FIRE FIGHTING VEHICLE	D0041	\$1,030,850	18	18	18	18	18
GENERAL PURPOSE JOINT LIGHT TACTICAL VEHICLE (JLTV)	D0045	\$300,000	0	0	0	277	277
HVY GUNS CARRIER JLTV	D0046	\$306,323	0	0	0	627	627
CLOSE COMBAT WEAPONS CARRIER JLTV	D0047	\$327,548	4	4	4	64	64
UTILITY JLTV	D0048	\$290,801	0	0	0	844	844

Consolidated Major Item Inventory and Requirements

Nomenclature	Equip No.	Unit Cost	Begin FY 2023 QTY O/H	Begin FY 2024 QTY O/H	Begin FY 2025 QTY O/H	End FY 2025 QTY O/H	End FY 2025 QTY REQ
LVSr, ARMORED CARGO VARIANT	D0052	\$1,403,789	38	36	34	34	44
LVSr, ARMORED TRACTOR VARIANT	D0053	\$1,275,336	7	7	7	7	7
LVSr, ARMORED WRECKER VARIANT	D0054	\$1,622,517	3	3	3	3	4
ARMORED SEMI-TRLR, REFUELER, 5,000 GAL	D0055	\$386,909	0	0	0	0	13
TRUCK, RTAA, CARGO, 7 TON, W/O WINCH	D0198	\$449,613	341	341	341	341	448
FLATRACK REFUELING CAPABILITY (FRC)	D0211	\$224,966	37	37	37	37	54
SEMI-TRLR, REFUELER, 5,000 GAL	D0215	\$397,355	17	17	17	17	51
SEMI-TRLR, LOWBED, 40T	D0235	\$102,094	47	47	47	47	60
TRLR, CARGO, RESUPPLY F/HIMARS	D0861	\$91,922	20	20	20	20	36
TRLR, TANK, WATER, 400 GAL, 1 1/2T, 2-WHL	D0880	\$20,954	191	189	187	187	216
TRUCK CARGO 22.5 TON, 10X10, (LVSr)	D0886	\$1,160,477	95	95	95	95	146
TRUCK, TRACTOR, 10X10 (LVSr)	D0887	\$1,045,775	42	42	42	42	56
TRK, AMBUL, 4-LTR, ARMD, 2 1/4T, HMMWV	D1001	\$107,323	18	18	18	18	18
TRK, AMBUL, 2-LTR, SOFT TOP, 2 1/4T, HMMWV	D1002	\$61,521	24	0	0	0	0
TRUCK, RTAA, XLWB CARGO, 7 TON, W/O WINCH	D1062	\$447,185	66	66	66	66	142
HIMARS, ARMORED RE-SUPPLY VEHICLE, NON REDUCIBLE	D1063	\$1,336,254	20	20	20	20	36
TRUCK, RTAA, DUMP, 7 TON, W/O WINCH	D1073	\$475,839	14	14	14	14	29
TRUCK, WRECKER, 10X10 (LVSr)	D1214	\$1,622,517	17	17	17	17	20
Ordnance & Weapons							
SCOUT SNIPER DAY SCOPE (SSDS)	E0013	\$2,670	230	230	230	230	255
SCOUT-SNIPER MID-RANGE NIGHT SIGHT	E0020	\$8,795	283	283	283	283	361
LONG RANGE SNIPER RIFLE	E0040	\$6,500	48	48	48	48	48
PORTABLE LIGHTWEIGHT DESIGNATOR RANGEFINDER (PLDR))	E0042	\$79,400	89	89	89	89	99
SABER SYSTEM	E0055	\$970,000	61	61	61	61	66
MODELED METEOROLOGICAL INFORMATION MANAGER (MMIM)	E0059	\$35,000	9	9	10	10	10
EOD AN/PLT-4 TRANSMITTER (CITADEL II)	E0090	\$24,699	4	4	4	4	6
M27 INFANTRY AUTOMATIC RIFLE (IAR)	E0100	\$2,815	3251	3251	3251	3251	3251
SEMI-AUTOMATIC SNIPER SYSTEM (SASS)	E0103	\$8,500	116	116	116	116	136
MACHINEGUN .50 CAL QCB	E0123	\$12,886	320	318	316	316	406
LIGHT ARMORED VEHICLE - ELECTRONIC WARFARE (LAV-EW)	E0133	\$6,485,011	3	3	3	3	3

Consolidated Major Item Inventory and Requirements

Nomenclature	Equip No.	Unit Cost	Begin FY 2023 QTY O/H	Begin FY 2024 QTY O/H	Begin FY 2025 QTY O/H	End FY 2025 QTY O/H	End FY 2025 QTY REQ
RADIAC SET AN/PDX-2	E0153	\$191,186	2	2	2	2	3
SIGHT, WEAPON THERMAL	E0156	\$7,840	192	192	192	192	192
CIRCLE, AIMING	E0180	\$3,913	82	82	82	82	96
JAVELIN	E0207	\$133,063	64	64	64	64	64
HOWITZER, LTWT, TOWED, 155MM	E0671	\$2,500,000	48	48	48	48	48
ASSAULT AMPHIBIOUS VEHICLE, COMMAND	E0796	\$3,719,875	10	8	6	6	6
ASSAULT AMPHIBIOUS VEHICLE, PERSONNEL	E0846	\$3,229,583	80	60	40	40	40
ASSAULT AMPHIBIOUS VEHICLE, RECOVERY	E0856	\$4,054,968	6	5	4	4	4
LAUNCHER, ROCKET, ASSAULT, 83MM	E0915	\$31,650	183	183	183	183	189
LAV, ANTI-TANK	E0942	\$2,091,280	24	24	24	24	24
LAV, COMMAND & CONTROL (BN)	E0946	\$3,255,380	18	18	18	18	18
LAV, LIGHT ASSAULT, 25MM	E0947	\$3,224,110	88	88	88	88	88
LAV, LOGISTICS	E0948	\$1,883,020	30	30	30	30	30
LAV, MORTAR	E0949	\$2,507,080	12	12	12	12	12
LAV, MAINT/RECOVERY	E0950	\$2,183,920	9	9	9	9	9
MACHINE GUN, CAL .50, BROWNING, HB FLEXIBLE	E0980	\$16,575	334	330	326	326	395
MACHINE GUN, MEDIUM, 7.62MM, GROUND VERSION	E0989	\$8,590	1191	1180	1169	1169	1461
HEAVY MACHINE GUN, 40MM	E0994	\$15,320	369	368	367	367	512
MORTAR, LW COMPANY, 60MM, M224A1	E1065	\$64,652	71	71	71	71	72
MORTAR, MEDIUM, 81MM, EXTENDED RANGE	E1095	\$47,043	76	76	76	76	76
NEUTRALIZATION DEVICE, ORDNANCE, REMOTE	E1385	\$259,279	2	2	2	2	3
RIFLE, SNIPER, 7.62MM, M40A6	E1460	\$7,503	56	56	56	56	56
RIFLE, SCOPED, SPECIAL APPLICATION, .50 CAL.	E1475	\$12,078	63	63	63	63	63
ROCKET SYSTEM, ARTY, HIGH MOB (HIMARS)	E1500	\$10,500,000	18	18	18	18	18
RECEIVER, INFRARED (STINGER)	E1837	\$24,143	2	2	2	2	4
SIGHT, WEAPON, THERMAL, MEDIUM (MTWS)	E1975	\$11,300	1011	1000	989	989	1269
SIGHT, WEAPON, THERMAL, HVY (HTWS)	E1976	\$11,999	841	834	827	827	1339

Note: The above table reflects estimated on-hand and Reserve-In-Stores quantities against the full wartime requirement. USMC equipping strategy is that the RC maintains on-hand a Training Allowance only. The Training Allowance is the portion of the wartime requirement necessary to conduct home station training. USMC operating concepts rely on global sourcing and pre-positioned assets for combat. When activated, the USMC plans on RC units falling in on either pre-positioned equipment or assets already in theater from previous rotations.

USMCR

Average Age of Equipment

Table 2

NOTE: This table provides the average age of selected major equipment items. The average age provides a projected average age of the fleet at the start of FY 2021.

Nomenclature	Equip No.	Average Age	Remarks
Aircraft			
Aircraft, Fighter/Attack, F/A-18A++	F/A-18A++	34	
Aircraft, Fighter/Attack, F/A-18C+	F/A-18C+	31	
Aircraft, Refueling/Cargo, KC-130T	KC-130T	27	
Aircraft, Refueling/Cargo, KC-130J	KC-130J	10	
Aircraft, Utility/Cargo, UC-12W	UC-12W	10	
Aircraft, Utility/Cargo, UC-35C	UC-35C	20	
Aircraft, Utility/Cargo, UC-35D	UC-35D	12	
Aircraft, Fighter, F-5F	F-5F	40	
Aircraft, Fighter, F-5N	F-5N	40	
Tilt-rotor, Cargo, MV-22B	MV-22B	13	
Helicopter, Attack, AH-1Z	AH-1Z	4	
Helicopter, Attack, AH-1W	AH-1W	28	
Helicopter, Utility, UH-1Y	UH-1Y	5	
Helicopter, Cargo, CH-53E	CH-53E	22	
RQ-21A Blackjack System	RQ-21A	3	
Communications/Electronics			
Adaptable Tactical Lightweight Antenna System (ATLAS)	A0063	1	New Table 1 item. Added to Table 2 per instructions
High Frequency Vehicle System	A0067	14	
Radio Set	A0153	13	
Very Small Aperture Terminal - Small (VSAT-S)	A0234	5	
Very Small Aperture Terminal - Medium (VSAT-M)	A0241	5	
Very Small Aperture Terminal - Large (VSAT-L)	A0242	5	
VSAT Master Reference Terminal (MRT)	A0244	5	
Marine Corps Wideband SATCOM-Expeditionary (MCWS-X)	A0245	1	New Table 1 item. Added to Table 2 per instructions
Combat Operations Center (COC) V(4)	A0255	5	
Combat Operations Center (COC) V(2)	A0271	5	
GBS RECEIVE SUITE, AN/TSR-11	A0428	3	New Table 1 item. Added to Table 2 per instructions
GBS RECEIVE SUITE, AN/PRS-11	A0431	2	New Table 1 item. Added to Table 2 per instructions
Motor Transport			
Truck, Armored, Cargo 7-ton, W/O Winch Reducible	D0003	13	
Truck, Armored, XLWB, W/O Winch Reducible	D0005	13	
Truck, Armored, Dump 7-ton W/O Winch Reducible	D0007	10	
Truck, RTAA, Tractor, 7-ton, W/O Winch	D0009	8	
Truck, Armored, Tractor, 7-ton, W/O Winch, Reducible	D0013	8	
Truck, Armored, Wrecker, 7-ton, W/Winch Non-Reducible	D0015	8	

USMCR Average Age of Equipment

Table 2

Nomenclature	Equip No.	Average Age	Remarks
Truck, Utility, Expanded Capacity, Enhanced, M1152	D0022	11	
Truck, Utility, Expanded Capacity, Armament Carrier	D0030	11	
Truck, Utility, Expanded Capacity, C2/GP Vehicle	D0031	11	
Truck, Utility, ECV, TOW Carrier, Armored	D0032	11	
Truck, Utility, Expanded Capacity, Fully-armored (2-door)	D0033	11	
Truck, Utility, Ground Mobility Vehicle, Armored (4-door)	D0034	11	
Truck, RTAA, Cargo, 7-ton, W/O Winch	D0198	13	
Semitrailer, Refueler, 5,000 gal	D0215	17	
Semitrailer, Lowbed, 40-ton	D0235	17	
Trailer, Cargo, Resupply for HIMARS	D0861	13	
Truck Cargo 22.5-ton, 10X10, (LVSR)	D0886	8	
Truck, Tractor, 10X10 (LVSR)	D0887	6	
Truck, Ambulance, 4-Litter, Armored, 2 1/4-ton, HMMWV	D1001	16	
Truck, Ambulance, 2-Litter, Soft Top, 2 1/4-ton, HMMWV	D1002	16	
Truck, RTAA, XLWB Cargo, 7-ton, W/O Winch	D1062	13	
HIMARS, Armored Resupply Vehicle, Non-Reducible	D1063	10	
Truck, RTAA, Dump, 7-ton, W/O Winch	D1073	10	
Truck, Wrecker, 10X10 (LVSR)	D1214	7	
Ordinance & Weapons			
Saber System	E0055	8	
Javelin	E0207	8	
Equipment Set, Night Vision	E0330	29	PMM140. Obsolete. TAMCN in DP status.
Howitzer, Lightweight, Towed, 155mm	E0671	10	
Assault Amphibious Vehicle (AAV), Command	E0796	44	
Assault Amphibious Vehicle, Personnel	E0846	44	
Assault Amphibious Vehicle, Recovery	E0856	44	
Launcher, Rocket, Assault, 83mm	E0915	36	
Launcher, Tubular, F/GM TOW Weapon System	E0935	32	PMM140. Obsolete. TAMCN in DP status.
Light Armored Vehicle (LAV), Anti-Tank	E0942	27	
LAV, Command & Control (Battalion)	E0946	18	
LAV, Light Assault, 25mm	E0947	24	
LAV, Logistics	E0948	21	
LAV, Mortar	E0949	24	
LAV, Maintenance/Recovery	E0950	32	
Recovery Vehicle, Full-tracked, Heavy, W/Equip	E1378	11	
Rocket System, Artillery, High Mobility (HIMARS)	E1500	10	
Tank, Combat, Full-tracked, 120mm Gun	E1888	21	

Service Procurement Program - Reserve (P-1R)

NOTE: This table provides a comparison of the dollar value of the FY 2020 request, the FY 2020 enacted amount; and, the actual amount spent on procurement for specific categories of RC equipment. All values are costs in millions. Deliveries of procured equipment normally take one to two years before they arrive in the inventory; e.g., items procured in FY 2022 are expected to arrive in RC inventories in FY 2023 or FY 2024.

Nomenclature	Request	Enacted	Actual
Radar + Equipment (Non-Tel)	121.8	121.8	125.9
Other Support (Non-Tel)	6.7	6.7	6.7
Guided Missiles	3.5	3.5	3.3
Other Support	2.4	2.4	2
Tactical Vehicles	1.1	1.1	1.1
Intell/Comm Equipment (Non-Tel)	1	1	0.7
Tracked Combat Vehicles	0.3	0.3	0.3
Engineer and Other Equipment	2.2	2.2	0.3
Grand Total	141	141	140

National Guard and Reserve Equipment Appropriation (NGREA) Procurements

NOTE: This table identifies the dollar value of planned equipment procurements with the National Guard and Reserve Appropriation (NGREA). These funds are available for a three-year period from the year of appropriation. Deliveries of procured equipment normally take one to two years from the date of procurement before they arrive in the inventory.

Marine Corps Reserve Defense Appropriations Act NGREA	FY 2020 ¹	FY 2021	FY 2022 ²
F-5 N Block Upgrades		9,300,000	
Meteorological Mobile Facility {Replacement} Next Gen (V)2 IBV		1,900,000	
Naval Integrated Tactical Environmental System (NITES-Next) INMARSAT		10,800	
Module		9,300,000	
Naval Integrated Tactical Environmental System (NITES IV)		1,900,000	
PROCESSING Module		10,800	
Naval Integrated Tactical Environmental System (NITES IV) SENSOR		180,000	
Module		400,400	
UC-35D Engines		3,800,000	
IMV-22 Nacelle Maintenance Stands		493,826	
Truck Mounted Cleaning and De-Icing Stand		429,450	
Squad Binocular Night Vision Goggle (SBNVG) AN/PVS-31A/B		611,134	
Enhanced Clip On Thermal Imager {ECOTI} AN/PAS-29B		372,000	
Total USMCR NGREA	0	17,497,610	

1. NGREA funds for FY 2020 were reallocated by DoD.
2. FY 2022 data was not available at time of publication.

Projected Equipment Transfer/Withdrawal Quantities

NOTE: This table portrays the planned equipment transfers (Active to Reserve), withdrawals (-), and decommissioning (-). Transferred equipment is commonly called "cascaded equipment," or equipment that is provided to the RC once the AC receives more modern equipment. Although this table highlights a three-year period, many Services will not know exact quantities of transfers or withdrawals until year of execution, due to the uncertainty of the procurement/delivery cycle of new equipment.

Nomenclature	Equip No.	FY 2022 Qty	FY 2023 Qty	FY 2024 Qty	Remarks
Aircraft, Refueling/Cargo, KC-130T	KC-130T				Last aircraft transferred as part of sundown plan February 2021
Aircraft, Refueling/Cargo, KC-130J	KC-130J		-1	+2	DC Aviation has not published projected transfers of KC-130Js to the RC beyond FY 2021, due to unknown production and delivery schedule from manufacturer. FY22 no gain but inter wing transfer, FY23 gain 3 but transfer 4, FY24 1 gain, 1 delivery.
Aircraft, Fighter Adversary, F-5N	F-5N	+1	+1	+3	With the FY 2020 NDAA line item for purchasing F-5N aircraft from the Swiss, the Marine Corps Reserve anticipates a total of (16) F-5N aircraft in FY 2024
Aircraft, Fighter Adversary, F-5F	F-5F	+1	+1	+1	With the FY 2020 NDAA line item for purchasing F-5F aircraft from the Swiss, the Marine Corps Reserve anticipates a total of (4) F-5F aircraft in FY 2024
Assault Amphibious Vehicle (AAV), Command	AAV-C				AAV sundown plan(s) published in FY 21. Divestment is targeted to begin in FY 24 and complete by the end of FY 25.
Assault Amphibious Vehicle, Personnel	AAV-P				AAV sundown plan(s) published in FY 21. Divestment is targeted to begin in FY 24 and complete by the end of FY 25.
Assault Amphibious Vehicle, Recovery	AAV-R				AAV sundown plan(s) published in FY 21. Divestment is targeted to begin in FY 24 and complete by the end of FY 26.

FY 2019 Planned vs Actual Procurements and Transfers

NOTE: This table compares planned Service procurements and transfers to the RC in FY 2019 with actual procurements and transfers. FY 2019 is selected as these are the most recent funds to expire. Because the procurement cycle is normally one to two years from funding to delivery, this table identifies only deliveries through the end of 2021. Procurement and NGREA columns reflect cost values in dollars.

Nomenclature	Equip. No.	FY 2019 Transfers (# of items)		FY 2019 Procurements (\$s)		FY 2019 NGREA (\$s)	
		Plan	Actual	Plan	Actual	Plan	Actual
FY 2019 Planned Transfers & Withdrawals							
Aircraft, Refueling/Cargo, KC-130J	KC-130J	4	6				
Aircraft, Refueling/Cargo, KC-130T	KC-130T	-5	-4				
Deployable End Office Suite - Transition Switch Module (TSM)	A0125	-32	-30				
FY 2019 Service Procurement Programs – RC (P-1R) Equipment							
Weapons and Combat Vehicles							
AAV7A1 PIP				322,000	322,000		
Modification Kits				2,512,000	2,602,000		
155mm Lightweight Towed Howitzer				6,000	6,000		
Artillery Weapons System				3,068,000	3,068,000		
Guided Missiles and Equipment							
Anti-Armor Missile-Javelin				167,000	167,000		
Anti-Armor Missile-TOW				186,000	186,000		
Support Vehicles							
Motor Transport Modifications				237,000	237,000		
Family of Tactical Trailers				668,000	668,000		
Engineer and Other Equipment							
Tactical Fuel Systems				54,000	54,000		
Power Equipment Assorted				1,833,000	0		
Amphibious Support Equipment				199,000	199,000		
Family of Construction Equipment				2,282,000	2,282,000		
Items Less Than \$5 Million				510,000	510,000		
Communications and Electronics Equipment							
Items Under \$5 Million (Comm & Elec)				48,000	48,000		
Command Post Systems				2,158,000	2,158,000		
Comm Switching & Control Systems				2,448,000	2,448,000		
Radar Systems				4,382,000	4,382,000		
Ground/Air Task Oriented Radar (G/ATOR)				119,357,000	119,357,000		
Fire Support System				1,352,000	1,352,000		
Intelligence Support Equipment				529,000	529,000		
Total				142,318,000	140,575,000		
FY 2019 National Guard and Reserve Equipment Appropriation (NGREA) Equipment							
Mobile Integrated Remains Collection System (MIRCS)						6,825,000	6,825,000
F/A-18 SimuStrike Low Cost Trainer (LCT)						2,400,000	1,756,704

USMCR

Table 6

FY 2019 Planned vs Actual Procurements and Transfers

Nomenclature	Equip. No.	FY 2019 Transfers (# of items)		FY 2019 Procurements (\$s)		FY 2019 NAREA (\$s)	
		Plan	Actual	Plan	Actual	Plan	Actual
HD-9 Visual Database Upgrade F/A-18 TOFT Trainer						1,900,000	1,980,163
F/A-18 Brief/Debrief Station (BDS)						900,000	813,265
Footprint Reduction I Storage Area Network (FR/SAN) for Aviation						850,000	1,499,868
Initial Spares Package for F/A-18 TOFT Trainer						125,000	125,000
Total						13,000,000	13,000,000

Major Item of Equipment Substitution List

NOTE: This table identifies equipment authorized by the Service to be used as a substitute for a primary item of equipment. The table also identifies whether or not the item is deployable in wartime. This data meets the Title 10 requirement to identify substitutes that are not the most desired equipment item.

Required Item Nomenclature	Reqd Item Equip No.	Substitute Item Nomenclature	Substitute Item Equip No.	FY 2022 Qty	Deployable?	
					Yes	No

Service Does Not Use Substitution to Satisfy Major Item Equipment Requirements.

**USMCR
Significant Major Item Shortages**

Table 8

NOTE: This table provides a RC top ten prioritized (PR) shortage list for major equipment items required for wartime missions. It lists the total quantity required, the shortfall, the individual item cost, and the total cost of the shortfall. This data is consistent with other equipment data submitted by the Service.

Priority	Nomenclature	T/E QTY	Req Qty	U/P	Total	Remarks/Justification
1	Joint Light Tactical Vehicle (JLTV)	2,196	2,196	\$ 339,000.00	\$ 744,444,000.00	The JLTV is a joint Army/Marine Corps program to procure the next generation of light tactical vehicles and companion trailers. The vehicle design provides the warfighter with increased protection through the use of scalable armor solutions, while restoring payload capabilities lost due to the armoring of the high mobility multipurpose wheeled vehicle (HMMWV) fleet. Full rate production and fielding started in FY 2019. The Marine Corps plans to procure 12,500 JLTVs. The RC is slated to receive a total of 2,196 vehicles starting in FY 2030 with FOC slated for FY 2036.
2	F-5 N/F block upgrades	12	10	Varies	\$ 38,500,000.00	The F-5 is the DoN's only tactical jet without basic safety features and is flown in some of the most dynamic roles. The current cockpit instrumentation not only lacks basic safety features but also has extreme obsolescence and sustainment challenges which will increasingly degrade F-5 readiness. Upgrading the old/obsolete instrumentation and adding required safety features will avoid degraded readiness and mitigate mishaps. Total cost for block upgrade is: \$35M, with additional Anti-Skid upgrades totaling: \$3.5M.
3	Individual Combat Clothing and Equipment (ICCE)	Varies	Varies	Varies	\$ 42,000,000.00	ICCE comprises the full suite of protective equipment each Marine relies on for kinetic threat protection, to carry their combat loads and protection from environmental threats. As a complete system of equipment ICCE enables Marines to function in austere environments. ICCE provides critical life saving protection in combat environments, constant upgrade and new fielding of ICCE creates sustainment challenges as replacement items cannot be requisitioned while the item is in fielding. Additionally, the individual cost of each item continues to increase without a subsequent increase in baseline sustainment funding to support the requirement through its lifecycle. Additionally, Combatant Commanders require specific ICCE based on the threats presented within the AO.
4	BINOCULAR NIGHT VISION DEVICE	5,870	5,536	\$ 6,470.00	\$ 35,817,920.00	The Squad Binocular Night Vision Goggle is a lightweight night vision system comprising an image-intensifier binocular and enhanced clip-on thermal imager. The SBNVG provides capabilities that increase the survivability and lethality of the Marines. A helmet-mounted system, the SBNVG provides increased depth perception, improved clarity and a thermal-imaging capability to detect targets in extreme darkness or through battlefield obscurants. Marines can use the goggles to operate vehicles at night, move through dark buildings or tunnels, and engage targets after sunset.
5	Ground/Air Task Oriented Radar (G/ATOR) AN/TPS-80	2	1	\$ 38,962,000.00	\$ 38,962,000.00	AN/TPS-80 is a three-dimensional, expeditionary, short/medium range multi-role radar capable of detecting low-observable, low-radar cross-section targets such as rockets, artillery, mortars, cruise missiles, and unmanned aerial systems. This system is ideal for distributed operations to augment sea based air-defense sensors, and C2 capabilities. It provides the Naval and Joint Forces with expeditionary radar and cruise missile detection capability that extends landward battlespace coverage. The USMCR currently has an allowance for 2 systems with one funded, and one unfunded.
6	F-5 Simulator startup costs	Varies	Varies	Varies	\$ 1,100,000.00	The F-5 simulator was included in the FY 2020 budget line item purchasing 22 Swiss F-5 aircraft. The simulator line item did not include the cost of establishing the location for its placement. This is requested in order to perform site preparations and provide for required facilities and public works efforts to place and operate the simulator with necessary power, security, and infrastructure support for its use.

USMCR
Significant Major Item Shortages

Table 8

Priority	Nomenclature	T/E QTY	Req Qty	U/P	Total	Remarks/Justification
7	Joint Light Tactical Vehicle (JLTV), Intermediate Field Maintenance Kit	101	72	\$ 25,524.00	\$ 1,837,728.00	Required to support fielding of JLTV
8	Joint Light Tactical Vehicle (JLTV) Trailer	64	64	\$ 57,000.00	\$ 3,648,000.00	Required to support fielding of JLTV
9	Transfer Device, Data	1,987	185	\$ 2,919.00	\$ 540,015.00	The PYQ-10 (Simple Key Loader-SKL) is a dedicated device that allows secure, multi-band communications over Very High Frequency (VHF) frequency hopping/Ultra High Frequency (UHF) Line of Sight communications, SATCOM and High Frequency (HF). Without dedicated SKL's, flexibility, and frequency hopping capabilities (which allow units to talk on VHF radio equipment), is degraded. In a CONUS training environment, SKL's will allow units to support overlapping training exercises.
10	F-5 N/F MAXDRFM jamming pods	12	12	\$ 1,030,938.00	\$ 12,371,256.00	Provides an increased jamming capability over the current legacy equipment. This improves the electronic attack capability to support Red Air training evolutions prior to fleet deployments. MAXDRFM provides modern electronic jamming techniques and an updated operating system with capacity for future upgrades to threat jamming capability. This will bring the USNR and USMCR F-5's to a common configuration. Additionally, this item will not be funded by the AC due to it being equipment specific to a Reserve airframe.

Chapter 4

United States Navy Reserve (USNR)

I. Navy Overview

A. Navy Planning Guidance

The reemergence of long-term strategic competition, the evolving character of that competition, and accelerating advancements in technology are spurring a period of transformation in the strategic environment, requiring the Navy to adapt its integrated naval force design and operating concepts. The Navy must be ready to respond by delivering the personnel, platforms, and operational capability necessary to secure vital sea lanes, standing by our allies, and protecting the American people.¹

The requirements of long-term strategic competition dictate that the United States Navy Reserve (USNR) will pivot to a unit-centric model capable of rapidly deploying trained and ready forces, while ensuring force structure, resourcing, manning, and mobilization processes are aligned with the National Defense Strategy (NDS).² The ability of the USNR to be a Global Force Management (GFM) deployer and pre-deployment enabler depends on readiness. Being ready to win is not a passive undertaking. The USNR must deliberately focus actions on readiness and infuse a sense of urgency in how it operates. This requires improved readiness systems and processes that better enable Reserve Sailors to contribute to the fight.³

B. Navy Equipping Policy

DoD Instruction 1225.06, *Equipping the Reserve Forces* states that all units will be equipped to accomplish assigned missions and shall have a responsive, balanced, and sustainable equipment and distribution program to effectively meet mission requirements. Units scheduled for deployment should be prioritized for equipment distribution. Equipment priorities for Reserve Component (RC) units will be determined with the same methodology as Active Component (AC) units with the same mobilization mission in accordance with Chief of Naval Operations (CNO) established guidance.

C. Plan to Fill RC Equipment Mobilization Requirements

Reserve equipment allocation is planned and coordinated with the AC via the planning, programming, budgeting, and execution (PPBE) process. In 2020, the USNR assumed responsibility as a resource sponsor for RC manpower and readiness beginning in FY 2023. The USNR maintains equipment as training or mobilization assets and, in many instances, will utilize AC equipment already in theater. In certain warfare areas such as aviation and expeditionary, the RC maintains its own equipment for operational employment. Equipment requirements and

¹ Chief of Naval Operations Statement before the Senate Armed Services Committee, March 5, 2020.

² Chief of Navy Reserve Statement before the Senate Subcommittee on Defense, Committee on Appropriations, May 18, 2021.

³ *Navy Reserve Fighting Instructions*, November 2020.

shortfalls are identified during the requirements process, which the USNR then prioritizes and funds based on resources allocated.

D. Initiatives Affecting RC Equipment

In the *Navy Reserve Fighting Instructions*, the Chief of Navy Reserve states:

“We are focused unambiguously on warfighting readiness. It is my number one and only priority—period. We will generate the combat power and critical strategic depth the Navy requires to prevail in conflict in an era of great power competition. That's our job, and why we exist. All else is secondary.”⁴

Three overarching principles are outlined for meeting this priority via types of lines of effort: Design, Train, and Mobilize the Force. In alignment with these lines of effort, and to ensure that Reserve Sailors are ready to activate and serve on “Day One” throughout the spectrum of conflict at a resource-informed cost, the Navy has established ongoing initiatives to recapitalize or modernize most of its fleet of aircraft and its patrol boat inventory. Examples of key USNR programs that require further investment are listed below:

- **K/C-130T Hercules:** The K/C-130T is a unique Fleet logistics enabler capable of airlifting oversized cargo that the AC is unable to transport organically, including weapons, CMV-22 detachments, and replacement parts for warfare platforms (F-35 engines, submarine masts, etc.). Although the mission of Reserve K/C-130T aircraft is essential, aircraft age, associated parts availability, and maintenance issues present significant challenges that negatively affect aircraft readiness and Fleet support capability.

The most desirable and only long-term solution to increase readiness and meet increasing Fleet demand is to recapitalize the existing K/C-130T aircraft with the more supportable and capable C-130J. This recapitalization effort is the Chief of Navy Reserve’s top equipment priority, but requires significant funding to accomplish. In the interim, to mitigate existing challenges with the K/C-130T fleet and maintain global support operations, Commander, Naval Air Force Reserve (CNAFR) has undertaken several modernization initiatives including a substantial avionics safety upgrade.

- **F-5 N/F Tiger II:** USNR F-5N/F squadrons provide dedicated professional adversary support to the Fleet. These aircraft provide 60 percent of USN’s professional adversary support sorties, primarily to Fleet Replacement squadrons and Fleet squadrons going through Advanced Readiness Program syllabi and Air Wing training. Starting in 2022, VFA-204 will divest of the F/A-18C/D and transition into F-5N/F provided by VFC-13. VFC-13 aircraft will in turn transition to the F-16C provided by the Air National Guard.

Continuing the modernization of the F-5N/F fleet is imperative for safety and training relevance. For several years, the F-5N/F has been slowly undergoing a necessary block upgrade that brings modernized cockpits and a digital architecture. Block upgraded aircraft are safer to operate and, with additional updates, provide better threat representation and

⁴ *ALNAVRESFOR 025/20:NAVY RESERVE FIGHTING INSTRUCTIONS 2020.*

higher fidelity training to Fleet customers. Additional funding will be required to complete this effort.

- **F-16C Fighting Falcon:** In 2022, VFC-13 will transition from the F-5N to the F-16C Fighting Falcon. The aircraft are set to receive a large number of modifications, increasing the capabilities of the 4th generation fighter, that will make them the U.S. Navy's most capable adversary platform for years to come. These aircraft will be used to support the Navy's most advanced air-to-air training events including TOPGUN, Advanced Readiness Program syllabi, and Air Wing Fallon. Additional funding will be required to ensure that these aircraft continue to provide the Fleet with threat representative capabilities like Infrared Search and Tracking Systems (IRSTS).
- **MH-60R Seahawk:** HSM-60 is the USNR's only Helicopter Maritime Strike (HSM) squadron. In FY 2015, NGREA funding was used to modify all of HSM-60's helicopters with the day and night Head Up Display (HUD), greatly increasing their Airborne Use of Force (AUF) mission capability. Investing in Digital Magnetic Anomaly Detection (DMAD) kits will provide capability advancements in Anti-Submarine Warfare (ASW). The kits are transferable, allowing the squadron to outfit any of their aircraft with enhanced passive submarine detection, a highly-valued mission set on detachments supporting surface combatants.
- **Maritime Expeditionary Security Force (MESF):** The MESF is the only force provider for port security and harbor defense across DoD. With the current 34-foot Patrol Boat (34PB) operating past its service life, the Navy has begun to procure the 40-foot Patrol Boat (40PB) as the fleet replacement. The 40PB will be procured over a 15-year period, 2018–2033. In FY 2014, USNR MESF assumed Continental United States (CONUS) high-value unit escort missions from the United States Coast Guard. The RC MESF continues to support this mission while also forward-deployed. The CONUS missions encompass five locations on both coasts. Additional critical MESF equipment requirements include procuring Patrol Boat navigation simulators, Patrol Boat prime mover trucks, and mobile SATCOM equipment.
- **Navy Expeditionary Logistics Support Group (NAVELSG):** The NAVELSG is tasked with providing Expeditionary Ordnance (EXORD) reload operations, at sea or ashore, in austere, expeditionary non-permissive environments where Navy Munitions Command (NMC) units do not have the capacity or capability. Rearming Vertical Launch System platforms will be accomplished via the Expeditionary Reload Teams (ERT) within the Expeditionary Reload Company (ERC). NAVELSG is establishing ERCs within each reserve Naval Cargo Handling Battalion (NCHB). Reloading surface combatants in non-permissive environments provides Combatant Commanders agility through the spectrum of conflict. Equipment requirements to enhance existing capabilities and bolster them for new, ordnance-specific tasks include additional Civil Engineer Support Equipment (CESE), Material Handling Equipment (MHE), Weight Handling Equipment (WHE), and Ordnance Handling Equipment (OHE).
- **Naval Construction Force (NCF):** The NCF is tasked to support Naval Component Commanders, Marine Corps Commanders, Combatant Commanders, and the Joint Task Force with expeditionary construction and engineering service capabilities to support Battle Damage Repair (BDR) of naval airfields and ports; construction of advance naval bases and

theater infrastructure such as roads, naval airfields, and ports; and contingency base construction repair and support. The NCF is bolstering existing capabilities in Expeditionary Airfield Damage Repair (Ex-RADR) and Expeditionary Port Damage Repair and Opening (Ex-PDRO) by testing and acquiring more agile, mobile, and scalable equipment and by implementing revised Tactics, Techniques, and Procedures to enable the Joint Force.

E. Plan to Achieve Full Compatibility and Interoperability between AC and RC

To compete and win in long-term strategic competition requires a depth of assets. This depth can only be built through AC/RC compatibility and interoperability. To ensure effective and efficient execution, it is critical that the Navy and Navy Reserve work in concert to achieve and maintain synergy within the Total Force. Along with various upgrade and recapitalization efforts, the following are several recent NGREA procurements helping the RC to keep pace:

- Force Protection Large Prime Movers
- F-5 upgrades (Avionics, Antiskid, Threat Representation)
- NAVELSG Crane Simulators
- MH-60S External Gun Mount System.

Without a continued focus on interoperability, the USNR will fall behind the AC and struggle to deliver against the demands of long-term strategic competition.

II. Navy Reserve Overview

A. Current Status of the Navy Reserve

1. General Overview

An integral part of the United States Navy, the RC is comprised of 95,744 citizen Sailors, including 46,955 Selected Reservists, 38,665 Individual Ready Reservists, and 10,124 Full Time Support members. These Sailors come from every state and territory. Historically comprising less than 2 percent of the Navy's total annual budget, USNR Sailors have mobilized over 94,000 times to every theater of operation since 2001.

Top Navy Reserve Focus Areas

- Recapitalize aging C/KC-130T fleet with modern C-130J aircraft
- Invest in Expeditionary Logistics Vertical Launch System Reload to support Distributed Maritime Operations
- Ensure long-term Adversary capability to provide the fleet with relevant, necessary tactics training

Aligned with guidance from the National Military Strategy and the CNO's *Design for Maintaining Maritime Superiority 2.0*, the USNR is rebalancing to meet the dynamic challenges of today and the threats of tomorrow. We are building a more lethal and ready force, focused on capabilities, as an essential element of naval power in an era of long-term strategic competition.⁵

The USNR provides crucial capabilities for urgent missions and operational support. Recent examples include:

- In November 2020, HSM-60 embarked a two-plane detachment aboard cruiser USS SAN JACINTO (CG 56) to support Theater Anti-Submarine Warfare (ASW) and national tasking. Additionally, in August 2021, the squadron completed work-ups in preparation for a two-plane detachment on an independent deployment to a guided missile destroyer in summer 2022. HSM-60 is the only Navy HSM squadron manned and equipped with a night Head Up Display (HUD) capability (procured using NGREA) to execute this mission at night.
- From Guam to Key West, USNR Adversary squadrons continue to provide the majority of the Navy's professional airborne adversary support. Four Reserve squadrons support Fleet Replacement Squadron initial air-to-air training, Fleet squadron unit level air-to-air-training, and advanced graduate level training for TACAIR Advanced Readiness Programs, Air Wings, TOPGUN, and Carrier Strike Groups.
- To accommodate COVID-19 mitigation measures, Fleet Logistics Support Wing (FLSW) provided previously unheard of, but now essential, "bubble-to-bubble" transport for thousands of personnel around the world. During 1,926 airlift missions that supported Navy, DoD, and White House requirements, CNAFR's C-40A Clipper and K/C-130T Hercules aircraft flew 25,226 flight hours, transported 100,904 passengers, and moved 22.0 million pounds of cargo. This included transporting nearly 30,000 Recruit Training Command (RTC) graduates to their follow-on "A" Schools, enabling a much higher level of accountability of our newest sailors during worldwide pandemic conditions.

⁵ Chief of Navy Reserve Statement, Hearing before the Senate Appropriations Committee Subcommittee on Defense, April 10, 2019.

- More than 1,300 USNR healthcare providers mobilized to support the national pandemic response effort, some with as little as 2 days' notice. USNR Sailors manned our Navy's two hospital ships as well as the Navy Medical Support Team in New York City in spring of 2020. Members provided COVID screening and support at recruit training sites for the Navy and Marine Corps to ensure the safe, uninterrupted operation of accession pipelines. USNR members also took part in federal vaccination efforts by administering more than one million shots across the country.
- Nearly 1,400 USNR Surge Maintenance experts mobilized to the nation's four public shipyards: Norfolk Naval Shipyard, Portsmouth Naval Shipyard, Puget Sound Naval Shipyard, and Pearl Harbor Naval Shipyard, to clear the pandemic-induced maintenance backlog that resulted from at-risk civilian shipyard workers self-isolating away from the workplace.
- In response to subsurface threats in the Arctic, FLSW C-40A and K/C-130T aircraft performed numerous time-critical sonobuoy resupply missions to the North Pacific and North Atlantic that enabled continuous ASW operations by deployed Maritime Patrol and Reconnaissance (VP) units. As threats moved throughout the region, FLSW aircraft rapidly redeployed and resupplied assets in response to a fluid tactical environment.

a. Naval Air Force Reserve

The Naval Air Force Reserve provides critical GFM assets and personnel the Navy needs to prepare for and defeat current and future threats. It is comprised of 7,600 personnel and 150 aircraft assigned to three Air Wings, two Joint Reserve Bases, and one Naval Air Facility. FLSW and Tactical Support Wing (TSW) are based at Naval Air Station-Joint Reserve Base Fort Worth, TX, and the Maritime Support Wing (MSW) is headquartered at Naval Air Station North Island, CA. Naval Air Forces Reserve Joint Reserve Bases are in Fort Worth, TX, and New Orleans, LA, and Naval Air Facility Washington is co-located with Andrews Air Force Base in Maryland. The USNR also operates 23 Reserve Squadrons and 28 Squadron Augment Units that either deploy regularly or provide critical pre-deployment support to Fleet customers.

3 Wings / 23 Squadrons / 3 Shore Commands

NAS Whidbey Island, WA
 VAQ-209 (5 x E/A-18G)
 VR-61 (3 x C-40A)
 VP-69 (3 x P-3C)

NAS Fallon, NV
 VFC-13 (14 x F-5N/F)

NAS Pt Mugu, CA
 VR-56 (6 x K/C-130T)

NAS North Island, CA
 CNAFR Headquarters
 Maritime Support Wing (MSW)
 VR-57 (3 x C-40A)
 HSC-85 (10 x MH-60S)

MCAS Kaneohe Bay, HI
 VR-51 (2 x C-40A)

JB Pearl Harbor, HI
 VR-1 Det Hawaii (1 x C-37A)

Enduring Detachments
 NSA Bahrain (C-40A + K/C-130T)
 NAS Sigonella, Sicily (C-40A + K/C-130T)
 NAF Atsugi, Japan (C-40A + K/C-130T)
 Kadena AFB, Okinawa (4x MH-60S)

NAS JRB Fort Worth, TX
 Tactical Support Wing (TSW)
 Fleet Logistics Support Wing (FLSW)
 Fleet Readiness Center Reserve -
 Midwest (FRCR-MW)
 VR-59 (3 x C-40A)

New Orleans, LA
 Navy Air Logistics Office (NALO)
 VFA-204 (12 X F/A-18C)
 VR-54 (6 x K/C-130T)

JB McGuire, NJ
 VR-64 (6 x K/C-130T)

NAF Washington, DC
 VR-1 (3 x C-37B)
 VR-53 (6 x K/C-130T)

NAS Oceana, VA
 VFC-12 (4 x F/A-18E/F)
 VR-56 (3 x C-40A)

NB Norfolk, VA
 HM-14* (2 x MH-53E)
 HM-15* (5 x MH-53E)

NAS Jacksonville, FL
 VR-58 (3 x C-40A)
 VR-62 (6 x K/C-130T)
 HSM-60 (7 x MH-60R)
 VP-62 (4 x P-3C)

NAS Key West, FL
 VFC-111 (17 x F-5N/F)

* Integrated AC / RC Squadron



28 Squadron Augment Units (SAUs)

NAS Whidbey Island, WA
 VAQ-129 SAU

NAS Fallon, NV
 VARMITT SAU
 F-16 SAU

NAS Lemoore, CA
 VFA-122 SAU
 VFA-125 SAU

NAS North Island, CA
 HSC-3 SCORE DET
 VRM-30 DET SIX

NAS Corpus Christi, TX
 VT-27 SAU
 VT-28 SAU
 VT-31 SAU
 VT-35 SAU

NAS Pensacola, FL
 VT-4 SAU
 VT-10 SAU
 VT-86 SAU

NAS Kingsville, TX
 VT-21 SAU
 VT-22 SAU

NAS Meridian, MS
 VT-7 SAU
 VT-9 SAU

NAS Whiting Field, FL
 VT-2 SAU
 VT-3 SAU
 VT-6 SAU
 HT-8 SAU
 HT-18 SAU
 HT-28 SAU

NB Norfolk, VA
 ACCLOGWING SAU

NAS Oceana, VA
 VFA-106 SAU

NAS Jacksonville, FL
 VP-30 SAU
 VUP-19 Reserve Component



Reserve Maritime Patrol and Reconnaissance Force (MPRF): MPRF provides operational support to forward commanders while maintaining surge readiness to rapidly mobilize in the event of war or national emergency. To increase lethality in the maritime domain, Commander, Naval Air Force Reserve is focused on P-8A recapitalization and fleet integration and on supporting the MQ-4C Triton mission.

P-3C Orion: The RC operates two MPRF P-3C squadrons: VP-62 based at NAS Jacksonville, FL, and VP-69 located at NAS Whidbey Island, WA. Squadrons are manned, trained, and equipped to provide combat deployments and perform the core missions of Anti-Submarine Warfare (ASW) and Anti-Surface Warfare (ASuW) while maintaining combat-ready Intelligence, Surveillance & Reconnaissance (ISR) or Littoral Surveillance Radar Systems (LSRS) aircraft and aircrews, a mission supported exclusively by the RC until the service-life expiration of their P-3C fleet in FY 2022.

The recapitalization of the Reserve MPRF community to P-8A is planned for FY 2023 and FY 2024 with 11 P-8A aircraft apportioned to the USNR. One additional P-8A is required to fully transition both squadrons.

Reserve Helicopters: The Reserve rotary wing force provides two RC and two blended AC/RC squadrons that execute regular combat deployments and detachments with their respective platforms.

MH-60S Knighthawk: The MH-60S is a multi-mission helicopter capable of performing Surface Warfare (SUW), Maritime Interdiction Operations (MIO), Special Operations Forces (SOF) Support, Personnel Recovery (PR), Combat Search and Rescue (CSAR), Casualty Evacuation (CASEVAC), Search and Rescue (SAR), Vertical Replenishment (VERTREP), Non-Combatant Evacuation Operations (NEO), and Humanitarian Assistance/Disaster Relief (HA/DR).

The RC operates one MH-60S squadron: HSC-85, based at NAS North Island, CA. HSC-85 is the Navy's only dedicated Special Operations support squadron. They are capable of performing all core mission sets, while providing dedicated SOF capability for an enduring detachment to support Special Operations Command Pacific (SOCPAC). Navy intends to divest of HSC-85 in FY23.

MH-60R Seahawk: The MH-60R is the Navy's shipboard submarine hunter, capable of performing ASW and ASuW, as well as Airborne Use of Force (AUF) to support the Countering Illicit Trafficking (CIT) mission.

The RC operates one MH-60R squadron: HSM-60, based in JAS Jacksonville, FL. HSM-60 uses the same hardware as the AC, and is trained and equipped to execute all core mission sets. They regularly execute deployments that support GFM tasking.

MH-53E Sea Stallion: The MH-53E is a heavy-lift helicopter capable of supporting Airborne Mine Countermeasures (AMCM), Vertical Onboard Delivery (VOD) operations, HA/DR, and Defense Support of Civil Authorities (DSCA).

RC personnel and aircraft are embedded within two blended squadrons that report to Commander, Sea Combat Wing Atlantic: HM-14 and HM-15, both based at NAS Norfolk, VA. These squadrons represent the Navy's only heavy-lift helicopter capability. They are trained and equipped for all core mission sets, and additionally maintain combat detachments capable of worldwide rapid response AMCM support. Navy intends to consolidate HM-14 and HM-15 into a single, larger squadron in FY23.

Fleet Logistics Support Wing (FLSW): FLSW aircraft, scheduled by the Navy Air Logistics Office (NALO), remain the Navy's only organic source of intra-theater dedicated air logistics support. The USNR fulfills the Navy Unique Fleet Essential Airlift (NUFEA) requirement with its C-40A and K/C-130T aircraft. Together, they provide the flexible, responsive, and efficient global support the Fleet needs at a lower cost than other DoD and commercial logistics support options. Organic airlift is the only effective means of supporting the Navy's dynamic sea-going force. FLSW personnel conduct operations from their home bases and abroad while simultaneously operating from permanent detachment sites in CENTCOM (Bahrain), EUCOM (Sigonella), and INDOPACOM (Atsugi). Using FLSW assets rather than USAF or commercial options saves the Navy an average of \$1.2 billion each year.

C-40A Clipper: The C-40A is a military variant of the Boeing 737. It has a 3,000 nautical mile (nm) range fully loaded and is reconfigurable to support passengers, cargo, or a combination of both. Established to fulfil Title 10 wartime requirements, the C-40A provides the Fleet with on-demand, medium cargo airlift capability to rapidly support ongoing naval operations. Examples of their services include critical weapons and parts resupply, global personnel movements, supply-chain linkage between commercial and shipboard delivery, and timely deployment and detachment support for myriad entities across the Navy.

The RC operates six C-40A squadrons: VR-51 at MCBH Kaneohe Bay, HI, VR-56 at NAS Oceana, VA, VR-57 at NAS North Island, CA, VR-58 at NAS Jacksonville, FL, VR-59 at NAS JRB Fort Worth, TX, and VR-61 at NAS Whidbey Island, WA. Additionally, these squadrons collectively provide continuous detachment coverage with a minimum of one aircraft in each of three locations: NSA Bahrain, NAS Sigonella, Italy, and NAF Atsugi, Japan.

While the Navy achieved its inventory objective of 17 C-40A aircraft, the warfighting requirement remains 23. Sustaining the C-40A fleet must remain prioritized to ensure that the Navy continues to receive the support it requires in wartime and contingency operations.

K/C-130T Hercules: Like the C-40A, Navy K/C-130T Hercules aircraft provide the Fleet with rapid, on-demand, medium cargo airlift that supports ongoing naval operations. C-130 series aircraft are also able to airlift outsized cargo (F-35 engines, larger weapons, submarine masts,

etc.) that do not fit in the C-40A, which makes it a critical logistics enabler for the Fleet. They are typically kept in a cargo-only configuration, but support passenger movements as well.

Due to aircraft age and parts obsolescence, current K/C-130T mission-capable rates lag Navy requirements for distributed maritime operations. **Recapitalizing the Navy Reserve K/C-130T fleet with the C-130J is the Chief of Navy Reserve's top equipment priority** and will ensure that the Navy is able to receive the support it requires in future wartime and contingency operations.

The RC operates five K/C-130T squadrons: VR-53 at Joint Base Andrews, MD, VR-54 at NAS JRB New Orleans, LA, VR-55 at NAS Point Mugu, CA, VR-62 at NAS Jacksonville, FL, and VR-64 at McGuire AFB, NJ. The squadrons also collectively provide continuous detachment coverage with a minimum of one aircraft in each of three locations: NSA Bahrain, NAS Sigonella, Italy, and NAF Atsugi, Japan.

Service Secretary Controlled Aircraft (SSCA): The Secretary of the Navy's SSCA aircraft, operated by CNAFR and aligned under Naval Air Facility Washington, provide DoD required-use travelers with on-demand airlift equipped with continuous secure communications while airborne. These aircraft provide airlift capability for senior Service officials when a threat exists that could endanger lives or when there is a need to satisfy short-notice travel requirements that make commercial transportation unacceptable.

VR-1 is based at Joint Base Andrews, MD, and operates the C-37B, a military variant of the Gulfstream 550. VR-1 also maintains one forward-deployed Executive Transport Detachment, VR-1 Detachment Hawaii, located at Joint Base Pearl Harbor-Hickam, HI, which operates the C-37A, a military variant of the Gulfstream V.

Tactical Support Wing (TSW): TSW provides expeditionary Airborne Electronic Attack and airborne Adversary support to the Navy.

EA-18G Growler: The EA-18G Growler provides full-spectrum Airborne Electronic Attack (AEA) from land bases and aircraft carriers to exploit, suppress, degrade, and deceive enemy electromagnetic defensive and offensive systems to support joint operations. Because of the advanced capabilities that the EA-18G brings to Combatant Commanders, these assets are in high demand by both INDOPACOM and CENTCOM.

The RC has one EA-18G squadron, VAQ-209, based in Whidbey Island, WA. VAQ-209 deploys regularly to mitigate VAQ operational capacity gaps while providing a formidable strategic capability at a reduced cost. VAQ-209 is highly unique because they are able to leverage their Reserve aircrew's civilian skillsets to link government and military contracting entities outside the Navy directly to the squadron, which creates dynamic and diverse synergies not found in their AC counterparts. Currently, VAQ-209 executes expeditionary deployment cycles every other year to support GFM. They also regularly participate in various Joint or combined large force exercises.

F/A-18E/F Hornet: RC F/A-18E/F Super Hornets provide high-fidelity, professional adversary support to the Fleet by emulating the capabilities and tactics of threat nation air forces. VFC-12, located at NAS Oceana, VA, operates F/A-18E/F to support the Navy's TACAIR Advanced Readiness Programs and advanced Air Wing and Strike Group large force exercises.

F-16C Fighting Falcon: In FY 2022, the RC will receive 12 F-16 Fighting Falcons from the Air National Guard. These aircraft provide high-fidelity, high-end Adversary support to the Fleet by emulating the capabilities and tactics of pacing-threat air forces. VFC-13, located at NAS Fallon, NV, will transition from F-5 to F-16 starting in FY 2022, and operate the F-16 to support the Navy's TACAIR Advanced Readiness Programs, TOPGUN, and Air Wing Fallon events. To enhance replication capabilities, a multi-faced upgrade program is ongoing. VFC-13's F-5 aircraft will move to VFA-204.

F-5 Tiger II: USNR F-5N/F squadrons also provide dedicated professional Adversary support to the Fleet. Aircraft are flown to emulate threat nation tactics and capabilities. VFC-111, in NAS Key West, FL, and VFC-204, in NAS JRB New Orleans, LA, provide undergraduate support to the Fleet Replacement Squadrons during air-to-air training detachments, and graduate level training for Advanced Readiness Program. VFA-204 begins to transition out of F/A-18C/D and into F-5N/F in FY 2022.

The current fleet of F-5 aircraft faces service life limitations that will be mitigated using the currently underfunded but ongoing Block Upgrade efforts and via the procurement of 11 additional F-5 aircraft from the Swiss (expected delivery in FY 2023).

b. Navy Expeditionary Combat Command (NECC)

NECC's mission is to organize, man, train, equip, and sustain Navy Expeditionary Combat Forces to execute combat, combat support, and combat service support missions across the full spectrum of naval, joint, and combined operations that enable access from the sea and freedom of action throughout the sea-to-shore and inland operating environments. Approximately 50 percent of NECC personnel are Navy Reservists.

Maritime Expeditionary Security Force (MESF): The USNR MESF is an operational reserve that protects critical maritime infrastructure, embarks on military and strategic sealift vessels, and escorts fleet units operating in and around ports across the world. In addition to conducting CONUS high value unit protection missions, the RC MESF conducts rotational deployments that support AFRICOM and CENTCOM. It also provides mission-enabling augmentation to AC MESF as required. The most critical MESF equipment need is the 40PB and the 40PB prime mover. Both the 34PB and associated prime mover have reached critical maintenance and service life benchmarks, requiring ever-increasing maintenance and overhaul scheduling to meet mission requirements, which increases risk to personnel and readiness. The recapitalization plan is to procure the 40PB for both AC and RC, an effort MESF began by purchasing 24 40PBs using OPN and NGRE funding for RC squadrons.

The RC MESF consists of four Mobile Security Squadrons (MSRON): MSRON 1 at San Diego, CA, MSRON 8 at Newport, RI, MSRON 10 at Jacksonville, FL, and MSRON 11 at Seal Beach, CA. Each MSRON has geographically dispersed subordinate companies and high value unit protection detachments.

Navy Expeditionary Logistics Support Group (NAVELSG): NAVELSG is a vital enabler of Maritime Prepositioning Forces (MPF), Joint Logistics Over the Shore (JLOTS) operations, and maritime forces ashore, providing expeditionary cargo handling services for surface, air, and terminal operations; expeditionary refueling; and expeditionary ordnance handling/reporting/reloading, both ashore and afloat in austere expeditionary environments to support worldwide Naval, Joint, interagency, and combined forces/organizations. Shortfalls exist in expeditionary ordnance reloading and training equipment, material handling equipment, expeditionary refueling, and organic mobility equipment to move large equipment in austere environments. The USNR accounts for over 90 percent of NAVELSG forces.

NAVELSG RC consists of three Navy Expeditionary Logistics Regiments (NELR) and six Navy Cargo Handling Battalions (NCHB): 2nd NELR, in Williamsburg, VA, 4th NELR in Jacksonville, FL, and 5th NELR in Point Mugu, CA. NCHB 5 is located at Tacoma, WA, NCHB 8 at Fort Dix, NJ, NCHB 10 at Yorktown, VA, NCHB 11 at Jacksonville, FL, NCHB 13 at Gulfport, MS, and NCHB 14 at Port Hueneme, CA.

Naval Construction Force (NCF): Navy Reserve NCF units provide a wide range of capability to support Navy and Joint Forces, including the construction and repair of bridges, airfields, forward operating bases, and roads, as well as civic projects for partner nations. The RC represents 45 percent of the total naval construction force capacity. The RC NCF consists of two Naval Construction Regiments (NCR) and five Naval Mobile Construction Battalions (NMCB). RC battalions continue to deploy as detachments in a rotation with AC to support missions in the CENTCOM and AFRICOM areas of responsibility. Developing Expeditionary Port Damage Repair and Opening (Ex-PDR) port and Expeditionary Rapid Airfield Damage Repair (Ex-RADR) airfield assessment and damage repair capabilities that support operational plan requirements will necessitate additional investment to ensure compatibility with active NCF forces. Funding is also required to upgrade communications equipment. 7th NCR, NMCB 14, and NMCB 27 are located in Gulfport, MS, while 1st NCR, NMCB 18, NMCB 22, and NMCB 25 are homeported in Port Hueneme, CA.

c. Surface Warfare

RC Sailors support Surface Warfare via the following major surface and amphibious warfare areas: Littoral Combat Ship (LCS) support units; surface readiness detachments; surface and mine warfare development; afloat cultural workshops; Tactical Air Control Squadrons; and Naval Beach Group (NBG) activities consisting of Amphibious Construction Battalions (ACB), Naval Beach Master Units, and Assault Craft Units. Additionally, RC Sailors provide critical sustained operational support to worldwide surface deployments via the RC-to-Sea initiative.

Navy Reserve LCS Community: The USNR LCS mission calls for RC Sailors to perform afloat/expeditionary maintenance and Anti-Terrorism Force Protection (ATFP) watch standing aboard LCS hulls in an optimized state of readiness to support global LCS mission requirements. RC LCS units are organized to provide strategic support for warfighting requirements and operational support during normal and surge operations. Shipboard maintenance and watch support remain the primary lines of effort for LCS Reservists. To support their mission, RC LCS units require firearm training simulators for proficiency, and various SAR, Anti-Terrorism Force Protection (ATFP), and maintenance equipment for real world operations. LCS Reserve Squadrons (LCSRON) have multiple units in 17 locations with LCSRON ONE HQ at San Diego, CA and LCSRON TWO HQ at Mayport, FL.

Naval Beach Group (NBG): NBG consists of Assault Craft Units, Amphibious Construction Battalions, and Beach Master Units whose primary mission is to provide dedicated support to amphibious operations. The RC maintains qualified boat crews, beach masters, and Seabees to support this effort and RC Sailors account for 86 percent of the ACB force. In addition, the RC owns, operates, and maintains ten Maritime Prepositioning Force Utility Boats in five different locations for training on assault follow-on echelon offload mission support and other home port support requirements. Currently, NBG requires additional Improved Navy Lighterage Systems to train Navy reservists for deployment. NBG-1 is located in Coronado, CA, and NBG-2 is located in Little Creek, VA.

d. Naval Special Warfare (NSW)

For more than a decade, the RC has consistently provided 10 percent of NSW's worldwide deployable capability, including 33 percent of its Unmanned Aerial Systems (UAS) capacity. RC NSW has been at the forefront of innovation and transformation in the Navy Reserve Force by fully integrating with its AC counterpart. This provides additional lethal combat capability for NSW to accomplish its current operational mission downrange, concurrently ensuring NSW maintains a robust operational reserve. RC NSW consists of three AC/RC hybrid commands and 12 Navy Reserve Units located in Coronado, CA, and Little Creek, VA, as well as 14 regional detachments dispersed across the country. RC NSW relies on a combination of programmed acquisition resourcing and unprogrammed funds to procure the equipment required to maintain the highest state of RC readiness.

e. Military Sealift Command (MSC)

Military Sealift Command is the Maritime Component Commander for sealift missions for U.S. Transportation Command and the Type Commander for MSC ships for United States Fleet Forces Command. MSC is the seaborne transportation provider for DoD, providing worldwide strategic sealift and ocean transportation for all military forces. MSC is represented by five geographic area commands (Atlantic, Pacific, Europe and Africa, Central, and Far East) that exercise tactical control of all assigned U.S. Transportation Command and MSC forces assigned to the numbered fleet commanders. MSC HQ is located in Norfolk, VA. MSC's RC is composed of 976 Selected Reservists operating in 38 units and 2,145 Individual Ready Reserve Sailors in the Strategic Sealift Officer Force (SSOF). The 38 MSC RC units perform a variety of missions

supporting worldwide maritime logistics including: Maritime Operations Center, Joint Task Force-Port Opening, and logistics management. The SSOF provides qualified Navy Reserve Officers with civilian credentials and military training with the ability to activate, operate, and sustain strategic sealift to support Joint Force and Fleet requirements through all phases of extended conflict in a contested environment.

f. Submarine Force

The RC submarine force's main missions are undersea warfare operations (UWO), expeditionary maintenance (EM), force protection (FP), undersea rescue (UR), mine warfare, and unmanned undersea vehicles (UUVs). The vast majority of RC Sailors support UWO, enabling the AC to sustain 24/7 antisubmarine warfare operations ashore and at sea. More than 400 EM Sailors augment submarine tender crews and shipyards to provide maintenance support and voyage to deployed submarines worldwide. Strategic Reserve FP units augment Naval and Coast Guard Force Protection units CONUS and OCONUS. The UR teams help rescue Sailors from distressed undersea platforms. Half of the submarine force's UR team is ready to execute a submarine rescue from Coronado, CA, to anywhere in the world within 72 hours. The UUV component performs UUV launch and recovery, Remotely Operated Vehicle operations, and UUV operations center support.

2. Status of Equipment

a. Equipment On-hand

Table 1, Consolidated Major Item Inventory and Requirements provides projected RC major equipment requirements and on-hand inventories to meet assigned missions.

b. Average Age of Major Equipment Items

The equipment in *Table 2, Average Age of Equipment*, provides the average age of selected major equipment items at the start of FY 2022. With a Reserve Force that maintains increasingly older equipment, particularly aircraft, there is a compelling need to recapitalize or modernize the USNR's oldest assets. The USNR's primary concern is the K/C-130T (27–32 years old), which operates at a higher than optimal cost per flight hour, produces lower readiness rates than missions require, and provides less capability than its desired replacement platform, the C-130J. There is currently no funded plan to recapitalize Reserve K/C-130T aircraft.

c. Compatibility of Current Equipment with the AC

USNR equipment requires compatibility with the AC to support applicable Navy assigned missions. Achieving equipment compatibility with the AC is critical to ensuring the RC has the ability to train to the same standards and be ready to operate seamlessly with AC counterparts. While procurement and upgrade programs, Congressional additions, and NGREA funds have helped improve RC equipment capability and compatibility, significant challenges remain. *Table 8, Significant Major Item Shortages* provides the USNR equipment recapitalization priorities.

d. Maintenance Issues

USNR equipment maintenance continues to remain a high priority. Due to competing fiscal priorities, depot throughput limitations, and a high operations tempo, both the AC and the RC are confronted with maintenance shortfalls and backlogs. The USNR's high operational tempo has accelerated equipment degradation and service-life expenditure. Maintenance issues most significantly affect K/C-130T aircraft. These aircraft suffer from long and costly depot maintenance periods, service life-related issues, and a lack of repair parts caused by obsolescence. Modern aircraft such as the C-130J have fewer maintenance and supply issues, generate significant cost avoidance, and provide increased fleet support with better aircraft reliability.

Modernization Programs and Shortfalls

The Department of the Navy maintains a prioritized list of unfunded equipment. This list is used to inform Unfunded Priority List (UPL) development. When directed, the CNO forwards the UPL to Congress for resourcing consideration. The USNR's top-ten unfunded equipment requirements are provided in *Table 8, Significant Major Item Shortages*.

B. Changes Since the Last NGRER

The following statements represent the latest changes since publication of the FY 2022 NGRER.

- CNAFR completed the acquisition of six additional USMC KC-130T aircraft in FY 2021.
- VFC-12 transitioned from the F/A-18C/D to the F/A-18E/F in FY 2021.
- VFA-204 will divest of their F/A-18C/D aircraft by the end of FY 2022. This represents complete divestment of F/A-18C/D aircraft by the Navy Reserve.
- VFA-204 will complete transition from the F/A-18C/D to the F-5N/F by the end of FY 2023.
- VFC-13 will complete transition from the F-5N/F to the F-16C by the end of FY 2023.
- Nine P-8A's were appropriated to the Navy Reserve in FY 2021, bringing the total P-8A inventory to 11. VP-62 will begin its transition from the P-3C to the P-8A in FY 2023, followed by VP-69. Both squadrons will complete the transition by 2024.

C. Future Years Program (FY 2023–FY 2025)

1. FY 2025 Equipment Requirements

Table 1, Consolidated Major Item Inventory and Requirements identifies major equipment requirements and on-hand inventories projected from FY 2023 to FY 2025.

2. Anticipated New Equipment Procurements

In FY 2020, Congress appropriated \$75 million in NGREA for the USNR. This funding, as well as funding for one of three P-8A aircraft appropriated to the USNR, was later identified for reprogramming and sent to the Department of Homeland Security for counter-drug activity. *Table 4, NGREA Procurements* reflects the 2020 loss of NGREA funding.

3. Anticipated Withdrawals and Transfers from AC to RC

Table 5, Projected Equipment Transfer/Withdrawal Quantities identifies major RC equipment forecasted for withdrawal or decommissioning and anticipated equipment transfers from the AC to the RC.

Differences in Table 5 from FY 2021 and FY 2022 NGRER:

- The USNR is scheduled to divest all Legacy F/A-18A–D aircraft by the end of FY 2022. These aircraft will be replaced with 12 F/A-18E/F aircraft and 12 F-16C aircraft.
- The P-3C divestment schedule has been updated to reflect divestment at the end of FY 2023.
- Two P-8A will be delivered to VP-62 in FY 2023.

4. Remaining Equipment Shortages and Modernization Shortfalls at the End of FY 2025

Aircraft recapitalization remains the USNR’s number one equipment priority. *Table 1, Consolidated Major Item Inventory and Requirements* and *Table 8, Significant Major Item Shortages* provide a listing of the RC’s projected on-hand equipment inventories and requirements through FY 2025.

D. Summary

Mission One for every Sailor—active and reserve, uniformed and civilian—is the operational readiness of today’s Navy.⁶ To this end, the USNR must continue to prioritize AC/RC compatibility and interoperability. Specifically, we must recapitalize our RC aircraft at a rate that generates a force multiplier and maintains operational relevance. We must modernize our capabilities to increase our effectiveness when called to deploy. We must grow our investment in expeditionary logistics to support distributed maritime operations to provide maximum support to the fleet during sustained military conflict.

America’s USNR remains ready to respond when called. In the face of enduring strategic competition, investment in a forward-looking, holistic Total Force ensures the most effective and lethal reserve warfighting component possible.

⁶FRAGO 01/2019: A Design for Maintaining Maritime Superiority, December 2019.

Consolidated Major Item Inventory and Requirements

NOTE: This table provides a comprehensive list of selected major equipment items. It provides the projected inventory quantity on-hand (QTY O/H) at the beginning/end of the selected fiscal year (FY). It also provides the quantity required (QTY REQ) to meet the full wartime requirements of the Reserve Component. In accordance with Title 10, the QTY REQ number provides the recommendation as to the quantity and type of equipment that should be in the inventory of each Reserve Component. FY 2022 unit cost estimates are provided by the Military Departments.

Nomenclature	Equip No.	Unit Cost	Begin FY 2023 QTY O/H	Begin FY 2024 QTY O/H	Begin FY 2025 QTY O/H	End FY 2025 QTY O/H	End FY 2025 QTY REQ
Aircraft							
Aircraft, Transport, C-40A (Boeing 737-700)	C-40A	\$93,000,000	17	17	17	17	23
Aircraft, Transport, C-130T (Hercules)	C-130T	\$64,200,000	19	19	19	19	19
Aircraft, Transport, KC-130T (Hercules)	KC-130T	\$73,000,000	11	11	11	11	13
Aircraft, Transport, C-37A (Gulfstream)	C-37A	\$71,100,000	1	1	1	1	1
Aircraft, Transport, C-37B (Gulfstream)	C-37B	\$67,600,000	3	3	3	3	3
Aircraft, Patrol, P-3C (Orion)	P-3C	\$36,000,000	7	3	0	0	0
Aircraft, Patrol, P-8A (Poseidon)	P-8A	\$174,000,000	0	0	2	11	12
Aircraft, Electronic Attack, EA-18G (Growler)	EA-18G	\$98,000,000	5	5	5	5	5
Aircraft, Fighter/Attack, F/A-18E (Super Hornet)	F/A-18E	\$68,000,000	10	10	10	10	10
Aircraft, Fighter/Attack, F/A-18F (Super Hornet)	F/A-18F	\$68,000,000	2	2	2	2	2
Aircraft, Fighter, F-5F (Tiger II)	F-5F	\$21,700,000	2	2	3	3	3
Aircraft, Fighter, F-5N (Tiger II)	F-5N	\$3,300,000	29	30	32	35	35
Aircraft, Fighter, F-16C Fighting Falcon	F-16C	\$18,800,000	12	12	12	12	12
Helicopter, ASW, MH-60R (Seahawk)	MH-60R	\$47,100,000	5	5	5	5	5
Helicopter, NSW, MH-60S (Knighthawk)	MH-60S	\$30,700,000	10	0	0	0	0
Helicopter, Mine Warfare, MH-53E (Sea Dragon)	MH-53E	\$62,300,000	7	7	7	7	7
Aviation Simulators							
C-130T Simulator	C-130T SIM	\$8,893,000	3	3	3	3	3
F-5 Simulator	2F213	\$4,000,000	2	2	2	2	2
FA-18C Simulator	2F193A	\$7,964,000	3	0	0	0	0
F-16C Simulator	F-16C SIM	\$3,500,000	1	1	1	1	1
Naval Beach Group							
Maritime Prepositioning Force Utility Boat	MPF-UB	\$1,000,000	10	10	10	10	10
Naval Beach Group Table of Allowance (TOA) Equipment	NBG	\$26,705,722	1	1	1	1	1
Naval Construction Force (NCF)							
Construction Battalion Maintenance Unit TOA	CBMU	\$14,536,097	2	2	2	2	2
Naval Mobile Construction Battalion TOA	NMCB	\$89,397,807	5	5	5	5	5
Naval Construction Regiment TOA	NCR	\$14,943,056	2	2	2	2	2
Construction Capability Augment TOA	NCFCCA	\$298,175,525	1	1	1	1	1
NAVCONTGRU Equipment	NAVCONSTGRU	\$69,037,607	2	2	2	2	2
Maritime Expeditionary Security Force (MESF)							
40 Foot Patrol Boat	40PB	\$3,540,000	20	20	24	24	96
34 Foot Patrol Boat	34PB	\$1,200,000	58	58	58	58	0
Squadron TOA Equipment	MSRON	\$16,832,037	4	4	4	4	4
MobileSecurity Company TOA	MESCO	\$25,351,168	16	16	16	16	16
Navy Expeditionary Logistics Support Group (NAVELSG)							
Navy Expeditionary Logistics Regiment TOA	NELR	\$4,526,911	3	3	3	3	3
Navy Cargo Handling Battalion (Commercial) TOA	NAVCARGOBN (C)	\$46,967,158	2	2	2	2	2
Navy Cargo Handling Battalion (Tactical) TOA	NAVCARGOBN (T)	\$53,156,828	1	1	1	1	1

USNR
Average Age of Equipment

Table 2

NOTE: This table provides the average age of selected major equipment items. The average age provides a projected average age of the fleet at the start of FY 2022.

Nomenclature	Equip No.	Average Age	Remarks
Aircraft			
Aircraft, Transport, C-40A (Boeing 737-700)	C-40A	12	
Aircraft, Transport, C-130T (Hercules)	C-130T	27	
Aircraft, Transport, KC-130T (Hercules)	KC-130T	32	
Aircraft, Transport, C-37A (Gulfstream)	C-37A	19	
Aircraft, Transport, C-37B (Gulfstream)	C-37B	15	
Aircraft, Patrol, P-3C (Orion)	P-3C	36	
Aircraft, Electronic Attack, EA-18G (Growler)	EA-18G	11	
Aircraft, Fighter/Attack, F/A-18C (Hornet)	F/A-18C	29	
Aircraft, Fighter/Attack, F/A-18D (Hornet)	F/A-18D	29	
Aircraft, Fighter/Attack, F/A-18E (Super Hornet)	F/A-18E	20	
Aircraft, Fighter/Attack, F/A-18F (Super Hornet)	F/A-18F	20	
Aircraft, Fighter, F-5F (Tiger II)	F-5F	24	
Aircraft, Fighter, F-5N (Tiger II)	F-5N	41	
Helicopter, ASW, MH-60R (Seahawk)	MH-60R	7	
Helicopter, ASW, MH-60S (Knighthawk)	MH-60S	12	
Helicopter, Mine Warfare, MH-53E (Sea Dragon)	MH-53E	30	
Aviation Simulators			
C-130T Simulator	C-130T SIM	30	
F-5 Simulator	2F213	11	
F/A-18C Simulator	2F193A	11	
Naval Beach Group			
Maritime Prepositioning Force Utility Boat	MPF-UB	10	
Naval Beach Group Table of Allowance (TOA) Equipment	NBG	6	
Naval Construction Force (NCF)			
Construction Battalion Maintenance Unit TOA	CBMU	13	
Naval Mobile Construction Battalion (NMCB) TOA	NMCB	13	
Naval Construction Regiment TOA	NCR	11	
Construction Capability Augment TOA	NCFCCA	14	
NAVCONTGRU Equipment	NCGEQP	4	
Maritime Expeditionary Security Force (MESF)			
Squadron TOA Equipment	MSRON	15	
Company Security Company	MESCO	15	
MK VI Patrol Boat	MKVIPB	6	
34 Foot Patrol Boat	34PB	15	
Navy Expeditionary Logistics Support Group (NAVELSG)			
Navy Expeditionary Logistics Regiment Staff TOA	NELRHQ	13	
Navy Cargo Handling Battalion (Commercial) TOA	NAVCARGOBN (C)	13	
Navy Cargo Handling Battalion (Tactical) TOA	NAVCARGOBN (T)	13	

Service Procurement Program - Reserve (P-1R)

NOTE: This table provides a comparison of the dollar value of the FY 2020 request, the FY 2020 enacted amount; and, the actual amount spent on procurement for specific categories of RC equipment. All values are costs in millions. Deliveries of procured equipment normally take one to two years before they arrive in the inventory; e.g., items procured in FY 2022 are expected to arrive in RC inventories in FY 2023 or FY 2024.

Nomenclature	Request	Enacted	Actual
Other Aircraft	327	327	327
Modification of Aircraft	38	35	35
Civil Engineering Support Equipment	15	15	15
Command Support Equipment	7	7	7
Grand Total	387	384	384

National Guard and Reserve Equipment Appropriation (NGREA) Procurements

NOTE: This table identifies the dollar value of planned equipment procurements with the National Guard and Reserve Appropriation (NGREA). These funds are available for a three-year period from the year of appropriation. Deliveries of procured equipment normally take one to two years from the date of procurement before they arrive in the inventory.

Navy Reserve Defense Appropriations Act NGREA	FY 2020¹	FY 2021	FY 2022²
Crane Simulator		2,400,000	
Prime Mover		1,624,000	
Satellite Communications Equipment		3,492,988	
Light Service Cargo Truck		2,814,000	
Boom Fork Truck		1,512,000	
Water Distribution Vehicle		580,000	
Fuel System Supply Point		3,225,000	
Experimental Diving Unit Equipment		402,600	
Gauge Calibration Equipment		222,483	
F-5 Upgrades		26,606,000	
VFC-111 Mobile Secure Facility		2,000,000	
F-5 Maint, Support Equipment		1,290,000	
MH-60S Equipment		5,545,000	
K/C-130T Corrosion and Safety Upgrades		194,030	
C-40 Aircraft Protective Equipment		582,150	
Ship Maintenance Tool Kits		9,749	
Total USNR NGREA	0	52,500,000	

1. NGREA funds for FY 2020 were reallocated by DoD.
2. FY 2022 data was not available at time of publication.

Projected Equipment Transfer/Withdrawal Quantities

NOTE: This table portrays the planned equipment transfers (Active to Reserve), withdrawals (-), and decommissioning (-). Transferred equipment is commonly called "cascaded equipment," or equipment that is provided to the RC once the AC receives more modern equipment. Although this table highlights a three-year period, many Services will not know exact quantities of transfers or withdrawals until year of execution, due to the uncertainty of the procurement/delivery cycle of new equipment.

Nomenclature	Equip No.	FY 2023 Qty	FY 2024 Qty	FY 2025 Qty	Remarks
Aircraft, Fighter, F-5F	F-5F	+1	0	0	One Swiss F-5F expected FY23 delivery
Aircraft, Fighter, F-5N	F-5N	+2	+3	+3	Additional F-5s from Swiss buy.
Aircraft, Fighter, F-16C	F-16C	+12	0	0	VFC-13 will transition to 12 F-16Cs by the end of FY23.
Aircraft, Patrol, P-3C	P-3C	-3	0	0	Plan is to support LSRS requirement through FY22 w/ full P-3 sundown scheduled for FY23.
Aircraft, Patrol, P-8A	P-8A	+2	+9	0	VP-62 and VP-69 slated to transition to P-8A beginning in FY23
Aircraft, Helicopter, MH-60S	MH-60S	-10	0	0	Navy plans to divest to of all HSC-85 aircraft by the end of FY23
40 Foot Patrol Boat	40PB	+20	+4	0	MSRON 1, 8, 10 and 11 transitioning from 34PB to 40PB. These procurements started in FY17 fill existing shortfalls.
34 Foot Patrol Boat	34PB	0	0	0	Navy plans to replace 34PB with 40PB.

FY 2019 Planned vs Actual Procurements and Transfers

NOTE: This table compares planned Service procurements and transfers to the RC in FY 2019 with actual procurements and transfers. FY 2019 is selected as these are the most recent funds to expire. Because the procurement cycle is normally one to two years from funding to delivery, this table identifies only deliveries through the end of 2021. Procurement and NGREA columns reflect cost values in dollars.

Nomenclature	Equip. No.	FY 2019 Transfers (# of items)		FY 2019 Procurements (\$s)		FY 2019 NGREA (\$s)	
		Plan	Actual	Plan	Actual	Plan	Actual
FY 2019 Planned Transfers & Withdrawals							
Aircraft, Fighter/Attack, F/A-18B (Hornet)	F18A	-2	-2				
Aircraft, Fighter/Attack, F/A-18A+ (Hornet)	F18B	-4	-25				
Aircraft, Fighter/Attack, F/A-18C (Hornet)	F18C	4	24				
Aircraft, Transport, C-20G (Gulfstream)	C-20G	-1	-2				
Helicopter, Combat SAR, HH-60H (Seahawk)	HH-60H	-11	-11				
Helicopter, Combat SAR, MH-60S (Knighthawk)	MH-60S	10	10				
40 Foot Patrol Boat	40PB	4	0				
FY 2019 Service Procurement Programs – RC (P-1R) Equipment							
Other Aircraft							
KC-130J				270,446,000	252,446,000		
Modification of Aircraft							
Adversary				14,606,000	14,606,000		
H-53 Series				725,000	725,000		
C-130 Series				16,185,000	14,438,000		
Cargo/Transport A/C Series				8,932,000	8,932,000		
Civil Engineering Support Equipment							
Construction & Maintenance Equip				7,449,000	7,449,000		
Tactical Vehicles				1,464,000	1,464,000		
Items Less Than \$5 Million				8,338,000	8,338,000		
Personnel & Command Support Equip							
C4ISR Equipment				834,000	834,000		
Physical Security Equipment				2,350,000	2,350,000		
				Total	331,329,000	311,582,000	
FY 2019 National Guard and Reserve Equipment Appropriation (NGREA) Equipment							
F-5 Filthy Buzzard						16,175,000	14,055,000
F/A-18 Filthy Buzzard						13,643,000	11,243,000
Force Protection Large / 40' Patrol Boats						9,600,000	9,600,000
Tactical Communications Equipment						8,372,179	8,372,179
Weapons Simulators						4,871,395	2,499,135
HSC-85 MH-60S Equipment						3,890,573	3,890,573
Cargo Handling Equipment						2,416,776	2,540,776
F/A-18 Simulator Visual Upgrade						1,514,000	0
Concrete Mixer						908,118	676,872
C-130 Corrosion Correction Equipment						820,867	820,867

FY 2019 Planned vs Actual Procurements and Transfers

Nomenclature	Equip. No.	FY 2019 Transfers (# of items)		FY 2019 Procurements (\$s)		FY 2019 NAREA (\$s)	
		Plan	Actual	Plan	Actual	Plan	Actual
MH-60R Link 16 Terminal Upgrade						773,624	768,876
LCSRON Support Equipment						645,710	645,710
F-5 Aircraft Protective Equipment						600,000	1,107,423
C-40A Weather Radar Upgrade						577,758	172,433
C-37A Safety Upgrades						191,000	175,904
F-5 Block Upgrade (1 aircraft)						0	4,782,665
F-5 Maintenance Support Equipment						0	2,871,333
F-5 Avionics Upgrade						0	777,254
Total						65,000,000	65,000,000

Major Item of Equipment Substitution List

NOTE: This table identifies equipment authorized by the Service to be used as a substitute for a primary item of equipment. The table also identifies whether or not the item is deployable in wartime. This data meets the Title 10 requirement to identify substitutes that are not the most desired equipment item.

Required Item Nomenclature	Reqd Item Equip No.	Substitute Item Nomenclature	Substitute Item Equip No.	FY 2022 Qty	Deployable?	
					Yes	No

Service Does Not Use Substitution to Satisfy Major Item Equipment Requirements.

Significant Major Item Shortages

NOTE: This table provides a RC top ten prioritized (PR) shortage list for major equipment items required for wartime missions but which are currently not funded in the FYDP. It lists the total quantity required, the total shortage, the individual item cost, and the cost of the shortage. This data is consistent with other equipment data submitted by the Service.

PR	Nomenclature	Total Req'd	# Items Short	Item Cost	Total Shortage Cost	Rationale/Justification
1	KC-130J	32	32	\$109,700,000	\$3,510,400,000	Procure 32 KC-130J aircraft to replace the aging and maintenance-intensive K/C-130T aircraft. The K/C-130T fleet is a crucial part of the Navy Unique Fleet-Essential Airlift (NUFEA) requirement. They serve as a connector between strategic airlift points, and they provide global logistics support while specializing in airlift for oversized cargo. Without recapitalization to KC-130J, K/C-130T readiness will not meet requirements.
2	Expeditionary VLS Reload Equipment	6	3	8,764,462	\$26,293,386	The Naval Expeditionary Logistics Support Force (NAVELSF) is task with conducting ordnance reload operations in non-permissive environments where Navy Munitions Command (NMC) units do not have the capacity or capability. Reloading surface combatants in non-permissive environments gives Combatant Commanders agility within Great Power Competition. This capability provides each ERC the tools to safely handle, load/offload VLS canisters and cargo arriving from their delivery source (aircraft or ship), transport VLS canisters and cargo to the loading location, and reload VLS canisters and cargo onto the surface combatant. Finally, the capability will also enhance the conduct of cargo sorting and prioritization of airfreight or ocean cargo to and from AMC aircrafts or ships. The impact if not funded, will negatively impact the NAVELSF ability to train and certify ERC Teams to meet request for forces requirements.
3	Force Protection Large / PB40 Patrol Craft	96	26	\$3,540,000	\$92,040,000	Current Force Protection Large (FPL) 34FT Patrol boats (34PB) are fast approaching critical maintenance and service life issues, requiring ever increasing maintenance/CMAV/overhaul scheduling to meet mission requirements, increasing risk to personnel and readiness. 34PB boat service life is maximized - the Original Equipment Manufacturer (OEM) is no longer manufacturing 34PBs - they require replacement starting in 2019, with follow-on out-year procurement/acquisition strategy delivering complete replacement by 2027. The addition of the R/C HVU mission requirement increases the requirement for patrol boats. Currently 34PBs are being sourced from the R/C squadrons training allotment as well as suitable substitute patrol boats reactivated from NAVSEA's Boat Inventory Manager. 40PB is the designated replacement program for the aging 34PBs.
4	F-5 Block Upgrade	31	23	\$4,000,000	\$92,000,000	The Navy Reserve's fleet of F-5N/F aircraft are outdated, and the aircraft are scheduled to remain in service until 2035. These aircraft require significant modernization to their avionics and tactical systems to allow safe and effective operation going forward. Modernization efforts include updated navigation systems, avionics, displays, a night vision device compatibility, a helmet-mounted cueing system, and a digital architecture that will allow for future modernization. There are currently 31 F-5N/F in the Navy Reserve. 11 additional aircraft have been procured from the Swiss over the FYDP, all of which are funded for the Block Upgrade modification.
5	P-8A Inventory Completion	12	1	\$174,000,000	\$174,000,000	Procure 1 additional P-8As to recapitalize RESFORON P-3Cs with Fleet representative aircraft. Without final aircraft the two Maritime Patrol Force RESFORONs will not be fully recapitalized to meet requirements.
6	C-40A Inventory Completion	23	6	\$93,000,000	\$558,000,000	The requirement for the C-40A inventory is 23 aircraft as a result of a 2007 CNA study. Having 23 aircraft would allow the Navy Reserve to continue to provide unparalleled flexibility to support worldwide fleet logistics operations as the demand for this capability only continues to grow fleet-wide. As the VRM concept becomes reality, their ability to deploy will be closely tied to the mobility afforded by the C-40 fleet and having a full compliment of airplanes will be paramount to keep the carrier logistics force in place.
7	P-8A Squadron Ground Support Equipment (GSE)	2	1	\$4,540,000	\$4,540,000	The Navy Reserve has been appropriated 11 P-8A aircraft, which allows for the recapitalization of two Reserve squadrons, VP-62 and VP-69. There is a significant amount of GSE required to transition these squadrons from P-3C to P-8A and allow them to perform routine maintenance, testing and diagnostics. Without this equipment, the squadrons will be unable to properly maintain their aircraft.
8	KC-130T Avionics Obsolescence Upgrade (AOU) Kits	30	6	\$6,500,000	\$39,000,000	24 of 30 Navy Reserve K/C-130Ts have funding to complete their Avionics Obsolescence Upgrade. 6 KC-130T aircraft received from the Marine Corps Reserve are not funded. AOU ensures the C-130 fleet attains international communications, navigation and safety standards. Without funding, the legacy K/C-130Ts will lag the K/C-130Ts receiving the upgrade, resulting in significant operational and safety limitations.
9	Improved Navy Lighterage System (INLS)	1	1	\$40,000,000	\$40,000,000	Naval Beach Group ROC/POE requires seven operational Improved Navy Lighterage System (INLS) causway ferry (CF) systems on each coast at ACB-1 and ACB-2, and two training sets. However, only four CF sets per coast were fielded with no dedicated training sets. 4 CFs consists of 12 modules, in a 4x3 arrangement where each CF consists of a power module, an intermediate module, and a beach module. Procurement would allow for a training set for ACB-1 who has a 33/67 AC/RC mix.
10	Crane Simulators	3	1	\$1,200,000	\$1,200,000	NAVELSG has the mission to rearm, refuel, and resupply the Fleet in austere environments. By the end of FY21, NAVELSG will be certified by PMA 280 to conduct Vertical Launch System (VLS) reload, a critical capability in the High End Fight. To meet the Fleet's requirements, NAVELSG has to train and be certified to operate four major types of cranes; Pedestal (permanently mounted cranes), Gantry (shipboard cranes that run on a track), 90 ton Mobile crane (wheeled or tracked cranes that can move independently) and Appleton (a family of maritime cranes found on a variety of ships to include Military Sealift Command (MSC)). NAVELSG does not currently have cranes in their Table of Allowance (TOA) and have to rely on crane rental or the availability of an MSC ship to conduct training. Reserve units do not have the equipment or time to build and sustain crane skills required to meet their Fleet missions.

Chapter 5

United States Air Force Reserve Components

“America cannot wait to modernize the Air Force any longer, not one year, one month, or one week. To deter and defeat today’s competitors and tomorrow’s adversaries, we must re-capitalize our Air Force and we must do it now . . . the call to accelerate change or lose is not hyperbole—it is a requirement.”

- General Charles “CQ” Brown, Chief of Staff of the Air Force

I. Department of the Air Force Overview

UNITED STATES AIR FORCE MISSION

Fly, Fight, and Win . . . Airpower Anytime, Anywhere.

UNITED STATES AIR FORCE VISION

With a Total Force of more than 689,000 personnel, Airmen work to support all aspects of airpower, which includes five core missions: air superiority; global strike; rapid global mobility; intelligence, surveillance, and reconnaissance; and command and control. Airpower also requires people and resources dedicated to unit readiness, base infrastructure, and talent management.

UNITED STATES SPACE FORCE MISSION

The USSF is responsible for organizing, training, and equipping Guardians to conduct global space operations that enhance the way our joint and coalition forces fight, while offering decision makers military options to achieve national objectives.

A. Air Force Planning Guidance

The Department of the Air Force requires a modernized force that is relevant today and long into the future. We are hard at work designing our future force. We must invest in the cutting-edge technologies and capabilities that are critical to securing our military advantage in the future—this includes updating our two legs of the nation’s nuclear triad, and our nuclear command, control, and communications systems. To enable our military advantage in the long term, we need to shift away from legacy platforms and weapons systems that are decreasing in relevance today and will be irrelevant in the future—our aircraft fleet is 30 years old on average, and 44 percent of our aircraft are beyond their designed service life. Maintaining our aging weapon systems is costly now and, without change, will mortgage our future.

As the Department of Air Force prepares to celebrate 75 years of service to our great nation, the U.S. Air Force (USAF) is transforming itself to address the challenges of near-peer adversaries while the newest branch of the U.S. Armed Forces—the United States Space Force—is creating and integrating a Military Service purposely built to compete, deter, and win in the space domain. Both Military Services and the entire Department of the Air Force are dedicated to

protecting the Homeland and democracy around the globe. We must modernize and integrate to meet the challenges posed by great power competition, climate change, cybersecurity, fiscal constraints, and worldwide pandemics.

Airmen have performed the Air Force's five core missions superbly while executing almost three decades of near-continuous combat operations in relatively uncontested environments. Past success, however, is no guarantee of future performance. Absent change, our presumed advantage will continue to erode, and the USAF will not be adequately prepared for future warfighting challenges in contested environments. Absent change, our nation will assume increasing risks to our mission and our forces. Many of the requirements for capabilities that have underpinned our success were developed in the same decade when today's most senior leaders joined the USAF. Since then, much has changed. Not only has technological progress dramatically changed the ways in which humans and economies interact in the world, it has changed the way militaries can develop and project power. Unlike in the past, many of the emerging technologies that will determine our future are no longer created or funded by the Department of Defense. The processes we use to build capabilities for our Airmen have not adapted to these changes and the ways in which we test, evaluate, and train with them do not meet current or future demands. Although we have made progress, our Airmen need us to integrate and accelerate the changes necessary to explore new operational concepts and more rapidly bring the capabilities that will help them in the future fights.

To do this, we must contribute to the Joint Warfighting Concept, enabled by Joint All-Domain Command and Control, and place capability in warfighters' hands faster by innovating, experimenting, rapidly prototyping, and collaborating with our service and industry teammates. We must also use the opportunity presented by standing up the U.S. Space Force to evaluate and adjust internal USAF structures and decision processes to include a renewed look at service-assigned roles and missions internal to the Department of the Air Force and even within the Joint Force. We must also consider how to improve interoperability and data sharing with our closest allies and partners so that we can fly, fight, and win together. We should expand our network of like-minded Airmen from around the world, leveraging our common perspective against shared threats to present multiple dilemmas to our competitors and adversaries.

B. Air Force Equipping Policy

A cornerstone of creating the Air Force required by the future is Active Component (AC) and Air Reserve Component (ARC) parity. For the USAF to be successful, AC and ARC forces must be equivalent in terms of lethality and interoperability. The USAF will continue to adhere to the principle of proportional and concurrent fielding across the components, as seen in the F-35 and KC-46 programs. Accordingly, in advance of full integration, new equipment will arrive at ARC units simultaneously with its arrival at AC units in the proportional share of each component. The USAF has identified Air Force Policy Directive 10-3, *Operational Utilization of the Air Reserve Component Forces*, and subsequently Air Force Instruction (AFI) 10-301, *Managing Operational Utilization Requirements of the Air Reserve Component Forces*, as the appropriate implementation mechanism.

Additionally, the USAF published a revised 90-1001, *Planning Total Force Associations* (TFAs), in June 2020. This document provides policy for planning Total Force Integration (TFI) initiatives across all components of the USAF. TFAs optimize existing force structure to enable USAF component organizations to share resources to perform a common mission. Concurrent fielding and equipment modernization allows the USAF to maximize readiness of the force, increase lethality, and cost-effectively modernize.

C. Plan to Fill Equipment Shortages in the RC

The USAF seeks the optimal mix of operational forces across the Total Force to shift quickly and efficiently from one mission to another. It continually seeks to maximize the value of the RC, most notably through unit associations, fielding over 70 across the ARC. Classic Associations provide access to a depth of personnel experience and surge capacity. Active Associations provide access to equipment and enable additional absorption within operations and maintenance.

D. Initiatives Affecting RC Equipment; Plan to Achieve Full Compatibility Between AC and RC

The Department of the Air Force requires a modernized force that is relevant today and long into the future. We are hard at work designing our future force. We must invest in the cutting-edge technologies and capabilities that are critical to securing our military advantage in the future—which includes updating our two legs of the nation’s nuclear triad and our nuclear command, control, and communications systems. To enable our military advantage in the long term, we need to shift away from legacy platforms and weapons systems that are decreasing in relevance today and will be irrelevant in the future—our aircraft fleet is 30 years old on average, and 44 percent of our aircraft are beyond their designed service life. Maintaining our aging weapon systems is costly now and, without change, will mortgage our future. We must also create decision superiority by delivering information and capabilities to decision makers at all echelons through a “military internet of things.” A critical step includes accelerating command and control infrastructure by investing in the Advanced Battle Management System (ABMS)—a vital contribution by the Department of the Air Force to Joint All-Domain Command and Control. We must methodically and immediately move out on tough decisions to compete.

The Air Force’s future force design recognizes the need for change and the range of threats to the nation, our allies, and partners. In 2021, we identified three key capability development areas for investment: connect the joint force, generate combat power, and conduct logistics under attack. Moving forward, we will prioritize the resources that will allow us to continue to make investments in these areas, with more to come. Additionally, the USAF will prioritize affordable, analytically defensible force structure and system capability proposals that are within its resources. Through partnership with Congress, the USAF will prioritize resources to guard the foundations of national freedom and independence for America and our allies.

II. Air National Guard (ANG) Overview

A. Current Status of the ANG

1. General Overview

“The National Guard is a lethal, cost-effective, dual-role operational force that provides strategic depth to the Army, Air Force, and Space Force, and responds to crises in our homeland. The National Guard is capable of operating in a complex global security environment and continues to invest in modernization and readiness to prepare for the threats of the future. Today’s National Guard is an integral part in addressing the gravest challenges facing the Joint Force. . . The year 2020 was unprecedented and historic. National Guard members supported every Combatant Commander around the globe and met every mission here at home. On June 6, [2020,] 120,000 National Guard Soldiers and Airmen were mobilized in support of overseas and domestic missions, one of the highest levels of National Guard support to our nation since World War II.”¹

Top ANG Equipment Focus Areas

- Mobility Fleet Modernization: C-130H engine upgrades, C-130J support equipment
- Combat Aircraft Sustainment: F-16 AESA radar, Revitalize aging F-15C fleet

The Chief, National Guard Bureau’s (CNGB’s) vision remains focused on supporting the NDS while accomplishing three core missions: Warfight, Homeland, and Partnerships. These missions are achieved by dedicated efforts centered on four priorities: people, readiness, modernization, and reform. A modernized Air National Guard (ANG) that is “Ready for Today’s Fight” is a critical enabler of the CNGB’s readiness priority. The ANG uses resources provided to ensure its force is deployable, sustainable, and interoperable with the Air Force at all times—yet more can be done. The ANG will remain a force in transition as “21st Century Guard Airmen” train for and execute new missions with modernized and recapitalized combat capability—the ANG strengthens the total force by fulfilling new mission requirements alongside its Active Duty counterparts. Finally, the ANG will never stop “Building for Tomorrow’s Fight,” by ensuring it is a resilient and lethal operational reserve—it requires well-developed and exceptional leaders focused on ensuring the ANG is a central component to America’s security and future.

2. Current Status of Equipment

The ANG support equipment and vehicle inventory fill-rate is 92 percent and 87 percent respectively. These rates have remained at or above 85 percent for the past four reporting periods.

¹ Written statement of Gen Daniel Hokanson, Senate Appropriations Committee, Subcommittee on Defense, May 18, 2021, p. 2.

a. Equipment On-hand

Table 1: Consolidated Major Item Inventory and Requirements provides projected RC inventory of major items including air refueling, air support, airlift, fighter, and rescue aircraft.

b. Average Age of Major Items of Equipment

The average age of ANG aircraft is 26 years old, ranging from an average of 62 years old for the KC-135T fleet to an average of 1 year old for the KC-46. Support equipment used to sustain ANG aircraft is still challenging to maintain and procure. As original manufacturers stop manufacturing some support items or produce items that are no longer viable, maintenance costs continue to increase. See *Table 2: Average Age of Equipment* for the average age of major equipment items as of the start of FY 2022.

c. Compatibility of Current Equipment with AC

The ANG is focused on readiness because the NDS demands more lethality from the military. This readiness requires the ANG to be deployable, sustainable, and interoperable with the AC. Enhancing full time support and replacing and upgrading dilapidated facilities are vital steps. The ANG also requires parity when equipping its force via concurrent and balanced modernization and recapitalization so that it can deliver the lethality required to the joint force. With continued congressional funding, the ANG will be able to maintain compatibility with the AC.

d. Maintenance Issues

The ANG continues to operate and maintain the oldest aircraft in the USAF inventory while facing significant challenges to increasing aircraft availability. Aircraft support and test equipment are critical to daily maintenance operations at all ANG flying units. **Much of the equipment used in testing aircraft systems is nearing the end of its designated useful life and is increasingly difficult to sustain and expensive to repair.** The ANG functions at a prolonged high operations tempo that drives the need for efficient maintenance processes and robust supply chains. Devices enhancing maintenance efficiency and safety while improving capabilities also improve aircraft availability, reduce operating costs, and enhance agile combat support. State of the art equipment such as the maintenance inspection platforms, maintenance cranes, and digital test equipment reduce aircraft downtime, allow logistics personnel to maintain a high rate of sortie generation, and ensure the longevity, relevance, reliability, and responsiveness of the aging fleet. The ANG Weapon Systems Sustainment Working Group outlined the following maintenance concerns regarding legacy system sustainment and shortfalls.

Support and Test Equipment: Currently, the ANG relies on outdated test equipment to sustain an aging fleet of aircraft that frequently breaks and incurs high maintenance costs. This has a direct impact on aircraft availability. Updating to digital replacements for test equipment items will enable maintenance personnel to troubleshoot and repair aircraft in a fraction of the time required by older methods.

While some support equipment modernization has been completed in recent years, the majority of aircraft support equipment was designed and built in the 1970s and 1980s and is not on par with current technology. Legacy equipment remains labor intensive and costly to operate, regularly presenting significant safety concerns. The ANG continues to explore innovative solutions to these challenges by working with industry partners to find off the shelf solutions that consolidate multiple functions, are more efficient to operate, and enhance maintenance efficiency and safety.

e. Isochronal (ISO) Maintenance and Inspection Stands and Cranes

ANG lacks the necessary C-17 maintenance inspection stands to perform required inspections and maintenance. The first C-17 ISO/Home Station Check (HSC) Maintenance Stand was delivered in May 2018 with four additional stands to be delivered in the future. Since the last report, a contract has been awarded, with first trial kit install anticipated in March of 2022, and stands delivered to each base in 9 month increments thereafter. The ANG's C-40 unit is presently using antiquated man lifts, also known as JLGs, and is working a replacement acquisition through NGB/A5. Inspection stands are also under the Statement of Work for ANG's C-40 unit. ANG's KC-135 and E-8C inspection stands, which average 32 years of age, no longer meet Air Force Occupational Safety and Health or Occupational Safety and Health Administration standards. ANG units received the first nine deliveries of ANG KC-135 ISO Maintenance Stands, which helped save an average of five days during ISO Maintenance Inspections. Three more sets of stands will be delivered in the near future. Delivery of E-8C ISO Maintenance Stands has been completed. To meet outstanding requirements, the ANG needs to purchase four new C-17 stands and one C-40 inspection stand totaling \$18.5 million to alleviate unnecessary risk and allow maintainers to focus on aircraft specific tasks while providing a safe working environment. In addition to maintenance stands, current crane/hoist/sling capabilities are insufficient in ANG KC-135 units. New KC-135 maintenance cranes would reduce risk of personnel injury or equipment damage during heavy maintenance requirements and substantially decrease maintenance repair times, thereby increasing aircraft availability and Mission Capable rates. NGREA funding has been secured for **three** cranes and will be obligated upon final contract award.

f. Aircrew Flight Equipment (AFE) Sustainment Issues

As the only maintenance-type function located within the Operations Group, AFE is caught between funding lines and often left off budget requests. Major programs listed below such as F-15, F-16, and A-10 are getting upgraded 3-D audio and Joint Helmet-Mounted Cueing Systems that fall directly into AFE management once procured. As a result, AFE is left with the burden of sustaining this equipment. As more AFE serviced items become locally purchased, the Cost per Flying Hour funds for locally purchased support to the flying squadrons are becoming limited.

Aircrew Chemical Defense is AFE's largest program across all manned aircraft. This program directly ties to the readiness rating of these units within the ANG Enterprise. This program has historically been underfunded both for direct funding from the Program Element and for sustainment funding. The lack of funding affects readiness and the ability of the ANG to support CNGB goals.

The severity of the struggling Aircrew Chemical Defense program is highlighted by the ANG's use of the Defense Property Accountability System (DPAS), which the ANG calls the Aircrew Flight Equipment Resource Management System. DPAS allows for the accurate tracking of proper equipment stocks. Rather than relying on data calls for expiring equipment, NGB is able to track expired items across the enterprise for the current year and 6 years forward. With the specialized Aircrew Chemical Defense equipment shortages, this is an example of an innovative way to ensure aircrew readiness is properly sustained.

With the increased highlight of the AFE program shortfalls in all areas, the creation of a standalone NGB AFE PE is under consideration. This would allow for dedicated funding to sustain the programs and ensure alignment with CNGB-stated priorities.

g. Modernization Programs and Shortfalls

ANG documented \$10.1 billion in critical capability shortfalls through its Air Reserve Components (ARC) Weapons and Tactics Council (WEPTAC) and ANG Domestic Capability Priorities (DCP) programs. Because of these acute shortfalls, ANG modernization programs use innovative acquisition strategies to build a more lethal force for the war fight and homeland and provide current equipment for first responders during domestic emergencies. The annual ARC WEPTAC and DCP Conferences remain the starting points for ANG modernization efforts.

At the virtual 2020 ARC WEPTAC, field operations, maintenance, and support experts across ANG identified and vetted critical shortfalls collaboratively with headquarters staff-level functional area managers. This process included a review of command and control (C2); cyber; intelligence, surveillance, and reconnaissance (ISR); training; and simulator systems as well as weapons delivery, airlift, and tanker platforms. Identified capability shortfalls are documented in the annual Weapons Systems Modernization Priorities book. **The 2020 Modernization Book documented a \$9.5 billion shortfall for modernizing and recapitalizing the ANG aircraft fleet and associated equipment. The top three modernization priorities for 2023 remain: Active Electronically Scanned Array (AESA) radar modernization for the F-16 and F-15; C-130H propulsion modernization; and acquisition of C-130J Support Equipment.**

The DCP Conference identifies and prioritizes capability shortfalls for federal and non-federal support of civil authorities during a domestic emergency. The conference is organized by functional areas to mirror the National Response Framework and aligns requirements with the CNGB's core capabilities. The output from this conference is published in the annual ANG DCP Book. The 2020 DCP book identified \$562 million in capability priorities. The Spring of 2021 DCP followed the same model as the ARC WEPTAC, with the majority of the working groups meeting virtually.

The ANG Modernization Book and the Domestic Capability Priorities Book, available at <http://www.ang.af.mil/Home/ANG-Priorities-Books/ANG>, illustrates how the ANG leveraged NGREA to modernize 30 weapons systems and mission areas and to procure equipment for ANG domestic operations (covering 11 of 15 Emergency Support Functions). Priorities for future modernization include aircraft sensors, legacy cockpit upgrades (communications/datalink), aircraft defensive system upgrades, simulators, and Special Warfare equipment. Priorities for equipment

supporting domestic operations include equipment for first responders; command and control equipment; emergency mobile medical facilities; Chemical, Biological, Radiological, Nuclear, and High-yield Explosives response equipment; and urban search and rescue equipment.

The following paragraphs highlight the modernization efforts undertaken by the ANG and some of the critical shortfalls, arranged by mission type with individual associated weapons systems broken out in detail.

h. Combat Aircraft

A-10C: The ANG's 84 A-10C aircraft provide 32 percent of the total Air Force fleet and are the premier close air support aircraft. ANG aircraft have the helmet-mounted integrated targeting modification, which drastically reduces the time required to acquire targets. This ultimately increases survivability and lethality. ANG A-10 aircraft are equipped with two ARC-210 radios, giving them a unique capability to simultaneously communicate via secure line-of-sight and beyond-line-of-site (BLOS). These dual radios extensively contribute to combat search and rescue (CSAR) mission success. One A-10 modernization priority is a high-resolution center display that shows pilots the high-definition picture provided by targeting pods, which improves A-10 pilots' ability to positively identify friendly forces and helps search for, identify, surveil, and track enemy personnel. Additional upgrades include an integrated, noise-cancelling, three-dimensional (3-D) cockpit audio system, and an anti-jam embedded Global Positioning System (GPS).

- Total Unfunded Modernization Shortfall: \$90.4 million. This reduction from the previous year's \$115.5 million results from completing a significant amount of non-recurring engineering needed for systems integration.
- High Resolution Display Systems (HRDS): Installs a more capable system that enables full utilization of targeting pod improvements, enabling visual identification of friendly and enemy forces from greatly increased standoff ranges—\$44 million shortfall; 3-year fielding timeline if fully funded. This reduction from \$54 million the previous year results from reductions in non-recurring engineering.
- Second Gigabit Ethernet Switch: Installs a system that expands Ethernet capability to 22 ports to support the requirements for the HRDS upgrade—\$8.9 million shortfall; 2-year fielding timeline if fully funded.
- Conversion Fuel Tank: Modifies current excess F-15 external fuel tanks to improve range, loiter time, and G-rating—this requirement is fully funded and awaiting production contract through NSPA.
- 3-D Audio: Installs a noise-cancelling system that increases situational awareness by spatially separating aural warning and radio signals, providing angular cueing to ground and air threats—\$10.4 million shortfall; 3-year timeline if funded.
- Selective Availability Anti-Spoofing Module Embedded GPS/Inertial Navigation System: Installs a system that will improve navigational accuracy in a GPS-denied environment—\$27.1 million shortfall; 3-year timeline if funded. This reduction from \$32 million the

previous year results from reductions in non-recurring engineering and the completion of a number of test and integration projects.

F-15C: The F-15C Eagle has been the backbone of the nation's Air Superiority fleet for over 30 years and will continue to be a key asset. The ANG's 137 F-15C/D aircraft provide 58 percent of the F-15C/D fleet, and CONUS units provide 31 percent of the Nation's Aerospace Control Alert assets, spanning five alert sites and providing 24-hour homeland defense. Modernization and sustainment programs are vital to improve aircraft capabilities for overseas contingency operations and homeland defense. These upgrades recapitalize and repair long-range combat identification and air superiority "kill chains" while drastically increasing survivability in contested environments. These programs include the AESA radar, multi-spectral search and track technologies, electronic warfare and self-protection, a modern integrated cockpit, and next generation air-to-air weapons technology. The Air Force identified and validated defensive shortfalls in the F-15C Electronic Warfare (EW) capability. Previous efforts to modernize the EW system were cancelled, leaving the F-15C with no current or planned EW systems. All F-15 pilots were provided with Digital Eye Pieces, which provide Joint Helmet Mounted Cueing System information during operations using night vision goggles. These were partially funded with NAREA. Modernization efforts are underway to increase vehicle interoperability with 5th Gen platforms and to increase pilot safety.

- Total Unfunded Modernization Shortfall: \$369.7 million
- Data Link Interoperability: ANG F-15s require full secure data link interoperability to ensure safety-of-flight, continued lethality during combat operations, and effective command and control during homeland defense missions. ANG has not allocated NAREA to fund this effort.
- Full-Spectrum Electronic Warfare (EW) Capability: F-15s require a full-spectrum EW suite that autonomously and automatically detects, identifies, and locates radio frequency threats. The F-15C will be without FULL datalink interoperability at the start of 2022 due to modern upgrade/installs. This will keep one of the primary ACA assets without the ability to locate, track, and identify targets of interest without fighter datalink. Current funding is for testing and initial article purchase—\$85.7 million shortfall not funded in the FYDP.
- Multi-Spectral Search/Track/Identification/Target: Comprised of an enhanced Electronic Warfare Warning Set (EWWS), Infrared Search and Track (IRST), and Tactical Electronic Warfare System (TEWS). They will supplement onboard threat detection, identification, and tracking. Current efforts leave the program of record unfunded in the FYDP.
- Cockpit Modernization: The F-15C cockpit requires modernization to fully capitalize on network-centric operations and increase safety—\$66 million shortfall not funded in the FYDP; 3-year timeline if funded.
- High-Fidelity DMO Capable Simulators with Updated Threat Replication: F-15s require the ability to participate in networked, high-fidelity simulators with a wide variety of aircraft types and squadrons around the globe in real-time against modern threats. Current effort is not funded in the FYDP.

F-16: The ANG's 335 F-16C/D aircraft provide 37 percent of the total Air Force fleet and fulfill many of Allied Air Command's precision-guided munitions and close air support taskings, including

convoy escort, dedicated infrastructure defense, border patrol, and raid support. ANG aircraft also make up 56 percent of the nation's Aerospace Control Alert fighter force.

Modernization efforts are underway to improve ANG F-16s by fielding affordable systems with secure line-of-sight and BLOS communication suites, smart displays with data processing capability, advanced helmet-mounted target cueing for air and ground weapons employment, enhanced self-protection suites, and improved radar performance and reliability.

- Total Unfunded Modernization Shortfall: \$1.3 billion
- AESA Radar: AESA radars provide the capability to detect and track multiple airborne targets of interest in dense civilian air traffic environments. AESA radars will improve the capability of ANG F-16s to perform close air support, surface attack, and defensive counter-air—\$650 million shortfall not funded in the FYDP; 5-year timeline if funded.
- 3-D Audio: F-16s require simultaneous secure line-of-sight and BYOS three-dimensional audio noise-cancelling system that increases situational awareness by spatially separating aural warning and radio signals, providing angular cueing to ground and air threats—\$101.3 million shortfall not funded in the FYDP.
- Advanced Targeting Pod: F-16s require a center display unit, including modern multifunction displays to transfer high-definition digital pod displays to ground controllers—\$40 million shortfall not funded in the FYDP.
- Helmet-Mounted Display Update: F-16s require a lightweight, color, night-compatible helmet display that provides rapid sensor cueing, increased battlespace awareness, and safety in the night environment—\$18.8 million shortfall not funded in the FYDP.
- Next Generation Electronic Warfare (EW): Rapidly adaptable, automated, and digital electronic warfare suite capable of detecting, precisely geolocating, protecting from, and attacking modern radio frequency and infrared threats—\$447.3 million shortfall not funded in the FYDP.
- Jam Resistant Navigational System: Navigational system capable of operating in GPS-denied environments—\$6.65 million shortfall not funded in the FYDP.
- Advanced Datalink: Link-16 will provide the capability to effectively employ in the current operational environment by allowing seamless deployment, connectivity, and interoperability for the entire ANG F-16 fleet—\$41.4 million shortfall not funded in the FYDP.

Mobility Aircraft

With a legacy lasting over 65 years, the C-130 Hercules still remains the U.S. Military's primary combat delivery aircraft. In addition to its primary role in tactical airlift, ANG C-130s support humanitarian, peacekeeping, and disaster relief operations. Procurement efforts continue to address needed updates to the avionics suites, propulsion modernization, improved self-protection, and enhanced situational awareness. These improvements ensure that the ANG C-130 fleet remains capable of safely and effectively executing its missions globally and maintains relevancy in tomorrow's fight.

C-130H: The ANG's 99 C-130H aircraft provide 35 percent of the total Air Force fleet. C-130H aircraft safety and compliance requirements are being addressed via the Avionics Modernization Program, AMP2. Upgrades include Communication, Navigation, and Surveillance/Air Traffic Management, Automatic Dependent Surveillance-Broadcast, and a digitized glass cockpit. AMP2 is on contract for all the Air Forces C-130Hs but it is only partially funded in FY 2022.

- Total Unfunded Modernization Shortfall: \$1.9 billion
- The ANG C-130H fleet requires a common carry open-architecture mission pod capable of producing mission enhancement effects in contested environments. Mobility Air Forces (MAF) C-130H aircraft have inadequate missile-launch detection and inadequate ability to detect, degrade, and defeat infrared (IR) man-portable air defense systems (MANPADS). The Block 30 AN/AAQ-24 Large Aircraft IR Countermeasures (LAIRCM) system improves detection against advanced MANPADS threats and degrades the enemy's ability to engage C-130H aircraft. To survive in modern combat, C-130H aircraft require a radar warning receiver (RWR) with geolocation ability that is capable of processing signals in a dense radio frequency (RF) environment and automatically directing countermeasures to defeat those threats—\$809 million shortfall not funded in the FYDP; 5-year timeline if funded.
- The C-130H fleet is bringing performance and fuel savings initiatives to production with a 3.5 engine upgrade while digitizing the electronic propeller controller system (EPCS) and upgrading propeller performance to a modernized, high performance eight-bladed propeller (NP-2000). Thanks to congressional adds, EPCS kits are fully funded for all ANG C-130Hs, 56 ANG C-130Hs are funded for the 3.5 engine, and 42 ANG C-130Hs are funded for NP-2000 upgrades. This is one of the top three priorities for the ANG. The NP2000 and 3.5 engine programs still have a \$580 million shortfall not funded in the FYDP; 4-year timeline if fully funded.
- The ANG C-130H fleet requires avionics and training systems modernization. The C-130H faces severe sustainment challenges with current avionics and cockpit instrumentation, and will be out of compliance with the Communications, Navigation, and Surveillance/Air Traffic Management 2020 mandate if not modernized. Additionally, tactical night operations continue to suffer with lighting that is not night vision imaging system (NVIS)—compliant. To eliminate critical sustainment issues caused by diminishing manufacturing sources and material shortages (DMSMS) this modernized cockpit will include improvements in automatic dependent surveillance-broadcast (ADS-B) and NVIS compatibility, as well as a modern flight management system with GPS approach and polar navigation capabilities. An NVIS-compatible and modernized glass cockpit with a digital overhead panel reduces crew workload, lowers maintenance costs, and increases capability and sustainability to operate safely at night. The \$592.5 million shortfall is not funded in the FYDP; 5-year timeline if funded.

C-130J: The ANG's 40 C-130J aircraft provide 13 percent of the total Air Force fleet and support not only its wartime mission, but also peacekeeping, humanitarian, and disaster relief operations. While the C-130J is the newest addition to the combat delivery fleet, it still requires incremental modernization to ensure fleet viability throughout its useful life.

- Total Unfunded Modernization Shortfall: \$330 million

- C-130J Support Equipment: Provides support equipment and initial spares for C-130J ANG units receiving congressional adds of C-130Js. The congressional adds did not include funding for support equipment or spare parts—\$58 million shortfall unfunded in the FYDP; 2-year timeline once funded.
- The C-130J requires a common carry open architecture mission pod capable of producing mission enhancement effects in ever-changing contested environments. The common carry pod will include self-protection and will be designed to accept future enhancements to protect the aircraft from emerging threats. To increase operational effectiveness in a hostile environment, the C-130 community has identified Large Aircraft Infrared Countermeasures Block 30 as the most effective measure against man-portable air defense systems. To counter radar threats, the C-130J requires an upgraded digital RWR (ALR-69A) to defeat current and future radar threats—\$93 million shortfall unfunded in the FYDP; 5-year timeline once fully funded.
- ANG C-130Js require integrated battlespace awareness in the form of Real Time Information in the Cockpit (RTIC). RTIC with Link-16 provides a tactical data link (TDL) to ensure the C-130J fleet has access to the common operating picture. RTIC is vital for sending and receiving threat information BLOS. Additionally, RTIC and self-protection systems need a fusion mechanism to effectively display ground- and air-based threats (Advanced Integrated Electronic Combat Suite)—\$154 million shortfall unfunded in the FYDP; 4-year timeline once fully funded.
- C-130J aircrews require the ability to train in a GPS denied/degraded environment. A deception-based GPS jamming option is required to accurately reflect scenarios that are not simply GPS denied environments—\$2 million shortfall unfunded in the FYDP; 3-year timeline once fully funded.

LC-130H: The ANG owns 10 ski equipped C-130Hs. The LC-130H operates on snowfields in remote areas of the polar regions to support the National Science Foundation (NSF), supporting national security requirements in the Arctic region. The ANG LC-130H fleet requires updated avionics to ensure continued global airspace access. LC-130Hs face severe sustainment challenges with current avionics and cockpit instrumentation if not modernized. Additionally, tactical night operations continue to suffer without NVIS-compliant lighting. To eliminate critical sustainment issues caused by DMSMS and to meet required mandates and AFIs, this modernized cockpit will include a multifunction EIDS, automatic dependent surveillance-broadcast capability, NVIS compatibility, and a modern flight management system with GPS approach and polar navigation capabilities. Updated avionics address CNS/ATM mandates and increase operational efficiency by opening up airspace routes with stringent navigational requirements and allowing the use of GPS approaches. The LC-130 is part of the current Air Force C-130H avionics update program and the ANG continues to emphasize the importance of this program so it will receive priority on the upgrade schedule and ensure the aircraft can meet its mission requirements.

- Total Unfunded Modernization Shortfall: \$8.2 million
- ANG LC-130Hs require a robust, secure TDL. TDL provides a C2 link and maximizes aircrew situational awareness with BLOS capabilities—\$2.2 million shortfall unfunded in the FYDP; 3-year timeline once fully funded.

- RTIC with Link-16 provides a TDL, to ensure the C-130H fleet has access to the common operating picture. RTIC is vital for sending and receiving threat information BLOS—\$6 million shortfall unfunded in the FYDP; 3-year timeline once fully funded.

C-17: The 50 ANG C-17s provide 23 percent of the total Air Force C-17 fleet. Recently celebrating its 30th birthday, the C-17 is the go-to workhorse for AMCs global airlift mission. The C-17 must be modernized to keep this aging aircraft safe and relevant in tomorrow’s high-end fight. To perform Rapid Global Mobility in a peer and near-peer threat environment, the ANG C-17 fleet requires self-defense capabilities to detect and defeat modern threats. To accomplish this, C-17s require an open mission system digital backbone to enable processing at the forward edge and integration into the Joint All Domain Command and Control architecture. It also requires access to high-speed global data for tactical and strategic situational awareness and to enable Mission Command for mobility forces and a cloud-based mission management suite to guarantee worldwide access to secure mission planning and communication.

The majority of missions flown by ANG C-17s are in areas posing a significant electronic threat with no dedicated off-board assets to provide detection or protection. The C-17 fleet does not currently have an on-board capability to detect or defend against electronic threats. To survive in modern combat, C-17 aircraft require an RWR capable of processing signals in a dense radio frequency environment and automatically directing countermeasures to defeat those threats. This capability enables C-17s to detect and defend against electronic threats in the likely scenario that the aircraft is operating independently.

- Total Unfunded Modernization Shortfall: \$659 million
- The C-17 requires a common carry open architecture mission pod capable of producing mission enhancement effects in ever-changing contested environments. The common carry pod will include radio frequency self-protection and will be designed to accept future enhancements to protect the aircraft from emerging threats. To counter radar threats, the C-17 requires a new digital RWR to defeat current and future radar threats—\$359.5 million shortfall unfunded in the FYDP; 5-year timeline once fully funded.
- ANG C-17s require secure airborne data communications with other aircraft, C2 agencies, and ground-based forces. The MAF mission computer data link and data transfer capabilities provide aircrew the ability to report and receive battlespace information such as the position of other aircraft, weather, threat, mission events, mission status, task completion, and resource status. This increased situational awareness allows C2 agencies to track mission progress and facilitate rapid decisions and adjustments during mission execution. These improvements include an integrated data link, upgraded satellite communications, and an electronic flight bag—\$105.5 million shortfall unfunded in the FYDP; 4-year timeline once fully funded.
- ANG C-17s require onboard capability to access secure and unsecure internet data. While operating globally, aircrews require both tactical and strategic situation awareness provided by a secure high-speed global data system—\$80 million shortfall unfunded in the FYDP; 3-year timeline once fully funded.

- ANG C-17s require a cloud based mission management suite up to Information Level 6. It should establish direct, real-time, secure connections between C2, mission planners, maintenance, support, and aircrew on any mobile device or browser—\$5 million shortfall unfunded in the FYDP; 4-year timeline once fully funded.

C-40: The ANG's three C-40C aircraft provide 21 percent of the fleet and provide worldwide distinguished visitor transportation for Congressional, Department of Defense (DoD), Air Force and National Guard missions. The primary mission of the C-40 is to ensure passenger safety and comfort while providing the utmost in reliability.

- Total Unfunded Modernization Shortfall: \$67 million. This significant increase from last year's \$21.5 million shortfall results from the additional requirements outlined below, including satellite augmentation and Large Aircraft Infrared Countermeasure System (LAIRCM).
- To enhance C-40 employment capabilities during worldwide operations, ANG C-40Cs require a high-speed data system for seamless, worldwide satellite-based communications and internet connectivity to enable the C-40C fleet to meet time-critical and persistent passenger mission requirements—\$25 million shortfall unfunded in the FYDP; 2-year timeline once fully funded.
- ANG C-40Cs require an upgraded Aircraft Communication Addressing and Reporting System and Controller Pilot Data Link Communications for data-link systems to send messages between an aircraft and an operator's ground base through VHF, HF, and SATCOM links—\$13.5 million shortfall unfunded in the FYDP; 2-year timeline once fully funded.
- ANG C-40Cs require satellite based augmentation systems to ensure travel anywhere in the world at any time. The C-40 does not currently possess the ability to fly GPS approaches to localizer minimums. Wide Area Augmentation System/Localizer Performance with Vertical Guidance increases safety with tighter navigation tolerances and increased capabilities including lower approach minima—\$10.5 million shortfall unfunded in the FYDP; 2-year timeline once fully funded.
- ANG C-40Cs require upgraded Large Aircraft Infrared Countermeasure Systems (LAIRCM). C-40Cs rely on the LAIRCM system for self-defense in contested airspace. The current LAIRCM system requires replacement by 2025 because of obsolescence issues—\$18 million shortfall unfunded in the FYDP; 2-year timeline once fully funded.

KC-135: The KC-135 Stratotanker is Air Mobility Command's primary air refueling platform, providing approximately 87 percent of air refueling in support of U.S., allied, and coalition military aircraft. The ANG's 164 KC-135 aircraft provide 44 percent of the total Air Force fleet. The KC-135 is tasked to operate close to high-threat areas. Defensive systems are necessary to prevent shoulder-fired surface-to-air missile systems from destroying aircraft during takeoff, landing, and low altitude flight over mountainous terrain. TDL technologies and situational awareness displays that bring real-time threat information and secure radio capability greatly enhance KC-135 air refueling, airlift, and aeromedical evacuation missions.

- Total Unfunded Modernization Shortfall: \$569 million with some costs savings over last year based on updated estimates.

- The KC-135 requires a common carry open architecture mission pod capable of producing mission enhancement effects in ever-changing contested environments. The common carry pod will include radio frequency self-protection and will be designed to accept future enhancements to protect the aircraft from emerging threats—\$166 million shortfall unfunded in the FYDP; 5-year timeline once fully funded.
- To safeguard against man-portable air defense systems, the ANG is leading the integration of the LAIRCM system. All 164 ANG KC-135s will be modified with Group A wiring and 38 LAIRCM Group B pods will be procured—\$197 million shortfall unfunded in the FYDP; 4-year timeline once fully funded.
- The RTIC situational awareness system will provide a baseline for future growth to establish the KC-135 as a data relay platform when equipped with Link-16 and TDL. RTIC was successfully demonstrated and is currently on contract to modify 164 ANG KC-135s—\$148 million shortfall unfunded in the FYDP; 4-year timeline once fully funded.
- ANG KC-135s require cockpit and cabin cooling during ground and low-level operations. Temperatures at deployed locations routinely result in cockpit temperatures of 140° F and cargo compartment temperatures of 170° F. Aircrews generally spend more than 1 hour in these conditions, which is not conducive to mission accomplishment. Ground cooling carts are the primary method for temperature reduction. Ground cooling carts are removed before engine start and are not usable if mission delays occur. Roll-on/roll-off vapor cycle air conditioning units placed onboard can provide ground cooling—\$7 million shortfall unfunded in the FYDP; 2-year timeline once fully funded.
- ANG KC-135s require an automated hardened position, navigation, and timing (PNT) system integrated into the existing navigation equipment. ANG KC-135s fulfill almost 70 percent of the nuclear refueling mission. KC-135s require the ability to navigate oceanic airspace in a post-strike environment where traditional navigation aids and satellites are not available. Astro-inertial navigation systems provide the greatest accuracy and a bounded position error over an extended use-time and distance. These systems are autonomous, passive, non-jammable, and automatic. All 164 ANG KC-135s require automated, hardened PNT systems—\$37 million shortfall unfunded in the FYDP; 3-year timeline once fully funded.
- ANG KC-135s require portable aircraft-powered ground transfer fuel pumps to onload/offload fuel in an adaptive basing scenario or forward deployed environment where ground support is unavailable. This capability provides combatant commanders with greater flexibility staging KC-135s during contingency operations, natural disasters, and humanitarian support operations—\$13.6 million shortfall unfunded in the FYDP; 2-year timeline once fully funded.

i. Rescue and Special Operations Aircraft

HC-130J: The ANG's 12 HC-130J aircraft provide 34 percent of the total Air Force fleet. The HC-130 is the rescue mission variant of the C-130. ANG HC-130 units continue to deploy in support of overseas contingency operations and provide emergency rescue and relief support during domestic operations. The ANG has finished recapitalization to the HC-130J.

- Total Unfunded Modernization Shortfall: \$343 million

- Joint TDL: ANG HC-130Js require the integration of multiple radios, data links, rescue devices, and defensive systems to keep the primary focus on safe and successful mission accomplishment and not electronic management. Multiple unintegrated efforts to upgrade technology have resulted in a task-saturated workload for HC-130 aircrews. There is a \$32 million shortfall with a 3-year timeline once funded.
- Onboard secure global network connectivity: ANG HC-130Js require secure, continuous, onboard connectivity over wide-band BLOS systems. As the CSAR coordinator role is advancing as an HC-130J capability, the requirement to communicate securely BLOS with multiple assets is critical. Currently, the HC-130J must rely on an outdated BLOS voice communication radio to receive and pass critical survivor information from command and control sources, delaying the recovery effort. The \$18 million shortfall is not funded in the FYDP; 3-year timeline if funded.
- Precision geolocation and identification of isolated personnel: ANG HC-130Js require the ability to carry mission-specific capabilities including data link, sensors, communications, video downlinks, and electronic warfare payloads on external hard points without detrimental effects to baseline aircraft capabilities, specifically aerial refueling. Wing mounted sensors for isolated personnel search and identification—\$74 million shortfall not funded in the FYDP; 2-year timeline if funded.
- Increased survivability in contested environments: ANG HC-130Js require a robust self-defense capability to perform combat rescue in a hostile environment in a peer-to-peer conflict. To operate in a high threat environment, the HC-130J requires an RF jammer and digital RWR for improved radar detection capability, and must leverage improving technology to incorporate the newest chaff expendables to defend against a radar guided threat. Federated RWR and radio frequency jammer capability—\$175 million shortfall is not funded in the FYDP; 3-year timeline if funded.

HH-60G: The ANG's 18 HH-60G helicopters provide 19 percent of the total Air Force fleet. ANG Personnel Recovery (PR) helicopters and aircrew play a critical role in support of overseas contingency operations while responding to an increasingly high demand for domestic operations. There are three ANG PR helicopter units and one ANG PR training unit associated with an active duty unit. The HH-60G modernization priorities included smart multi-functional color display improvements and acquisition of multiple datalinks. Additional upgrades have focused on modernizing aircraft communication systems and integrating a helmet mounted head-up display.

- Total Unfunded Modernization Shortfall: \$234 million
- Modernized integrated defensive suite: Integration of infrared countermeasures and RWRs to the HH-60—\$87 million shortfall not funded in the FYDP; 3-year timeline if funded.
- Integrated flight deck with handheld device interoperability: ANG HH-60G aircrew require an integrated flight deck with wireless handheld device interoperability to fuse information from multiple sources into a common operating picture. This requires an open architecture on the HH-60G to enable digital interoperability and provide for access to aircraft-derived information. To enable cross-platform communication, upgraded software definable radios will enable previously stove-piped communications channels to interoperate with various CSAR weapon systems. This cross wave form communications tool, which will include cellular, ties civil

response forces into traditional CSAR communications channels—\$13 million shortfall funded by FY 2018 NGREA; estimated contract delivery 3Q FY 2020.

- Degraded visual environment-capable helmet mounted display: ANG HH-60Gs require day and night, helmet-mounted head-up display capability to significantly increase aircrew situational awareness and weapons employment, enhance terminal area search and rescue operations, speed overall internal communications during critical mission phases, and enable crews to safely land a helicopter in a degraded visual environment. A helmet mounted cueing system will allow all crewmembers to quickly build situational awareness without the need for voice communication. Sensor and data link symbols are visible on the helmet-mounted display superimposed over the geographic location of friendly, hostile, and survivor positions. Additionally, the ability to display sensor pictures, hazards, terrain, and data link information while maintaining a heads-up posture will greatly enhance safety while flying in the low-level (<500ft) environment—\$75 million shortfall not funded in the FYDP; 3-year timeline if funded.
- Weapons modernization to enable self-escort: ANG HH-60Gs require weapons modernization to provide reliable defensive firepower to support various combat mission operations. The fielded systems have no capability for target marking, concealment, or battlefield illumination. To reduce the cost of CSAR, the HH-60G needs a lightweight, precision and non-precision standoff weapons capability. The LAU-68 F/A Extended-Length Launcher is a lightweight 7-shot rocket pod that enables employment of precision guided munitions such as the Advanced Precision Kill Weapons System. This system is capable of delivering precision and non-precision guided rockets armed with anti-armor, high explosive, or anti-personnel warheads as well as non-lethal smoke or battlefield illumination payloads—\$60 million shortfall not funded in the FYDP; 5-year timeline if funded.

EC-130J: The ANG’s seven EC/MC-130J aircraft provide 100 percent of the total Air Force fleet. The EC-130J “Commando Solo” conducts information operations, psychological operations, and civil affairs broadcasts. ANG provides 100 percent of the three EC-130J assets in the USAF. The ANG continues to work with Air Force Special Operations Command (AFSOC) to identify capability gaps and field modernized capabilities.

- Total Unfunded Modernization Shortfall: \$28 million
- Federated defensive system unit: ANG EC-130Js require a federated Defensive Systems Unit (DSU) capable of aligning with updated operation flight programs, the ability to rapidly dispense chaff and flares, and an increased flare capacity. The DSU will allow the Combat Systems Officer to dispense chaff, flare, or both with a single button push without the need to switch settings on the defensive system’s master panel. The federated DSU will decrease EC-130J aircrews’ operational risk while increasing crew resource management and enhancing overall mission success. Chaff and flare dispense integration to aircraft primary software—\$6 million shortfall not funded in the FYDP; 3-year timeline if funded.
- Multi-Mission Payload-Heavy: The EC-130J requires a Multi-Mission Payload–Heavy(MMP-H) Communication Electronic Attack with Surveillance and Reconnaissance (CEASAR) pod. This device will expand the current EC-130J capabilities. Four of seven EC-130Js do not currently meet the electronic warfare (EW) needs of the Combatant Commanders. MMP-H will bridge the gap between current Commando Solo capabilities and future EW needs. The 193 Special

Operations Wing requires five CEASAR pods for the four remaining Commando Solo aircraft—\$5 million shortfall not funded in the FYDP; 3-year timeline if funded.

- Long Range Broadcast System: The EC-130J requires Long Range Broadcast System (LRBS) pods. Four of seven EC-130Js do not currently meet primary mission requirements for psychological operations broadcast. While not matching current Commando Solo capabilities, LRBS will enable an additional four aircraft to execute the primary mission task. The 193 SOW requires six LRBS pods for the four additional EC-130J aircraft, one for a maintenance spare, and one for a part task trainer—\$12 million shortfall not funded in the FYDP; 3-year timeline if funded.
- Link-16: The ANG EC-130J requires a TDL to be interoperable with the active duty Air Force. AFSOC aircraft operate under the legacy Situational Awareness Data Link system while the conventional Air Force operates utilizing Link-16. This disconnect between systems causes a lack of a Common Operating Picture. Additionally, AFSOC required that all Special Operation Forces aircraft have Link-16 capabilities by August 2018. Equipping the EC-130 with Link-16 capability—\$5 million shortfall; 2-year timeline once funded.

MC-12: United States Special Operations Command (USSOCOM) owns the 34 MC-12 aircraft that remain in the DoD inventory. As a USSOCOM platform, the MC-12 provides manned, airborne electro-optical (EO)/infrared(IR) full-motion video (FMV) and signals intelligence coverage for U.S. Special operations forces. There are two major MC-12 programmatic issues for which the ANG is awaiting resolution:

- MC-12 aircraft availability in the 137 Special Operations Wing, Will Rogers Air National Guard Base (WRANGB), OK: The majority of USSOCOM's MC-12s are part of the government-owned, contractor-operated (GOCO) program known as JAVAMAN. Per the Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, Facilities and Policy Change Recommendation for the 137 SOW, USSOCOM was to allocate 13 MC-12 aircraft for 137 SOW's home station training and overseas deployment requirements. However, during the first few years of the 137 SOW's conversion to the MC-12 mission, the unit struggled to achieve Initial Operating Capability milestones so USSOCOM shifted some of the MC-12 aircraft originally allocated to the 137 SOW to GOCO support. The result is the 137 SOW has averaged between three and five MC-12 aircraft on its ramp since 2017. In the meantime, the 137 SOW's recruiting and training effectiveness have increased which—when combined with current MC-12 tail availability—has resulted in a backlog of ingesting new students into, and training delays within, the MC-12 Formal Training Unit co-located at WRANGB. To remedy this situation, AFSOC is working with USSOCOM to increase WRANGB MC-12 tail availability to at least nine aircraft by the end of 1st quarter FY 2021. Nine aircraft is the minimum number required to sustain two MC-12 aircraft deployed 365-days/year and generate a sufficient number of training sorties at WRANGB to increase combat-mission ready MC-12 aircrew to meet the 137 SOW's Full Operational Capability requirements.
- A propeller upgrade to enable short field operations in austere environments was funded with FY 2017 NGREA and delivered in FY 2020. Modernization efforts funded with NGREA are only for the 13 aircraft operated by the ANG and all modernization upgrades to these aircraft will be easily installed and uninstalled to ensure compliance with the requirements of NGREA. The propeller upgrade is pending STC approval for 16,500 lb. gross weight. The current gross weight

limitation for the new propellers is 15,000 lbs. The SPO has failed to successfully get this effort on contract for an extended period of time. The SPO is now researching options outside of L3-Harris to support the increased weight for the STC. There is not a known timeline for this to be resolved.

- Total Unfunded Modernization Shortfall: \$37.1 million
- Second FMV sensor: ANG MC-12W units require an additional electro-optical/infrared (EO/IR) sensor to meet the highly demanding ISR tasks required by combatant and task force commanders. The ANG MC-12W mission heavily relies on the ability of the crews to see the smallest details on the ground from miles away. Currently, the MC-12W is outfitted with a single MX-15DiD sensor on each aircraft. While this allows the MC-12W to complete a wide range of ISR tasks, it is extremely limited in fidelity and flexibility. An added system will double the amount of area to be surveilled by MC-12W crews and provide a substantial amount of situational awareness to the commanders on the battlefield—\$22 million shortfall not funded in the FYDP; 2-year timeline once funded.
- Synthetic Aperture Radar: ANG MC-12Ws require a synthetic aperture radar for ground moving target indication, dismounted moving target indication, coherent change detection, and maritime search capabilities. A moving target indicator will significantly enhance the MC-12W's ability to find and fix personnel and vehicles during reduced or obscured visibility conditions, such as inclement weather, smoke, or dense forest canopy—\$36 million shortfall not funded in the FYDP; 2-year timeline once funded.
- Airborne Mission Network: ANG MC-12W aircraft require an onboard TDL radio, with associated hardware and antennas, to employ across multiple areas of responsibility. MC-12Ws lack the means to establish and maintain direct TDL communications with command and control, tactical agencies, and other TDL users. TDLs share aircraft position, targeting data, sensor points of interest, cursor-on-target data, and target-track information derived from various intelligence sources via an airborne network. The lack of onboard TDL slows the kill chain, delays effects for supported commanders, and poses a safety risk regarding aircraft position and airspace deconfliction—\$7.5 million shortfall not funded in the FYDP; 2-year timeline if funded.

j. Command, Control, Intelligence, Surveillance, and Reconnaissance (C2ISR)

Air Operations Centers (AOCs): The ANG's seven AOCs provide 54 percent of the total Air Force number. The AOC weapon system is employed by the Joint Forces Air Component Commander (JFACC), facilitating operational control and direction of theater air, space, and cyber forces. Air National Guard AOC and Air Force Forces (AFFOR) staffs are comprised of personnel and facilities postured to support Homeland Defense, Overseas Contingency Operations, and Defense Support of Civil Authorities (DSCA). AOC personnel are organized as divisions specializing in integrated, distributed C2 processes and products. The AFFOR staff is organized as special and functional directorates that provide planning teams to the Commander, Air Force Forces in support of the JFACC.

- Total Unfunded Modernization Shortfall: \$24 million

- **Weapon System Modernization.** ANG AOC units require the modernized Block 20 Falconer Weapon System to maintain readiness with the impending termination of the current 10.1 Weapon System. The Kessel Run/Pathfinder initiative is revolutionizing the way the Air Force develops, tests, employs, and updates AOC mission software, making it accessible via the Block 20 Weapon System through the cloud. To ensure redundant capability and connectivity, especially in a degraded mission environment, Pivotal Cloud Foundry (PCF) server racks hosting the Block 20 Weapon System will also be based at nine different geographic nodes (e.g., 603rd AOC in United States Air Forces in Europe). However, the current plan does not include fielding PCF server racks for ANG units. Instead, ANG units are expected to access the weapon system through the cloud without local hardware. This poses a potential mission degradation challenge for ANG AOC units accessing the cloud in a conflict where the cyber-enabled environment is contested or degraded. This upgrade will be for six ANG AOCs, which support AC AOCs located OCONUS—\$15 million shortfall not funded in the FYDP; 3-year timeline if funded.
- **Single Pane of Glass (SPG) Display:** ANG AOC operators and Air Force contingency planners need an SPG Display to conduct operations and training. The SPG solution provides simultaneous views of multiple classified and unclassified domains from a single client, enabling enhanced awareness of the battlespace. The SPG solution must be able to support the performance requirements of the graphics-intensive applications inherent to the Block 20 AOC Weapon System. An SPG solution is vital to modernizing AOC operations and bringing enhanced capability to the operator for more effective and efficient mission execution. This capability is required for six ANG AOCs—\$6 million shortfall not funded in the FYDP; 2-year timeline if funded.
- **Cross-Domain Solution (CDS):** CDS provides simultaneous views of multiple classified and unclassified security domains on a single client, enhancing operating capability for more effective and efficient mission execution—\$3.5 million shortfall not funded in the FYDP; 2-year timeline if funded.

Battle Control Centers (BCCs): The ANG’s four BCCs, located in Alaska, Hawaii, Washington state, and New York, provide 100 percent of the total Air Force capability. The BCC operations force includes four ARC operations groups and squadrons. BCCs support North American Aerospace Defense and Northern Command as part of the homeland defense mission, DSCA, and search and rescue. BCCs provide 24/7 aerospace surveillance, warning, control, and maritime warning in the defense of North America.

- **Total Unfunded Modernization Shortfall:** \$28 million.
- **Integrated Fire Control:** The four BCCs require the advanced data link capabilities needed to pass critical tasking messages to perform integrated fire control. Along with advanced sensor integration, interagency and joint partnerships are critical to performing the Air Defense component of the homeland defense mission—\$6 million shortfall not funded in the FYDP; 3-year timeline if funded.
- **National Capital Region Camera Modernization:** ANG BCCs requires a modernized Enhanced Regional Situational Awareness (ERSA) System at the Joint Air Defense Operation Center to provide continuous support of the BCC mission. This system includes all-weather, high-definition EO/IR sensors; a network architecture that transmits high-definition sensor imagery in its native

format; and an improved ERSA user interface—\$11 million shortfall not funded in the FYDP; 2-year timeline if funded.

- **Live Virtual Constructive/Distributed Mission Operations (DMO) Training System:** Each of the four BCCs requires a DMO-capable simulator training system that produces a virtual environment that can enable 4th and 5th generation fighter integration and allows control of the direction, de-confliction, and employment of ground, surface, and air assets. NGREA has been used to pay for three of the four required training systems—\$5 million shortfall not funded in the FYDP; 3-year timeline if funded.
- **CDS:** A CDS would allow BCCs to integrate TDLs, provide functional redundancy to the Air Event Information Sharing Service, integrate joint service TDLs, and facilitate DSCA through the Situational Awareness Geospatial Enterprise application—\$8 million shortfall not funded in the FYDP; 2-year timeline if funded.

Control and Reporting Centers (CRC): The ANG’s 10 CRCs provide surveillance, tactical communications, data links, and combat-related air battle management of joint air operations with real-time networked situational awareness. The CRC, at the operational and tactical levels, provides surveillance, tactical communications, data links, and combat-related air battle management of joint air operations with real-time networked situational awareness to support Active Duty and ANG missions.

- **Total Unfunded Modernization Shortfall:** \$32 million
- **Integrated Mode 5/ADS-B:** ANG CRCs require the capability to interrogate Mode 5 and access ADS-B data to complete an identification matrix organically—\$11 million shortfall not funded in the FYDP; 3-year timeline if funded.
- **Remote Radar and Radio Access:** ANG CRCs require a remote radar and voice communications integration package to execute specialized live-fly operations—\$3 million shortfall.
- **Electronic Attack Training System:** The ANG CRCs do not have the capability to train against an electronic attack-equipped threat, leaving crews unprepared to mitigate real world radar degradation—\$6 million shortfall not funded in the FYDP; 3-year timeline if funded.
- **Highly Mobile AESA Radar with Combat Identification:** CRCs (AC and ANG) have experienced a significant shortfall in radar parts because of DMSMS of the current AN/TPS-75 Radar. The Air Force plan to maintain the AN/TPS-75 and replace it with the 3D Long-Range Radar (3DELRR) will fulfill mission requirements. The estimated fielding timeline for the 3DELRR to ANG units has been extended to FY 2030, which is significantly late to need—\$12 million shortfall not funded in the FYDP; 3-year timeline if funded.

E-8C JSTARS: The ANG’s 16 E-8C JSTARS aircraft provide 100 percent of the total Air Force fleet and are the world’s premier wide-area surveillance moving target indicator, airborne, manned battle management command and control aircraft. All 16 E-8Cs have been or are in the process of being upgraded with a Global Imagery Server, Automatic Identification System, Integrated Broadcast System, and the Joint Worldwide Intelligence Communications System; all were fully funded with

NGREA. Central computer modernization for all 16 E-8Cs was funded with ANG Operations and Maintenance funds.

- Total Unfunded Modernization Shortfall: \$178 million.
- Counter-Unmanned Aircraft Systems (UAS): Installs system capable of detecting UAS—\$41 million shortfall; 3-year timeline once funded.
- Fifth-to-Fourth Generation Communications Gateway: Bridges interoperability gap between 5th and 4th generation fighter data links—\$75 million shortfall not funded in the FYDP; 3-year timeline if funded.
- Command and Control Enterprise Common Battle Management Suite: Provides a common battle management suite with the E-3—\$15 million shortfall not funded in the FYDP; 2-year timeline if funded.
- Increased Commercial/Military BLOS Internet Bandwidth Capability: Increases available onboard communications capacity—\$40 million shortfall not funded in the FYDP; 3-year timeline if funded.
- Special Operations Forces–Integrated Situation Awareness Data Link: Provides a roll-on/roll-off data link gateway for USAF, ANG, and special operations forces—\$7 million shortfall not funded in the FYDP; 1-year timeline if funded.

MQ-9: The ANG’s 12 MQ-9 squadrons provide long endurance intelligence, surveillance, and reconnaissance and strike capabilities for Combatant Commands, executing daily operations in combat zones around the world. The ANG hosts two of three USAF MQ-9 formal training units. Five units can launch and recover MQ-9 aircraft for formal training unit missions, CONUS-based continuation training and exercise participation, and domestic operations. In FY 2021, the ANG provided 14 of the USAF’s 36 blue-suit combat lines, and is scheduled to provide the same level of support in FY 2022. In FY 2021, the ANG MQ-9 enterprise significantly increased the number of CONUS-based continuation training sorties to support readiness levels for all ANG MQ-9 units and three USAF MQ-9 combat units. FY 2021 also saw the ANG MQ-9 Enterprise participate in four CONUS and two OCONUS exercises resulting in 2,608 total flight hours, and 108 live and inert munitions expended.

- Total Unfunded Modernization Shortfall: \$122.5 million.
- National Airspace Integration and Freedom of Movement: ANG MQ-9 units require both ground-based and air-based detect and avoid radar solutions to fulfill Federal Aviation Administration (FAA) requirements to safely operate within domestic airspace alongside civilian aircraft. ANG MQ-9 units also require an agile launch-and-recovery system to enable expeditionary operations, including an auto take-off and land capability to mitigate transitory airspace challenges and extend airframe reach. ANG MQ-9 units are not authorized to launch without a “chase plane” during Visual Flight Rules conditions, resulting in delays of up to 24 hours to coordinate for support; and ANG MQ-9 units are currently not authorized to launch at all during Instrument Flight Rules conditions, resulting in many mission cancellations and delays. ANG MQ-9 units also lack the ability to stage within the vicinity of a domestic emergency similar to other aircraft, resulting in

excessive daily transit times and additional airspace challenges, impacting on-station direct-support times by as much as 50 percent, or over six hours per day. This modernization effort will minimize weather-related delays and cancellations, and negate the need to fund annual service contracts for chase planes. Radar installations and launch-and-recovery systems are required for all five ANG MQ-9 wings, and airborne detect and avoid systems are required for each of the 24 ANG MQ-9 aircraft—\$84.5 million shortfall planned to be funded by NGREA; 3-year timeline once funded.

- **Multi-spectral Targeting System (MTS) Resolution and Computing Improvements:** ANG MQ-9 aircraft require an upgrade to the MTS for deep-look, find, and fix effects required in Great Power Competition areas. Currently, the MTS maximizes the physical limits of the aperture, meaning that further resolution enhancements would require physical changes to the system in the form of aperture changes or an increase in the power of image post-processing to utilize state-of-the-industry techniques. An updated electronics unit (EU), called the Sensor Open Systems Architecture (SOSA), provides the computational power to dramatically improve combat identification and enable artificial intelligence/machine learning algorithms to run on the sensor data inside the MTS. This EU upgrade provides a significant and much-needed improvement in the MQ-9s passive find/fix capability, filling one of the Combat Air Force’s critical capability gaps in that area. Militarized systems in emission control or highly mobile systems executing emit-and-move tactics are still susceptible to passive find/fix tactics utilized by the MQ-9 MTS. Upgrading the EU in the MQ-9 MTS adds situational awareness to the joint force while mitigating an acceptable level of risk where required. Each of the 24 ANG MQ-9 aircraft will require one MTS SOSA Electronic Unit—\$16.2 million shortfall planned to be funded by NGREA; 3-year timeline once funded.
- **Minimal Latency Tactical Data Link and Communications Pod:** ANG MQ-9 aircraft require a podded TDL radio, with associated hardware and antennas, to employ across multiple areas of responsibility (AOR). MQ-9s lack the means to establish and maintain direct TDL communications with command and control, tactical agencies, and other TDL users. TDLs are used to share aircraft position, targeting data, sensor points of interest, cursor-on-target data, and target-track information derived from various intelligence sources via an airborne network. The lack of a TDL capability onboard the aircraft slows the kill chain, delays effects for supported commanders, and poses a safety risk for deconflicting aircraft airspace. Lack of direct information-sharing with other TDL participants degrades overall situational awareness. A new system must be compatible with all current data link architectures in both domestic and combat AORs, include Enhanced Position Location Reporting System (EPLRS), Situational Awareness Data Link (SADL), and Link-16 with gateway capable software. Each of the 24 ANG MQ-9 aircraft will require one Link-16 radio, SADL radio, and a pod—\$13.8 million shortfall planned to be funded by NGREA; 3-year timeline once funded.
- **Edge processing for Artificial Intelligence (AI) and Machine Learning (ML):** ANG MQ-9 aircrew require the ability to quickly locate, identify, and distribute targets in a contested or denied environment. This limitation creates follow-on effects for the entire kill chain when trying to rapidly find, fix, and engage targets in a high threat environment. Advances in machine learning and edge computing, have enabled the ability to automate target identification by correlating multiple onboard sources of information such as the targeting pod and synthetic aperture radar, then distributing those targets via the data link architecture to Squadron Operations Centers (SOCs). This technology not only enhances the MQ-9’s capabilities on the battlefield, it also

accelerates the rest of the forces' ability to identify and engage targets in one of the most dynamic and difficult environments. The ANG MQ-9 community requires 20 artificial intelligence/machine learning computers, one for each of the 17 SOCs and an additional three for podded capabilities to demonstrate airborne processing and automated functions. These computers are required to meet size, weight, and power constraints of being carried in podded systems onboard the aircraft and must provide processing power capable of hosting artificial intelligence cognitive functions. In addition, the ANG requires 17 installation hardware kits, 12 for combat and 5 for unclassified SOCs—\$5.3 million shortfall planned to be funded by NGREA; 3-year timeline once funded.

- **Agile Remote Split Operations Plus Multi-Domain Dissemination:** ANG MQ-9 units require Agile remote split operations plus (RSO+) plus to ensure the survivability of MQ-9 airframes, ground control stations (GCS), and personnel. To accomplish critical missions, a Ku-band satellite communications link must be present and operational. Every unit has a fixed RSO capability within their server rooms, which allows the GCS to communicate with a satellite Earth terminal subsystem anywhere in the world via internet protocol. The single point of failure with this intricate network is the hardware's location in a fixed facility. If that fixed facility is damaged in any way, the ability to conduct operations is severely hindered or stops altogether. Agile RSO+ provides the solution to this problem in the form of a modular server room, hardened and placed inside a mobile GCS shell. This mobile server room will serve all MQ-9 Guard units. It has the ability to be unplugged, picked up, and moved anywhere in the world at a moment's notice. Agile RSO+ will be an asset to all units, providing a stopgap in fixed facility degradation due to local natural disaster. It will also allow units to complete a technical refresh of their server rooms with little to no effect on contingency operations. Additionally, it would be available for large force exercises to provide a combat representative capability with the ability to move information and full-motion video out of the cockpit in real-time. The ANG requires one RSO+ mobile server room to support the MQ-9 enterprise—\$2.7 million shortfall planned to be funded by NGREA; 3-year timeline once funded.

Space and Cyber

Space: The ANG has 14 units and 1,008 personnel who provide missile warning, space situational awareness, satellite communications, and space electronic warfare (EW) capabilities to support operational, exercise, and planning activities along with other space support as requested.

- **Air National Guard Space Electronic Warfare Test and Training Range:** \$24.7 million procured a live, virtual, and constructive training range that will enable the five ANG Space Control Squadrons to conduct remote threat-based training from their home units. In addition, the Range can be a critical enabler of Spectrum Effects support to USSF operational, test, and training requirements.
- **Badger RF Training Lab:** \$1.5 million procured five phased array small form factor unclassified RF training environment for the five ANG Space Control Squadrons to increase EW knowledge base for new personnel, enable unclassified outreach, and provide signal generation surge capacity. These systems lay the foundation for critical Spectrum Effects support for the NG and USSF enterprise.

- Air National Guard Space Electronic Warfare Translator (ASET): \$1.4 million procured a sidecar/aux-processor to rapidly onboard space electronic warfare data and integrate tactical, time sensitive data with air and ground players via tactical datalink. ASET transfers system data across multiple Tactical Data Links and the Unified Data Library, allowing information to be instantly accessed at multiple classification levels.
- Space Electronic Warfare Counter Communications System (CCS) Antenna Family: \$4.72 million provided smaller antenna options to reduce the deployment footprint and enable agile space control operations downrange. Test data was used to support a critical AFCENT Urgent Operational Need (UON).

Cyber and Communications: Communications and Cyberspace enable every Air Force core mission: Air & Space Superiority, Rapid Global Mobility, Globally Integrated ISR, Global Strike, and Command and Control. Cyberspace operators enable these missions by building, operating, and defending a robust Enterprise IT network that will enable Advanced Battle Management System (ABMS) and Joint All Domain Command and Control (JADC2). The same enterprise also enables Airmen to efficiently and effectively execute the basic administrative functions that deliver wartime capabilities.

Cyberspace Operations: The ANG has 3 Cyber Operations (CO) Groups, 1 Operations Support Squadron and 17 COSs postured that support a variety of cyber missions to include offensive cyber, cyber deterrence, and cyber defense.

- Total Unfunded Modernization Shortfall: \$33 million (4 critical systems).
- Cloud Cyber Operations Platform (CCOP): The CCOP was identified by ANG Cyber Squadrons as a CNGB #1 Prioritized Critical Gap List (PCGL) capability. ANG Cyber units require an agile, minimal footprint, and a non-Department of Defense information network cloud based capability for executing Defense Support to Civil Authorities (DSCA) missions, domestic mission partner taskings, and State Partnership Program events. Cloud-based operations will prevent limited existing hardware from being “burned,” and enable near-instant software deployments and reduced operations and maintenance costs. Cloud-based systems are agile and allow adversary engagement from geographically separated locations while maintaining collaboration between operators and analysts.

Cyber Infrastructure: Over 106,000 personnel across all states and territories, provide unique ANG Air Control Alert coverage for CONUS training missions required to maintain combat aviation proficiency, as well as continuous support for ongoing persistent strategic missions including Air Refueling, Air Mobility, Space Control, and BCCs. Updating and supporting these missions and supporting continuous digital modernization needs are the primary demands that require secure Department of Defense information network connectivity and enterprise services requirements at every ANG location. Robust, efficient cyberinfrastructure and services are required to cultivate a ready digital workforce and take actions to evolve and adapt cybersecurity capabilities that also enable an agile, resilient defensive posture.

- Total Unfunded Modernization Shortfall: \$122.1 million.

- Long Haul Communication provides the digital pathways required to enable NIPR, SIPR, Joint Worldwide Intelligence Communications System, and various community of interest system connections. These systems enable critical supported flying and cyber missions including real-time remote piloted aircraft missions in various combatant theaters and direct support functions including augmented reality used in maintenance areas, virtual reality applications, flight simulators, and distributed training operations. There is an emerging need for redundant and diverse communication transport connections to support AI and ML initiatives in addition to safety and critical mission connectivity needs, which will require significant initial costs and innovation experiments. Improving the resilience and efficiency of redundant system connections will require implementing software-defined wide area networking (SD-WAN) technologies. There is a shortfall of \$10 million (\$6 million for 1Gbps Ethernet upgrades and \$4 million for SD-WAN) that is not funded in the FYDP; 1-year timeline if funded.
- Digital transformation is sorely needed to address recapitalization of legacy technologies by eliminating existing time division multiplexing architectures and replacing them with current and emerging Ethernet based technologies that enable a defensible unified capabilities environment. This evolution will include leveraging cloud-based resources in many forms including enterprise user services (e.g., IL-5 O365 and milDrive), zero-trust enabled access controls, and AI/ML-enabled monitoring solutions that address service consumption from ANG installations and from off-net (i.e., from traditional guardsman homes) using both government and personally owned smart devices (computers and wireless/mobile cellular phones/tablets). There is a shortfall of \$20 million (\$18 million for O365, \$1 million for milDrive, \$1 million for missing SBC capability) that is not funded in the FYDP; 1-year timeline if funded.
- Current secure (SIPRNet) collaboration technologies are barely adequate at ANG installations. New cloud-based capabilities gaps must be employed to address both on-installation and remote access solutions that simultaneously address C2 challenges while providing timely and resilient capabilities and access where and when needed. Examples are enabling AFNET-S enterprise services across the ANG by employing the JADC2 devices (e.g., ADSV cloud host and client hardware/software), resilient responsive client patching systems, encryption devices/management, and secure mobile/cellular technologies providing voice and data functionality. There is a shortfall of \$22 million (\$10 million for SIPR govCloud IL-6 instance for hosting ADSV [and potentially Wickr on SIPR], \$10 million for 5,000 ADSV devices, \$2 million for TACLANE Agile VLAN capability) that is not funded in the FYDP; 1-year timeline if funded.
- Current ANG installation 1 Gbps core and access nodes must be recapitalized with 40Gbps IPv6 capable nodes using software defined networking to provide necessary system responsiveness and resiliency. There is a shortfall of \$59.4 million (\$50 million for Core/non-Core BAN Switch Recap and \$9.4 million for NAC) not funded in the FYDP; 1-year timeline if funded.
- Existing ANG Component Enterprise Data Center (CEDC) computer and store infrastructure is reaching end of support life and must be recapitalized and upgraded to trusted platform module capable hardware to continue supporting critical command enterprise applications being refactored for migration to a cloud-hosted environment. There is a \$10.7 million (\$0.7 million for STRATUM-1 NTS, \$10 million for CEDC computer & Store Recap) shortfall not funded in the FYDP; 1-year timeline if funded.

k. Agile Combat Support

Civil Engineering: The ANG possesses nine Rapid Engineer Deployable Heavy Operational Repair Squadron Engineer units and 71 Prime Base Engineer Emergency Force units. NGREA funding provided upgrades to debris clearance and explosive ordnance disposal (EOD) teams' equipment. Upgrading ANG Civil Engineer units with new equipment aligns resources with the AC and provides horizontal and vertical construction capabilities; urban search and rescue; fire response; EOD; and chemical, biological, radiological, and nuclear (CBRN) tools for engineering forces.

- Total Unfunded Modernization Shortfall: \$35.3 million.
- EOD Base Response Equipment: 17 ANG units are uniquely trained and equipped to facilitate explosive operations during joint wartime missions. In the deployed environment, EOD operators routinely defeat improvised explosive devices, render unexploded ordnance safe, perform route clearance operations, conduct post-blast analysis and evidence collection, and embed with special operations forces. Furthermore, EOD technicians must also be prepared to respond to incidents involving chemical/biological weapons, weapons of mass destruction, and nuclear weapons. These units will be equipped with upgraded communications and robotic systems—\$9 million shortfall not funded in the FYDP; 30-year effort if funded.
- Individual Wildland Firefighting Kits: ANG Firefighting and Emergency Services (FES) flights require fully equipped wildland firefighting kits to provide an initial response to wildland fires and provide Wildland Urban Interface protection. Firefighters must be trained and equipped to National Wildland Coordinating Group standards. The standardized wildland firefighting kits include fire shelters, hand tools, and personal protection equipment (PPE). The PPE sets include a Nomex shirt and pants. Each of the 63 ANG FES units, plus five additional units engaged in wildland firefighting, requires 10 wildland firefighting kits and associated PPE sets—\$1 million shortfall not funded in the FYDP; 1-year effort if funded.
- PPE Cleaning Capability: The ANG requires upgraded PPE cleaning and testing kits for its FES units. An updated extractor (washer), dryer, and water penetrator tester will provide FES units the ability to conduct proper post emergency cleaning of PPE. Routine contact with chemicals, fuel, and the products of combustion require decontamination, which can take weeks without in-house capability. With the addition of the water penetrator tester, all FES units will have the capability to conduct in-house annual advanced cleaning in accordance with National Fire Protection Association 1851 Standards. Each of the ANG's 63 FES units requires one cleaning and testing kit, as well as equipment training for three personnel—\$2 million shortfall not funded in the FYDP; 2-year effort if funded.

Medical: The ANG possesses 90 Medical units, 27 of which have an additional tasking for the CBRN Enhanced Response Force Package (CERFP), 3 Guardian Angel units, and 10 Aero-Medical Evacuation units.

- Total Unfunded Modernization Shortfall: \$11 million.
- Critical Care Air Transport Team (CCATT) Equipment: 6 sets of CCATT Equipment Kits—\$3.4 million shortfall not funded in FYDP; 2-year effort if funded.

- CERFP Modernization: Rapid Response Equipment is outdated and in need of update—\$4.9 million shortfall not funded in FYDP; 3 year effort if funded.
- Aero-Medical Evacuation (AE) Equipment: The AE equipment is currently loaned from AC stocks for the ANG AE mission—\$2.7 million shortfall not funded in the FYDP; 2 year effort if funded.

Operational Training Infrastructure (OTI), Simulation, and Range Instrumentation: OTI is the overarching training technology that encompasses and links all aspects of simulation, including DMO and range instrumentation, into a live, virtual, constructive battlespace environment. The ability to connect simulators for mission rehearsal events and exercises adds a significant and required level of realism to simulator training. Using NGREA, the ANG has aggressively invested in tactical and virtual range infrastructure to meet 5th generation aircraft training requirements. The baseline structure for OTI is a fielded array of high fidelity, state-of-the-art aircrew, and weapon system simulators at every ANG unit. The ANG procures simulators through Air Force programs of record and designs, builds, and manages simulator programs in-house to meet training requirements.

- Total Unfunded Modernization Shortfall: \$155 million.
- F-16 Mission Tactics Trainer–Guard (MTT-G) provides distributed mission capable trainer for F-16 pilots in block 30 and 40 configuration. Eleven MTT-Gs, paid for with NGREA, have been delivered. The ANG has utilized \$77 million in NGREA for 22 additional MMT-Gs as a block II purchase. Initial block II deliveries are scheduled for February 2022 with the remaining devices scheduled to be delivered over the next 2 years.
- The ANG has provided 23 Relocatable Simulator Shelters (RSSs) to units to support simulator mission training needs as they await MILCON funding or completion of MILCON. RSSs have been procured with \$7.2 million in NGREA, enabling tens of thousands of critical mission training hours across multiple platforms.
- Range Infrastructure provides radios, datalinks, surrogate target, and EW emitters for ANG ranges to meet USAF Range Enterprise Tier standards. The ANG used \$9.5 million in NGREA to successfully upgrade war rooms across 6 wings. The upgrade war rooms provide mission planning, post training debrief, live HD mission video feed, live on field communication, and additional capabilities to the warfighter.
- The ANG utilized NGREA to procure C-130 Multi Mission Crew Trainer (MMCT), HH-60 MMCT, AAJTS Derivative Proof of Concept (ADPOC) formerly known as Combat Operations Procedures Simulator (COPS).

Security Forces: ANG Security Forces include over 7,400 defenders from all wings in all states and territories. Security Forces protect and support worldwide contingencies and home-station installations. The Security Forces missions include installation access control, base defense, asset security, suspect apprehension and detention, high-risk vehicle inspections, heavy weapons support with military operations in urban terrain, mounted and dismounted individual and team patrols, convoy operations, detainee movement operations, personal security details, fly-away security, Raven tasking, close precision engagement teams, active shooter response, and weapons qualifications through combat arms.

- Total Unfunded Modernization Shortfall: \$56.3 million.
- Counter-Small Unmanned Aircraft System Defense Platform: ANG Security Forces require implementation of a counter small-unmanned aircraft system (sUAS) to defend vital installation assets. Presently, ANG lacks the capability to detect, identify, track, and defeat the most common sUAS threats. Its Security Forces do not possess the equipment, the associated training, or the ability to detect and mitigate threats from sUAS. The employment of a system that is able to minimally detect sUAS platforms, identify platforms, and subsequently mitigate a threat sUAS will enable Security Forces to execute its integrated base defense mission and protect resources vital to national security—\$31 million shortfall not funded in the FYDP; 3-year effort if funded.
- Modular Small Arms Ranges: ANG Combat Arms (CA) personnel need a modular indoor containerized range (MICR) that will provide a fully enclosed zero surface danger zone and vertical danger zone environment allowing personnel to train and qualify safely 365 days a year, day and night, regardless of external environmental conditions. Additionally, personnel assigned to a deployable unit type code must now qualify once every 3 years to meet category B requirements, resulting in a minimum 33 percent increase in personnel requiring scheduled weapons qualification. With the MICR, CA personnel will be able to ensure all of the Air Force’s assigned combat personnel, an average of over 250 personnel per installation, receive weapons qualification training in a timely and cost-efficient manner. The ANG has 28 installations with a small-arms range and only three are compliant with the Air Force Engineering Technical Letter 11-18: Small Arms Range Design and Construction. The need for a modular small arms range is magnified because, of the remaining 25 ranges, 8 are permanently closed and all 17 others are in a state of degraded operations—\$45 million shortfall not funded in the FYDP; 4-year effort if funded.
- Integrated Base Defense Sensor Fusion and Analytics: The ANG Security Forces organizations require a system that collects, analyzes, and provides a real-time and situational awareness picture of emerging and near-peer threats. This system must link all currently existing communication technologies, audio/visual equipment; situational awareness devices, weapon systems, and personnel. In addition, it must incorporate video and data analytics, intelligently fusing this raw data into a functional, lethal, and precision command and control platform. To achieve superiority over near-peer threats, this system must incorporate a 4-dimensional fluid battlespace and unknown threats—\$142 million shortfall not funded in the FYDP; 4-year effort if funded.

Special Warfare: Special Warfare is a new nomenclature, replacing Battlefield Airmen. Special Warfare refers to the Combat Controller Teams, Guardian Angels (GA), Special Reconnaissance (formerly Special Operations Weather Teams), and Tactical Air Control Parties (TACP) mission design series.

- Total Unfunded Modernization Shortfall for the following items—\$3.4 million
- The ANG has procured Hand Held Link-16 (HH-16) radios and required equipment for all TACP units using \$12 million in NGREA, meeting 75 percent of the fielding requirement. The HH-16 radio procurement will allow digital interface capabilities with multiple aircraft. Integrating the Link-16 onto the user creates a better understanding of the operational battlespace while increasing situational awareness by displaying the mission critical live stream information of all involved air players and ground parties in a joint operation.

- The ANG purchased 20 Small Unmanned Aircraft Systems (sUAS) of varying size and capabilities for the two Special Tactics Squadrons in the ANG using \$3.9 million in NGREA. These UASs allow the Special Warfare operators teams—composed of combat controllers and para-rescue—to analyze their own environment in precarious or life threatening situations.
- The ANG has procured 30 Ultra-Light Tactical Battlefield Vehicles (UTV) needed for use in an austere or urban environment utilizing \$7.8 million in NGREA. The current fleet of vehicles available to Special warfare units are too hardened and too large for use in moving to an objective quickly. The purchases of the UTVs also standardize the tactical vehicles used across all services' Special Forces units.
- The ANG has procured Low Visibility Tactical Sprinter Vehicles to facilitate troop movement in urban and light off-road operations using \$2.6 million in NGREA funding. The sprinter vehicles have the ability to transport 2–8 operators and equipment with a modular design that can meld to specific mission sets. It is outfitted to be air transportable by C-130 or larger aircraft. During domestic operation, vehicles have a fully integrated communication suite for joint operations.

Medical: The ANG possesses 90 Medical units, 27 of which have an additional tasking for the CBRN Enhanced Response Force Package (CERFP); 3 Guardian Angel units; and 10 Aero-Medical Evacuation units.

- Total Unfunded Modernization Shortfall: \$11 million
- Critical Care Air Transport Team (CCATT) Equipment: 6 sets of CCATT Equipment Kits—\$3.4 million shortfall not funded in FYDP; 2-year effort if funded.
- CERFP Modernization: Rapid Response Equipment is outdated and in need of update—\$4.9 million shortfall not funded in FYDP; 3 year effort if funded.
- Aero-Medical Evacuation (AE) Equipment: The AE equipment is currently loaned from AC stocks for the ANG AE mission—\$2.7 million shortfall not funded in the FYDP; 2 year effort if funded.

B. Changes Since the Last NGRER

While the FY 2021 Defense Appropriation improved the ANG's sustainment, modernization, and recapitalization efforts, there are still modernization gaps between the AC and RC equipment. The ANG's C-130 fleet continues to be primarily made up of legacy HC-130H aircraft, though newer HC-130Js have been added to the inventory via congressional adds. The HC-130H Avionics Modernization Program was fully funded and on contract, which will significantly increase the aircraft capabilities. The ANG's F-16 fleet remains primarily made up of legacy Block 30/32 aircraft that have received significant capability upgrades including center display units paid for with NGREA funding. The F-15C fleet is reaching the end of its useful life, but new F-15EXs will enter the inventory in the next few years. ANG continues to work within Air Force and DoD requirements development, acquisition, and test processes to ensure the ANG's fleet of aircraft is safe, modern, and fully integrated.

Significant ongoing changes since the publication of the previous NGRER:

- F-35 Lightning II deliveries to the 158th Fighter Wing, Burlington, VT, are in progress.
- KC-46 Pegasus deliveries to the 157th Air Refueling Wing, Pease, NH, are in progress.
- F-15 EX deliveries for test and evaluation are in progress.

C. Future Years Program (FY 2023–FY 2025)

1. FY 2023 Equipment Requirements

Table 1 *Consolidated Major Item Inventory and Requirements* provides projected FY 2023–FY 2025 major equipment inventories and requirements.

2. Anticipated New Equipment Procurements

Table 3 *Service Procurement Program–Reserve (P-IR)* lists planned versus actual procurements. Table 4 *NGREA Procurements* provides ANG planned NGREA procurements for FY 2018–FY 2020.

3. Anticipated Transfers from AC to ANG

Table 5 *Projected Equipment Transfer/Withdrawal Quantities* lists planned ANG transfers for FY 2023–FY 2025.

4. Anticipated Withdrawals from ANG Inventory

Table 5 also lists planned ANG major equipment withdrawals for FY 2023–FY 2025, including the force structure changes discussed in Section II, paragraph B of this chapter.

5. Equipment Shortages and Modernization Shortfalls

The Director, Air National Guard’s three lines of effort remain the same: Readiness for Today’s Fight; 21st Century Guard Airman; and Build for Tomorrow’s Fight. The ANG’s modernization efforts remain focused on the first and last of these three tenets, continuously improving readiness and improving capability to support future combat and domestic operations. Some expected shortfalls for these lines of effort include

F-15/F-16 AESA radars, C-130H propulsion upgrades, and mobile/deployable Remotely Piloted Aircraft Detect and Avoid Capability. Further information on equipment and modernization shortfalls that are anticipated through the end of FY 2023 are listed in the preceding “Modernization Programs and Shortfalls” section of this chapter and in the “ANG Equipment Shortfalls” section in Appendix B.

Table 1 *Consolidated Major Item Inventory and Requirements* and Table 8 *Significant Major Item Shortages* provide ANG equipment inventories, shortfalls, and modernization requirements.

D. Summary

The ANG’s efforts are guided by the Chief, National Guard Bureau and the Director, Air National Guard’s priorities and focus areas. Readiness will remain a top priority. A modernized and

recapitalized ANG with equipment and warfighting platforms fielded concurrently with the active duty is the most effective path to ensuring the NDS. The ANG's efforts are summed up best by the Chief, National Guard Bureau:²

Today's National Guard is the most modern, ready and interoperable Joint Force in our 384-year history. However, our adversaries do not rest. We must continue to build a National Guard that is stronger and more responsive, one with greater lethality, global influence, and the combat readiness to deter aggression.

***-General Daniel Hokanson
Chief, National Guard Bureau***

² Written statement of Gen Joseph L. Lengyel to Senate Appropriations Committee, Subcommittee on Defense, April 10, 2019, p.

Consolidated Major Item Inventory and Requirements

NOTE: This table provides a comprehensive list of selected major equipment items. It provides the projected inventory quantity on-hand (QTY O/H) at the beginning/end of the selected fiscal year (FY). It also provides the quantity required (QTY REQ) to meet the full wartime requirements of the Reserve Component. In accordance with Title 10, the QTY REQ number provides the recommendation as to the quantity and type of equipment that should be in the inventory of each Reserve Component. FY 2022 unit cost estimates are provided by the Military Departments.

Nomenclature	Equip No.	Unit Cost	Begin FY 2023 QTY O/H	Begin FY 2024 QTY O/H	Begin FY 2025 QTY O/H	End FY 2025 QTY O/H	End FY 2025 QTY REQ
Air Refueling							
Air Refueling, KC-135R	KC-135R	\$56,723,905	140	140	140	138	140
Air Refueling, KC-135T	KC-135T	\$56,723,905	24	24	24	24	24
Air Refueling, KC-46A	KC-46A	\$143,012,826	12	12	12	12	12
Airlift							
Airlift, C-130H	C-130H	\$22,563,660	99	86	86	78	70
Airlift, C-130J	C-130J	\$58,037,019	35	40	40	41	48
Airlift, C-17A	C-17A	\$240,874,004	50	50	50	50	50
Airlift, LC-130H ¹	LC-130H	\$21,396,427	10	10	10	10	10
Electronic Warfare (EW)							
EW, E-8C/T	E-8C/AOT	\$236,689,273	16	16	14	11	9
EW, EC-130J	EC-130J	\$50,705,938	7	7	7	7	7
EW, RC-26B	RC-26B	\$8,175,100	0	0	0	0	0
Fighter							
Fighter, A-10C	A-10C	\$13,606,060	84	84	63	63	63
Fighter, F-15C	F-15C	\$29,071,254	123	123	94	71	20
Fighter, F-15D	F-15D	\$27,285,818	14	14	9	5	1
Fighter, F-16C	F-16C	\$8,174,610	289	265	249	249	249
Fighter, F-16D	F-16D	\$8,038,532	46	45	33	33	33
Fighter, F-22A	F-22A	\$161,011,388	20	20	20	20	20
Fighter, F-35A	F-35A	\$88,234,000	20	20	36	58	73
Operational Support							
Op Support, C-32B	C-32B	\$115,708,959	2	2	2	2	2
Op Support, C-40C	C-40C	\$75,451,202	3	3	3	3	3
Rescue							
Rescue, HC-130J	HC-130J	\$74,095,506	12	12	12	12	12
Rescue, HH-60G	HH-60G	\$15,591,143	18	21	21	18	12
Rescue, HH-60W	HH-60W	NA	0	0	0	0	0
Miscellaneous Equipment							
MD-1A	MD-1A	\$1,731,540	35	33	34	34	34
MD-1B	MD-1B	\$1,437,196	7	7	7	7	7
MQ-9A	MQ-9A	\$8,692,500	24	24	24	24	24
(1) Four LC-130s are National Science Foundation (NSF)-owned.							

ANG
Average Age of Equipment

Table 2

NOTE: This table provides the average age of selected major equipment items. The average age provides a projected average age of the fleet at the start of FY 2022.

Nomenclature	Equip No.	Average Age	Remarks
Air Refueling			
Air Refueling, KC-46	KC-46A	2	
Air Refueling, KC-135R	KC-135R	60	
Air Refueling, KC-135T	KC-135T	62	
Airlift			
Airlift, C-130H	C-130H	32	
Airlift, C-130J	C-130J	12	
Airlift, C-17A	C-17A	22	
Airleft, C-40C	C-40C	18	
Airlift, LC-130H	LC-130H	36	
Electronic Warfare (EW)			
EW, E-8C	E-8C	50	
EW, TE-8A	TE-8A	50	
EW, EC-130J	EC-130J	21	
EW, RC-26B	RC-26B	27	
Fighter			
Fighter, A-10C	A/OA-10C	41	
Fighter, F-15C	F-15C	38	
Fighter, F-15D	F-15D	37	
Fighter, F-16C	F-16C	32	
Fighter, F-16D	F-16D	33	
Fighter, F-22A	F-22A	16	
Fighter, F-35A	F-35A	2	
Operational Support			
Op Support, C-32B	C-32B	18	
Op Support, C-40C	C-40C	18	
Rescue			
Rescue, HC130J	HC130J	3	
Rescue, HH-60G	HH-60G	12	
Intel Surveillance & Reconnaissance			
ISR, MQ-009A	MQ-009A	7	
Ground Control Station			
GCS MD-001A	MD001A	7	
GCS MD-001B	MD001B	8	

Service Procurement Program - Reserve (P-1R)

NOTE: This table provides a comparison of the dollar value of the FY 2020 request, the FY 2020 enacted amount; and, the actual amount spent on procurement for specific categories of RC equipment. All values are costs in millions. Deliveries of procured equipment normally take one to two years before they arrive in the inventory; e.g., items procured in FY 2022 are expected to arrive in RC inventories in FY 2023 or FY 2024.

Nomenclature	Request	Enacted	Actual
Tactical Aircraft	76	159	159
Organization and Base	29	55	55
Other Aircraft	32	28	28
Common Support Equipment	4	27	27
Air Force Communications	5	8	8
Cargo and Utility Vehicles	9	8	8
Special Purpose Vehicles	7	7	7
Strategic Aircraft	5	5	5
Electronics Programs	5	2	2
Base Support Equipment	2	2	2
Depot Plant+Mtrls Handling Eq	1	1	1
Base Maintenance Support	1	1	1
Spcl Comm-Electronics Projects	1	1	1
Personal Safety & Rescue Equip	0.3	0	0
Passenger Carrying Vehicles	0.2	0	0
Grand Total	176	303	303

National Guard and Reserve Equipment Appropriation (NGREA) Procurements

NOTE: This table identifies the dollar value of planned equipment procurements with the National Guard and Reserve Appropriation (NGREA). These funds are available for a three-year period from the year of appropriation. Deliveries of procured equipment normally take one to two years from the date of procurement before they arrive in the inventory.

Air National Guard Defense Appropriations Act NGREA	FY 2020 ¹	FY 2021	FY 2022 ²
Air Superiority and Global Precision Attack			
CAF Helmet Mounted Cueing Systems		3,000,000	
CAF Communications Suite Upgrades		16,000,000	
CAF Avionics Upgrades		16,100,000	
CAF Defensive Systems Upgrades		8,800,000	
CAF Advanced Targeting Pods		24,190,000	
Rapid Global Mobility			
MAF Communications and Avionics Suite Upgrades		26,000,000	
MAF Defensive Systems Upgrades		26,600,000	
MAF Propulsion Upgrades		1,000,000	
Personnel Recovery, Special Operations, and Special Warfare			
EC/HC-130 Communications, Avionics, and Defensive Systems		17,300,000	
Guardian Angel/Special Tactics/Tactical Air Control Party Equipment		16,940,000	
Space, Cyber/IO, C2, and ISR			
Space Operations and Training Equipment		21,000,000	
Cyber Operations and Training Equipment		16,800,000	
Intel, Information, Imagery, Analysis, & Assessment Equipment		1,700,000	
C2 Operations and Training Equipment		19,603,500	
ISR Communications, Avionics, Defensive Systems, and Operations		22,450,000	
Simulation, DMO and Ranges			
CAF Simulators		5,800,000	
MAF Simulators		12,087,500	
Personnel Recovery/Special Operations Simulators		5,129,670	
C2 Simulators (AOC, BCC, CRC, DCGS, JSTARS)		2,000,000	
Distributed Mission Operations / Live Virtual Constructive Equipment		3,874,000	
ANG Range & Instrumentation Upgrades		1,100,000	
Agile Combat Support			
Logistics Support Equipment		5,730,000	
Public Health and Medical Services Equipment		3,055,510	

National Guard and Reserve Equipment Appropriation (NGREA) Procurements

Air National Guard Defense Appropriations Act NGREA	FY 2020 ¹	FY 2021	FY 2022 ²
Mass Care Support Equipment		800,000	
Civil Engineering and Explosive Ordnance Disposal Equipment		1,550,000	
Fire Fighting Equipment		2,389,820	
Security Forces Equipment		4,000,000	
Total ANG NGREA	0	285,000,000	
1. NGREA funds for FY 2020 were reallocated by DoD. 2. FY 2022 data was not available at time of publication.			

Projected Transfer/Withdrawal Quantities

NOTE: This table portrays the planned equipment transfers (Active to Reserve), withdrawals (-), and decommissioning (-). Transferred equipment is commonly called "cascaded equipment," or equipment that is provided to the RC once the AC receives more modern equipment. Although this table highlights a three-year period, many Services will not know exact quantities of transfers or withdrawals until year of execution, due to the uncertainty of the procurement/delivery cycle of new equipment.

Nomenclature	Equip No.	FY 2023 Qty	FY 2024 Qty	FY 2025 Qty	Remarks
Air Refueling					
Airlift					
Airlift, C-130H	C-130H	-13		-8	-8
Airlift, C-130J	C-130J	+5		+1	+3
Fighter					
Fighter, A-10C	A-10C	-21			
Fighter, F-15C	F-15C		-29	-23	-51
Fighter, F-15D	F-15D		-5	-4	-3
Fighter, F-16C	F-16C	-24	-16		
Fighter, F-16D	F-16D	-1	-12		
Fighter, F-35A	F-35A		+16	+22	+15
Electronic Warfare (EW)					
	E-8C/AOT		-2	-3	-2
Rescue					
Rescue, HH-60G	HH-60G	+3		-3	-6
Rescue, HH-60W	HH-60W				FY26 +15
Miscellaneous Equipment					
MD-1A	MD-1A	-2	+1		
MD-1B	MD-1B	-1			

FY 2019 Planned vs Actual Procurements and Transfers

NOTE: This table compares planned Service procurements and transfers to the RC in FY 2019 with actual procurements and transfers. FY 2019 is selected as these are the most recent funds to expire. Because the procurement cycle is normally one to two years from funding to delivery, this table identifies only deliveries through the end of 2021. Procurement and NGREA columns reflect cost values in dollars.

Nomenclature	Equip. No.	FY 2019 Transfers (# of items)		FY 2019 Procurements (\$s)		FY 2019 NGREA (\$s)	
		Plan	Actual	Plan	Actual	Plan	Actual
FY 2019 Planned Transfers and Withdrawals							
Airlift, C-130H	C-130H	-1	-1				
Airlift, C-130J	C-130J	-4	0				
EW, E-8C	E-8C	-3	0				
EW, EC-130J	EC-130J	4	0				
Fighter, F-16D	F-16D	1	0				
Op Support, C-21A	C-21A	-2	0				
MD-1A/B	MD-1A/B	10	12				
FY 2019 Service Procurement Programs – RC (P-1R) Equipment							
Modification of Inservice Aircraft							
A-10				2,708,000	2,837,000		
C-17A				4,985,000	1,733,000		
C-130				4,643,000	4,343,000		
C-135				32,068,000	32,072,000		
E-8				0	13,000,000		
F-15				65,689,000	65,417,000		
F-16				33,798,000	61,969,000		
F-22A				17,108,000	15,085,000		
H-60				13991000	171000		
Aircraft Replacement Support Equipment							
Vehicular Equipment							
Passenger Carrying Vehicles				194,000	178,000		
Medium Tactical Vehicle				156,000	1,707,000		
Cargo and Utility Vehicles				247,000	240,000		
Joint Light Tactical Vehicle				372,000	372,000		
Security And Tactical Vehicles				97,000	104,000		
Special Purpose Vehicles				97,000	98,000		
Runway Snow Remov And Cleaning Equip				303,000	303,000		
Base Maintenance Support Vehicles				1,998,000	1,978,000		
Electronics and Telecommunications Equip							
Air Traffic Control & Landing Sys				24,640,000	12,352,000		
Theater Air Control Sys Improvement				9,856,000	9,856,000		

FY 2019 Planned vs Actual Procurements and Transfers

Nomenclature	Equip. No.	FY 2019 Transfers (# of items)		FY 2019 Procurements (\$s)		FY 2019 NGREA (\$s)	
		Plan	Actual	Plan	Actual	Plan	Actual
Air & Space Operations Center (AOC)				600,000	600,000		
Base Information Transport Infrastructure (BITI)				1,270,000	4,690,000		
Tactical C-E Equipment				25,766,000	16,244,000		
Base Comm Infrastructure				9,028,000	3,291,000		
Other Base Maintenance and Support Equip							
Personal Safety and Rescue Equipment				335,000	335,000		
Mechanized Material Handling Equip				1,887,000	8,167,000		
Base Procured Equipment				860,000	860,000		
DCGS-AF				14,300,000	14,300,000		
FY 2019 National Guard and Reserve Equipment Appropriation (NGREA) Equipment							
Air Superiority and Global Precision Attack							
CAF Helmet-Mounted Cueing Systems						750,000	1,750,000
CAF Communications Suite Upgrades						10,137,000	10,229,553
CAF Avionics Upgrades						41,191,000	37,363,975
CAF Defensive Systems Upgrades						26,321,620	65,192,951
CAF Advanced Targeting Pods						25,651,000	39,713,676
CAF Combat Operations Enablers						1,410,000	8,485,380
Rapid Global Mobility							
MAF Communications and Avionics Suite Upgrades						16,910,000	21,415,918
MAF Defensive Systems Upgrades						41,525,000	40,041,328
MAF Podded Sensors						23,076,000	10,000,000
MAF Propulsion Upgrades						2,000,000	5,421,254
MAF Airlift Operations Enablers						890,000	0
Personnel Recovery, Special Operations, and Special Warfare							
HH-60 Communications, Avionics, and Defensive Systems						5,582,000	0
EC/HC-130 Communications, Avionics, and Defensive Systems						1,964,369	0
Guardian Angel/Special Tactics/Tactical Air Control Party Eqpt						5,872,691	8,561,108
Space, Cyber/IO, C2, and ISR							
Space Operations and Training Equipment						37,500,000	38,112,975
Cyber Operations and Training Equipment						12,000,000	13,588,086
Intel, Information, Imagery, Analysis, & Assessment						4,631,200	717,735
C2 Operations and Training Equipment						13,475,000	9,281,667
ISR Communications, Avionics, Defensive Systems, and Operations Enablers Upgrades						39,450,000	41,090,026
E-8C Joint Surveillance Targeting Attack Radar System (JSTARS) Communications and Systems						9,500,000	0
Simulation, DMO, and Ranges							
CAF Simulators						18,370,000	10,224,157

FY 2019 Planned vs Actual Procurements and Transfers

Nomenclature	Equip. No.	FY 2019 Transfers (# of items)		FY 2019 Procurements (\$s)		FY 2019 NGRE (\$s)	
		Plan	Actual	Plan	Actual	Plan	Actual
MAF Simulators						4,190,000	3,294,865
Personnel Recovery/Special Operations Simulators						1,000,000	0
C2 Simulators (AOC, BCC, CRC, DCGS, JSTARS)						2,864,000	4,384,494
ISR Simulators (RC-26, MC-12, RPA)						1,650,000	0
Distributed Mission Operations / Live Virtual Constructive Eqpt						4,039,000	4,666,241
ANG Range & Instrumentation Upgrades						3,300,000	3,823,792
Agile Combat Support							
Logistics Support Equipment						4,446,000	6,291,421
Logistics Test Equipment						16,655,000	14,456,139
Public Health and Medical Services Equipment						6,608,000	0
Mass Care Support Equipment						4,500,000	0
Civil Engineering and Explosive Ordnance Disposal						8,242,600	6,741,469
Fire Fighting Equipment						1,707,000	1,714,072
Emergency Management Equipment						6,780,000	1,149,674
Security Forces Equipment						16,811,520	13,288,044
Total						421,000,000	421,000,000

Major Item of Equipment Substitution List

NOTE: This table identifies equipment authorized by the Service to be used as a substitute for a primary item of equipment. The table also identifies whether or not the item is deployable in wartime. This data meets the Title 10 requirement to identify substitutes that are not the most desired equipment item.

Required Item Nomenclature	Reqd Item Equip No.	Substitute Item Nomenclature	Substitute Item Equip No.	FY 2022 Qty	Deployable?	
					Yes	No

Service Does Not Use Substitution to Satisfy Major Item Equipment Requirements.

Significant Major Item Shortages

NOTE: This table provides a RC prioritized (PR) shortage list for major equipment items required for wartime missions but which are currently not funded in the FYDP. It lists the total quantity required, the total shortage, the individual item cost, and the total cost of the shortfall. This data is consistent with other equipment data submitted by the Service.

PR	Nomenclature	Total Req'd	# Items Short	Item Cost	Total Shortage Cost	Rationale/Justification
1	F-16 AESA Radar Test and Initial Fielding (Phase 1)	332	260	\$2,123,077	\$552,000,000	ANG F-16 Block 25/30/32/40/42/50/52 aircraft require Active Electronically Scanned Array (AESA) radars to effectively execute doctrinally tasked mission sets including homeland defense. AESA radars provide a critical capability for Aerospace Control Alert (ACA) F-16s to detect and track multiple airborne targets of interest in dense civilian air traffic environments near major population centers. AESA radars will improve the capability of ANG F-16s in diverse mission sets, including close air support, surface attack, and defensive counter-air. Additionally, AESA radars eliminate several components associated with mechanical radars, thus improving reliability and reducing sustainment costs. (This does not include the estimated \$35K for Non-Recurring Engineering)
2	C-130H Propulsion Improvements	114	83	\$6,988,000	\$580,000,000	Provides efficiency and performance improvements for the C-130H model aircraft. Although the overall size of the H-model fleet may decrease over time, the ANG will continue operating this aircraft for the foreseeable future. As a result the C-130H can and should have an established modernization program for all aspects of the weapon system. Propulsion modernization is three different initiatives including the 3.5 engine upgrade, NP2000 eight-bladed propeller, and the Electronic Propeller Control System (EPCS). The 3.5 engine program updates the compressor and turbine stages of the T56 engine, and the resulting engines provide a 10% fuel savings and a 24% improvement in time on wing. The EPCS/NP2000 eight-bladed propellers and control system improve takeoff performance and low speed power, and significantly reduce maintenance requirements and deployed spares. When combined these systems will improve the overall efficiency, improve the performance, and extend the life of the T56 engines. Thirty one ANG C-130Hs are funded for EPCS/NP2000 and 3.5 upgrades.
3	C-130J Support Equipment	2	2	\$29,000,000	\$58,000,000	Funding provides support equipment and initial spares for C-130J ANG units receiving Congressional adds of C-130J aircraft. The Congressional adds did not include funding for support equipment or spare parts.

Significant Major Item Shortages

4	Mobile/Deployable Remotely Piloted Aircraft (RPA) Detect and Avoid Capability	12	9	\$4,700,000	\$42,300,000	The current Remotely Piloted Aircraft (RPA) configuration and equipment, along with international and FAA safety requirements, limit the ability to operate RPAs in international and domestic airspace. RPA flight operations require specific, International Civil Aviation Organization (ICAO), FAA, or foreign approvals, which restrict aircraft airspace routing and altitude. These restrictions inhibit aircrew training and degrade operational flexibility during Federal and state missions. An RPA operating with a Ground-Based Detect and Avoid (GBDAA) system meets the requirement of collision-avoidance contained in the ICAO Rules of the Air and FAA Federal Aviation Regulations (FAR). GBDAA systems incorporate low cost commercial off-the-shelf active radar sensors to provide ANG with an affordable, scalable, and transportable sense and avoid system.
5	Multi-Mission Design Series Real Time Information in the Cockpit (RTIC) for KC-135, C-17, C-130J Aircraft	224	224	\$1,102,679	\$247,000,000	Provides secure line-of-sight and beyond line-of-sight radios and data link to enable KC-135, C-17, and C-130J aircrews to participate in network-centric operations. Provides continuous positions of friendly and hostile forces to expedite mission execution. Enables rapid re-tasking of aircraft to maximize efficiency of refueling operations.
6	Digital Radar Warning Receiver (RWR) (C-130/F-16/C-17)	298	298	\$1,000,000	\$298,000,000	ANG aircraft perform demanding missions in close proximity to radio frequency (RF) based threats. Combat plans rely heavily on airlift for logistical support to front-line troops, requiring mobility aircraft to operate closer to adversary RF surface-to-air missile systems. At present, ANG C-130Hs have limited to no RF detection capability, and ANG C-17s currently do not have onboard radar warning receiver (RWR). The current F-16 Block 40/42/50/52 electronic warfare (EW) suite processor computers were designed in the 1980s and are not configured to provide advanced EW systems integration. Increased situational awareness is needed to correlate onboard and off-board threat detection, terrain masking, and optimized dynamic rerouting capabilities to avoid or minimize exposure to threats. A RWR with geolocation capability in dense RF environments is critical for all ANG C-130H, C-130J, and C-17 aircraft. A fully automated and integrated electronic attack suite processor enables ANG Block 40/42/50/52 F-16C aircraft to fully integrate existing and planned upgrades to the F-16 EW suite.

Significant Major Item Shortages

7	Targeting Pod Upgrades	250	250	\$920,000	\$230,000,000	<p>The ANG utilizes a large number of advanced targeting pods (ATP) across multiple aircraft types. ATPs give ANG aircraft precision targeting capability and the ability to get accurate coordinates of objects of interest, the ability to observe areas of interest, and an improved navigation capability, day or night. The ANG plans to utilize ATP capabilities on additional platforms. The ANG is also evaluating several ATP upgrades that will allow improved communications and sensing. ATP upgrades allow ANG platforms to take advantage of the new capabilities without incurring expensive Group A aircraft modification costs. ANG's goal is to obtain an open architecture in all of its ATPs. This will allow the utilization of available space for the latest technological advances and the ability to adapt ATPs to tomorrow's needs. Open architecture ATPs will also allow easy swapping of an ATP's components and software, thereby changing its capabilities based on mission requirements. ANG requires new ATPs for aircraft that do not have them, and modification of its current ATP inventory with new open architecture.</p>
8	RPA Ground Control Station (GCS) Modernization	34	34	\$353,000	\$12,002,000	<p>The MQ-1/9 cockpit, referred to as the Ground Control Station (GCS), was originally designed only as a test control station for new Remotely Piloted Aircraft (RPA) technology. Without further development of the cockpit system, urgent operational and combat needs pressed it into service as the actual operating console for the GCS. The inefficiencies of the GCS cockpit limit aircrew ability to fly the aircraft and manage the mission. The GCS's awkward human machine interface was the cause of aircraft accidents, mission effectiveness degradation, and mission failure.</p>

III. Air Force Reserve Overview

“The Air Force Reserve can only provide strategic depth and operational support to the Joint Force in mission areas where our personnel are trained on the required weapon systems, and we are most effective when we can operate interchangeably with our Active Component counterparts.”

- Lieutenant General Richard W. Scobee, Chief of the Air Force Reserve

A. Current Status of the Air Force Reserve

1. General Overview

As an integral component of the Total Force, the Air Force Reserve provides experienced manpower and critical capabilities for our national defense. Our Citizen Airmen are interchangeable, interoperable, and integrated across the Total Force. We execute the full spectrum of Department of the Air Force missions, while providing daily operations at a fraction of the cost of a standing force.

Total Force operations require Total Force readiness. The Air Force Reserve must be structured, trained, and equipped for the future fight. Operational success in tomorrow’s battlespace requires an agile, modern force. We must be prepared to provide ready forces for joint operations, defend our homeland, counter violent extremist organizations and rogue nations, and deter aggression through nuclear and conventional readiness. While we continue to preserve our force and readiness, we still face challenges. The Air Force Reserve needs to balance requirements and prioritize critical aircraft system upgrades to enhance our ability to provide relevant warfighting capacity in support of the Total Force and to enable joint all-domain operations. Additionally, we are prioritizing backlogged infrastructure and facilities requirements within our existing resources to optimize our training.

In his paper, *Accelerate Change or Lose*, the Chief of Staff of the Air Force presented a clear case for the changes needed to ensure we are able to meet the challenges of the security environment. *Accelerate Change or Lose* outlines a path toward ensuring the Total Force is

Top Air Force Reserve Equipment Focus Areas

- **Recapitalization & Aircraft Modernization** is required to maintain parity and to increase readiness, survivability, compatibility, and lethality to support Combatant Commanders
- **Diminishing Manufacturing Sources** negatively impacts readiness due to increased downtime and lack of repair capability for obsolete components
- **Vehicles & Support Equipment** have been chronically underfunded to accommodate other modernization efforts
- **Training Simulators** must be updated as aircraft modernize and force structure changes to produce mission ready aircrew
- **Base Defense Security Upgrades** are needed to upgrade legacy systems at Air Force Reserve installations

ready when called to defend our nation and its interests. The Air Force Reserve is involved in every core Air Force mission set and is impacted by nearly every Active Component initiative. To remain relevant contributors to joint operations, we must maintain interoperability as a Total Force. Air Force Reserve operational capability is optimized when we maintain parity with our Active Component counterparts. Concurrent fielding; recapitalization; and divestment of airframes, systems, and equipment is essential to the Air Force Reserve's ability to more effectively integrate within the Total Force. Associations between geographically co-located Active and Reserve component units greatly enhance this integration, benefitting the Total Force at the best value for the American taxpayer.

The Air Force Reserve provides the Total Force with a method to retain talent by providing a continuity of service option for Active Component members who would otherwise separate. The Department of the Air Force understands the importance of retaining experience and talent, and seeks to leverage the value that the Reserve Component brings to the Total Force. In addition to using Total Force partnerships to place newly trained members in units with highly experienced personnel, the Air Force is currently exploring flexible service options designed to allow members to easily transition between components of the Total Force. The Air Force Reserve fully supports these efforts, which will benefit our Airmen, our readiness, and our national defense.

Total Force Integration is exemplified by associations between geographically co-located Active Component and Reserve units. In this construct, equipment resources are officially assigned only to the lead unit, but are shared between the lead and associate unit. Associations further enhance our interoperability and give the Active Component access to the experience resident in the more seasoned Reserve force. This ensures parity in equipment and training while providing cost savings and readiness benefits to both components.

Currently, there are 79 associations between the Reserve and the Active Component. Most of these are classic associations, in which the Active Component is the lead organization. Active associations, in which the Reserve is the lead unit, comprise a little more than 12 percent of current associations. The Reserve and the Active Component have associations in nearly every major mission set, and many training units, including every undergraduate pilot training wing, pilot instructor training, and major aircraft formal training units. The Air Force Reserve is also the lead component for the B-52 and C-5 Formal Training Units.

Both the Future of Defense Task Force Report 2020 and *Accelerate Change or Lose* acknowledge that our technological advantages are rapidly eroding in a strategic environment that is defined by great power competition. Both of these documents call for change to meet the requirements of the National Defense Strategy. To align Air Force Reserve capabilities and force structure with the National Defense Strategy and to posture our force to execute tomorrow's missions, we developed the Air Force Reserve Future Force Framework. This will enable the Air Force Reserve to deliberately organize, train, and equip our force to best prepare for conflict in highly contested environments. This framework directs mission optimization by assessing capabilities to determine which mission sets are best suited for the Air Force Reserve to align

and improve policy, planning, and programming efforts. The framework also provides for tailored and prioritized training. This element synchronizes training efforts and capitalizes on technology to optimize unit training assemblies by enabling Airmen to complete ancillary training requirements using virtual methods. Finally, the Air Force Reserve continues to leverage civilian sector strengths by capitalizing on member expertise and knowledge, cultivating industry partnerships, and tailoring recruitment efforts to develop the force of the future.

The Air Force Reserve consistently deploys alongside the Active Component for contingency operations. Concurrent and proportional fielding of equipment allows for safe, efficient, and lethal operations. In those areas where the Air Force Reserve operates legacy fleets, diminishing manufacturing sources continue to hamper mission capable rates. Modernization of legacy fleets, where appropriate, is key to survivability, interoperability, and lethality. The Air Force Reserve can only provide strategic depth and operational support to the Joint Force in mission areas where our personnel are trained on the required weapon systems, and we are most effective when we can operate interchangeably with our Active Component counterparts. The Air Force Reserve provides daily operational support to the Joint Force, while maintaining a strategic force for sustained operations during major conflict. We provide surge capacity and rapid response capabilities, enabling the Joint Force to quickly adapt to operations tempo increases and unforeseen events, such as national disasters and contingencies. We also fill Active Component manning shortfalls and provide augmentation to meet short term manpower requirements.

The Air Force Reserve must be able to decisively employ traditional and emerging capabilities. To enhance our ability to compete, deter, and win in any environment, we remain focused on key mission sets and are actively expanding our capabilities in the space and cyber realms. As warfighting domains become increasingly integrated, we must be prepared to conduct joint all-domain operations, which will allow us to create decisive, asymmetrical advantages in future conflicts. To defeat a peer or near-peer adversary, we must be able to generate combat power in contested environments. Maintaining parity with the Active Component is essential for assuring the ability to operate in contested environments. Program upgrade delays and limited delivery of replacement aircraft add risk to the ability to sustain air superiority strategic surge capacity in the future. The operational capabilities of the Air Force Reserve are tied to our ability to integrate into the Total Force. The Air Force must simultaneously upgrade Active Component and Reserve legacy platforms, adding capabilities required for the future fight. To effectively support the Active Component and connect with the Joint Force, we must maintain parity with the Active Component whenever possible.

Concurrently fielding new airframes, aircraft upgrades, and other equipment is critical to sustaining and improving this operational parity. Concurrent fielding enables our personnel to train on the same systems employed by the Active Component, facilitating interoperability within the Total Force. This maximizes the Air Force Reserve's ability to support operational missions and enhances our integration with the Active Component, assuring we are capable of providing the Total Force with the warfighting capability necessary to achieve decisive victory against future threats and in all domains.

a. Combat Air Forces (CAF)

The Air Force Reserve provides 6 percent of the Air Force's combat air forces, contributing a significant number of aircrews in diverse mission areas that are maintained at the highest level of readiness to provide strategic depth, rapid surge capability, and daily operational support to the joint force. Currently, the AFR unit equipped capabilities include B-52H, A-10C, F-16C, HH-60G, HC-130, and Guardian Angel (GA) units. The AFR maintains classic associations with the AC in the operation of A-10C, AC-130J, B-1B, B-52H, C-146, E-3, F-15E, F-16C, F-22, F-35, MC-130H, MQ-9, RQ-4, and U-28 weapon systems. For the Total Force, the Air Force Reserve holds the following:

- 20 percent of A-10C close air support fleet
- 50 percent of A-10C Formal Training Unit (FTU) pipeline
- 6 percent of F-16 air to air and air to ground combat fleet
- 14 percent of Air Force personnel recovery capability, HH-60G
- 14 percent of Air Force fixed wing personnel recovery, HC-130J
- 24 percent of Air Force B-52 strategic strike fleet
- 100 percent of the Air Force's B-52H FTU pipeline
- 27 percent of Guardian Angel capability.

b. Mobility Air Forces (MAF)

Mobility Air Forces include tactical and strategic airlift, air refueling, aeromedical evacuation, and mobility support capabilities. MAF forces comprise 54 percent of the AFR force structure, which contributes a significant number of trained and ready aircrews and support personnel. Currently, the AFR maintains unit equipped capability on the C-5, C-17, C-40, C-130H/J, KC-46, KC-135, and WC-130J. The AFR is a Total Force partner in classic associations at nine installations on the C-5, C-17, C-130J, KC-10, KC-46, and KC-135. For the Total Force, the Air Force Reserve holds the following:

- 18 percent of aerial refueling capability
- 17 percent of tactical airlift capability
- 25 percent of Air Force aerial firefighting capability
- 100 percent of Air Force aerial spray mission
- 100 percent of the Air Force's weather reconnaissance mission
- 33 percent of Air Mobility Operations Squadrons
- 56 percent of the Contingency Response Flights

- 100 percent of the C-5 FTU pipeline
- 60 percent of Aeromedical Evacuation capability.

c. Agile Combat Support

Agile Combat Support (ACS) enables all other Air Force core functions. ACS provides the essential capabilities and functions to deploy, establish, operate, and maintain the operations of an airbase. In addition to deployment support capabilities, ACS functions allow operations at our host base locations for training and readiness. Core to our ability to train and prepare Airmen for combat is our ability to protect them and our assets through base defense. The Air Force Reserve maintains nine host bases where we must provide security, emergency services, and mission support for the Air Force Reserve and our other DoD and governmental partners who are co-located with us.

The Air Force Reserve provides deployable combat support and mission generation capability to the Air Force in various mission areas:

- 13 percent of Air Force Emergency Management capability
- 16 percent of Air Force Traffic Management capability
- 17 percent of Air Force Prime Base Engineer Emergency Force (Prime BEEF) civil engineer capability
- 18 percent of Air Force Rapid Engineer Deployable Heavy Operations Repair Squadron Engineers (RED HORSE) heavy construction capability
- 23 percent of Air Force Fire Protection capability
- 28 percent of Air Force Security Forces capability
- 28 percent of Air Force Logistics Plans capability
- 33 percent of Air Force Logistics Readiness Officer capability
- 44 percent of Air Force Explosive Ordnance Disposal capability
- 65 percent of Air Force Air Transportation capability.

2. Current Status of Equipment

a. Equipment On-hand

Table 1 Consolidated Major Item Inventory and Requirements provides projected Air Force Reserve major equipment requirements and on-hand inventories to meet assigned missions.

b. Average Age of Major Items of Equipment

Table 2 Average Age of Equipment provides the average age of major equipment items as of October 1, 2021. The average age of Air Force Reserve aircraft ranges from one year for the

KC-46A to 60 years for KC-135Rs and B-52Hs. As aircraft increase in age, there are corresponding increases in the requirements for Operations and Maintenance funding to maintain capability. Spare parts for legacy aircraft are not readily available because of the industrial base's limited ability to produce those parts only used in the military and for aircraft scheduled for divesture. These factors often lead to reliance on the Aerospace Maintenance and Regeneration Group (AMARG), a.k.a. the Boneyard, at Davis-Monthan AFB, to pull parts off retired aircraft to sustain the needs of the field.

c. Compatibility of Current Equipment with Active Component

Air Force Reserve aircraft require modernization and technology upgrades to continue to maintain readiness and lethality in the future. Technology upgrades in communications equipment and advanced data link capability will enable communications between fourth and fifth generation platforms and allow the Air Force Reserve to seamlessly provide support to Air Force and joint missions. Achieving and maintaining an Air Force Reserve that is technically compatible with the Active Component is also critical to ensuring the Selected Reserve can train to the same standards and prepare to operate efficiently across the Total Force. In addition to aircraft modernization, Air Force Reserve host base security forces require updates to base defense systems to remain on parity with the Active Component to counter threats and share information while protecting our Airmen, mission partners, and assets.

d. Maintenance Issues

The Air Force Reserve is tracking multiple maintenance issues that affect entire Air Force Reserve aircraft fleets, ultimately drive down mission capable rates, and impacting training opportunities for Airmen. Two significant issues that affect Air Force Reserve fleets are diminished manufacturing sources and airframe corrosion. The average age of Air Force Reserve aircraft is 37 years. These aircraft fleets have long been out of production. For example, the B-52 and KC-135 were produced during the Eisenhower administration, and the industrial manufacturing base to produce and sustain parts for these aircraft is no longer readily available. Lapses in the availability of parts result in additional downtime and increased expense as the Air Force must start new contracts to initiate production lines for low rate of production parts. The maintenance concerns of specific airframes are addressed below.

A-10C: Fleet readiness continues to be challenged due to parts supportability. For example, the Central Interface Control Unit (CICU) has been the highest driver of non-mission capable aircraft across the Air Force fleet and continues to cause significant aircraft down time. This aircraft component integrates onboard weapons stores with avionics capabilities in the cockpit. Without this function, the aircraft is unable to execute combat missions or effective training sorties. Additionally, supply shortages in multiple other components caused by lapsed contracts have led to non-mission capable rates on par with those caused by the CICUs. Furthermore, the high deployment rate and combat use of the A-10 has outpaced the longevity of the aircraft wings. The award of the A-10 Thunderbolt Advanced-Wing Continuation Kit (ATTACK) contract will provide wing replacement, but is not scheduled to begin until FY 2023. Of the Air

Force Reserve's fleet of 55 aircraft, 19 still require new wings. Both deployability and unit readiness will be negatively impacted if flying hour programs cannot be executed.

B-52H: The overall age of the aircraft and engines along with continued corrosion and structural issues are lengthening repair times, both in field-level inspections and in Programmed Depot Maintenance days. With increasing frequency, structural components found deficient during these inspections have not been manufactured before or are produced at low rate and have extended lead times to manufacture. The TF-33 engine system is the same age as the aircraft and continues to drive aircraft downtime because of reliability and spares availability that will not be remedied until the commercial engine replacement program is complete.

C-5M: The Reliability Enhancement and Reengineering Program is complete and has provided increased reliability for engines. The programmed depot maintenance process at Warner Robins Air Logistics Complex (WR-ALC) continues to require longer flow times for aircraft because of structural issues and insufficient access to repair parts. The impact of increased aircraft down time is exaggerated in small Primary Assigned Aircraft (PAA) Air Force Reserve units. There are only eight aircraft assigned at both Joint Base San Antonio (JBSA)–Lackland, TX, and Westover Air Reserve Base (ARB), MA, and diminished aircraft availability significantly impacts their ability to carry out their assigned missions.

C-17A: Since production of this aircraft by Boeing ceased in 2015, the fleet has seen a significant decrease in spares availability, especially for engines. This is a key indicator that without future input to stimulate the manufacturing base, this fleet will experience the same parts availability and sustainability challenges that plague much of the fleet. The AF has committed to increasing the spares posture of the Air Reserve Component to improve aircraft availability across the fleet.

C-130H: The C-130H fleet is aged and is facing the same diminished manufacturing issues as other older airframes. This fleet continues to experience part supportability issues because the AMARG at Davis-Monthan AFB, AZ, is generally exhausted as a source of supply. Contract and organic repair sites struggle to conduct repairs because of shortages of parts and sub-assemblies. The System Program Office is working with parts program managers on solutions with manufacturers, but there is still unfilled demand in the field. As an example of successful modernization, the Air Force Reserve C-130H fleet is now completely updated with Automatic Dependent Surveillance–Broadcast (ADS-B) and Electronic Propeller Control System modifications. However, the current C-130H propulsion system still requires upgrades to complete all missions efficiently. Specifically, upgrading the engines with the 3.5 Engine Enhancement Package will increase engine life span, improve fuel economy, reduce takeoff distances, and increase the effective cargo capacity. Replacing dated four-bladed propellers with improved, modular eight-bladed propellers (NP2000) will provide improved thrust for heavy weight and short field operations, improving its support to its customers who count on it to get in and out of austere locations. Previous fiscal year congressional adds funded these modifications for the Air National Guard.

C-130J: The Air Force Reserve C-130Js are some of the oldest in the Total Force fleet but are not currently experiencing significant spare parts availability or corrosion concerns. The production line at Lockheed Martin is still open and the aircraft are an average of 15 years old.

F-16C/D: The Air Force Reserve has F-16C/D Block 30 aircraft that are some of the oldest in the operational fleet. These aircraft are experiencing significant maintenance downtime and increased costs because of aircraft wiring that is breaking down as the aircraft age and diminished spare parts availability caused by age and use. These aircraft are also experiencing structural corrosion that is driving additional PDM time when the aircraft undergo inspection and modifications. All of these aging aircraft and diminished parts availability issues continue to drive not mission capable downtime and impact readiness training.

HH-60G: The fleet continues to experience severe corrosion issues based on geographic location, continuous utilization, and parts supportability limitations. The Air Force Reserve began receiving the first of 10 former Active Component HH-60G's in early FY 2021 and will begin retiring current Air Force Reserve possessed aircraft at that time. The Active Component aircraft will have on average 2000 more flight hours than the Air Force Reserve's fleet of HH-60G's at the time of transfer. The Air Force Reserve is programmed to recapitalize to the HH-60W in future years.

HC-130J: The HC-130J is a new acquisition and does not currently have maintenance shortfalls.

KC-46A: The KC-46A is a new acquisition and does not currently have maintenance shortfalls.

KC-135R: After over 60 years of flight, many parts for this aircraft are stock limited or non-procurable. The option to cannibalize from aircraft in storage at AMARG has dwindled, with many components completely or nearly exhausted. Additionally, expiring contracts and contracts not performing to the agreed standard consistently drive mission capable rates down and could lead to grounding if not addressed. The AF has funded a contract for the Input/Output Concentrator, one of the highest drivers of downtime. Spare parts availability increases mission impacting aircraft downtime at Small Air Force Reserve 8 PAA wings more than at larger Active Component wings. There are currently no initiatives or efforts in place to modernize avionics, environmental systems, or engine controls that continue to contribute to aircraft downtime. Lastly, Unscheduled Depot Level Maintenance, follow-on warranty work after PDM, and unreliable/obsolete support equipment are contributing to degraded aircraft availability for one of the most tasked assets.

WC-130J: The Air Force Reserve WC-130Js are some of the oldest in the Total Force fleet at over 20 years but are not currently experiencing significant spare parts availability or corrosion concerns.

e. Modernization Programs and Shortfalls

Table 8 Significant Major Item Shortages addresses program details of specific requirements identified through the Air Force Reserve Prioritized Integrated Requirements List (PIRL)

process; specifically, the AFR's unfunded, or underfunded, procurements or modernization programs affecting our ability to force project and generate readiness. The Air Force Reserve list of modernization shortfalls prioritizes modernizing communications; improving aircraft defensive systems; upgrading radar and avionics across multiple platforms to maintain battlespace awareness; addressing shortfalls in support equipment and vehicles; and upgrading simulators and C-130 propulsion systems. Modernizing aircraft and support equipment is required to limit the impact of or reverse degraded capabilities; adapt to evolving threats; improve safety and efficiency; and overcome materiel age, Diminishing Manufacturing Sources and Materiel Sources (DMSMS), and obsolescence.

A-10C: The A-10C Thunderbolt II is the Air Force's go-to ground attack fighter for close air support, forward air control-airborne, and combat search and rescue. The Air Force Reserve operates 55 A-10 aircraft, providing 19 percent of the AF fleet, dispersed between Whiteman AFB, MO, and Davis-Monthan AFB, AZ. The 924th Fighter Group at Davis-Monthan AFB, AZ, provides 50 percent of the A-10 FTU pipeline to create new A-10 pilots for combat operations. Air Force Reserve A-10s have exceeded an average age of 40 years and parts obsolescence and diminishing manufacturing sources have created sustainment challenges that cost valuable aircraft availability for training. In 2019, the Air Force concluded its re-winging program to reconstitute the wings on 173 aircraft, which included equipping 36 Air Force Reserve aircraft with the enhanced wing assembly (EWA).

The Air Force Reserve has used NGREA to address priority shortfalls, including upgrading A-10 communications, aircraft avionics, and defensive systems to increase combat lethality and survivability. The Air Force Reserve is now focusing resources on installing the latest in GPS Anti-Jam technology and mounting updated targeting pods that allow pilots to employ low collateral damage weapons. These capabilities will increase aircraft and pilot survivability through radar and missile warning upgrades. To complement the improvements in advanced warning, the AFR plans to modernize the self-protection jamming pod and field modern expendable radar decoys. We are fielding digital radio controllers, new satcom radios, and Link-16 for tactical data transfer. Upgrading to Link-16 capability will allow tactical situational data to be transferred from other aircraft and sensors to Air Force Reserve A-10s for enhanced survivability and effectiveness.

B-52H: The B-52H Stratofortress is the backbone of global attack and precision strike for the U.S. Air Force. Current projections show the B-52H in service through 2050, putting the fleet at nearly 100 years of service. The B-52H Stratofortress serves as the workhorse of the conventional bomber fleet, possessing intercontinental range and the ability to employ accurate standoff weapons. The Air Force Reserve operates 18 B-52 aircraft, 24 percent of the AF fleet, assigned to the 307th Bomb Wing, Barksdale AFB, LA. Currently, the 307th Bomb Wing is the only unit that produces new aircrew for this aircraft through their FTU, providing 100 percent of the formal training for B-52 aircrew. Parts obsolescence and diminishing manufacturing sources have created sustainment challenges that cost valuable aircraft availability for training.

To keep the B-52H viable in any significant air campaign of the future and increase the aircrew's precision engagement capability, the LITENING advanced targeting pod color sensor needs to be upgraded from black and white targeting video to color to enhance the aircrew's ability to detect, acquire, and identify targets at long range. This upgrade introduces a requirement for enhanced training capabilities via the digital mission recorder and color targeting pod emulator.

F-16C/D: The F-16 Fighting Falcon is a compact, highly-maneuverable, multi-role fighter aircraft that provides air-to-air and air-to-ground combat capabilities. It is a relatively low cost yet high-performance weapon system capable of performing day/night precision strike, close air support, and air-to-air beyond-visual-range interception missions. The Air Force Reserve owns 54 F-16s, approximately 6 percent of the total fleet, residing at Naval Air Station Joint Reserve Base, Ft. Worth, TX, and Homestead Air Reserve Base (HARB), FL. The Air Force Reserve's F-16s are legacy preblock aircraft, some of the oldest in the fleet at more than 33 years old. The AFR F-16C/D fleet is not projected for the service life extension program. The unit in Ft. Worth, TX, is programmed to divest its aircraft in FY 2023 and to re-mission to the F-35 beginning in FY 2024. The unit at Homestead ARB, FL is not approved to re-mission to F-35.

The Air Force Reserve has used NGREA to purchase the active electronically scanned array (AESA) radar upgrade that offers advanced lethal capabilities and improved reliability and maintainability. We seek to install the latest in GPS Anti-Jam capability and employ the latest targeting pods. To improve survivability, we are upgrading radar warning and missile warning devices. To complement the advanced warning, we want to modernize the ALQ-131 self-protection jamming pod to enable advanced technology jamming techniques and field modern expendable radar decoys. To improve anti-jam and secure communications, we are fielding digital radio controllers, new MUOS capable satcom radios, and MIDS-J Link 16 tactical data links. The Air Force Reserve will prioritize modernizing the aircraft that have the lowest hours and are in the best condition to be retained as one of the units retires their aircraft.

HH-60G: The HH-60G Pave Hawk's core mission is recovering personnel under hostile conditions, including search and rescue. The Air Force Reserve operates and maintains 16 HH-60G aircraft, 15 percent of the total fleet, at Patrick SFB, FL, and Davis-Monthan AFB, AZ, but will divest all 16 aircraft in FY 2023. Because the HH-60G is now in sunset and will no longer receive NGREA investment. The Air Force Reserve will receive aircraft from the Active Component as replacements until it is recapitalized with the HH-60W.

HC-130J: The HC-130 is the only dedicated fixed-wing personnel recovery platform in the Air Force inventory. The HC-130 provides expeditionary, all-weather personnel recovery capabilities, including the air refueling of recovery force helicopters and tactical delivery via airdrop or air-land of rescue personnel watercraft, all-terrain vehicles, and direct assistance in advance of recovery vehicles. The Air Force Reserve operates and maintains six HC-130J aircraft at Patrick SFB, FL. There is currently no plan to purchase HC-130J weapons systems flight simulators for Patrick SFB, which will continue to require aviators to travel off station for proficiency training and will impact aircrew readiness.

Guardian Angel: Guardian Angel (GA) is uniquely designed and dedicated to conduct personnel recovery across the full range of military operations and during all phases of joint, coalition, and combined operations. These elite warriors are the soul of a non-aircraft, equipment-based, human weapons system. The Air Force Reserve GA personnel and equipment are assigned to Patrick SFB, FL, Davis-Monthan AFB, AZ, and Portland International Airport (IAP), OR. Guardian Angel personnel recovery mission equipment is needed to replace and upgrade existing communication equipment, recovery equipment, and self-defense systems to increase the effectiveness and survivability of Guardian Angel personnel forces that are committed to recovering isolated personnel.

C-130H: The C-130H Hercules primarily performs the tactical portion of the cargo and personnel airlift mission. The aircraft is capable of operating from dirt landing strips and is the prime transport for airdropping troops and equipment into hostile areas. The C-130H is an average of 28 years old and resides completely in the Air Force Reserve and Air National Guard. The Air Force Reserve owns and operates 34 C-130H aircraft at Dobbins ARB, GA, Youngstown ARB, OH, Maxwell AFB, AL, Peterson AFB, CO, and Minneapolis-St. Paul IAP, MN. Two AFR C-130H units are special mission platforms in addition to their cargo carrying and delivery roles. The 302nd Airlift Wing, Peterson AFB, CO, provides 25 percent of the fleet Modular Airborne Firefighting System capability and the 910th Airlift Wing, Youngstown IAP, OH, provides 100 percent of the Modular Aerial Spray System (MASS) capability. The MASS is tasked as the only large area fixed-wing aerial spray capability within DoD to control disease-carrying insects, pest insects, and oil spill dispersal.

The C-130H is currently on contract for the Avionics Modernization Program (AMP) Increment 2 upgrades. This program effort will upgrade the C-130H with a digital avionics architecture allowing the AFR C-130Hs to fly unrestricted flight in worldwide airspace, support improved required Navigation Performance (RNP) capability, increase reliability, and reduce obsolescence. The AFR C-130H fleet is currently scheduled to receive propulsion upgrades, addressing one of the long-standing Air Force Reserve significant shortfalls. This includes the 3.5 engine and NP2000 8-bladed propeller to overcome their current deficiencies in high density altitude environments and mitigate the growing maintenance and sustainment costs of legacy systems.

C-130J: The C-130J Hercules is the latest and most technologically advanced model of the C-130, with increased fuel efficiency, greater range, and increased reliability and maintainability than previous models while operating at up to 45 percent of the cost of a C-130H. The aircraft is capable of operating from dirt landing strips and is the prime transport for airdropping troops and equipment into hostile areas. The Air Force Reserve owns 10 C-130Js residing with the 403rd Wing, Keesler AFB, MS.

These aircraft have completed modernization of communications, navigation, and surveillance capabilities to meet international air traffic management and flight safety standards. To be relevant in the future fight, mission effectiveness and situational awareness can be improved via mission computer upgrades that allow real time data transfer, voice, and data links. The C-130J

has infrared countermeasures installed and adding a digital, advanced radar warning system will improve survivability in contested environments against radar guided missiles.

WC-130J: The WC-130J Hurricane Hunter is a C-130J transport configured with palletized weather instrumentation that collects weather data and provides vital tropical cyclone forecasting information as it penetrates tropical cyclones and hurricanes. An average weather reconnaissance mission might last 11 hours and cover almost 3,500 miles while the crew collects and reports weather data. The Air Force Reserve is the sole DoD operator for the weather reconnaissance mission and operates ten WC-130J aircraft from Keesler AFB, MS. The Air Force Reserve provides direct support to National Hurricane and National Winter Storm operation plans.

These aircraft completed modernization of communications, navigation, and surveillance capabilities to meet international air traffic management and flight safety standards. To improve effectiveness in storm reporting, the Air Force Reserve would like to add real time image transfer capability to the aircraft. Currently, captured storm data cannot be transmitted until after landing. This data is more than three hours outdated when received. Real time data transfer will allow timely reporting during the critical time when storms are approaching the shore and ensure the best decisions can be made to protect civilian lives and property.

C-5M: The C-5M Super Galaxy is a strategic transport aircraft and is the largest aircraft in the Air Force inventory. Its primary mission is to transport cargo and personnel for the Department of Defense. The Air Force Reserve currently possesses 16 C-5M aircraft, split between Westover ARB, MA, and Joint Base San Antonio Lackland (JBSA Lackland), TX. The AFR possesses 31 percent of the C-5M fleet and provides 100 percent of the C-5M FTU pipeline aircrew training for the Total Force at JBSA Lackland.

The modernization priorities within the Air Force Reserve C-5 fleet include upgrades that enhance aircrew awareness, communication, and integration into the Combatant Commanders' network. Real Time in the Cockpit (RTIC), like the more commonly known Link-16, and updated radio communication (ARC-210), are essential to interoperability and mission success.

C-17A: The C-17A Globemaster III provides the Air Force with inter- and intra-theater airlift. It is capable of performing combat airdrop and landing on short, austere airfields. The AFR owns 26 C-17As, 12 percent of the Total Force, at March ARB, CA, Wright-Patterson AFB, OH, and Pittsburgh ARB, PA. To support the re-mission at Pittsburgh ARB, infrastructure including aircraft simulators and C-17A support equipment was purchased using a combination of regular appropriation and NGREA funds.

The C-17 modernization priorities include those upgrades that enhance aircrew awareness, communication, and integration into the Combatant Commanders' network, like Link-16, Real Time in the Cockpit (RTIC), and piloted aircraft radio communication (ARC-210), which are essential to interoperability and mission success.

C-40C: The C-40C provides worldwide air transportation for the Executive Branch, congressional members and delegations, DoD officials, and high-ranking U.S. and foreign dignitaries, as well as other numerous operations support requirements. The Air Force Reserve operates four C-40C aircraft at Scott AFB, IL. The C-40C is now in sunset and will no longer receive NGREA investment. No replacement is programmed at this time.

KC-135R: The KC-135R Stratotanker provides worldwide air refueling, airlift, and aeromedical evacuation capabilities. The KC-135 is one of the oldest aircraft in the fleet and is scheduled to remain in the Air Force Reserve inventory until 2040. The Air Force Reserve operates the KC-135 from Grissom ARB, IN, March ARB, CA, Andrews AFB, MD, Tinker AFB, OK, Niagara Falls Air Reserve Station, NY, and Beale AFB, CA. At the end of FY 2021, the Air Force Reserve owned 62 KC-135R aircraft, 17 percent of the Total Force fleet. The tanker fleet is one of the most heavily tasked to support current overseas contingency operations and operations at home to act as a force extender to other aircraft getting to or coming home from the fight.

Funding defensive systems for this airframe to provide integrated self-protection against infrared missile threats has been an enduring Air Force Reserve priority. The Large Airframe Infrared Counter-Measures (LAIRCM) system is in the operational test phase and has been programmed for AC aircraft in the program of record. The LAIRCM has not been programmed for the Air Force Reserve. Additionally, upgrading the aircraft's mission computer will allow voice, data link, and real time data transfer capabilities and will provide battlespace integration to aircrews, ensuring situational awareness and enhancing mission effectiveness in the future fight.

KC-46A: The KC-46A is the first phase in recapitalizing the U.S. Air Force's aging tanker fleet. With greater refueling, cargo, and aeromedical evacuation capabilities compared to the KC-135, the KC-46A will provide next generation aerial refueling support to Air Force, Navy, Marine Corps, and partner-nation receiver aircraft. The Air Force Reserve operates the KC-46A at Seymour-Johnson AFB, NC, and will have 12 aircraft by the end of FY 2022. In addition, the Air Force Reserve will field additional KC-46s in the future after a basing decision has been made.

AGILE COMBAT SUPPORT: Mission ready vehicles and support equipment are required to keep aircraft adequately combat ready and provide training for Reservists. The AF has prioritized investments in other priorities and accepted risk in vehicle replacement and support equipment accounts, creating large shortfalls in both. In vehicles, the Air Force Reserve has a \$53.7 million, 333 vehicle shortfall, leaving 79 vacancies and requiring 254 vehicles to continue operating beyond their designed lifecycle. Over the last three years the Air Force Reserve has replaced 43 vehicles across the command valued at \$7.9 million dollars with NGREA money to mitigate the risk to mission success. This has included new fire trucks, ambulances, snow removal equipment, and general purpose vehicles.

With respect to support equipment shortfalls, only 10 percent of total support equipment requirements have been funded in since 2011. Now that some support equipment has extended

beyond its lifecycle, a cumulative backlog of replacement requirements now exists and must be funded. The Air Force continues to fund some replacement equipment procurement annually but it is not enough to overcome the backlog. Replacement support equipment will allow scarce resources to be focused on increasing readiness, aircraft repair, and training rather than repairing support equipment.

The diminished condition of support equipment also affects the warfighter's ability to support unit mobility commitments, base maintenance obligations, and training requirements. Civil engineering equipment for Rapid Airfield Damage Repair and RED HORSE units to support construction and maintenance of airfield runways, roads, taxiways, and building sites is insufficient. Without this equipment, RED HORSE cannot meet mission training demands to have fully qualified and proficient operators to fulfill real world requirements. Units have previously rented or leased equipment, but such actions did not provide for enough time to meet all of their training obligations.

Regarding integrated base defense systems, the Air Force Reserve is responsible for providing security and protecting our Airmen, assets, and mission partners at all installations where we are the host. In the ever-changing security environment, we must make investments in upgraded counter unmanned aerial systems (Counter-UAS) and systems and equipment for countering base threats. The Air Force Reserve is responsible for nine host bases and has not been able to adequately recapitalize our systems as the Active Component upgrades. Although we are fielding similar systems, our systems are a collection of mismatched capabilities that are not as effective as the updated systems fielded by the Active Component.

f. Overall Equipment Readiness

The AFR accomplishes its mission with the oldest fleet of any component, a force that is too small for the missions it has been tasked with, and an aging infrastructure that continues to present challenges absent necessary upgrades and, in some cases, replacement. Due to accepted risk in Weapons System Support (WSS), delayed recapitalization, and refocused priorities on the high-end fight, fewer Air Force aircraft are available now. If the Air Force Reserve is to remain a combat-ready force, we must continue to evolve and adapt. Our capability to deter, respond to, and eliminate threats relies upon our ability to proactively and continuously develop advanced air, space, and cyber capabilities while simultaneously honing the readiness and lethality of the force.

g. Other Equipment Specific Issues: Diminishing Manufacturing Sources and Materiel Shortages (DMSMS)/Obsolescence

Diminishing Manufacturing Sources and Materiel Shortages (DMSMS)/Obsolescence is an increasingly difficult problem for the Air Force that disproportionately affects the readiness of Air Force Reserve weapon systems, as discussed in paragraph 2.b, Average Age of Major Items of Equipment. Because the manufacturing lives of many critical items are decreasing while the lifecycles of military weapon systems continue to be increased, the AMARG is used as a routine

supply source on multiple platforms across the Air Force, from A-10 centralized integrated control units to major structural components like vertical stabilizers for C-130 aircraft.

Materiel readiness is an immediate and urgent concern for the warfighter. Missions are affected when equipment cannot be supported. It is unacceptable for an aircraft to be non-mission-capable because of a DMSMS issue. To allow a DMSMS situation to progress to the point of affecting a mission (because items are not available) does not align with the National Defense Strategy's line of effort to increase readiness and improve lethality, and is an indication that DMSMS has not been managed effectively. Further, ineffective DMSMS management can uncontrollably escalate the costs of items and, if wholesale levels from suppliers are low, increase customer wait times substantially at the local level and across the Air Force enterprise.

Traditionally, efforts to mitigate the effects of DMSMS have been reactive, meaning negative effects are addressed only when they are seen. This reactive approach to DMSMS solutions leads to decisions that put a premium on faster solution paths with attractive short-term gains to avoid system inoperability, but ignore the long-term paths that would lead to wide-scale solutions designed to avoid future DMSMS issues. To solve this issue with lower overall cost, DMSMS solutions must change from a reactive to a proactive approach. The building blocks of an effective proactive approach to managing DMSMS are established during the design and development of systems with investment into sustainment and eventual retirement plans.

B. Changes Since the Last NGRER

The FY 2021 Defense Appropriation Act improved the Air Force Reserve's sustainment, modernization, and recapitalization efforts, yet there are still modernization gaps between Air Force Reserve and Active Component aircraft and equipment. The Air Force Reserve has used NGREA funds to address these gaps and priority shortfalls. For example, over the last year, the Air Force Reserve has utilized NGREA funds to complete the A-10 and F-16 Helmet Mounted Integrated Targeting upgrades, the C-130H Common MAF Mission Computer upgrade, the Bounty Hunter Space Simulator, and the PRINCE RPA simulator. In the combat aircraft portfolio, the targeting pod upgrades are ongoing. For the F-16, 3D audio kits have been purchased and are being installed and AESA radars have been purchased. The A-10 Link-16 upgrade is in progress and the anti-jam GPS installs have been contracted. In the mobility aircraft portfolio, the first contract has been awarded for C-5 Real Time in Cockpit and ARC-210 radios have been purchased for the WC-130 fleet. For the KC-135 fleet, one aircraft has received LAIRCM and the common MAF mission computer upgrade. The C-130H 3.5 engine upgrade is ongoing, with 16 installs completed. The AFR has also purchased vehicles and support equipment to help increase readiness and safety.

C. Future Years Program (FY 2023–FY 2025)

1. FY 2023 Equipment Requirements

Table 1 Consolidated Major Item Inventory and Requirements provides projected FY 2023–FY 2025 major equipment inventories and requirements. It reflects programming for the type and quantity of each major end item of equipment for the Air Force Reserve.

2. Anticipated New Equipment Procurements

Table 3 Service Procurement Program–Reserve (P-IR) lists planned versus actual procurements for the Air Force Reserve. *Table 4 NGREA Procurements* provides Air Force Reserve planned NGREA procurements for FY 2019–FY 2021.

3. Anticipated Transfers from Active Component to Air Force Reserve

Table 5 Projected Equipment Transfer/Withdrawal Quantities lists planned Air Force Reserve transfers for FY 2022–FY 2024. All projected additions are from previously programmed decisions.

4. Anticipated Withdrawals from Air Force Reserve Inventory

Table 5 also lists planned Air Force Reserve major equipment withdrawals for FY 2023–FY 2025, including the force structure changes discussed in Section II, paragraph B of this chapter.

5. Equipment Shortages and Modernization Shortfalls at the End of FY 2022

Table 1 Consolidated Major Item Inventory and Requirements and *Table 8 Significant Major Item Shortages* provide AFR equipment inventories, shortfalls, and modernization requirements. While the AFR does not have any aircraft shortages, there are numerous vehicle and support equipment shortages. Of the aircraft assigned to the Air Force Reserve, there are modernization shortfalls that could hinder the Air Force Reserve’s defense against the threats in today’s evolving environment. Many initiatives are already in place, including multi-domain secure data links that span multiple platforms, to address the Air Force Reserve ability to interface and integrate with other components both in the air and on the ground. Other initiatives are already developed and just require the resourcing to complete the modifications. Several of these initiatives and modifications are ongoing, but have not been fully funded. For example, the Air Force Reserve needs to modify its simulator fleet to keep pace with aircraft modernization and ensure equivalent training for its pilot force proficiency.

D. Summary

Our force structure, built to deter the Cold War foe, was able to meet the competition of non-peer conflict for nearly three decades. However, near-peer threats have now expanded the battlespace to new levels, including space and cyber. Our enemies have closed gaps in their capability and capacity, and they’ve made clear their intent to seize advantages, at speed. With the Air Force’s

focus on multi-domain operations to maintain its competitive edge, the Air Force Reserve's strategic depth and operational readiness will enable us continue to play a pivotal role in the Total Force.

For the Air Force Reserve to remain a lethal and fully interoperable Total Force partner, aging fleets must be recapitalized via concurrent fielding with the Active Component and Air National Guard and existing airframes must be modernized to keep them in the joint fight. The age of the Air Force Reserve fleets has resulted in diminished manufacturing sources for aircraft spare parts that continue to plague them throughout their remaining life spans. Lastly, the Air Force Reserve needs support vehicles and equipment to meet readiness requirements and updated training simulators to ensure our Airmen are highly trained and proficient. The Air Force Reserve is a cost effective force and will continue its excellent stewardship of American taxpayers' dollars.

Consolidated Major Item Inventory and Requirements

NOTE: This table provides a comprehensive list of selected major equipment items. It provides the projected inventory quantity on-hand (QTY O/H) at the beginning/end of the selected fiscal year (FY). It also provides the quantity required (QTY REQ) to meet the full wartime requirements of the Reserve Component. In accordance with Title 10, the QTY REQ number provides the recommendation as to the quantity and type of equipment that should be in the inventory of each Reserve Component. FY 2021 unit cost estimates are provided by the Military Departments.

Nomenclature	Equip No.	Avg Unit Cost	Begin FY 2023 QTY O/H	Begin FY 2024 QTY O/H	Begin FY 2025 QTY O/H	End FY 2025 QTY REQ	End FY 2025 QTY REQ
Air Refueling							
Air Refueling, KC-135R	KC-135R	57,793,510	61	61	61	61	61
Air Refueling, KC-46A	KC-46A	\$157,905,269	12	12	12	12	12
Air Support							
Weather, WC-130J	WC-130J	\$35,786,439	10	10	10	10	10
Airlift							
Airlift, C-130H	C-130H	\$27,530,075	34	34	34	34	34
Airlift, C-130J	C-130J	\$34,943,464	10	10	10	10	10
Airlift, C-17A	C-17A	\$176,250,448	26	26	26	26	26
Airlift, C-5M	C-5M	\$210,192,604	16	16	16	16	16
Airlift, C-40C	C-40C	\$57,722,919	4	4	0	0	0
Bomber							
Bomber, B-52H	B-52H	\$38,958,617	18	18	18	18	18
Fighter							
Fighter, A-10C	A-10C	\$9,629,418	61	61	61	61	61
Fighter, F-16C	F-16C	\$10,639,971	27	27	27	27	27
Fighter, F-16D	F-16D	\$11,408,782	1	1	1	1	1
Fighter, F-35A	F-35A	\$107,750,669	0	4	4	17	17
Rescue							
Rescue, HH-60G	HH-60G	\$14,177,471	16	16	0	0	0
Rescue, HH-60W	HH-60W	Currently no HH60W out of production	0	0	0	7	7
Rescue, HC-130J	HC-130J	\$2,834,132	6	6	6	6	6

AFR Average Age of Equipment

Table 2

NOTE: This table provides the average age of selected major equipment items. The average age provides a projected average age of the fleet at the start of FY 2022.

Nomenclature	Equip No.	Average Age	Remarks
Air Refueling			
Air Refueling, KC-135R	KC-135R	60.1	
Air Refueling, KC-46A	KC-46A	0.8	
Air Support			
Weather, WC-130J	WC-130J	20.4	
Airlift			
Airlift, C-130H	C-130H	28.2	
Airlift, C-130J	C-130J	17.2	
Airlift, C-17A	C-17A	20.9	
Airlift, C-5M	C-5M	33.4	
Airlift, C-40C	C-40C	13.1	
Bomber			
Bomber, B-52H	B-52H	59.6	
Fighter			
Fighter, A-10C	A-10C	40.5	
Fighter, F-16C	F-16C	33.8	
Fighter, F-16D	F-16D	33.9	
Rescue			
Rescue, HC-130N	HC-130J	1.2	
Rescue, HH-60G	HH-60G	30.6	

Service Procurement Program - Reserve (P-1R)

NOTE: This table provides a comparison of the dollar value of the FY 2020 request, the FY 2020 enacted amount; and, the actual amount spent on procurement for specific categories of RC equipment. All values are costs in millions. Deliveries of procured equipment normally take one to two years before they arrive in the inventory; e.g., items procured in FY 2022 are expected to arrive in RC inventories in FY 2023 or FY 2024.

Nomenclature	Request	Enacted	Actual
Other Aircraft	16	25	25
Common Support Equipment	2	11	11
Airlift Aircraft	12	11	11
Organization and Base	4	10	10
Strategic Aircraft	7	6	6
Tactical Aircraft	7	4	4
Cargo and Utility Vehicles	4	3	3
Materials Handling Equipment	2	2	2
Special Purpose Vehicles	2	2	2
Depot Plant+Mtrls Handling Equipment	1	1	1
Air Force Communications	2	1	1
Electronics Programs	1	1	1
Spcl Comm-Electronics Projects	1	1	1
Base Maintenance Support	0	0	0
Personal Safety & Rescue Equipment	0	0	0
Grand Total	62	80	80

National Guard and Reserve Equipment Appropriation (NGREA) Procurements

NOTE: This table identifies the dollar value of planned equipment procurements with the National Guard and Reserve Appropriation (NGREA). These funds are available for a three-year period from the year of appropriation. Deliveries of procured equipment normally take one to two years from the date of procurement before they arrive in the inventory.

Air Force Reserve Defense Appropriations Act NGREA	FY 2020¹	FY 2021	FY 2022²
CAF Helmet Mounted Cueing Systems		1,200,000	
CAF Communication and Datalink Upgrades		12,500,000	
CAF Avionics and GPS Upgrades		10,000,000	
CAF Defensive Systems Upgrades		21,000,000	
CAF Radar and Targeting Enhancements		22,215,000	
CAF Combat Operations Enablers		6,200,000	
MAF Communication and Datalink Upgrades		23,300,000	
MAF Avionics and GPS Upgrades		500,000	
MAF Defensive Systems Upgrades		20,200,000	
MAF Combat Operations Enabler		100,000	
Rescue Communication and Datalink Upgrades		1,000,000	
Guardian Angel Mission Equipment		435,000	
Special Mission		35,750,000	
Simulators & Training Devices		100,000	
Agile Combat Support - Support Equipment/Vehicles/Tac Equipment		500,000	
Total AFR NGREA	0	155,000,000	

1. NGREA funds for FY 2020 were reallocated by DoD.
2. FY 2022 data was not available at time of publication.

Projected Equipment Transfer/Withdrawal Quantities

NOTE: This table portrays the planned equipment transfers (Active to Reserve), withdrawals (-), and decommissioning (-). Transferred equipment is commonly called "cascaded equipment," or equipment that is provided to the RC once the AC receives more modern equipment. Although this table highlights a three-year period, many Services will not know exact quantities of transfers or withdrawals until year of execution, due to the uncertainty of the procurement/delivery cycle of new equipment.

Nomenclature	Equip No.	FY 2023 Qty	FY 2024 Qty	FY 2025 Qty	Remarks
Airlift					
Airlift, C-130H	C-130H	-8			(-8) Airlift conversion plan
Airlift, C-40C	C-40C			-4	(-4) Force Structure
Fighter					
Fighter, A-10C	A-10C	+6			(+7) Fighter conversion plan
Fighter, F-16C	F-16C	-25			Carswell Conversion
Figher, F-16D	F-16D	-1			
Figher, F-35A		+4	+13		
Rescue					
Rescue, HH-60G	HH-60G			-16	(-16) rescue mission conversion to (W)
Rescue, HH-60W	HH-60W			+7	(+7) Rescue
Air Refueling					
Tanker, KC135R	KC-135R	-1			(-1) BAI at March

FY 2019 Planned vs Actual Procurements and Transfers

NOTE: This table compares planned Service procurements and transfers to the RC in FY 2019 with actual procurements and transfers. FY 2019 is selected as these are the most recent funds to expire. Because the procurement cycle is normally one to two years from funding to delivery, this table identifies only deliveries through the end of 2021. Procurement and NGREA columns reflect cost values in dollars.

Nomenclature	Equip. No.	FY 2019 Transfers (# of items)		FY 2019 Procurements (\$s)		FY 2019 NGREA (\$s)	
		Plan	Actual	Plan	Actual	Plan	Actual
FY 2019 Planned Transfers & Withdrawals							
Airlift, C-130H	C-130H	-4	-4				
Airlift, C-17A	C-17A	8	8				
Tanker, KC-135R	KC-135R	1	1				
FY 2019 Service Procurement Programs – RC (P-1R) Equipment							
Modification of Inservice Aircraft							
A-10				1,740,000	1,884,000		
B-52				5,760,000	4,013,000		
C-5				14,087,000	11,874,000		
C-17A				1,164,000	1,467,000		
C-130				4,764,000	4,606,000		
C-135				14,689,000	14,571,000		
F-16				956,000	12,428,000		
H-60				14,171,000	91,000		
Vehicular Equipment							
Passenger Carrying Vehicles				98,000	106,000		
Medium Tactical Vehicle				125,000	1,035,000		
Cargo and Utility Vehicles				2,527,000	2,536,000		
Joint Light Tactical Vehicle				372,000	372,000		
Security And Tactical Vehicles				56,000	66,000		
Special Purpose Vehicles				1,821,000	1,792,000		
Materials Handling Vehicles				2,375,000	2,393,000		
Runway Snow Remov And Cleaning Equip				75,000	75,000		
Base Maintenance Support Vehicles				271,000	279,000		
Electronics and Telecommunications Equip							
Air Traffic Control & Landing Sys				800,000	795,000		
Air & Space Operations Center (AOC)				300,000	300,000		
Base Information Transport Infrastructure (BITI)				405,000	405,000		
Tactical C-E Equipment				4,783,000	3,471,000		
Base Comm Infrastructure				343,000	340,000		
Other Base Maintenance and Support Equip							
Personal Safety and Rescue Equipment				117,000	116,000		
Mechanized Material Handling Equip				387,000	387,000		
Base Procured Equipment				105,000	105,000		
Total				72,291,000	65,507,000		

FY 2019 Planned vs Actual Procurements and Transfers

Nomenclature	Equip. No.	FY 2019 Transfers (# of items)		FY 2019 Procurements (\$s)		FY 2019 NGREA (\$s)	
		Plan	Actual	Plan	Actual	Plan	Actual
FY 2019 National Guard and Reserve Equipment Appropriation (NGREA) Equipment							
CAF Helmet Mounted Cueing Systems						2,250,000	2,245,897
CAF Communication and Datalink Upgrades						11,500,000	5,118,865
CAF Avionics and GPS Upgrades						8,525,000	18,847,158
CAF Defensive Systems Upgrades						7,000,000	36,277,740
CAF Radar and Targeting Enhancements						31,145,000	44,062,179
CAF Combat Operations Enablers						980,000	848,684
MAF Communication and Datalink Upgrades						22,000,000	28,336,458
MAF Defensive Systems Upgrades						25,000,000	23,112,854
MAF Combat Operations Enablers						4,800,000	4,121,746
Rescue Communication and Datalink Upgrades						26,850,000	1,076,960
Guardian Angel Mission Equipment						9,800,000	8,029,684
Special Mission						23,500,000	16,694
Simulators & Training Devices						3,350,000	8,992,404
Agile Combat Support - Support Equipment						11,800,000	6,349,697
Agile Combat Support - Vehicles						7,000,000	8,062,979
Agile Combat Support - Expeditionary Tactical Equipment						4,500,000	4,500,000
Total						200,000,000	200,000,000

Major Item of Equipment Substitution List

NOTE: This table identifies equipment authorized by the Service to be used as a substitute for a primary item of equipment. The table also identifies whether or not the item is deployable in wartime. This data meets the Title 10 requirement to identify substitutes that are not the most desired equipment item.

Required Item Nomenclature	Reqd Item Equip No.	Substitute Item Nomenclature	Substitute Item Equip No.	FY 2022 Qty	Deployable?	
					Yes	No

Service Does Not Use Substitution to Satisfy Major Item Equipment Requirements.

Significant Major Item Shortages

NOTE: This table provides a RC top ten prioritized (PR) shortage list for major equipment items required for wartime missions. It lists the total quantity required, the shortfall, the individual item cost, and the total cost of the shortfall. This data is consistent with other equipment data submitted by the Service.

PR	Nomenclature	Total Req'd	# Items Short	Item Cost	Total Cost / Cost Remaining	Rationale/Justification
1	Aircraft Defensive Systems (KC-135, F-16, A-10, C-130, C-5)	various	various	various	\$405,500,000 / \$264,500,00	<p>Proliferation of evolving anti-aircraft missile threats have outpaced many of the legacy AFR aircraft defensive missile systems. This places aircrew and mission success at increased risk. Current aircraft defensive systems to address the threat are: Large Aircraft Infrared Countermeasures (LAIRCM), ALR-69A Digital Radar Warning Receiver and fighter aircraft active IR Missile Warning Systems (MWS).</p> <p>Block-30 LAIRCM: C-130H - 34 @ \$2M = \$68M KC-135 - 62 @ \$1M = \$128M (\$52M Rem)</p> <p>ALR-69A: F-16 - 27 @ \$0.9M = \$24.3M (\$5.3M Rem) A-10s - 56 @ \$0.9M = \$49.5M (\$42.7M Rem) KC-135 - 62 @ \$0.8M = \$51M C-5 - 16 @ \$0.9M = \$14M C-130Js - 10 @ \$0.8M = \$8M (\$6.8M Rem)</p> <p>Active IR MWS: F-16, 27 @ \$1.1M = \$29.7M (\$13.3M Rem) A-10s, 56 @ \$0.6M = \$33M (\$10.2M Rem)</p>
2	Link 16 (F-16, A-10, C-130H, C-130J, HC-130J)	210	210	\$590,000	\$82,560,000 / \$63,580,000	<p>Combatant Commanders expect all aircraft to have datalink integration with existing networks. Link-16 is the primary DOD Tactical Data Network (TDN) for tactical battlespace awareness by aircraft and command and control (C2) entities. Link-16 brings critical information to the pilot/aircrew such as friendly or hostile ground party locations along with other network aircraft location and associated data (heading, altitude, identification). Likewise, battlespace managers and ground parties may not have access to specific aircraft information without data link integration. Link 16 terminals installed @ \$0.59M each.</p> <p>27 F-16s = \$15.93M (\$3.0M Rem) 56 A-10s = \$32.45M (\$26.4M Rem) 42 C-130Hs = \$24.78M 10 C-130Js = \$5.9M 6 HC-130J = \$3.5M</p>

Significant Major Item Shortages

PR	Nomenclature	Total Req'd	# Items Short	Item Cost	Total Cost / Cost Remaining	Rationale/Justification
3	Targeting Pod Upgrades (Color/ Large Aperture)	90	90	\$ 500,000.00	\$ 45,000,000.00	AFRC utilizes advanced targeting pods (ATP) across multiple MDS. ATPs give aircraft precision targeting capability, the ability to acquire accurate coordinates of objects of interest, the ability to observe areas of interest, and an improved navigation capability in clear/obscured conditions day or night. AFRC is also evaluating several ATP upgrades that will allow improved communications and sensing. ATP upgrades allow AFRC platforms to take advantage of the new capabilities without incurring expensive Group A aircraft modification costs. AFRC's goal is to obtain an open architecture in all of its ATPs. This will allow the utilization of available space for the latest technological advances and the ability to adapt ATPs to tomorrow's needs. Open architecture ATPs will also allow easy swapping of an ATP's components and software, thereby changing its capabilities based on mission requirements and aircraft availability. AFRC requires upgrades to current sensors, and modification of its current ATP inventory with new open architecture, color, and large aperture. <i>Note: \$90M+ spent to purchase 90 ATPs and multiple upgrades from basic ATP to the current ELDP/Color configuration</i>
4	Radars (F-16)	27	27	\$3,100,000	\$83,700,000 / \$17,000,000	Current F-16 Block 30 radars have obsolescence/supportability problems that increase their maintenance cost and decrease their availability. A modern Actively Electronically Scanned Array (AESA) radar dramatically decreases maintenance cost and significantly increases availability, accuracy, lethality and allows better support of 5th Gen aircraft tactics.
5	Real Time Information in the Cockpit (RTIC) (C-5, KC-135, C-17)	various	various	various	\$140,500,000 / \$102,000,000	Communication upgrades that will provide aircrews the ability to report and receive battlespace and mission information. 14 C-5's - \$28.5M (\$20M Rem) 53 KC-135's - \$80M (\$50M Rem) 24 C-17's - \$32M
6	Avionics Upgrades (A-10)	55	55	\$475,000	\$26,125,000 / \$21,900,000	A-10 low-definition black and white avionics displays are unable to match the signal quality of the information sent to them. Targets are being missed and pilots are flying closer to the threats in an attempt to gain positive identification. High Resolution Display (HRDS) significantly improve mission success and safety while reducing pilot workload.

Significant Major Item Shortages

PR	Nomenclature	Total Req'd	# Items Short	Item Cost	Total Cost / Cost Remaining	Rationale/Justification
7	Jam Resistant Global Positioning System (GPS) (KC-135, A-10 F-16, C-5)	various	various	various	\$29,100,000 / \$19,300,000	<p>Aircraft Embedded GPS/INS (EGI) faces warfare navigation challenges. The EGI has significant parts obsolescence issues and new sophisticated jamming techniques can have serious implications for mission success. Updating KC-135, F-16 and A-10 EGI will provide robust SAASM capability now and lay a path to M-Code GPS when it becomes available.</p> <p>62 KC-135 @ \$125K = \$8M 54 F-16 @ \$46K = \$2.5M (\$2.0M Rem) 56 A-10 @ \$280K = \$15.4M (\$6.1M Rem) 16 C-5 @ \$200K = \$3.2M</p>
8	Propulsion Upgrades (C-130 Propellers)	33	33	\$3,000,000	\$99,000,000	<p>The current C-130H propulsion system performs deficiently in high density altitude environments and drives excessive maintenance costs. It requires a comprehensive upgrade to: improve performance and reliability; increase fuel efficiency; reduce airframe fatigue due to excessive vibration; decrease maintenance costs; and increase safety margins during critical phases of flight. Replacing dated four-bladed propellers with improved, modular eight-bladed propellers (NP2000) will provide improved thrust for heavy weight and short field operations, while increasing fuel efficiency.</p>
9	ARC -210 (KC-135, C-5, C-17, C-130H, C-130J, HC-130J)	various	various	various	\$36,500,000 / \$36,000,000	<p>Modern cryptographic requirements and fundamental changes to satellite communications drive radio modernization. Beyond Line of Sight upgrade at \$0.1M each.</p> <p>6 HC-130J = \$0.6M 34 C-130H = \$3.4M 10 C-130J = \$1M 62 KC-135 = \$19M 14 C-5 = \$4.5M (\$4M Rem) 24 C-17 = \$8M</p>
10	Simulators (C-5, HC-130, A-10)	various	various	various	\$78,300,000	<p>Current state of simulators (sims) losing effectiveness due to disparity with actual aircraft configurations. AFRC supports 23 simulators across the Total Force. Periodically, training requirements dictate either new or upgraded sims. Over time, the differences will continue to grow and render the sims less useful for mission readiness training. The challenges associated with tying Military Construction (MILCON) and Lead Command (LC) coordination to sim requirements delays purchases and delivery of capability. This impacts our ability to meet combatant commanders' requirements to accomplish their mission.</p>

Significant Major Item Shortages

PR	Nomenclature	Total Req'd	# Items Short	Item Cost	Total Cost / Cost Remaining	Rationale/Justification
						C-5 Fuselage Trainer @ \$21.5M HC-130J @ \$33M Guardian Angel Freefall Trainer @\$7M WC-130J Part Task Trainer @ \$7M Defensive Space Control simulator @ \$7.4M Global Strike simulators @ \$2.1M A-10C Full Mission Trainer (FMT) High Resolution Display System (HRDS) @ \$0.3M
11	Support Equipment	various	various	various	\$150,000,000	Agile Combat Support (ACS) Critical Support Equipment (SE) shortfalls for unit training, sustainment of existing missions, and mission conversions. SE shortfalls range across all functional areas, and as the average age of SE increases, there is a direct correlation to a demand for more Operation and Maintenance funding to preserve the capability.

Chapter 6 United States Coast Guard Reserve (USCGR)¹

I. Coast Guard Overview

For more than two centuries, the United States Coast Guard (USCG) has performed increasingly complex missions in the most challenging marine environments. In that time, our responsibilities have continuously expanded to encompass every aspect of maritime governance. By statute, the USCG is an Armed Force, capable of operating in the joint arena at any time and functioning as a specialized service under the Navy in time of war or when directed by the President. The USCG leverages broad authorities, partnerships, and operational presence as a system to meet mission responsibilities. Employing our unique blend of military, law enforcement, humanitarian, and regulatory capabilities, we prevent incidents when possible and respond when necessary. Table 6-1 provides an overview of the programs listed in the 2013 Department of Homeland Security (DHS) Federal Program Inventory for the USCG and the corresponding 2002 Homeland Security Act missions that support them.

Table 6-1. Coast Guard Programs and Missions

DHS Program Inventory	USCG Missions (Homeland Security Act of 2002)
1. Defense Operations	Defense Readiness
2. Maritime Law Enforcement	Drug Interdiction
	Migrant Interdiction
	Living Marine Resources
	Other Law Enforcement
3. Maritime Prevention	Ports, Waterways, and Coastal Security—Prevention Activities
	Marine Safety
	Marine Environmental Protection—Prevention Activities
4. Maritime Response	Search and Rescue
	Marine Environmental Protection—Response Activities
5. Maritime Security Operations	Ports, Waterways, and Coastal Security—Operational Activities
6. Marine Transportation System Management	Aids to Navigation
	Ice Operations
7. Mission Support	All Missions

USCG assets and personnel have deployed and operated under the control of DoD commands to combat terrorism and conduct major combat operation, humanitarian assistance, and other missions. USCG forces provide the combatant commanders (CCDRs) capabilities to interact

¹ The USCG Reserve is part of the Department of Homeland Security. This chapter is included at the request of DHS and questions about this chapter should be addressed to DHS.

with many regional maritime partners and provide a maritime law enforcement capability in their areas of responsibility.

USCG forces are included in DoD contingency plans to mitigate redundancy and enable optimal use of DoD capabilities resident in the national defense inventory. Use of USCG forces is driven by force readiness, national security requirements, and risk-based decision-making principles. DHS and DoD cooperate under three key memoranda of agreements, which facilitate the following defense operation imperatives:

- USCG inclusion in Maritime Homeland Defense Operations
- DoD support to USCG Maritime Security Operations
- USCG support of the National Military Strategy, specifically in the areas of
 - Maritime Interception and Interdiction Operations
 - Military Environmental Response
 - Port Operations, Security, and Defense
 - Theater Security Cooperation
 - Coastal Sea Control Operations
 - Rotary-Wing Air Intercept (RWAI) Operations
 - Combating Terrorism Operations
 - Maritime Operational Threat Response (MOTR) Support
 - Cybersecurity Operations.

As the USCG's only dedicated surge force, the Reserve Component (RC) is a contingency-based workforce that is trained locally and deployed globally to meet Coast Guard mission requirements. The USCG depends on the RC to be always ready to mobilize and respond to incidents with relevant competencies in boat operations, emergency management, expeditionary warfare, marine safety, port security, law enforcement, and mission support.

Units focused on defense support activities are primarily staffed by reservists. Port Security Units (PSUs) are a key RC capability of the USCG's Defense Operations program. PSUs are expeditionary units able to operate independently or in conjunction with joint, combined, and host nation security forces and often integrate with the Navy's Maritime Expeditionary Security Forces. The eight USCG PSUs are principally staffed with a RC complement of 137 reservists and supported by a full-time complement of 6 Active Component (AC) personnel. Also primarily staffed with reservists, the USCG Mobile Support Unit (MSU) provides expeditionary logistics support capability and resources deployed to support CCDRs. The MSU is air, sea, and land deployable within 96 hours after mobilization to support contingencies abroad and domestically.

A. Coast Guard Planning Guidance

The USCG Strategic Framework is outlined in the Coast Guard Strategic Plan 2018–2022. It reflects and directly supports the National Security Strategy, DHS goals and priorities, and the National Military Strategy. To meet the nation’s needs and address the most difficult maritime challenges, the Coast Guard must be nimble, adaptive, and anticipatory. The Coast Guard Strategic Plan 2018–2022 provides a framework for a ready, relevant, and responsive Coast Guard that seeks to maximize readiness today and tomorrow; address the nation’s complex maritime challenges; and deliver mission excellence anytime and anywhere.

The USCG is preparing to address future risks by ensuring the capability and capacity to respond simultaneously to (a) one nationally significant response operation, (b) one regional surge operation in a district, and (c) highest priority response operations locally. To prepare for this rapidly changing operating environment, the USCG has focused on six key strategic plans and outlooks representing the most pressing concerns of the USCG. The areas of focus were selected based on a risk-informed approach and our understanding of the strategic landscape:

- Western Hemisphere Strategy: combating networks, securing borders, and safeguarding commerce
- Cyber Strategy: defending cyberspace, enabling operations, and protecting infrastructure
- Human Capital Strategy: meeting the needs of our mission, service, and people
- Arctic Strategic Outlook: improving awareness, modernizing governance, and broadening partnerships in the polar regions
- Maritime Commerce Strategic Outlook: facilitating lawful trade and travel, modernizing aids to navigation and mariner information systems, and transforming workforce capacity and partnerships
- Illegal, Unreported, and Unregulated (IUU) Fishing Strategic Outlook: applying broad authorities, capabilities, and partnerships to be a global leader in the fight against IUU fishing.

Additionally, climate change is a key Administration and DHS priority. The USCG is focusing on actions and opportunities to build resilience to climate-driven impacts via capacity-building partnerships and regulatory compliance measures in the maritime community. The USCG will plan for and be poised to respond aggressively to climate driven emergencies and invest in resilient internal infrastructure and a workforce prepared for climate-related impacts. The RC will contribute to the catalogue of the many things the USCG has done and is doing related to climate-related activities.

USCG operational plans will dictate required competency and capability requirements, which shall be integrated into the USCG Force Planning Construct to shape the size and composition of current and future workforces.

Predictable and steady funding is critical to the USCG's ability to address these strategic priorities, especially within the RC. Long-term strategic accession and training decisions can help mitigate operational risk across all mission areas that require RC support now and in the future.

B. Coast Guard Equipping Policy

As an integrated workforce, the USCG AC owns and manages all equipment, including equipment allocated for the RC. The AC provides equipment for RC mobilizations and surge operations using existing unit inventories and supporting units, or via the procurement procedures of the USCG budget programmed through the DHS budget.

C. Plan to Fill Equipment Shortages in the RC

In FY 2021, approximately 511 Selected Reserve (SELRES) personnel performed active duty in support of overseas contingency operations, a modest increase compared to FY 2020. In FY 2022 the personnel footprint for planned PSU missions will remain approximately 115 members per deployment to support mission requirements at Guantanamo Bay, Cuba. An accelerated timeline for recapitalizing personal protective equipment (PPE) is primary and essential. Future plans to recapitalize boat platforms will begin in FY 2025.

D. Initiatives Affecting RC Equipment

Worldwide initiatives, such as elevated military focus in North Korea and the protection of shipping lanes in the Arctic, have increased concern for RC worldwide deployment because of anticipated shortages in the equipment needed to support such contingencies while maintaining existing statutory missions.

Progressively, climate resiliency requires the RC to have equipment and a workforce that is resilient and more prepared for the ever-evolving impacts of climate change and climate-driven emergencies. The USCG is actively incorporating climate change implications into requirements and capabilities development.

The SELRES is assigned to units supporting traditional USCG missions and to units providing defense support. At traditional units, reservists train and perform their duties alongside AC personnel. They obtain invaluable experience in their assigned mobilization competencies by regularly executing daily operations to meet USCG missions. The Boat Forces Reserve Management Plan (BFRMP), in particular, established a ratio of reservists-to-platforms to ensure assigned reservists were trained effectively. Additional analysis is needed to determine the appropriate number of platforms required if USCG operational planners determine more reservists with boat forces competencies are needed. The DoD-validated requirements for deployable USCG units providing defense support in recurring operations and in contingency operations exceed the capacity of a fully mobilized USCG RC. Without reallocating AC personnel, the RC would have difficulty filling all mobilization needs in an actual contingency.

II. Coast Guard Reserve Overview

A. Current Status of the Coast Guard Reserve

1. General Overview

The USCG RC Policy Statement calls for the RC to provide operationally capable and ready personnel with critical competencies vital to the USCG's capability to lead, manage, and coordinate the nation's response to acts of terrorism, disasters, and other emergencies in the maritime domain.

Top Coast Guard Reserve Equipping Challenges
<ul style="list-style-type: none">• Recapitalization of Personal Protective Equipment (PPE)• Increasing average age of small boat fleet• Equipment and PPE for USCG Police Department Program

Demand for Reserve support for planned and unplanned operations remains extremely high. Over the past three fiscal years, there has been a wide variety of needs for Reserve support, including PSU deployments, support to DHS along the southern border, COVID incident management needs, COVID operational backfills, hurricane support, parental leave support, and regular Active Duty Operational Support (ADOS) needs at local commands. Historically, the Reserve has an annual average of nearly 2,900 activations per year, representing an annual activation rate of 41 percent of the authorized Selected Reserve (SELRES) strength and 47 percent of available SELRES personnel.

Utilizing a new internal process known as the Reserve Component Requirements Generation System (RC RGS), senior leaders will incorporate a “risk-based” approach to define the Reserve Component's competency and capability requirements, ultimately determining the size and required mission activities of the Reserve. During the first three annual cycles, the RC will require additional PPE and equipment to support the current workforce and the intended growth in the training capacity of the RC. This holistic, systematic approach will provide critical foresight into formulating multi-year implementation plans to change budget, authorizations, and assignments to fulfil strategic commitments made at the Service-level and deemed as critical to the global implementation of national, DHS, and Coast Guard strategic priorities.

The USCG Reserve Training Appropriation for FY 2021 provided \$130.7 million for necessary expenses as authorized by law, which included operations, administration and maintenance of the RC, personnel and training costs, and services. The Reserve Training Appropriation does not provide funding for PPE and machinery assets such as boats, vehicles, boat engines, and rescue equipment.

2. Status of Equipment

a. Equipment On-hand

Table 1 Consolidated Major Item Inventory and Requirements identifies the major equipment inventories for FY 2023–FY 2025. The AC procures and accounts for all RC equipment. The RC uses two main boat platforms, the Transportable Port Security Boat (TPSB) and the Response Boat–Small (RB-S).

USCG PSUs operate the TPSB for defense operations providing waterborne security and for port defense operations. The USCG operates a total of 58 Generation IV TPSBs at the PSUs, in Guantanamo Bay, Cuba, and at the Special Missions Training Center (SMTC) in Camp Lejeune, North Carolina.

The RB-S serves as the primary training and employment platform for reservists assigned to USCG stations throughout the nation. The USCG recently completed the recapitalization of its RB-29-S II. There are 343 RB-S II boats operating throughout the USCG. They handle a wide range of Coast Guard missions close to shore, including search and rescue; law enforcement; Ports, Waterways, and Coastal Security (PWCS); drug and migrant interdiction; and environmental protection and response. The expected lifecycle for both RB-S platforms is 10 years. The first RB-S II was introduced in 2012.



29' RB-S II



32' TPSB, Generation IV

b. Average Age of Major Items of Equipment

Table 2 Average Age of Equipment provides the projected average age of equipment at the start of FY 2023.

c. Compatibility of Current Equipment with AC

The PSU's primary mission is supporting DoD expeditionary warfare and homeland defense under Title 10. The units are manned, trained, and equipped to provide point defense of strategic shipping and critical infrastructure, and antiterrorism–force protection in Level I and II threat conditions. Their secondary mission is supporting PWCS under Title 14 authorities. To accommodate their unique mission requirements, TPSBs are maintained mostly at PSUs, but SMTC maintains two TPSBs used to fulfill training requirements. Additional TPSBs were purchased solely for the Guantanamo Bay, Cuba, mission. The weapons systems and navigation packages of the TPSBs require periodic maintenance, upgrades, and repairs. TPSB communications systems have capacities beyond those on standard USCG boat platforms to ensure compatibility with DoD during Title 10 operations.

All other platforms and equipment used by the RC are shared with the AC.

d. Maintenance Issues

The transition to the Generation IV TPSB was completed in 2014. The USCG purchased seven additional TPSBs in 2015 and has implemented a depot-level maintenance plan that continually rotates TPSBs out of theater to spread the operational hours evenly across the fleet and to facilitate the additional required maintenance. Enrolling the TPSB into the USCG internal maintenance and repair program has helped ensure availability of the training platforms. Parts availability in Guantanamo Bay has been adequate, but there is room for improvement. PSU leadership can request changes or additions to the spare parts lists through the Small Boat Product Line (SBPL), which has extended the useful life of these boats to 15 years.

e. Modernization Programs and Shortfalls

i. RB-S II and TPSB Generation IV Boat Fleet

The USCG continues to pursue replacement of its aging boat platforms, weapons, and other equipment. Once procured and fielded, the RC will require additional training to become proficient on the new equipment and to maintain operational readiness.

The USCG SBPL has achieved fully integrated logistics support for the RB-S II and TPSB Generation IV boat fleet. The RB-S III new acquisition will begin in FY 2027. The TPSB replacement acquisition will begin by FY 2026 to meet the projected end of useful service life in 2030.

ii. USCG RC Maritime Enforcement Specialist Police Department (PD) Program

The Property Clause of the United States Constitution (U.S. CONST. art. IV, § 3, cl. 2) states “Congress shall have Power to dispose of and make all needful Rules and Regulations respecting the territory or other property belonging to the United States.” Pursuant to this power, Congress has enacted statutes requiring military departments to protect military installations and property. Statute 14 U.S.C. §504(a) (2) and (e) grants the USCG Commandant general powers to “maintain and operate” Coast Guard base and shore facilities and protect these facilities with police departments.

Leading up to FY 2022, global terrorist events have created critical force protection (police) personnel gaps at USCG bases, driving increased demand for reservists with law enforcement skillsets. To eliminate continuing gaps and to exploit the training capacity bases can provide reservists, the USCG established the Reserve Component Maritime Enforcement Specialist Coast Guard Police Department (CGPD) Program. The program is designed to present a constant visible force protection, and law and order presence to deter, detect, and prevent criminal activity onboard Coast Guard property or as mission dictates. The program is the first of its kind and designates specific billets with competency requirements to augment base or installation force protection personnel. A major benefit is that CGPD training is the same level and type for reservists designated for global force protection mobilization at USCG Port Security Units (PSUs), and as such will provide a much needed resource to eliminate reoccurring personnel gaps at PSUs slated for deployment.

Training funds for the new program have already been included in the FY 2023 Selected Reserve budget. However, the associated equipment and PPE requirements are unfilled. Multiple resource proposals through the active component are under consideration. These equipment needs are included in *Table 1* and are listed as significant in *Table 8* as a protective measure to meet predicted FY 2025 equipment and PPE shortages.

f. Overall Equipment Readiness

The USCG has made strides in the PSU community to recapitalize, upgrade, and standardize major equipment systems. However, a high operating tempo over the last 15 years supporting expeditionary and domestic contingencies has created a need to replace aging and rapidly degrading equipment. Continual use in a harsh deployed environment has demonstrated the need for asset rotation and depot-level maintenance plans to ensure continued viability. This program requires consistent funding of operation and maintenance accounts to conduct maintenance on the boat platform on a routine basis. Maximum availability of operational boats for maintaining tactical proficiency and weapons qualifications is imperative for RC personnel to attain required qualifications. The TPSB Generation IV is at the middle of its lifecycle, with an average age of approximately eight years per platform. Maintenance funding for all eight PSUs is currently provided through Base and Standard Support Level funding (\$2.6 million), and is critical to sustaining equipment required for expeditionary operations in support of Operational Plan (OPLAN) deployments.

Maximizing the availability of operational platforms for RC training extends beyond concerns with maintenance cycles. The integrated nature of the USCG results in competition for available platform hours on non-organic resources for the Reserve. The prioritization between domestic mission execution and Reserve readiness training is understandably skewed toward mission execution. Unit training officers and Reserve managers coordinate training to the greatest extent possible. However, unplanned mission requirements do result in reduced platform availability for Reserve training.

B. Changes Since the Last NGRER

The Reserve Training Appropriation experienced slight growth in FY 2021, rising to a level of \$130.7 million from the \$124.6 million appropriated in FY 2020, continuing a trend of modest increases through several fiscal years.

C. Future Years Program (FY 2023–FY 2025)

1. FY 2023 Equipment Requirements

Table 1 Consolidated Major Item Inventory and Requirements provides projected FY 2023 through FY 2025 inventories and requirements for major equipment. All equipment is procured and accounted for by the AC.

2. Anticipated New Equipment Procurements

Refer to *Table 1* for FY 2023.

3. Anticipated Withdrawals from RC Inventory

Refer to *Table 1* for FY 2023.

4. Remaining Equipment Shortages and Modernization Shortfalls at the End of FY 2025

Table 1 Consolidated Major Item Inventory and Requirements and *Table 8 Significant Major Item Shortages* provide RC equipment inventories, shortfalls, and modernization requirements.

USCG unit operations and maintenance fund managers include PPE in annual budget requests. Funding for PPE is based on a 5-year cycle, which provides the unit enough funding to completely outfit each member with new and serviceable equipment at the end of a five-year period. The five-year cycle was developed in part based on the equipment service life and member assignments and transfers.

The AC uses operation and maintenance funds to provide PPE for both AC and RC personnel. The replacement cycle for AC personnel is 3 years while RC replacement occurs every 5 years. The Reserve Training Appropriation does not fund PPE for RC personnel. Approximately 4,700 filled positions or 67 percent of the RC have mobilization requirements requiring PPE to conduct USCG operations. To meet RC PPE requirements, the USCG must program \$3.258 million for annual budget execution, but in FY 2021 the USCG only marked \$1.130 million for this purpose (a \$2.127 million difference). Funding for USCG PPE has not been indexed with inflation within the base budget and, as a result, buying power is reduced over time. This reflects an internal, risk-based, USCG resource allocation decision that relies on the use of unallocated funds in other operations and maintenance accounts to reduce PPE gaps over time.

Table 6-2 details the FY 2023 PPE. It is important to note that PSUs require personal equipment related to their expeditionary missions in addition to regular PPE. This additional equipment (ballistic protection, uniforms, and CBRN equipment) is purchased as part of the Coast Guard's base funding allocated for Defense Related Activities. The USCG will need to engage in a risk-based analysis to determine if maintaining this level of personnel readiness is the most effective allocation of limited resources.

The absence of PPE funding can diminish Reserve mobilization readiness and negatively impact the ability to safely train. Reservists must be properly outfitted to perform USCG operations safely to achieve and maintain their mobilization competencies.

Table 6-2. Coast Guard FY 2022 PPE Funding for the RC

Unit/PPE Type	Cost	# of Personnel	Total per 5 Year Cycle	Total per Year (÷5)
Ashore (Reserve) Basic Ensemble (Boat Station)	\$2,625	1,615	\$4,239,375	\$847,875
Ashore (Reserve) Cold Ensemble (Boat Station)	\$1,779	968	\$1,722,072	\$344,414.40
Sector Ops (Reserve) Basic Ensemble	\$2,625	414	\$1,086,750	\$217,350
Sector Ops (Reserve) Cold Ensemble	\$1,779	287	\$510,573	\$102,114.60
Tactical (Reserve) Basic/Cold Ensemble (PSU)	\$4,404	320	\$1,409,280	\$281,856
PSU Ballistic Protection Systems	\$4,400	1144	\$5,033,600	\$1,006,720
PSU MOPP 4	\$2,000	1144	\$2,288,000	\$457,600
PPE per Person Total		5,892	\$16,289,650	\$3,257,930
Total per 5 Year Cycle	\$16,289,650			
Total per Year (÷5)	\$3,257,930		Estimated FY 2023 Shortfall	
Total Dedicated to PPE in FY 2021	\$1,130,588		(\$2,127,342)	

All members of the USCG must wear specific equipment when conducting law enforcement missions. The AC provides equipment to conduct these missions to both the AC and RC using individual unit operation and maintenance funds. As with PPE, the RC does not procure law enforcement gear for RC members. The cost to outfit each member is approximately \$2,000.

D. Summary

The USCG depends on the Reserve force to be ready within 48 hours to mobilize with critical competencies in boat operations, contingency planning and response, expeditionary warfare, marine safety, port security, law enforcement, and mission support. The USCG RC is fully integrated with the AC. Both components collaboratively train and jointly conduct day-to-day operations. This ensures Reserve members are properly trained for contingency operations and allows the USCG RC to augment the AC.

The USCG RC will continue to be an invaluable force, ready to perform the missions critical to maritime homeland security, national defense (domestic and expeditionary), and domestic disaster operations. Predictable and steady funding is critical to sustain USCG operational integration, which is essential to responding to various contingencies and fulfilling the security demands of the nation.

Consolidated Major Item Inventory and Requirements

NOTE: This table provides a comprehensive list of selected major equipment items. It provides the projected inventory quantity on-hand (QTY O/H) at the beginning/end of the selected fiscal year (FY). It also provides the quantity required (QTY REQ) to meet the full wartime requirements of the Reserve Component. In accordance with Title 10, the QTY REQ number provides the recommendation as to the quantity and type of equipment that should be in the inventory of each Reserve Component. FY 2023 unit cost estimates are provided by the Military Departments.

Nomenclature	Unit Cost	Begin FY 2023 QTY O/H	Begin FY 2024 QTY O/H	Begin FY 2025 QTY O/H	End FY 2025 QTY O/H	End FY 2025 QTY REQ
Port Security Units (PSU)						
AN/PRC-117G Wideband, Multiband, Multi-mission Tactical Boat Radio	\$18,750	56	56	56	56	56
Fly Away Kit (Portable Satellite Communications Kit)	\$5,329	4	4	4	4	4
AN/PRC-152A Wideband, Handheld, Networking Radio	\$15,392	288	288	288	288	288
Power Amplifier RF-7800UL-V150 (1 per PRC-117G radio)	\$20,000	32	32	32	32	32
M4-Variant Rifle	\$1,100	956	956	965	956	956
SIG P229R DAK 9mm Pistol	\$660	540	540	540	540	540
Deployable Medical Kits	\$111,000	8	8	8	8	8
Portable Armory	\$75,000	8	8	8	8	8
Portable loading ramps	\$14,780	24	24	24	24	24
Portable Scales	\$9,380	48	48	48	48	48
All Terrain Forklift	\$171,000	8	8	8	8	8
Polytetrafluoroethylene 32' Transportable Port Security Boat (TPSB) Covers	\$1,200	56	56	56	56	56
Vehicle, F550 Stake-bed (1 per unit)	\$56,000	8	8	8	8	8
Vehicle, F450 Pickup (5 per unit)	\$46,000	40	40	40	40	40
Generators with Distribution Panel	\$44,000	24	24	24	24	24
32' Transportable Port Security Boat (TPSB)	\$500,094	56	56	56	56	56
Utility Trailer (1 per unit)	\$7,000	8	8	8	8	8
Searchlight Set	\$7,700	8	8	8	8	8
Tactical Field Lighting Sets	\$5,100	8	8	8	8	16
Counter, Frequency (DC to 500HHZCW)	\$4,461	8	8	8	8	8
Analyzer, Communication	\$4,390	8	8	8	8	8
Computer, Laptop	\$4,000	16	16	16	16	16
Fuel Bladder 3K Gallons	\$3,885	24	24	24	24	24
Water Buffalo	\$47,000	8	8	8	8	8
Forklift (non all-terrain)	\$42,000	8	8	8	8	8
Fuel Containment Boom	\$2,200	24	24	24	24	32
ISU 90 Shipping Container	\$8,600	176	176	176	176	176
Unity Triband Radio	\$5,000	110	110	110	110	110
Base X Shelter (6D31)	\$86,428	112	112	112	112	112
Water Bladder, 2K-gallon capacity	\$8,776	8	8	8	8	8
Palm Infrared, Thermal Imager	\$9,450	0	0	0	0	16
USCG Boat Forces						
RB-S II	\$343,435	343	343	343	343	343
Mobile Support Units (MSU)						

Consolidated Major Item Inventory and Requirements

Nomenclature	Unit Cost	Begin FY 2023 QTY O/H	Begin FY 2024 QTY O/H	Begin FY 2025 QTY O/H	End FY 2025 QTY O/H	End FY 2025 QTY REQ
Trailers, Tools / Equipment / Maintenance	\$150,000	1	1	1	1	1
Truck, Stake-bed Class 8	\$135,000	4	4	4	4	4
Truck, Stake-bed	\$55,000	2	2	2	2	2
Generator, 240kW	\$120,000	4	4	4	4	4
Forklift, 10,000 lb	\$90,000	1	1	1	1	1
Forklift, Telescoping	\$71,000	1	1	1	1	1
Trailer, Administrative Support	\$86,463	2	2	2	2	2
Trailer, Maintenance Shop	\$83,688	7	7	7	7	7
Trailer, Logistic Support Parts	\$58,462	6	6	6	6	6
Trailer, Open Bulk Storage	\$49,600	4	4	4	4	4
Trailer, 30ft Flatbed	\$14,000	1	1	1	1	1
Portable Welding/Cutting Shops	\$45,000	1	1	1	1	1
Generator, Magnum 25kW	\$10,000	4	4	4	4	4
CONEX Boxes, 40' X 8'	\$30,000	2	2	2	2	2
CONEX Boxes, 20' X 8'	\$12,000	6	6	6	6	8
CONEX Boxes, 8' X 8'	\$10,000	0	2	2	2	3
Power Distribution Center	\$12,000	4	4	4	4	4
AC&R Repair and Service Kits	\$10,000	2	2	2	2	2
DC Kit, Compressed Air - Diesel Powered	\$9,000	1	2	1	1	1
DC Kit, Diesel Powered Welder	\$3,000	1	1	1	1	1
Computer, Laptop	\$2,000	2	2	2	2	2
Gator, 6X6 Diesel Terrain Vehicle	\$6,500	3	3	3	3	3
Generator, Light Tower	\$10,000	10	10	10	10	10
Generator, 46Kw	\$33,000	2	2	2	2	2
Generator, 60Kw , Load Sharing	\$35,000	8	8	8	8	8
Microgrid Feeder Kit 60Kw	\$51,000	4	4	4	4	4
Base X Shelter (6D31) Command	\$27,966	1	0	0	0	0
Base X Shelter (505) Maintenance	\$24,190	1	0	0	0	0
Drash Shelter (6S)	\$18,300	5	0	0	0	0
Alaska Tent Kit XP (Includes ECU)	\$40,000	12	15	15	15	15
Environmental Control Unit (ECU), Drash	\$92,131	1	0	0	0	0
Loading Scale Kit	\$16,000	1	1	1	1	1
Air Craft Loading Ramp sets	\$15,000	2	2	2	2	2
Special Missions Training Center (SMTC)						
AN/PRC-117G Wideband, Multiband, Multi-mission Tactical Boat Radio	\$18,750	60	60	60	60	60
Fly Away Kit (Portable Satellite Communications Kit)	\$5,329	4	4	4	4	4
AN/PRC-152A Wideband, Handheld, Networking Radio	\$15,392	25	25	25	25	25
Water Buffalo	\$47,000	2	2	2	2	2
32' Transportable Port Security Boat	\$500,094	2	2	2	2	2
Environmental Control Unit (ECU), HP-2C/338 IPT	\$130,497	4	4	4	4	4
Base X Shelter (6D31)	\$27,966	1	1	1	1	1

Consolidated Major Item Inventory and Requirements

Nomenclature	Unit Cost	Begin FY 2023 QTY O/H	Begin FY 2024 QTY O/H	Begin FY 2025 QTY O/H	End FY 2025 QTY O/H	End FY 2025 QTY REQ
Base X Shelter (505)	\$24,190	1	1	1	1	1
Base X Shelter (307)	\$18,445	4	4	4	4	4
Base X Shelter (305)	\$13,008	8	8	8	8	8
Base X Shelter (203)	\$8,392	3	3	3	3	3
Trailer, Tank	\$12,955	1	1	1	1	1
ISU 90 Shipping Container	\$8,600	5	5	5	5	5
Portable Observation Post	\$65,000	0	2	2	2	2
Computer, Laptop	\$2,000	5	5	5	5	5
UTV, 6X6 Diesel Terrain Vehicle	\$15,000	3	3	3	3	3
TCCC Tommaniquian	\$40,000	2	2	2	2	2
Police Department/Security Program (New)						
Fly Away Kit (Portable Satellite Communications Kit)	\$5,329	0	0	0	0	5
AN/PRC-152A Wideband, Handheld, Networking Radio	\$15,392	0	0	0	0	25
Power Amplifier RF-7800UL-V150 (1 per PRC-117G radio)	\$20,000	0	0	0	0	25
M4-Variant Rifle	\$1,100	0	0	0	0	25
SIG P229R DAK 9mm Pistol	\$660	0	0	0	0	25
Deployable Medical Kits	\$111,000	0	0	0	0	5
Portable Armory	\$75,000	0	0	0	0	5
Utility Trailer (1 per unit)	\$7,000	0	0	0	0	5
Searchlight Set	\$7,700	0	0	0	0	10
Tactical Field Lighting Sets	\$5,100	0	0	0	0	10
Computer, Laptop	\$4,000	0	0	0	0	5
Fuel Bladder 3K Gallons	\$3,885	0	0	0	0	5
Water Buffalo	\$47,000	0	0	0	0	5
ISU 90 Shipping Container	\$8,600	0	0	0	0	25
Unity Triband Radio	\$5,000	0	0	0	0	25
Base X Shelter (6D31)	\$86,428	0	0	0	0	10
Water Bladder, 2K-gallon capacity	\$8,776	0	0	0	0	5
Palm Infrared, Thermal Imager	\$9,450	0	0	0	0	5
Generator, 240kW	\$120,000	0	0	0	0	5
Generator, Magnum 25kW	\$10,000	0	0	0	0	5
CONEX Boxes, 20' X 8'	\$12,000	0	0	0	0	5
Generator, Light Tower	\$10,000	0	0	0	0	5
Base X Shelter (6D31) Command	\$27,966	0	0	0	0	5
Base X Shelter (203)	\$8,392	0	0	0	0	5
Portable Observation Post	\$65,000	0	0	0	0	5
Body Armor	\$521	0	0	0	0	25
5.11 Jacket	\$238	0	0	0	0	25
Duty Belt (Complete Setup) *includes baton and OC	\$446	0	0	0	0	25
Flex Cuffs	\$57	0	0	0	0	25
PD Apparel/Gear	\$254	0	0	0	0	25
Kevlar Helmet	\$240	0	0	0	0	25
Level 4 Body Armor	\$180	0	0	0	0	25
Inspection Mirrors	\$25	0	0	0	0	25
Handheld Search Wands	\$215	0	0	0	0	25

Consolidated Major Item Inventory and Requirements

Nomenclature	Unit Cost	Begin FY 2023 QTY O/H	Begin FY 2024 QTY O/H	Begin FY 2025 QTY O/H	End FY 2025 QTY O/H	End FY 2025 QTY REQ
Narcotic Inspection Kits	\$280	0	0	0	0	25
Portable AlcholoSensor	\$450	0	0	0	0	5
Portable Inspection X-Ray	\$39,000	0	0	0	0	5
Gas Masks	\$924	0	0	0	0	25
ATV/UTV	\$12,000	0	0	0	0	5
Deployable Vehicle Kit (Lights/Siren/Magnets)	\$1,517	0	0	0	0	5
Night Vision Goggles	\$10,000	0	0	0	0	10
Handheld Spot Lights	\$552	0	0	0	0	10
Camel Backs/Hydration systems	\$54	0	0	0	0	25
Field Desks	\$1,500	0	0	0	0	5
Sand Bags (per 100)	\$235	0	0	0	0	25
Unmanned Aerial System and Training	\$1,950	0	0	0	0	5
Meals Ready to Eat (per 24)	\$131	0	0	0	0	5
Riot Control Helmets	\$215	0	0	0	0	25
Riot Control Shields	\$273	0	0	0	0	25
Riot Protective Body Armor	\$2,720	0	0	0	0	25
Spare Batteries (packs of 3)	\$5	0	0	0	0	100
Flashlights	\$104	0	0	0	0	100
ChemLights	\$11	0	0	0	0	100
Uniforms (CGPD Allowance)	\$600	0	0	0	0	25
Checkpoint Mobile Guard Shack (Self-Contained)	\$185,000	0	0	0	0	5
* The AC manages all equipment for the Coast Guard Total Force.						

USCGR
Average Age of Equipment

Table 2

NOTE: This table provides the average age of selected major equipment items. The average age provides a projected average age of the fleet at the start of FY 2023.

Nomenclature	Average Age FY23	Remarks
Port Security Units (PSU)		
32' Transportable Port Security Boat (TPSB)	10	
Radio Set AN/PRC-117G	7	
AN/PRC-152A Wideband, Handheld, Networking Radio	9	
Unity Triband Radio	5	
Portable Armory	8	
All Terrain Forklift	6	
All Terrain Vehicle, Gator (1 per unit)	7	
Vehicle, F550 Stake-bed (1 per unit)	9	
Vehicle, F450 Pickup (5 per unit)	9	
Generator 125kW with distro panel (3 per unit)	9	
Counter, Frequency (DC to 500HHZCW)	17	
Analyzer, Communication	15	
Fuel Bladder 3K Gallon	14	
Fuel Containment Boom	9	
Tactical Field Lighting Sets	11	
Aircraft loading ramps	9	
Water Buffalo (1 per unit)	5	
ISU 90 Shipping Container	10	
Base X Shelters (14 per PSU)	5	
USCG Boat Forces		
RB-S II	6	
Mobile Support Units (MSU)		
Truck, Stake-bed Class 8	4	
Truck, Stake-bed	1	
Gator, 6X6 Diesel Terrain Vehicle	11	
Generator, 240kW	14	
Generator, Light Tower	2	
Generator, Magnum 25kW	14	
Generator, Microsilent 12kW	17	
Forklift, 10,000 lb	16	
Trailers, Tools / Equipment	13	
Trailer, Administrative Support	12	
Trailer, Logistic Support Parts	12	
Trailer, Maintenance Shop	12	
Trailer, Open Bulk Storage	12	
Computer, Laptop	4	
Portable Welding/Cutting Shops	14	
CONEX Boxes, 40' X 8'	21	
CONEX Boxes, 20' X 8'	8	
CONEX Boxes, 8' X 8'	16	
Power Distribution Center	7	
AC&R Repair and Service Kits	11	
DC Kit, Compressed Air - Diesel Powered	2	
DC Kit, Diesel Powered Welder	12	
Environmental Control Unit (ECU), HP4-DL	15	

USCGR
Average Age of Equipment

Table 2

Nomenclature	Average Age FY23	Remarks
Base X Shelter (6D31) Command	15	
Base X Shelter (505) Maintenance	15	
Drash Shelter (6S)	15	
Forklift, Telescoping	2	
Generator, 46Kw	2	
Generator, 60Kw, Load Sharing	1	
Microgrid Feeder Kit 60Kw	4	
Alaska Tent Kit (Includes ECU)	2	
Loading Scale Kit	2	
Air Craft Loading Ramp sets	3	
Special Missions Training Center (SMTC)		
AN/PRC-117G Wideband, Multiband, Multi-mission Tactical Boat Radio	8	
Fly Away Kit (Portable Satellite Communications Kit)	4	
AN/PRC-152A Wideband, Handheld, Networking Radio	5	
Water Buffalo	11	
32' Transportable Port Security Boat (TPSB)	10	
Environmental Control Unit (ECU), HP-2C/338 IPT	6	
Base X Shelter (6D31)	11	
Base X Shelter (505)	11	
Base X Shelter (307)	11	
Base X Shelter (305)	11	
Base X Shelter (203)	11	
Trailer, Tank	17	
ISU 90 Shipping Container	10	
Portable Observation Post	11	
Computer, Laptop	4	
UTV, 6X6 Diesel Terrain Vehicle	3	
TCCC Tommaniquian	4	
Police Department/Security Program (New)		New Program. Equipment is all newly requested as required for FY2025
Fly Away Kit (Portable Satellite Communications Kit)	N/A	
AN/PRC-152A Wideband, Handheld, Networking Radio	N/A	
Power Amplifier RF-7800UL-V150 (1 per PRC-117G radio)	N/A	
M4-Variant Rifle	N/A	
SIG P229R DAK 9mm Pistol	N/A	
Deployable Medical Kits	N/A	
Portable Armory	N/A	
Utility Trailer (1 per unit)	N/A	

Service Procurement Program - Reserve (P-1R)

NOTE: This table provides a comparison of the dollar value of the FY 2020 request, the FY 2020 enacted amount; and, the actual amount spent on procurement for specific categories of RC equipment. All values are costs in millions. Deliveries of procured equipment normally take one to two years before they arrive in the inventory; e.g., items procured in FY 2022 are expected to arrive in RC inventories in FY 2023 or FY 2024.

Nomenclature	Request	Enacted	Actual

Table 3 not applicable for USCGR

National Guard and Reserve Equipment Appropriation (NGREA) Procurements

NOTE: This table identifies the dollar value of planned equipment procurements with the National Guard and Reserve Appropriation (NGREA). These funds are available for a three-year period from the year of appropriation. Deliveries of procured equipment normally take one to two years from the date of procurement before they arrive in the inventory.

Defense Appropriations Act NGREA	FY 2020	FY 2021	FY 2022

Table 4 not applicable for USCGR

Projected Equipment Transfer/Withdrawal Quantities

NOTE: This table portrays the planned equipment transfers (Active to Reserve), withdrawals (-), and decommissioning (-). Transferred equipment is commonly called "cascaded equipment," or equipment that is provided to the RC once the AC receives more modern equipment. Although this table highlights a three-year period, many Services will not know exact quantities of transfers or withdrawals until year of execution, due to the uncertainty of the procurement/delivery cycle of new equipment.

Nomenclature	Equip No.	FY 2023 Qty	FY 2024 Qty	FY 2025 Qty	Remarks

Service has no planned transfers or withdrawals for the years FY 2022 thru FY 2025

FY 2019 Planned vs Actual Procurements and Transfers

NOTE: This table compares planned Service procurements and transfers to the RC in FY 2019 with actual procurements and transfers. FY 2019 is selected as these are the most recent funds to expire. Because the procurement cycle is normally one to two years from funding to delivery, this table identifies only deliveries through the end of 2021. Procurement and NGREA columns reflect cost values in dollars.

Nomenclature	Equip. No.	FY 2019 Transfers (# of items)		FY 2019 Procurements (\$s)		FY 2019 NGREA (\$s)	
		Plan	Actual	Plan	Actual	Plan	Actual

USCGR had no planned or actual transfers or procurements of major equipment during FY 2019

Major Item Of Equipment Substitution List

NOTE: This table identifies equipment authorized by the Service to be used as a substitute for a primary item of equipment. The table also identifies whether or not the item is deployable in wartime. This data meets the Title 10 requirement to identify substitutes that are not the most desired equipment item.

Required Item Nomenclature	Reqd Item Equip No.	Substitute Item Nomenclature	Substitute Item Equip No.	FY 2022 Qty	Deployable?	
					Yes	No

Service Does Not Use Substitution to Satisfy Major Item Equipment Requirements.

USCGR Significant Major Item Shortages

NOTE: This table provides a RC top four prioritized (PR) shortage list for major equipment items required for wartime missions. It lists the total quantity required, the shortfall, the individual item cost, and the total cost of the shortfall. This data is consistent with other equipment data submitted by the Service.

PR	Nomenclature	Total Req'd	# Items ¹ Short	Item Cost	Total Shortage Cost	Rationale/Justification
1	Police Department/Security Program (New)	1	1	\$6,397,300	\$6,397,300	New Initiative. Multiple Items. Please refer to the cost breakdown provided in Table 1 and the narrative in the report.
2	Palm Infrared, Thermal Imager	16	16	\$9,450	\$151,200	Needed for PSU Shoreside Security Divisions to maintain perimeter security and entry control points for life support areas (base camps).
3	Tactical Field Lighting Sets	16	8	\$5,100	\$40,800	2 sets required by each PSU for tactical Safety and Security
4	Fuel Containment Boom	32	8	\$2,200	\$17,600	3 sets required by each PSU for air/sea/rail mobility and adherence to USAF requirements.
5	CONEX Boxes, 20' X 8'	8	2	\$12,000	\$24,000	Replacing 2 CONEX boxes of this size, per year for the MSU
6	CONEX Boxes, 8' X 8'	3	3	\$10,000	\$30,000	Replacing 3 CONEX boxes of this size

Note: Shortage items are required for AC recapitalization of outdated equipment.
The AC manages all equipment for the Coast Guard Total Force.

Appendix A

Report Requirements, Terminology, and Definitions

I. Report Elements

Overview of Committee Request

The reporting requirement in section 10541 was repealed by Congress in section 1061 of the NDAA for FY 2017. Consistent with the request of the Committee of Conference, this current NGRER, is being submitted in accordance with the text of section 10541 as it existed at the time of its repeal. This report is prepared by the Office of the Assistant Secretary of Defense for Manpower and Reserve Affairs with the assistance of the Department of the Army, the Department of the Navy, the Department of the Air Force, and the Department of Homeland Security (United States Coast Guard).

II. Report Objective

Based upon the request in the Explanatory Statement, the Office of the Assistant Secretary of Defense for Manpower and Reserve Affairs, with concurrence from all Military Departments, has identified the following objectives:

- Concentrate on FY 2022–FY 2024 RC requirements, procurements, and changes.
- Provide an overview of current RC equipment from three perspectives:
 - current status of equipment on-hand
 - future year equipment procurements for FY 2022–FY 2024
 - remaining shortfall for FY 2024 and beyond.
- Focus primarily on major items of equipment.

III. Report Contents

A. Overview (Chapter 1)

Chapter 1 presents a composite DoD perspective on National Guard and Reserve equipment and serves as the executive summary of the report.

B. Military Service Narratives and Data Tables (Chapters 2–6)

Chapters 2 through 6 present the status of each Military Service and their respective RC in terms of RC equipping policies and methodologies. Each chapter contains a Military Service and RC overview, and includes a discussion of current equipment status, future equipment procurements, and remaining shortfalls and unfunded requirements. Each chapter includes a review of the current status of equipment compatibility and interoperability between the AC and the RC of each Military Service, the effect of that level of compatibility/interoperability, and a plan to achieve full compatibility/interoperability.

RC data tables for each Military Service contain specific information on major items of equipment selected for review in this report and are placed at the end of each RC narrative section. The NGRER articulates data in eight tables (*Tables 1-8*) for each RC. In a situation where data tables are not applicable to a particular RC, a blank page has been inserted to note that table data is not applicable. The “Data Table Explanation” at the end of this section defines the data contained in *Tables 1-8*.

IV. Terminology and Definitions

Major Items of Equipment include aircraft, tanks, ships, trucks, engineer equipment, and major items of support equipment. These items normally will include large dollar value requirements, critical RC shortages, items procured via Military Service and National Guard and Reserve Equipment Appropriation (NGREA), and any RC specific item that the Chief of the specific RC wishes to highlight.

Required Quantity is the total number of an item required to be on-hand or available to RC units to go to war and accomplish their missions. This includes requirements for war reserve and other stocks. The simplified term “requirement,” as used in this report, is synonymous with “full wartime requirement,” and satisfies the requirement in Title 10 to provide a “recommendation” as to the type and quantity of equipment needed in RC inventories.

On-hand Quantity is the equipment physically on-hand in RC or AC units or in war reserve and other stocks specifically designed for wartime use by the RC or AC.

Deployable Item denotes an item which, considering its suitability, operability, compatibility and supportability, will provide an expected degree of mission success sufficient to warrant its wartime operational employment.

Compatibility/Interoperability denotes the capability of two items of equipment to operate together in the same environment without interfering with one another and without degrading function or unit capability.

Substitute Item denotes an item that is not the most desired item, but based upon its capability can be employed in wartime in lieu of a combat essential required item of equipment. It may not function at the same level of capability as the item in the AC for which it is the substitute.

Equipment Shortage (Shortfall) is the difference between the quantity required and the quantity on-hand, excluding substitute items and excess quantities beyond the required quantity.

Modernization Shortfall is the difference between the required quantity of the most modern item and the on-hand quantity of that item. Modernization shortfalls are not necessarily equipment shortages as most Military Services substitute older versions of an item for the most modern item. Therefore, modernization shortfalls are shortages of the most modern item only and can have a significant effect upon compatibility and interoperability.

V. Data Tables

A. Table Contents

A separate set of Data Tables (*Tables 1-8*) is provided in Chapters 2 through 6 for each RC. These tables contain the required information relative to major items of equipment identified in the report. The following list identifies the separate data tables that are included in the report for each RC.

- Table 1: Consolidated Major Item Inventory and Requirements (This is an all-inclusive table while other tables are subsets of *Table 1*.)
- Table 2: Average Age of Equipment
- Table 3: Military Service Procurement Program - Reserve (P-1R)
- Table 4: National Guard and Reserve Equipment Appropriation (NGREA) Procurements
- Table 5: Projected Equipment Transfer/Withdrawal Quantities
- Table 6: FY 2019 Planned vs Actual Procurements and Transfers
- Table 7: Major Item of Equipment Substitution List
- Table 8: Significant Major Item Shortages

B. Table Explanations

The following paragraphs provide an explanation of the data table columns and data criteria by table.

Table 1: Consolidated Major Item Inventory and Requirements. This table provides a comprehensive list of selected major items of equipment the RC chooses to highlight by providing key administrative data, on-hand inventories, and wartime requirements.

RC is the specific Reserve or National Guard entity, i.e., ARNG, USAR, USMCR, ANG, AFR, USNR, or USCGR.

Nomenclature is the description or common name of the item of equipment.

Equipment Number is the individual Military Service equipment identification code: Line Item Number for the Army; Table of Authorized Materiel Control Number for the Marine Corps; Equipment Cost Code for Navy engineering items; and National Stock Number for the Air Force.

Cost is the FY 2022 procurement cost per unit. If an item is no longer being procured, the inflation adjusted cost from the last procurement is shown. If an item is programmed for initial procurement beyond FY 2023, the data table depicts the projected unit cost at the time of procurement.

Quantity On-hand (QTY O/H) is the actual/projected item count for a particular item of equipment at a specified time.

Quantity Required (QTY REQ) is the authorized wartime requirement for a given item of equipment.

Table 2: Average Age of Equipment. This table is a subset of *Table 1* and highlights the average age of selected items of equipment.

Average Age is the calculated age of a given item of equipment. Since equipment is normally procured over several years, this figure provides an average age of the fleet at the start of FY 2022.

Table 3: Military Service Procurement Program–Reserve (P-1R). This table highlights the actual procurement of items of equipment for which funding was requested and enacted. The source of this data is the USD Comptroller’s P-1R exhibit.

Table 4: National Guard and Reserve Equipment Appropriation (NGREA) Procurements. This table highlights the items, which the RC plan on procuring with miscellaneous NGREA funds. Since these funds are available for 3 years, this table highlights items in the current procurement cycle.

Table 5: Projected Equipment Transfer/Withdrawal Quantities. This table portrays the planned equipment transfers (AC to RC), withdrawals, and decommissioning. Transfers are commonly called “cascaded” equipment or equipment that is provided to the RC once the AC receives more modern equipment items. Although this table highlights a 3-year period, many Military Services do not know exact quantities of transfers or withdrawals until year of execution because of the uncertainty of the procurement/delivery cycle of new equipment.

Table 6: FY 2017 Planned vs Actual Procurements and Transfers. This table compares what the Military Service planned to procure and transfer to the RC in FY 2018 with actual procurements and transfers. Because the procurement cycle is normally 1 to 3 years from funding to delivery, this table identifies only what has been delivered through the end of FY 2020.

Planned Quantity is the item quantity the Military Service programmed to deliver to the RC as part of the budgeting process.

Actual Quantity is the item quantity the Military Service actually delivered or has in the procurement cycle to deliver to the RC.

Table 7: Major Item of Equipment Substitution List. A list of equipment authorized by the Military Service to be used as a substitute for a primary item of equipment. This table also identifies whether this substitute item is suitable for deployment in time of war.


Nomenclature (Required Item/Substitute Item), see *Table 1* description for nomenclature.
Equipment Number (Required Item/Substitute Item), see *Table 1* description for equipment number.

Table 8: Significant Major Item Shortages. The top ten items of equipment and modernization/upgrades, which are not funded in the FY 2023–FY 2025 Future Years Defense Program, are listed in this table in priority order. If additional funds were to become available, the RC would apply those funds to the highest priority item on this list.

Appendix B

National Guard Equipment Reporting Requirements

This appendix provides the Department of Defense (DoD) response to what was formerly the section 10541(b)(9) of title 10, U.S.C. requirement for an assessment of the equipment necessary and available for the National Guard to respond to an emergency or major disaster in the U.S. (Section I) and the requirement for the Chief of the National Guard Bureau (CNGB) to provide a statement of accuracy on equipment projections and delivery of equipment procured the previous year in accordance with section 10541(d) of Title 10, U.S.C.



NATIONAL GUARD BUREAU
1636 DEFENSE PENTAGON
WASHINGTON DC 20301-1636

DEC 21 2021

MEMORANDUM FOR UNDER SECRETARY OF DEFENSE FOR PERSONNEL AND READINESS

SUBJECT: Certification and Statement of Accuracy to Accompany the Annual National Guard and Reserve Equipment Report for Fiscal Year 2023


Reference: Title 10 United States Code, Section 10541, "National Guard and Reserve Component Equipment: Annual Report to Congress," January 7, 2011

I submit this certification and statement of accuracy to the attached National Guard and Reserve Equipment Report, as required by the reference.

For the Army National Guard, I am able to certify deliveries from 2012 to 2014 for the first time. The Army National Guard accounts for equipment in the Global Combat Support System-Army and investments in data management platforms to achieve the levels of transparency and traceability and achieve full certification. The Air National Guard continues its transition to the Defense Property Accountability System (DPAS) as a system of record for equipment and vehicles, and improved management of equipment and readiness.

I do not expect to attain the full, auditable transparency and traceability of procurement funding desired by Congress until full implementation of the Department of Defense's Item Unique Identification and the DPAS. I expect to partially certify new procurement receipts for the Fiscal Year 2024 report. The ongoing efforts by the Office of the Secretary of Defense, and the Departments of the Army and the Air Force are appreciated.

The point of contact for this action is Colonel Kenneth Lozano, National Guard Bureau Operations Directorate, at 703-607-8406.



Daniel R. Hokanson
General, U.S. Army
Chief, National Guard Bureau

Enclosure:
As stated

cc:
ASA (M&RA)
ASAF (M&RA)
DARNG
DANG

Figure B-1. Chief, National Guard Bureau Memorandum

I. National Guard Overview

The Constitution and statute charge the National Guard to fulfill two key roles: the primary combat reserve of the Army and the Air Force (AF) and the first military responder in the homeland. The primary mission of the National Guard is fighting America's wars, supporting the interim National Defense Strategy (NDS) statement that it is our, "most solemn obligation to protect the security of the American people."¹

Since the first Gulf War and because of DoD missions in Afghanistan, Iraq, and worldwide, the National Guard has transformed from a strategic reserve to an operational force. The 2018 NDS refocuses the DoD for long-term competition with China and Russia. The NDS portrays China and Russia as dominant competitors, while Iran, North Korea, and non-state actors remain national security threats. The Soldiers and Airmen of the National Guard contribute 20 percent of the entire joint force, providing strategic depth for combatant commands.² The National Guard must remain a ready and well- equipped operational force, part of the Army and Air Force, to help protect and secure interests at home and abroad.

A. National Guard Readiness for Emergencies and Major Disasters in the U.S.

In the 2022 National Guard Posture Statement, the CNGB reiterates that National Guard Priority #1 is Readiness. "My goal over the next three years is to build a sustainable operational force by focusing on our core missions of Warfight, Homeland and Partnerships through four priorities: People, Readiness, Modernization, and Reform."³

"Today, thanks to the substantial investment in training, equipment, and readiness by Congress and DoD leaders, we have become the most capable, professional, ready, combat-proven National Guard in the history of the United States."⁴ The organization, training, leadership skills, exercise and operations experience, equipment, facilities, and full-time support enable a force that fulfills wartime missions and capably responds to domestic missions. National Guard Soldiers and Airmen served their communities a record 10.9 million man-days in FY 2021, supporting myriad missions such as COVID-19, Southwest Border, wildfires, civil disturbances, hurricanes, and Operation Allies Refuge concurrent with ongoing overseas missions. The importance of modern equipment for the National Guard can't be overstated, as witnessed by the events of September 5–6, 2020 when the crews of two California National Guard Blackhawk helicopters rescued over 200 people from the Creek Fire. The modernized helicopters with updated avionics systems and aircrew modernization with Air Warrior enabled the crews to complete this lifesaving mission. Domestic response to COVID, wildfires, storms, and civil disturbance operations also defined National Guard efforts in 2021. The response to the January 6, 2021, attack on the Capitol demonstrated the full capabilities of the National Guard. After

¹ Interim National Security Strategic Guidance, March 2021, p. 9.

² 2020 National Guard Bureau Posture Statement, p. 4.

³ Ibid, p. 8.

⁴ Ibid.

the Capitol Police and other federal agencies requested protection at force levels above 25,000 personnel, the National Guard mobilized and deployed over 26,000 Soldiers and Airmen to Washington, D.C. in less than two weeks using organic National Guard air support and logistics. Soldiers and Airmen from every state and territory arrived to help secure the 59th Presidential Inauguration. General Hokanson credits, “the relationship with our adjutants general that made this happen with all of us wanting to do the right thing for our nation. Everyone realized that and jumped on board to support the best they could.”⁵ The First Family summed it up:

We want to offer our deepest thanks and enduring gratitude to the women and men of our National Guard for their service to keep the U.S. Capitol Complex secure over the past nearly five months. Since the insurrection on January 6, thousands of proud service members, from states and territories all across our Union, have stood watch over the citadel of our democracy. As they return now to their homes and families, we salute each of them for their commitment to country. When duty calls, our National Guard members put their lives on hold to stand as a shield and a support when their country is in need.⁶

Hurricane Ida provides another example of the National Guard moving quickly to assist first responders; support citizens, municipalities, the health care system, and law enforcement; and preserve life and property. The Louisiana National Guard responded to Hurricane Ida’s landfall with 4,600 personnel called to State Active Duty by August 30, 2021. By September 5, 2021, eleven other states reinforced Louisiana with an additional 2,700 Soldiers and Airmen in a first wave of support.

The National Guard reinforces the connection between the American people and their military. Guard members are located in nearly every ZIP code, providing ready forces and unmatched capabilities in a domestic emergency response. Modern equipment was critical to the Hurricane Ida rescue and recovery effort with bridges spanning swollen rivers, Blackhawk helicopters dropping super sacks into levy breaches, Family of Medium Tactical Vehicles traversing high water, generators restoring power to healthcare facilities and critical infrastructure, and M915 truck tractors pulling semi-trailers with food and supplies and HIPPOs with water to population support centers. Engineering and mobility capabilities (e.g., skid-steers, backhoes, 2 1/2 yard loaders, hydraulic excavators, and dump trucks) were critical to performing route clearance of hundreds of miles to restore power and accomplish air, land, and water search and rescue operations. The National Guard helps save more lives and property because it requires less time and distance to respond.

Equipment modernization increases National Guard readiness and capability for deployments and domestic response missions. Parity in equipping the Guard is essential

⁵ Written Statement of Gen. Daniel R. Hokanson, before the 143rd Conference & Exhibition of NGAUS, May 2021, p. 5.

⁶ Statement by President Joe Biden and First Lady Jill Biden Thanking National Guard Members at the End of Their Capitol Deployment, May 24, 2021.

to the lethality that the NDS requires from the Joint Force. The previous model of cascading older equipment from active duty forces to National Guard units fails to support the National Guard as an operational force. The NDS underscores the risks that new technologies and weapons of competitor nations can deliver to the heart of America with little or no warning. The lines are blurred between domestic and overseas threats, with many of these threats transcending regions and domains of warfare. Equipping is a critical factor in the National Guard response, as is enhancing full-time support, and improving energy conservation and facility resiliency.

“As 2020 has shown us time and again, our work is invaluable to our communities, states, and nation—and we have plenty of work to do,” said Gen. Daniel Hokanson, who was sworn in as the 29th CNGB in August, 2020. “I believe this is an important and pivotal time in [the Guard’s] history, and what we do now, and what we do next, will ultimately shape the nation’s future.”⁷

In addition to traditional responses to natural or manmade disasters and deployments, the National Guard envisions a growing space and cyber presence. In the NGB 2022 Posture Statement, CNGB stated, “For 25 years, National Guard space units have provided operational, unit-equipped, surge-to-war capability to protect our nation’s vital interests in this contested domain and today supply the Space Force with 20 percent of its space professionals and 60 percent of offensive electronic warfare capability. In addition, our cyber warriors bring their military and civilian skillsets to bear in support of Cyber Command’s global commitments.”⁸

B. Army National Guard Equipment

The Army National Guard Dashboard (see Figure B-2) presents a snapshot of Army National Guard (ARNG) equipment on-hand (EOH); Critical Dual Use (CDU) equipment by Essential 10 Capabilities; projected equipment fielding impact from July 2021 through August 2023; and EOH of modernized versus non-modern equipment.

⁷ *CNGB Statement during Senate Confirmation Hearing*, June 18, 2020.

⁸ 2022 National Guard Bureau Posture Statement – Executive Overview, p. 5.

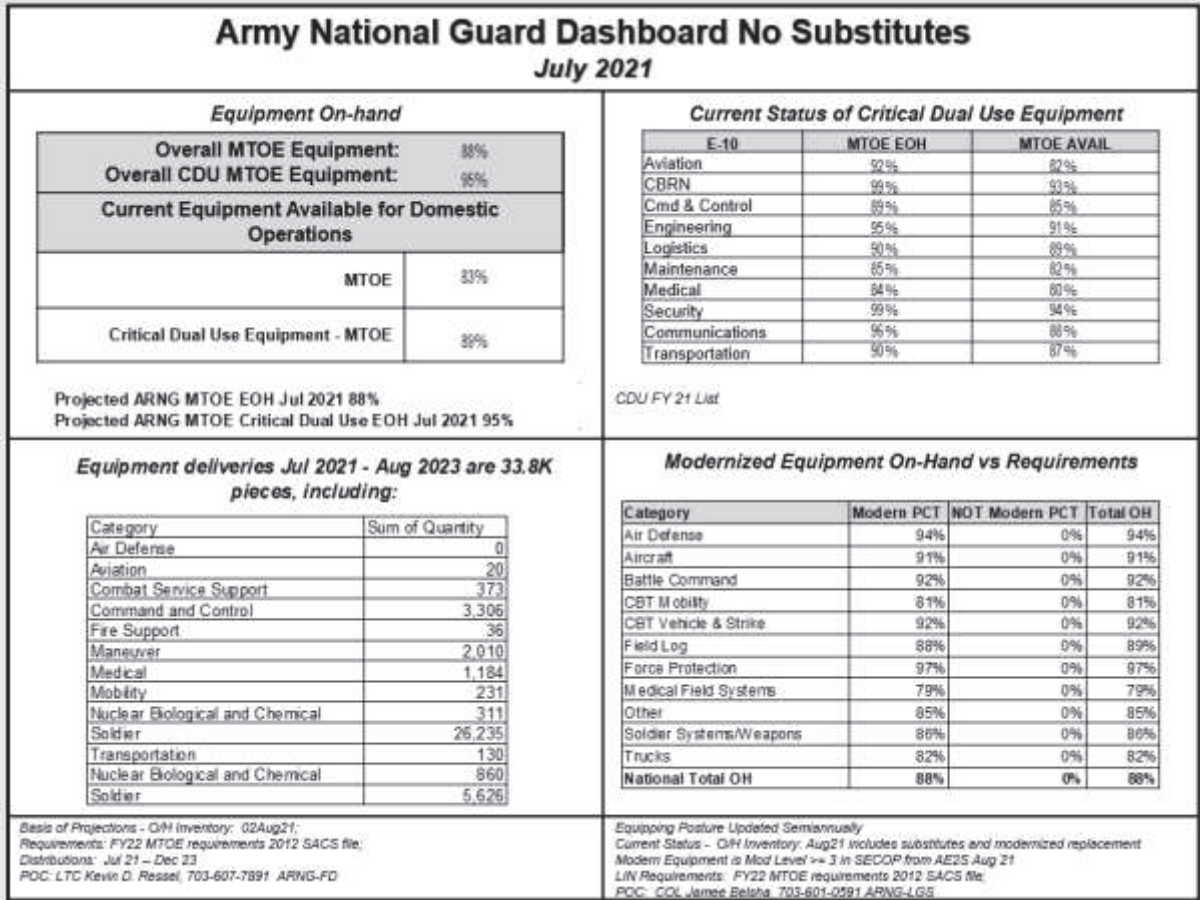


Figure B-2. Army National Guard Dashboard, July 2021

As of July 2021, the ARNG EOH for the Modified Table of Organization and Equipment (MTOE) required equipment stood at 88 percent overall and at 95 percent for the MTOE CDU equipment subset. A further breakdown of overall MTOE EOH and CDU EOH is provided for equipment available to governors for domestic operations (DOMOPS), with MTOE EOH at 83 percent and CDU EOH at 89 percent. Equipment unavailable to the governors is primarily a result of Title 10 mobilizations. EOH percentages fluctuate because of force structure changes, but should be stable because EOH is aggregated at the state and national levels. Year-to-year CDU percentage variations are primarily caused by changes in the CDU list. This year, the EOH percentage is calculated without using substitutions, resulting in reduced EOH compared to the previous year's percentage. Specific CDU areas of concern include chemical, biological, radiological, nuclear (CBRN); engineering; logistics; and transportation.

The Army recognizes the need to track Modernized EOH. Measuring the Army's modern inventory against requirements without substitutes defines modernization progress and the equipment modernization of the force at the aggregate and component levels. In July 2021, 88 percent of the ARNG's required equipment meets the desired modernization level. This is slightly improved over last year.

Over the past decades, the Total Army modernization efforts brought the ARNG in line with Active Army force structure capabilities. The ARNG modernization tenets focus on Readiness by ensuring equipment that is sustainable, interoperable, and deployable enables the total force and supports the Director, Army National Guard's strategic vision. Likewise, the "right mix" of unit capabilities combined with modern equipment generates capabilities essential to conducting the ARNG's federal and domestic missions.

C. Air National Guard Equipment

The Director, Air National Guard's (ANG's) three lines of effort remain the same: Readiness for Today's Fight; 21st Century Guard Airmen; and Build for Tomorrow's Fight. The ANG's modernization efforts center on the first and last of these three tenets, continuously improving readiness and improving capability to support future combat and DOMOPS. In keeping with the Director's priority to Build for Tomorrow's Fight, the ANG offers effective capabilities to the Total Force by modernizing existing equipment. The ANG leverages its unique strengths, such as its experienced workforce, strategic locations, and synergistic partnerships, to provide a future force design that capitalizes on the inherent advantages of ANG airmen, the 90 wings, and all states and territories.⁹ The NGREA has been a valuable funding tool as the ANG modernizes the force guided by CNGB, ANG Director, and AF priorities (see Table B-1).

The ANG is operationally engaged across every AF mission set, including newly added U.S. Space Force missions. It is simultaneously an integral part of how the National Guard responds to the needs of its communities. Over the past decade, the ANG has proven its value as the primary Air Force Operational Reserve force. Today's ANG includes some of the most talented individuals the nation has to offer. The accessibility, diversity, leadership, community ties, culture, and civilian skills of ANG Airmen define the foundation of the force.¹⁰

In the coming years, the ANG faces equipment and infrastructure modernization issues that will force it to change how it looks and operates. As the AF seeks to replace legacy equipment, it can expect the budgetary pressures of costly new systems to result in higher levels of risk to modernizing existing equipment. The future AF relies heavily on technological advantages in space, C2, intelligence and reconnaissance systems, cyber, remotely piloted aircraft, and next generation fighters, tankers, and bombers.¹¹ The ANG anticipates initial equipment and personnel requirements designated to support the former Air Force Space Command will transfer to Space Force installations.

CNGB stated, "The National Guard is a lethal, cost-effective, dual-role operational force that provides strategic depth to the Army, Air Force, and Space Force, and responds to crises in our homeland. We are capable of operating in a complex global security environment and continue to invest in modernization and readiness to prepare for the threats of the future.

⁹ Air National Guard Readiness Center 2019 Strategic Plan.

¹⁰ Ibid.

¹¹ Ibid.

Today’s National Guard is an integral part in addressing the gravest challenges facing the Joint Force.”¹² The revised table shows equipment and vehicle data extracted from the Defense Property Accountability System (DPAS), the new Accountable Property System of Record (APSR) for equipment, and the Defense Medical Logistics Standard Support information system. As the ANG navigates the capabilities of the APSR, coupled with more in-depth inventories, the ANG continues to establish more defensible, repeatable, and auditable equipment data (Table B-1).

Table B-1. ANG Equipment and Vehicles

Essential Capability	DPAS Total Asset In-Use Quantity	DPAS Total Asset In-Use Quantity Cost	Total Asset Requisition Quantity	Requisition Total Cost	Remaining Unfunded Requisition Quantity	Remaining Unfunded Requisition Cost
Aviation SE	108,130	\$2,303,995,034	4,168	\$276,544,581	3,792	\$263,041,216
Civil Support & Force Protection	20,923	\$179,770,642	610	\$6,917,557	602	\$6,446,669
Command & Control	7,675	\$360,389,144	195	\$17,612,115	189	\$17,450,943
Communication	13,266	\$283,325,031	565	\$6,517,909	563	\$6,491,969
Engineering	25,035	\$276,256,236	442	\$8,477,263	439	\$8,346,191
Logistics	52,373	\$136,382,458	2,866	\$9,765,285	2,859	\$9,585,996
Maintenance	17,877	\$290,226,096	2,042	\$20,193,676	1,994	\$19,703,540
Medical	547	\$2,594,380	2	\$64,720	2	\$64,720
Security	56,230	\$117,137,645	12,060	\$7,265,306	12,053	\$7,186,584
	302,056	\$3,950,076,665	22,950	\$353,358,410	22,493	\$338,317,828
	In Use Quantity	In Use Cost			Needed Quantity	Needed Cost
Vehicles	14,416	\$2,032,585,854	165	\$16,477,196	2,281	\$353,366,106
Total Equipment & Vehicles	316,472	\$5,982,662,519			24,774	\$691,683,934

D. Equipment Shortfalls

1. Aviation

The ARNG provides aviation forces to meet Army demands in theaters worldwide and concurrently provides a critical capability for domestic and Emergency Management first responders. ARNG rotary-wing and fixed-wing capabilities operate in combat areas, fight wildfires, provide search and rescue to support hurricane response, and are key to enabling the movements of first responders in the early aftermath of natural and

¹² General Daniel Hokanson, *Written Statement to the Senate Appropriations Committee, Subcommittee on Defense*, May 18, 2021, p. 2.

manmade disasters. The ARNG aircraft fleets provide critical support to National Guard domestic response.

The ARNG requires 921 H-60 helicopters and continues to modernize its entire UH-60 aircraft fleet by divesting of all UH-60A aircraft by the close of FY 2023, procuring the UH/HH-60M through FY 2027, and recapitalizing the UH-60L into the UH-60V and UH-60V MED from FY 2018 through FY 2034. Modernization within the Guard requires recapitalizing and digitizing the UH-60L fleet into the UH-60V series and procuring new build H-60M aircraft. Both of these initiatives will support the divestment of H-60As, as will cascading H-60Ls to backfill H-60A equipped units. Upon completion of Army Aviation H-60 procurement objectives, the ARNG end state fleet will consist of 921 UH-60 aircraft: 535 H-60M, and 386 UH-60V. The numbers include assault/command and control and medical evacuation variants.

The ARNG Cargo Helicopter fleet is completely modernized with 165 of the Multiyear 1 CH-47F Block I aircraft. The ARNG Light Utility Helicopter fleet is at the authorized level of 212 UH-72As, of which 10 have cascaded and a further 8 will cascade to the U.S. Army Aviation Center of Excellence. The ARNG will begin fielding 18 UH-72Bs beginning in January 2022 to achieve the 212 UH-72 authorization.

The ARNG fixed-wing fleet is comprised of 57 aircraft (46 C-12 and 11 C-26) based in 52 locations. ARNG is coordinating with Headquarters, Department of the Army and the Project Management (PM) Office for both Light Utility Helicopter and Fixed Wing to mitigate impacts associated with modernization and required lifecycle modifications to sustain these fleets through the next decade and beyond.

The ARNG is currently short 185 Raven unmanned aerial vehicles (23 percent of the requirement). The Raven program for Compo 1, 2, and 3 was fielded to 85 percent of authorizations. The Medium Range Recon unmanned aerial systems (UAS) replaces the Raven beginning in FY 2022 and PM UAS will field ARNG units to full authorizations. Soldier Borne Sensor (smallest UAS) fielding started in FY 2018. By FY 2025, ARNG will acquire 2,707 systems. Short Range Recon fielding starts in FY 2023. By FY 2026, ARNG will acquire 676 systems. The RQ-7 Shadow is upgrading to a new Block III capabilities group. ARNG 19th and 20th Special Forces Group units will receive Block III RQ-7 Shadow. ARNG Brigade Combat Team UAS will evolve to the new Future Tactical Unmanned Aircraft System (FTUAS). ARNG FTUAS fielding will be determined based on decisions related to the Regionally Aligned Readiness Modernization Model or ReARMM. The status of Army aviation is discussed in further detail in Appendix D.

2. Chemical, Biological, Radiological, and Nuclear (CBRN)

The Interim National Security Strategies recognize that the U.S. is no longer a sanctuary:

Many of the biggest threats we face respect no borders or walls, and must be met with collective action. Pandemics and other biological risks, the escalating climate crisis, cyber and digital threats, international economic disruptions, protracted humanitarian crises, violent extremism and terrorism, and the proliferation of nuclear weapons and other weapons of mass destruction all pose profound and, in some cases, existential dangers.¹³

The threat of chemical, biological, radiological, and nuclear (CBRN) incidents in the Homeland continue to increase. Pharmaceutical based agents (PBAs) such as fentanyl and related derivatives are prevalent in the U.S. because of illicit drug trafficking and can be used as incapacitating agents or contaminants. State and non-state actors have demonstrated willingness to use chemical agents from combat zones in Iraq and Syria and in other locations, such as in Great Britain. Additionally, the spread of nuclear weapons to rogue actors is a near certainty. The domestic threat is real and the probability of major or catastrophic domestic CBRN incidents is increasing.

National Guard CBRN Response Enterprise (CRE) forces respond during incidents that include use or threatened use of Weapons of Mass Destruction (WMD) and terrorist attack or threatened terrorist attack. The CRE provides support during intentional or unintentional release of nuclear, biological, radiological, or toxic/poisonous chemicals and natural or manmade disasters in the U.S. that result, or could result, in the catastrophic loss of life or property. The specialized CBRN equipment serves to identify hazards, assess current and projected consequences, advise on response measures, and provide additional support.

The National Guard CRE elements consist of 57 WMD Civil Support Teams (CSTs), 10 Homeland Response Forces (HRFs), and 17 CBRNE Enhanced Response Force Packages (CERFPs). CSTs are state of the art detection and mitigation teams manned with full-time personnel for immediate response. HRFs and CERFPs are modular joint task forces tailored to provide life-saving capabilities during multiple or large-scale domestic CBRN incidents involving mass casualties from CBRN and high-yield explosive hazards. With a total strength of over 10,000 Soldiers and Airmen, CRE elements are geographically distributed to enable rapid response times for the majority of the U.S. population.

- a. The DoD has recognized the reemergence of CBRN threats and resourced efforts to rebuild the nation's capability and capacity to mitigate and protect our Military Services' resources. A key enabler for the Brigade Combat Team (BCTs) is the Nuclear, Biological, and Chemical Reconnaissance Vehicle (NBCRV). The Army has taken risk in the NBCRV program to support other priority programs, resulting in a shortfall in NBCRV platforms and updated capabilities. Addressing this shortfall will ensure assets in ARNG BCTs dispersed across the nation are available for wartime or DOMOPS missions.

¹³ *Interim National Security Strategic Guidance*, March 3, 2021, p. 7.

b. The ANG CERFP and HRF medical elements need to upgrade their advanced trauma medical equipment. Medical requirements identified for modernization and renewal include the medical rapid response shelters, generators, oxygen generators, medical ultrasound, thermometers/vital signs monitors, environmental control units (ECUs), and exterior lighting in addition to a standardized equipment mounting solution to safely secure medical equipment during patient use. The medical rapid response shelters with ECUs, generator modernization, and oxygen generators have been validated through the Domestic Capability Priority Conference, and are awaiting final funding approval. Additionally, patient tracking remains a capability gap for National Guard medical CBRN Response Enterprise (CRE) forces. The lack of an automated tracking system that enables the tracking of victims and treatment between ANG medical units and local and regional hospitals was identified as a shortfall by the CNGB to the Chairman of Joint Chiefs of Staff in the annual (FY 2018–2022) Chairman’s Capability Gap Assessment.

c. Non-traditional Agent (NTA) Detection

WMD-CSTs continue to lack sufficient capability to detect and identify non-traditional agents (NTAs) at low concentration levels and when mixed with interferents; specifically, fourth generation agents such as Novichok and PBAs such as fentanyl and carfentanil. These agents are extremely lethal even at very low concentration levels and often are mixed with other substances in a domestic incident.

d. PBAs, Medical Countermeasures (MCM), and Decontamination

WMD-CSTs currently lack effective down-range medical countermeasures (MCM) or decontamination capabilities for fentanyl and other PBAs. Current commercial off-the-shelf (COTS) MCM (Naloxone injectors) do not provide sufficient dosages to meet therapeutic levels to ensure survival. Additionally, no known effective decontaminant exists. Soap and hot water decontaminate personnel, but most fentanyl derivatives remain a hazard in the run-off.

e. Radiological and Nuclear Detection and Identification

WMD-CSTs continue to have insufficient capability to detect and identify radiological and nuclear (R/N) hazards (including special nuclear material) to prevent or respond to domestic R/N incidents.

f. Mounted R/N Detection

WMD-CSTs lack a mounted R/N detection capability and therefore cannot conduct large area R/N broad area search missions to support domestic Radiological and Nuclear Search Operations, Prevention of Radiobiological or Nuclear Disasters, National Special Security Events, or post-incident survey missions for major catastrophic incidents.

g. Dismounted R/N Detection and Identification

WMD-CSTs require dismounted R/N capability to detect and identify R/N threats, including Special Nuclear Materials. The Army agreed to field 42 of 57 man-portable Radiological Detection Systems to the WMD-CSTs; but sufficient funding and the fielding plan remain undetermined. The Chemical Biological Defense Program (CBDP) also eliminated funding for the WMD-CST Radiological Isotope Identification Detector.

h. Biological Agent Detection

WMD-CSTs lack sufficient capability to detect biological warfare agents or emerging infectious diseases. Joint Biological Detection System (JBTDTS) is the primary program of record (POR) for biological threat detection.

i. Search and Rescue Reconnaissance

HRF and CERFP Search and Extraction (S&E) Teams have insufficient capability to rapidly conduct tactical reconnaissance and locate victims in the hazard area. To enable timely decisions to allocate S&E capabilities to save lives and simultaneously support force protection of service members, HRF and CERFP commanders require rapid verification of the level of environmental contamination and the location of surviving victims.

j. National Guard CRE Information Management System.

The National Guard CRE Forces lack sufficient capability to provide an integrated CBRN Common Operating Picture at the tactical-level and cannot share tactical information with mission partners and systems at the operational and strategic levels. The NGB began fielding the NG CRE Information Management System to mitigate this capability gap. The long-term viability of the National Guard CRE Information Management System (NG CIMS) depends on integrating NG CIMS capability requirements and sustainment into multiple existing DoD PORs.

3. Command and Control

a. The ARNG continues to improve C2 system modernization and readiness, but concerns about sufficient planning for future fielding coupled with slow rates of modernization still exist. Any reductions in C2 system funding for ARNG will reduce the ARNG's capability and capacity to conduct domestic response C2 operations. Real-time information needed by commanders to maximize federal and state domestic response efforts requires an effective modernization effort. The Joint Battle Command–Platform (JBC-P) provides Mission Command and situational awareness across all formations. The Army force structure growth (approved in the Army Structure FY 2020–2024) and the Army Procurement Strategy Configure for Combat decision increased the total Army requirement by 10 percent, leaving an equipment shortfall. The increase in requirement from 103,158 to 109,289 (aggregate four JBC-P line item numbers (LINs)) created an HQDA G-8 unfunded requirement of \$254 million that is projected to be funded during

FY 2023–FY 2025. If funding for this program is reduced, ARNG formations could be left without the most modernized JBC-P software/hardware Mission Command On-the-Move capability. If the \$254 million requirement is fully funded, the units without mission command capability will receive and train on the most modern equipment by FY 2025.

- b.** ANG C2 organizations require systems upgrades in Air Operations Centers (AOCs), Battle Control Centers (BCCs), Air Control Squadrons (ACSs), and Control and Reporting Centers (CRCs) to meet combatant command requirements. C2 organizations operate with outdated software, radar, communication, and data-link equipment as well as software that is not on par with current technology, creating several operational limiting factors. AOCs need a core radio package system comprising multiple radios, antennas, and datalink systems and a cross-domain solution (CDS) to allow simultaneous views of multiple classified and unclassified security domains. BCCs need advanced datalink capabilities to pass critical tasking messages, simulator training systems, and a CDS to share tactical data. CRCs need advanced identification equipment, remote radar and communications equipment, and a highly mobile active electronically-scanned array radar. Critical shortfalls exist with the TPS-75 Radar, Mode 5, combat ID, and counter unmanned aerial systems/counter cruise missile capabilities. Funding for critical upgrades to AOC, BCC, and ACS systems is necessary to match technology and capabilities fielded by the active duty component. FY 2021 NGREA addressed critical upgrades to AOC, BCC, ACS, and CRC systems.

4. Communications

- a.** ARNG authorizations for AN/PRC-148 and 152 multiband radios increase by 2,800 in FY 2022. The increase provides an opportunity to improve communications during domestic response. The SATCOM capability of these radios connects Guardsmen performing missions at long distances or on mountainous terrain to their units while the multiband capability connects the soldier to civilian first responders. Procurement and fielding of newly authorized quantities of this radio will enhance communication during domestic response.
- b.** ANG communications forces have required equipment for assigned Title 10 missions, while gaps continue to exist for DOMOPS. Military emergency response forces are often unable to conduct interoperable communications with their civilian emergency response counterparts when utilizing military-issued tactical radios. Radios must interoperate with civil networks in both line-of-sight and trunked modes. They should provide over-the-air geolocation data and offer National Security Agency Type 1 certification and programmable encryption. These radios facilitate communication on common military and civilian very-high and ultra-high frequency AM/FM bands, and grant automatic, instant connectivity among personnel entering the operational area. The encryption provides state-of-the-art security when required. Without these highly

capable and interoperable radios, responders risk mission degradation or failure during domestic disaster response operations.

- c. The National Guard has successfully fielded the Disaster Incident Response Emergency Communications Terminal (DIRECT) and Joint Incident Site Communications Capability (JISCC). After Hurricane Katrina, the National Guard was directed to implement a communications capability in every state and territory to enable command and control during domestic operations. JISCC platforms were fielded to each state Joint Force Headquarters (JFHQ) to meet the requirement laid out in JROCM 173-06. DIRECT has mostly replaced the JISCC with 44 DIRECT systems fielded to JFHQs. The DIRECT fielding was completed in FY 2021. JISCC Block 4 fielding results in an additional 14 systems to augment the DIRECT in FY 2022. DIRECT is a system comprised of POR and Commercial off the Shelf (COTS) components.

5. Engineering

- a. ARNG engineer units and equipment provide a versatile and affordable emergency response capability. The majority of the Army engineer force structure resides in the ARNG and frequently deploys OCONUS for other missions. Shortages of over 300 of the 25 ton lowbed trailers impact the mobility of ARNG engineer units and the capability to move engineer equipment to a domestic response. Fielding the additional 25 ton lowbed trailers will enhance a critical part of the National Guard domestic response.
- b. In limited cases, the ANG is authorized to use NGREA funding to upgrade equipment and vehicles that would otherwise be centrally managed by the AF. The ANG relies on outdated equipment and vehicles, which impact all logistics functional areas and other areas providing Base Operational Support. Centralized procurement of vehicles at the AF level impedes the ANG from modernizing its vehicle fleet at a rate that would have noticeable impact on vehicle readiness. Other centralized management of supply chain functions at the AF level impact the ANG's ability to support federal and DOMOPS requirements. Additionally, 2.03 percent of ANG equipment remains deployed in response to overseas contingencies. These assets must be replaced or modernized to provide the states a domestic response capability when the items return from overseas support to federal missions. Funding is programmed for upgrading Security Forces personal protective equipment, Mobile EOC, and Space Control vehicles and equipment.

6. Medical

Critical Care Air Transport Team and Aero-medical evacuation equipment is out of date and needs modernization to support contingency operations and DOMOPS. ANG domestic responses routinely include prolonged patient care by Guardian Angel (GA) personnel on HC-130s, HH-60s, and numerous other platforms. Relevant, modern, technologically advanced medical equipment is necessary to sustain this life-saving capability and to assure accurate tracking of patient movement. FY 2022 funding is planned for the procurement of

oxygen generation, airway management, GA, patient tracking, and other medical support equipment, such as Tactical Combat Casualty Care medical kits and Critical Care Air Transport equipment and supplies.

7. Security

ANG Security Forces (SF) include over 7,500 defenders from 90 wings in all states and territories. Security Forces face an extremely high operations tempo with air expeditionary force deployments and missions that support civil authorities. The ANG’s shortage of available ranges to conduct small arms qualification training degrades each wing’s operational readiness for all ANG personnel preparing for deployment and in support of full spectrum readiness. The ANG is actively filling SF equipment shortfalls using NGREA funds. Within the last few years, the ANG has begun to field portable modular ranges to increase deployment and full spectrum readiness, non-lethal conducted energy weapons (Tasers), and domestic operations response trailers. It has also modernized a portion of the SF vehicle fleet to equip Security Forces Defenders to meet their Title 10 and domestic response missions. SF personnel have also identified additional equipment requirements:

Defensive Systems	Vehicles	Protective Gear/Systems
Non-Lethal Weapon Systems	Security Forces Resources vehicles	Security Forces Climate Clothing System
Joint Integrated Base Defense Command Situational Awareness System	Utility Task Vehicles	Ballistic Body Armor System; Counter Small Unmanned Aerial Systems
Crowd Control Personal Protective Equipment		Advanced Night Vision Systems; Enhanced Communication and Hearing Protection Systems
Less than Lethal Equipment Modernization		Multitrace (Chemical, Explosive and Narcotic) Detection Systems
Advanced Individual Trauma Kits		

This equipment and these systems will enable SF Squadrons to provide mission-ready Airmen for federal and domestic missions.

8. Sustainment

- a. ARNG Maintenance Support Devices (MSD) are the diagnostic equipment for many Army vehicular systems. Every unit surface maintenance shop requires this test equipment. The V2 version of the MSD is obsolete, leaving unmet requirements for the new MSD V4. Documenting unit authorizations for the V4 is lagging behind the divestiture of the V2, resulting in an overall unclear picture of the shortfall. MSDs are essential to sustaining ground vehicle missions in all operations.
- b. A shortage of unit water trailers in the ARNG is growing as older 400 gallon models are being retired because of corrosion. The current shortage of 500 trailers may double before the fielding of the first replacement water trailers (Bison and Camel II) scheduled

for FY 2025. Shortages of water trailers reduce a unit’s ability to sustain operations, including feeding Soldiers and sanitation, over long periods of time and distances.

9. Transportation

- a. Due to corrosion problems affecting much of the M872, 34 Ton flatbed trailer fleet, the ARNG is short over one thousand out of four thousand trailers, resulting in an on hand percentage of only 67 percent. This shortage precludes trailer transfer operations in which a trailer of supplies may be dropped at a population support center and an empty trailer retrieved to be loaded for the next delivery. New procurement is slowly improving the inventory posture, but it remains a critical shortfall in responses to devastating events like hurricanes.

- b. The ANG vehicle overall EOH is at 75.1 percent, but fill rates do not address significant issues associated with the ANG Vehicle Fleet health rate. Approximately 10.2 percent of the ANG vehicles in use exceed their life expectancy. Additionally, 12.2 percent of validated vehicle requirements are unfilled. Traditionally, NGREA spending cannot be utilized to sustain vehicle procurement programs. The ANG remains woefully underfunded in the centralized AF Vehicle Procurement program. Established long-term programmatic requirements across the Fiscal Year Defense Plan are needed to bring ANG vehicle health rates to acceptable levels. The ANG has previously used NGREA spending to support modernization efforts for Battlefield Airmen missions, as reflected in the total number of vehicles in use. Nonetheless, the number of vehicles in use that are at or past life expectancy continues to degrade vehicle health rates. At this time, the ANG still fails to meet Air Force Common Output Level Standards (80 percent fleet health rates). ANG fleet procurement and modernization is critical to replace existing vehicles that have passed their lifecycle usefulness to accomplish federal and state missions (see Table B-2). Previous funding cuts in transportation have created an ever-increasing deficit in required funding to replace the equipment on time, as shown in Table B-2 under “Program Funding Deficit.”

Table B-2. ANG Vehicle Fleet Health Rates: August 2021

Vehicle Categories	Health Rate (%)	Effective Age	Program Funding Deficit (\$)	Fill Rate (%)	Vehicle Age
Passenger Carrying	82.6	9.1	13,423,125	87.8	9.3
Medium Tactical	63.1	17.6	55,778,483	80.4	17.0
Cargo & Utility	73.7	14.6	99,921,906	87.9	14.2
Joint Light-Tactical	81.2	14.4	30,635,655	83.6	13.3
Security Tactical	39.1	17.5	16,758,698	74.9	16.8
Special Purpose	79.3	16.6	100,559,030	93.4	16.4
Fire Fighting	77.5	13.9	71,625,069	88.7	13.2
Materiel Handling	78.1	15.8	53,011,478	91.5	15.8
Runway/Snow Removal	78.8	15.6	36,538,676	98.8	15.6

Table B-2. ANG Vehicle Fleet Health Rates: August 2021

Vehicle Categories	Health Rate (%)	Effective Age	Program Funding Deficit (\$)	Fill Rate (%)	Vehicle Age
Base Maintenance & Construction	84.8	13.0	64,111,584	89.6	12.3
Summary	75.1	14.9	542,363,706	88.5	14.5

E. Effects of Equipment Shortfalls

1. Army National Guard

- a. Modernizing ARNG domestic response capabilities remains chief among ARNG leadership priorities. Yet significant risk to domestic capabilities exists when planned modernization does not occur. The current fiscal environment requires the ARNG to cross-level equipment for deployments within and between the states, territories, and the District of Columbia, degrading unit readiness to meet deployment requirements. Although concurrent and proportional modernization across the Army Components is ideal for all systems, the Army can only modernize the ARNG as quickly as fiscal resources allow.
- b. Shortfalls in command, control, and communications (C3) reduce the ARNG’s ability to provide a tactical network, facilitate C2, and ensure communication among first responders, the Emergency Operations Centers (EOCs), and Soldiers in the field. As of August 4, 2020, the 22,538 ARNG soldiers deployed were providing critical infrastructure protection, support to civil authorities, and disaster relief, including 241 soldiers on Civil Disturbance Operations; 20,188 personnel on COVID-19 relief; and 109 Soldiers working Hurricane Isaias relief. The range and complexity of these missions reflects the importance of C3 capabilities and mandates continued emphasis and funding for modernization of C3 systems.
- c. Although the ARNG is currently 95 percent EOH for CDU equipment (including authorized substitutes), significant shortages exist in critical capabilities such as: Load Handling System Compatible Water Tank Rack, Modular Fuel System–Tank Rack Module, Cargo Truck (5T), and the Semitrailer: Flatbed 34 Ton. The estimated cost to fill the shortfalls is \$2.99 billion. Without procurement or modernization of these capabilities, the ARNG must respond to future combat and domestic emergencies with reduced capability and may require contracted civilian equipment.

2. Air National Guard

The ANG uses equipment and vehicles to support federal missions and DOMOPS. Shortfalls in equipment and vehicles and failures to modernize them concurrently with active component equipment and vehicles significantly undermines the ANG’s ability to support federal and state requirements. These items include equipment that support warfighters through the combatant commands and equipment that supports lifesaving DOMOPS operations during a

man-made or natural disaster. Some enhancements to current capabilities that will improve the overall effectiveness of existing efforts include Security Forces equipment and vehicles, CERFP/HRF equipment and vehicles, and C2 existing equipment shortfalls. See Chapter 5, Section II, for additional information on ANG equipment and modernization. ANG Priorities Books can be accessed at <https://www.ang.af.mil/Home/ANG-Priorities-Books/>.

3. National Guard Bureau

a. Insufficient Capability to Detect and Identify NTAs at Low Concentration Levels and When Mixed with Interferents

State and non-state actors are actively researching novel forms of chemicals. Non-state actors have developed and used crude chemical weapons while continuing to refine their recipes, means of delivery, and tactics. The threats are increasing and the impact of domestic use is high. Therefore, NTA detection gaps incur significant to high operational risk.

b. PBA, MCM, and Decontamination

Death can occur within three minutes from exposure to fentanyl or carfentanyl. The inability to provide an immediate MCM for PBA exposure incurs unacceptable health risks for WMD-CST personnel. The inability to effectively decontaminate WMD-CST personnel without exposing the public to potentially toxic run-off brings unacceptable risk to public safety. There is no current capability to decontaminate personnel exposed to PBAs without water; this is a capability gap.

c. R/N Detection and Identification

The divestiture of the CBDDP eliminated R/N capability development and procurement. Thus, NGB lacks the means to develop, procure, or modernize WMD-CST R/N detection and identification equipment. Eliminating the means for WMD-CSTs to obtain necessary R/N detection and identification equipment incurs unacceptable risk to mission for the WMD-CSTs.

d. Search and Rescue Reconnaissance

CERFP and HRF Search and Extraction Elements must conduct reconnaissance using personnel intensive point and area reconnaissance techniques, delaying the rescue of survivors and increasing the loss of life.

e. Enabling Technologies and Capabilities.

(1) National Guard CIMS. Without fielding and sustaining National Guard CIMS, the CRE lacks a CBRN Common Operating Picture at the tactical-level and cannot share tactical information with mission partners and systems at the operational and strategic levels.

(2) DIRECT and JISCC. An effort is underway to transition the COTS components of the DIRECT to POR capabilities by working with HQDA's Signal Modernization initiative to increase the Basis of Issue of the remaining POR components. This transition will result in a DIRECT that is wholly comprised of POR capabilities and thus more sustainable. The ANG fielded JISCC Block III to support the Homeland Response Force/CBRNE Enterprise Response Force Package mission under the requirements in JROCM 162-06.

4. Requirements and Acquisition Strategies

a. Army National Guard

The Army National Guard supports the Total Force requirements to achieve a fully modernized force, but continues to struggle to address modernization gaps. ARNG augments the modernization efforts of new procurement funding with NGREA and congressional marks. Using all resourcing and cascaded equipment, the ARNG strives to remain interoperable, sustainable, and deployable with the Active Component. The ARNG continues to support a balanced modernization strategy that provides capacity and capability to Large Scale Combat Operations and safeguards its robust response capability for DOMOPS. The ARNG priorities include 1) modernize ARNG Mission Command Systems to increase interoperability with the Active Component, 2) reinvest in Engineer and Mobility equipment to remain deployable to support Combatant Commanders and Governors, 3) modernize CDU equipment to support DOMOPS, and 4) invest in communication suites and other capabilities. The ARNG continues to use authorized substitution equipment to meet mission requirements to support DOMOPS and combatant commanders. However, maintaining aging equipment has required significant increases in sustainment funding.

The National Guard leverages NGREA to modernize CDU equipment, critical Essential 10 equipment capabilities, and training simulation to mitigate the risk to CDU equipment and domestic response readiness. The ARNG did not receive NGREA for FY 2020. Although the ARNG submits recommendations for the CDU equipment list to the Army for vetting and approval biannually, without resources applied against these CDU capabilities, the ARNG will continue to assume risk in modernization.

The ARNG approach to investment in new procurement and the modernization of the aviation fleet allows ARNG leadership the flexibility to achieve long-term goals to support U.S. Army combat needs while meeting states' readiness requirements. The resulting fielding plans consider deployment requirements, individual state requirements, and past performance with respect to flying hour execution.

b. Air National Guard

The ANG focuses on mitigating capability gaps critical to its combat and domestic missions. The process starts through two venues, the Air Reserve Component Weapons and Tactics Conference and the Domestic Capability Priorities (DCP) Conference. The Air

Reserve Component Weapons and Tactics Conference brings together experts from each of the ANG's weapon systems to identify combat mission capability gaps. The DCP Conference brings together first responders and experts in the homeland missions to identify domestic mission capability gaps. These capabilities and associated programs are documented in the annual ANG Weapons Systems Modernization Priorities and DCP books. The capability gaps go through a comprehensive verification and validation process to determine if they are actual requirements that meet identified combatant command or domestic mission shortfalls. The proposed solutions must be sustainable and trainable, meet authorized levels, have facilities to store them, and have a viable acquisition strategy. Finally, these solutions must be supported by affected ANG directorates who can integrate them with current ANG equipment when applicable with a commercial off-the-shelf or government solution. The ANG then uses numerous contract vehicles to procure materiel solutions for the identified requirements. Many of these solutions are dual use for combat and domestic missions and are fielded to applicable units.

c. National Guard Bureau

The responsibility for modernizing and procuring WMD-CST R/N equipment still has not been realigned to another DoD program since the 2019 Defense Wide Review (DWR) decision divested the CBDP of this responsibility. If this responsibility is not realigned to an appropriate DoD program, NGB cannot develop, procure, and modernize WMD-CST R/N detection and identification equipment.

The strategy to mitigate these two developments includes leveraging future procurement dollars to support the required detection, identification, and mitigation of agents; improve search and rescue and communications capability; and seek other DoD offices (such as Joint Program Executive Office (JPEO)-CBRN or the Defense Threat Reduction Agency) that can support development, procurement, and program management capabilities lost by the divestiture of the CBDP. Using an alternate program office may preclude establishing PORs and modernizing the materiel solution once it is developed and fielded.

Further, NGB continues to pursue POR for equipment to accomplish the full CRE mission by documenting the requirement, validating the resources, and supporting research, development, and procurement of the solution. NGB is currently developing necessary documentation to obtain POR status for NTA Detection and CIMS requirements. In recent years, NGB coordinated with the JPEO-CBRN and funded the COTS modernization process to experiment with using Unmanned Aerial Vehicles to perform rapid search and rescue reconnaissance.

E. Statement of Accuracy and Certification Relating to National Guard Equipment

Section 10541(d) of Title 10, U.S.C. requires this report to provide (1) a statement of the accuracy of the National Guard equipment inventory projection reported in previous NGRERs, and (2) a certification by the CNGB of the inventory of equipment items that were due procurement for the National Guard in the preceding fiscal year, but were not

received. Figure B-1 provides a CNGB memorandum regarding “Certification and Statement of Accuracy to Accompany the Annual National Guard and Reserve Component Report.”

F. Army National Guard

The transparency process, in accordance with the FY 2008 National Defense Authorization Act, provides the auditable path of approved funding and new procurement quantities enacted to track appropriated funds and requirements through the acquisition cycle to equipment delivery. Army Regulation 700-142 codifies roles and responsibilities for Transparency Stakeholders with the Assistant Secretary of the Army for Acquisition, Logistics and Technology identified as the overall Army policy lead for Army Transparency.

The current Army capability to systematically trace fielded equipment back to the procurement appropriation year lacks the fidelity required for the ARNG to certify the Equipment Transparency Report. Improvements have been made to the accounting process using Item Unique Identification (IUID) over the past year through a collaborative, automated collection tool in the Army Equipping Enterprise System, which, for the first time, has allowed the ARNG to certify a portion of the deliveries completed from FY 2013 appropriations forward. Using a multi-disciplinary method, the ARNG was able to verify and account for all equipment transactions from Appropriation Years FY 2012–FY 2014. As the Army increases data collection methods using web-based capability improvements, the ARNG is confident full transparency using IUID and enterprise business intelligence system is achievable to the level of transparency and accuracy expected by Congress. The Army will continue to improve data collection methods through web-based capability improvements, and intends to achieve full transparency using IUID as part of Global Combat Support System–Army (GCSS-Army). The Army modified the auditability process to use investment dollar and quantity databases as the reference to audit the transactions because of continuing P-1 and P-1R Form inconsistencies and LIN quantity suppression below the Acquisition Category I level.

The Army continues to develop improved data collection/data sharing functional databases across the Army Enterprise. Leveraging emerging business intelligence platforms, the Army is better postured to provide improved analysis that supports the transparency and fidelity of programmatic decisions. As DoD and the Army review IUID implementation policies and guidance, senior leaders and Congress should obtain better budgetary and programmatic performance analysis support for the National Defense Strategy. The current efforts, led by the Army, provide the ARNG the ability to trace decisions to defund a program with pending deliveries. With this information, the ARNG was able to verify a program to be closed and acknowledge the non-receipt of equipment. This example highlights that although the ARNG may not always receive projected equipment, it can now certify and have transparency on program performance and fielding decisions. The ARNG will continue to work with the Army

as the Executive Reporting Agent to Congress on Transparency to certify equipment delivery and the transparency of program performances to support ARNG modernization.

G. Air National Guard

The ANG has nearly completed the migration from the Air Force Equipment Management System to DPAS for equipment. ANG vehicles are totally managed using DPAS. The ANG is assured that the data provided by DPAS will enable more effective and efficient resource decision-making. The ANG uses DPAS as the Financial Improvement and Audit Readiness compliant system of record for equipment and vehicles, and is standardizing the order, update, transfer, and disposal of assets using this new system.

As the ANG migrates to DPAS, it is encouraged by the addition of the capability to define equipment authorizations versus on-hand balances. This capability brings added reliability to the data obtained from the single information system and enables base-level users and command managers to validate programmatic requirements. Eventually, DPAS will enable the ANG's 90 wings to adjust to and gain understanding of what the system offers in long-term planning and provide immediate accountability in a standardized manner.

The ANG continues to prioritize auditability and accountability of equipment and vehicles for its units. However, challenges frustrate some ANG efforts to adapt to the new system. Implementing such a complex data migration plan while processing supply demands for ongoing operations resulted in instances when data was unavailable because of migration errors or when ANG materiel managers could not depend on the data to make data-driven resource decisions. Other challenges include unique ANG requirements, lingering requisitions, order prioritization, and warehousing functionality limitations. ANG materiel management subject matter experts are working closely with their AF counterparts to identify challenges and communicate lessons learned to the system development team to overcome these obstacles.

The ANG remains committed to ensuring its processes result in defensible, repeatable, and auditable logistics readiness functions. The ANG is certain that as DPAS matures and the ANG learns more about its capabilities, this system will make producing a timely, accurate, and complete view of the state of equipment and vehicles in the ANG possible. The ANG believes DPAS will be a system of record that will enhance the information provided in future National Guard and Reserve Equipment Reports.

Appendix C

Principles of Modernization

Reporting Requirements

The Appropriations Subcommittee on Defense reinforced their continued support for maintaining fully modernized reserve components in the Committee on Appropriations, Senate Report 114-263, accompanying the Department of Defense Appropriations Bill, 2017. In their report, they noted that the codification of modernization principles would better allow for transparent appropriation decisions and thus directed the Secretary of Defense to promulgate service standards for reporting modern equipment. The Department responded to this requirement in the FY 2018 NGRER. The Department asked each of the Military Services to provide their definition of modern equipment and outline principles to develop an overarching definition that could be used department-wide. Based on the variation of this input, the Department determined that the term “modern equipment” was too vague and did not lend itself to a single definition. Instead, the Department presented a “modernization model” which proposed modernization criteria and defined standards by which the deployment of Forces could be best planned.

Modernization Model

The modernization model helps categorize equipment within a spectrum of “modernization” using a capability-based equipment planning diagram (Figure C-1). Within this appropriations planning tool, equipment is divided into three specific categories: cutting edge equipment, globally deployable equipment, and not globally deployable equipment, with distinct criteria for each. The model is designed to focus attention on the level of risk being assumed and to help make investment decisions (upgrade, replace, new procurement, or divest).¹

The model shows how centrifugal forces such as age, pace of technological advances, and overall capability push equipment “outward” toward obsolescence, while investment in new procurement and upgrades serve as the force propelling equipment “inward” toward cutting edge capability.

¹Upgrade means to integrate new technology into existing equipment. Replace means to exchange existing equipment with newer equipment through redistribution or cascading. New Procurement means to supplant existing equipment with newly purchased equipment. Divest means to dispose of outdated equipment no longer needed in the inventory.

Cutting Edge Equipment is a platform or piece of equipment that completely incorporates the latest technology and innovation. There are no components or sub-components which have upgrades or replacements identified and ready to be fielded. This equipment is within 10 years of its initial operating capability, a gauge of time at which consideration should be given to assessing the equipment and technologies that exist to upgrade, replace, or identify it as no longer “Cutting Edge.”

Globally Deployable Equipment includes Cutting Edge Equipment and equipment which meets the minimum standards for deployment and mission capability into all planned operating environments for that specific equipment, including all combatant command areas of responsibility, including non-permissive and contested environments. This equipment must be 1) technically compatible across associated joint and combined forces organizations and 2) logistically

supportable—sufficiently sustainable in any deployment environment with existing maintenance support and supply chain.

Not Globally Deployable Equipment is all equipment that does not meet the criteria to be categorized as Globally Deployable or Cutting Edge Equipment. This equipment may be capable to meet mission requirements in certain operational requirements or deploy to certain combatant command areas of responsibility, but is not appropriate for use in a planned operating environment.

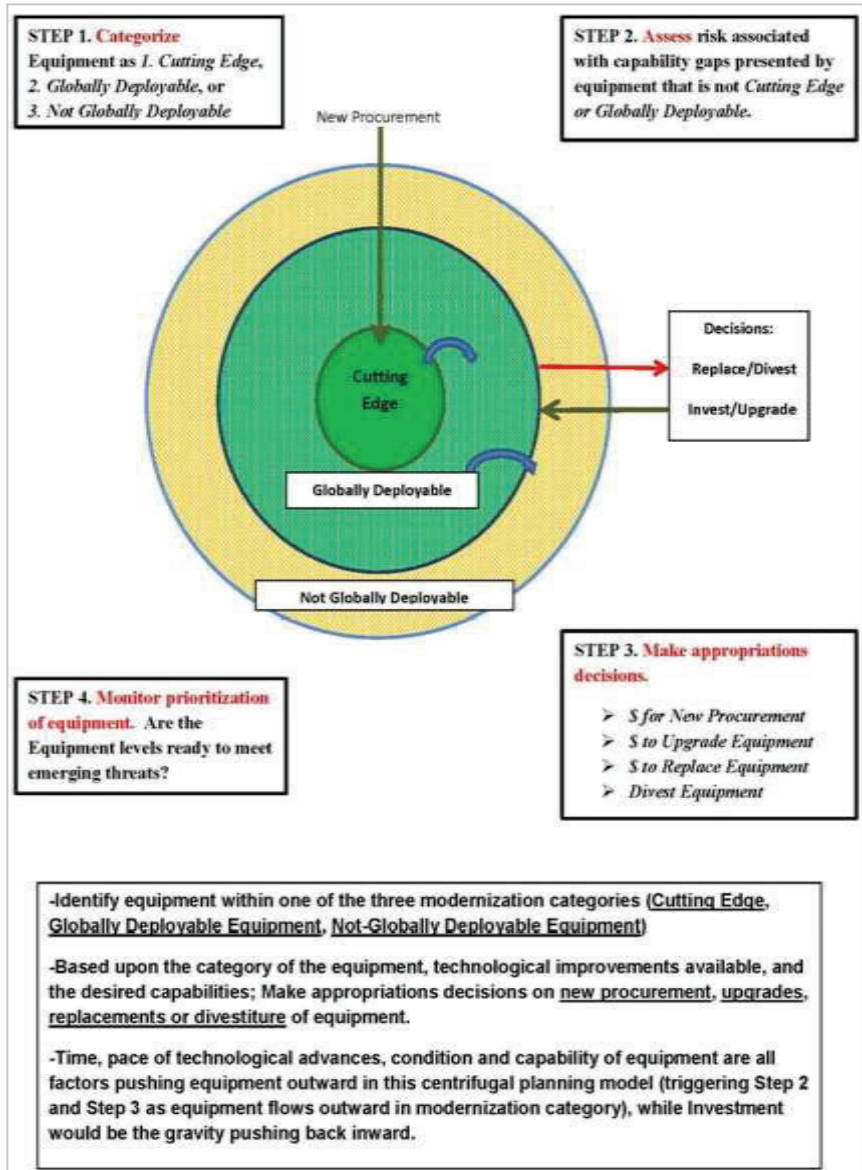


Figure C-1 Codification of Modernization Principles

Example: Heavy Dump Truck (HDT)

Capability Description: The M917A3 Heavy Dump Truck is a 27T vehicle based off a commercial platform. It is procured with an armor solution that is in compliance with the Long-Term Armor Strategy but can be operated with or without armor. The HDT supports construction and maintenance of main supply routes, logistical facilities, helipads, airfields, landing strips, motor pools and parking areas during contingency operations. It also supports construction by loading, transporting and dumping payloads of sand and gravel aggregates, crushed rock, hot paving mixtures, earth, clay, rubble, and large boulders. HDT is a critical dual use item that is required for both Defense Support to Civil Authorities during disaster relief and homeland defense operations.

Fleet Composition: The COMPO-3 Army Acquisition Objective (AAO) for the HDT is 357 systems. The USAR currently has 235 systems on hand (66 percent of the AAO) of which all are legacy equipment with an average fleet age of 24 years.

Breakdown of systems is as follows:

M917A1: 162 on hand with an average fleet age of 27 years

M917A2: 73 on hand with an average fleet age of 16 years)

M917A3: zero currently on hand with 139 in procurement pipeline

Maintenance: Operational Readiness (O/R) rates of legacy systems currently stand at 48 percent over the past 6 months (AUG 21 – JAN 22). Multiplied by the current O/H at 66 percent yields an overall readiness rate of 33 percent. The cost of rebuilding the A1 and A2 variants through Depot Maintenance stands at \$474,000 while replacement with fully modernized A3 variant remains at \$435,000 (i.e. modernized replacement costs 8 percent less than materiel rebuild). This cost differential, along with existing delays in Depot Maintenance throughput, makes modernization through replacement the only viable option to bring this CDU item to acceptable readiness for COMPO-3.

Funding: Since the Army Reserve receives only 1.3 percent of the equipping base budget, the USAR purchased 90 systems with FY 2019 NGREA funds; another 139 systems are in the procurement pipeline. A pure fleet of all modernized M917A3 systems requires the USAR to purchase 218 additional systems at a cost of approximately \$95 million. Replacing only the M917A1 systems with the modernized M917A3 requires a purchase of 145 systems at a cost of approximately \$63 million.

Industry: Mack Defense represents the sole provider of the M917A3 system for the Army. Mack Defense built a new production facility for the HDT when the Army originally intended to procure over 1,000 HDT, but this line is a risk due to only receiving orders for 150 HDT through FY 2022.

Other Considerations: Pure fleet procurement of modernized HDTs standardizes all systems across the Army Reserve and resets the fleet age to zero. A pure fleet reduces risk of industry production shortfalls and avoids the costly and time-consuming requirement to re-bid production as future needs arise. Replacing only the A1 variants modernizes 80 percent of Army Reserve HDT systems and reduces the average fleet age to 3.3 years but risks the ability to modernize the remaining 20 percent on the current contract.

Summary: As the number three Critical Dual Use system for COMPO-3, the HDT remains at 33 percent operational readiness rate, limiting commanders' battlefield mobility and the USAR's ability to provide engineering support during DSCA operations. Maintenance and rebuild efforts cannot maintain the pace of breakdowns with an aging fleet (average 24 years). Current NGREA and base funding provides modernization to 39 percent of the systems in COMPO-3. Replacement remains the only viable option to bring readiness to operational standards.

Appendix D

Joint Assessment on Efforts to Achieve Parity (Army)



DEPARTMENT OF THE ARMY
WASHINGTON DC 20310

16 DEC 2021

MEMORANDUM FOR Deputy Assistant Secretary of Defense for Readiness, 1500
Defense Pentagon, Washington, DC 20301-1500

SUBJECT: Joint Parity Assessment National Guard and Reserve Component
Equipment Report

1. References: Title 10 United States Code, Section 10541, "National Guard and Reserve Component Equipment: Annual Report to Congress."
 2. In accordance with the reference, we submit our joint assessment on the efforts to achieve parity of modernized equipment for Fiscal Year 2023 (FY23) among the Regular Army, Army National Guard, and Army Reserve with the enclosed report (National Guard and Reserve Component Equipment Report). This assessment reveals that although the Army lacks full equipping parity across all capabilities and formations, the Army modernization efforts and investments are being arrayed to ensure interoperability, deployability, and sustainability.
 3. The Army is committed to modernizing the Regular Army, Army National Guard, and Army Reserve to ensure like formations are combat-effective and interoperable. The Army manages parity between like-component formations and equips units based on Combatant Commanders requirements and employment timelines supporting the National Defense Strategy within the resources available. Based on this year's strategic assessment, projected major equipment distribution was reduced in two of the seven systems in the Reserve Components. The major contributing factors to these reductions include fiscal pressure as well as slowed procurement timelines.
 4. The Regionally Aligned Modernization Model (ReARMM) reached initial operational capability in FY22 and will influence the prioritization and pace of modernization once fully implemented in FY23. The ReARMM is the Army's force generation model designed to respond to the demands of combatant commands, while creating the space and time to modernize the force through predictability, stability, and synchronization.
-

SUBJECT: Joint Parity Assessment National Guard and Reserve Component
Equipment Report

5. The point of contact for this memorandum is Lieutenant Colonel (P) David K. Moser,
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Encl
as

CF:
Assistant Secretary of the Army (Manpower and Reserve Affairs)
Director, Army National Guard
Chief, Army Reserve

Appendix D

Joint Assessment on Efforts to Achieve Parity (Army)

This is the fourth annual joint (CSA and CNGB) assessment of the Army's efforts to achieve parity as required by the amended Section 111 of the 2019 National Defense Authorization Act (NDAA), 10541 of Title 10, U.S.C. Title 10 USC 10541 directed an assessment of the modernization and parity of five systems: Abrams, Bradley, Stryker, Apache, and Black Hawk.¹ The three Army components agreed to include two additional systems for modernization assessment. The first is the Joint Battle Command–Platform (JBC-P) because it affects interoperability across the components. The second is the Load Handling System (LHS) Compatible Water Tank Rack (HIPPO) with 2,000-Gallon capacity because it is a critical materiel solution for Large Scale Combat Operations gap #4 and a crucial Critical Dual Use item. The Army's top priority through 2022 is rebuilding warfighting readiness. As the Army rebuilds readiness, there will be simultaneous efforts on research and development for the six modernization priorities: Long-Range Precision Fires, Next Generation Combat Vehicles, Future Vertical Lift, Air and Missile Defense Capabilities, Army Network, and Soldier Lethality.

The Army assessed modernization and parity among the separate components by comparing each system's total component requirement against the system's "modern" and "most modern" variants for FY 2022 and the latest Army approved position of FY 2027.² The Army identified all the line item numbers (LINs) of these systems, their MOD level (as described below), and their authorization and on-hand quantities³ by component for FY 2022 and FY 2027.⁴ The analysis included a summary of requirements, on-hand quantities, and a parity assessment for the five high-priority items of equipment required by Title 10 U.S.C. 10541, as well as two other items included by agreement among all components of the Army.

Definition of Modern Equipment: The Army categorizes equipment in modernization levels (MLs) based on the Acquisition Phases established in the Department of Defense 5000 instruction series. Our most modern equipment, approaching the end of Engineering, Manufacturing and Development (EMD) or in low rate initial production (LRIP), is in ML 5. This early classification facilitates documentation and planning before fielding begins. ML4 equipment is normally in full-rate production, with the Army modernizing as quickly as resources and production allow procurement. In the sustainment phase, equipment is mostly in ML3. Equipment that is no longer adequate for combat or is for training purposes only is in ML2. ML1 represents obsolete equipment Army does not authorize for documentation on a unit's Modified Table of Organization and Equipment (MTOE). To

¹H.R.5515, "John S. McCain National Defense Act for Fiscal Year 2019." Subtitle B Army Programs, SEC. 111, Amended. National Guard and Reserve Component Equipment Report.

²OSD guidance was for the Army to provide an assessment of the current year FY 2022 to FY 2025. Army compared FY 2022 to FY 2027, which is the approved Army modernization position, to provide a complete picture for the system modernization path.

³LINs data generated from the Army Common Operating Picture (AR-COP) inventory file as of date 12 July 2021.

⁴Structure and Composition System 2012 database used to depict current modernization levels and modernization levels from the Army Equipping and Enterprise System (AE2S) LIN details for July 2021.

facilitate discussion—“modern” refers to ML3 equipment and “most modern” refers to ML 4 and 5 equipment.

The one standard to measure readiness and equipping must assess how well we are modernizing equipment for all components. The objective of Army equipping is to maintain the highest level of unit readiness to provide Soldiers and formations the most modern equipment available. This one standard must distinguish between equipping readiness based on today’s requirements and the modern requirements of tomorrow.

Definition of Parity: Section 10541(b) of Title 10 requires “*a joint assessment by the Chief of Staff of the Army and the Chief of the National Guard Bureau on the efforts of the Army to achieve parity among the active component, the Army Reserve (USAR), and the Army National Guard with respect to equipment and capabilities.*”

This joint assessment will compare inventories of the following equipment in each component:

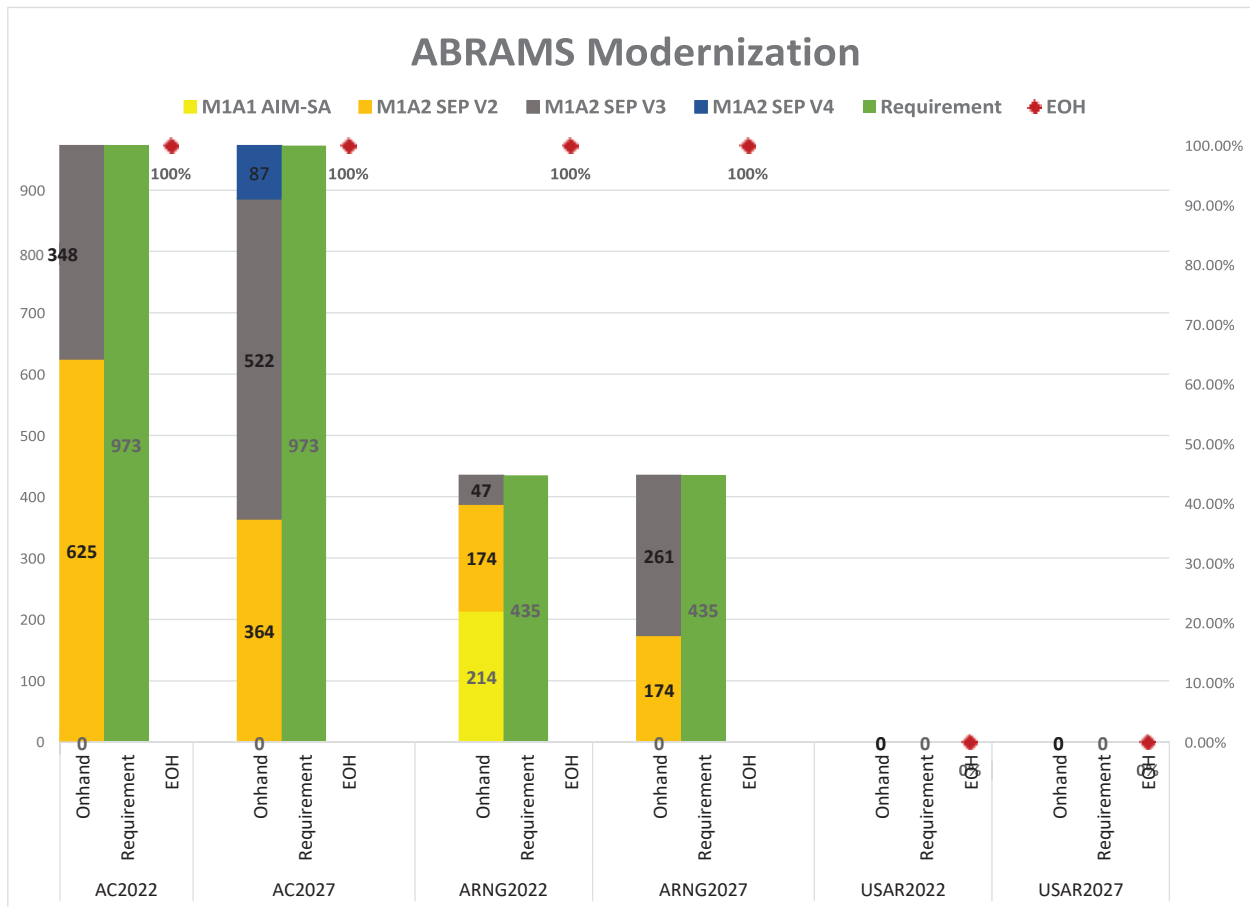
- (A) AH-64 Attack Helicopters;
- (B) UH-60 Black Hawk Utility Helicopters;
- (C) Abrams Main Battle Tanks;
- (D) Bradley Infantry Fighting Vehicles;
- (E) Stryker Combat Vehicles; and
- (F) Any other items of equipment identified as high priority by the Chief of Staff of the Army or the Chief of the National Guard Bureau.

The definition of parity as articulated in statute implies parity as being the same variant of a weapon system, platform, or capability within like formations in each component. In other words, the exact same equipment across the same MTOE units in the total Army or “pure-fleet.” However, finite resources, extended procurement, and distribution timelines limit the Army’s ability to equip all like-type formations with the same variants of key equipment. Additionally, to deter and defeat the most dangerous threats effectively, the Army must maintain capability overmatch of key weapon systems with near-peer adversaries by developing and fielding improved, more lethal capabilities to the force while simultaneously maintaining sufficient capacity. Consequently, Army leadership will assume risk by fielding some formations with less modern but still interoperable and capable variants of key systems to balance capability and capacity requirements.

A. Joint Assessment

The Army remains focused on transforming into the Multi-Domain Army of 2035. During transformation, the Army must maintain readiness to fulfill joint force requirements while ensuring modernization. The Army’s Regionally Aligned Readiness and Modernization Model (ReARMM) provides ready Army forces to combatant commanders while providing dedicated times for its units to modernize. Of the seven systems assessed, the Army has sufficient MOD level 3 and 4 equipment on hand to meet priority mission requirements. However, a higher percentage of MOD level 4 items reside in the Active Component (AC) (COMPO 1) as guided by the ReARMM framework and available resources.

A. Abrams Main Battle Tank



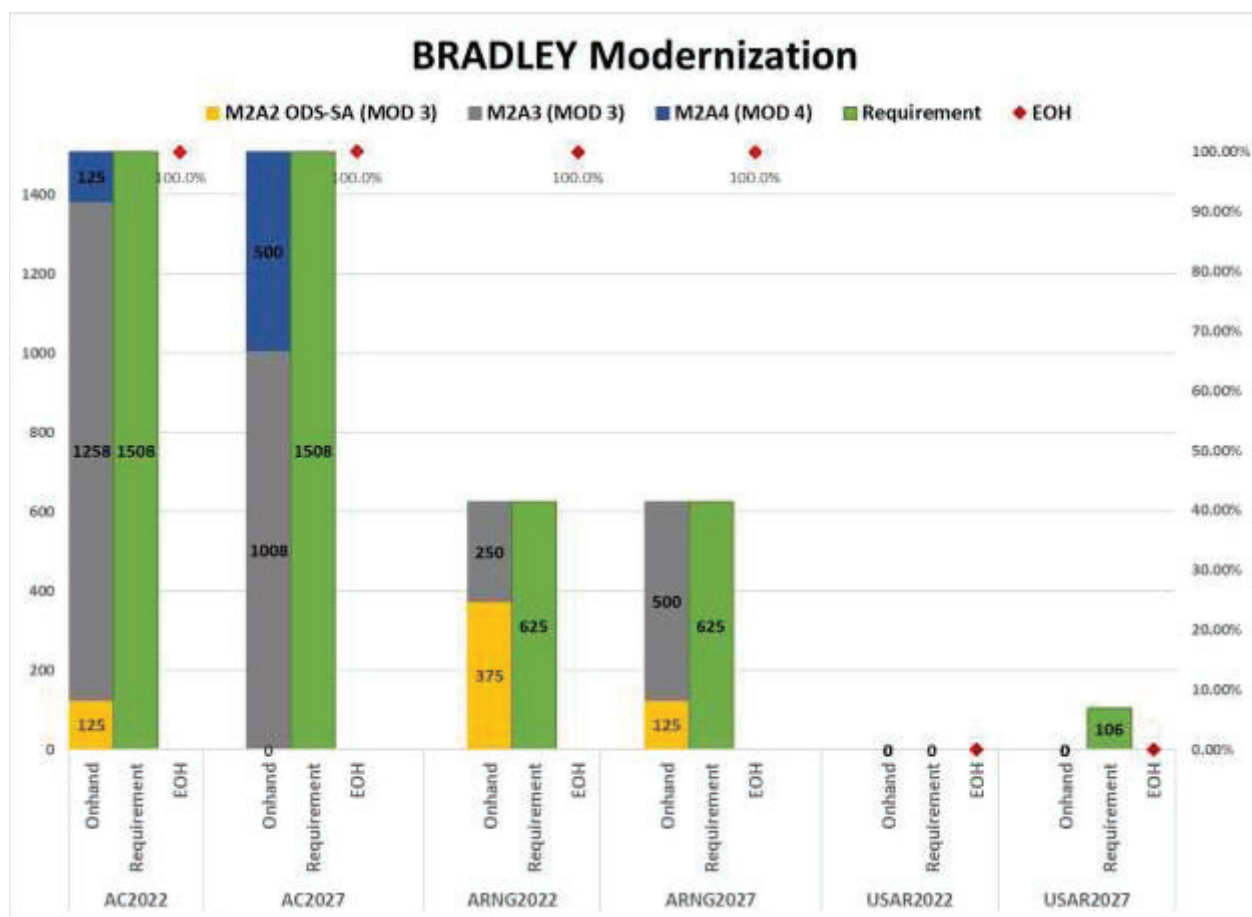
	AC2022	AC2027	ARNG2022	ARNG2027	USAR2022	USAR2027
M1A1 AIM-SA	0	0	214	0	0	0
M1A2 SEP V2	625	364	174	174	0	0
M1A2 SEP V3	348	522	47	261	0	0
M1A2 SEP V4	0	87	0	0	0	0
Requirement	973	973	435	435	0	0
EOH	100%	100%	100%	100%	N/A	N/A

The Army currently employs three variants of the Abrams tank: M1A1 AIM-SA, M1A2 SEP v2, and the M1A2 SEPv3. The newest tank, the M1A2 SEPv3, is in production and was fielded to the first unit equipped, the Army Preposition Stocks (APS) in Europe, in FY 2020, driving an increase in requirements for the AC. The Army plans to field three-quarters of an Armored Brigade Combat Team (ABCT) per year beginning in FY 2022. Per Headquarters, Department of the Army (HQDA), Executive Order (EXORD) 267-20, Modernization of Abrams and Bradley Fleets, the M1A2 SEPv3 will be fielded to APS (Set# 1), AC units (Set# 2–6), and Army National Guard (ARNG) (Set# 7–9) to replace the M1A1 AIM-SA, between FY 2023–FY 2025.

Beginning in FY 2027, the M1A2 program of record will see a substantial lethality enhancement with the adoption of the M1A2 SEpv4 systems. The M1A2 SEpv4 will be fielded with 3rd Generation Forward Looking Infrared, improved Commander and Driver’s Primary Sights, engine fuel usage and reliability improvements, and an improved thermal management system (electric).

Parity Assessment. The Army is committed to continuing Abrams modernization at a rate of three-quarters of an ABCT per year beginning in FY22. The first three ABCTs, APS (Europe) and 3rd Brigade Combat Team, 1st Cavalry Division (3/1 CD) received their M1A2 SEpv3 tanks in late FY 2020. The 2nd Brigade Combat Team, 1st Cavalry Division (2/1 CD) and TRADOC received their M1A2 SEpv3 tanks in early to mid-FY 2021. At this three-quarters of an ABCT per year modernization rate, the Army expects to achieve parity by FY 2042.

B. Bradley Fighting Vehicle



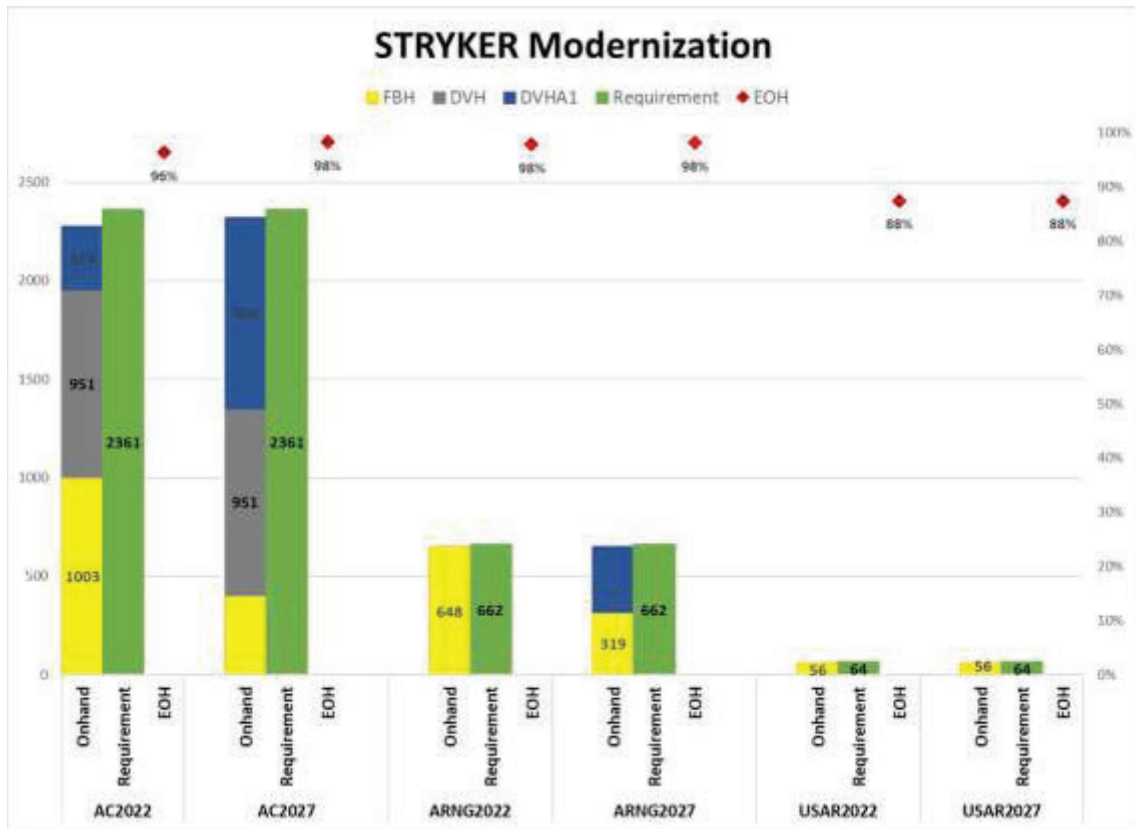
	AC2022	AC2027	ARNG2022	ARNG2027	USAR2022	USAR2027
M2A2 ODS-SA (MOD 3)	125	0	375	125	0	0
M2A3 (MOD 3)	1258	1008	250	500	0	0
M2A4 (MOD 4)	125	500	0	0	0	0
Requirement	1508	1508	625	625	0	106
EOH	100%	100%	100%	100%	N/A	0%

The Army currently employs two Bradley variants for training and operations: M2A2 ODS-SA and the M2A3. The newest upgrade to the Bradley, the M2A4, is in initial production and will begin fielding in FY 2022. The Army will field one ABCT set per year in FY 2022, 2023, and 2025. As the Army fields the M2A4 to AC units, displaced M2A3s will cascade to the remaining ABCT ARNG units. In addition, a recent force structure changes adds a requirement for 106 M2A3s for USAR Engineer Battalions. The Army intends to resource this requirement with cascaded equipment after OMFV production and fielding begin (not earlier than 2030).

There is minimal operational risk with having four ABCTs (1xAC / 3xARNG) equipped with the M2A2 ODS-SA. The AC units will retain the ODS-SA Bradley variant until 1Q FY 2022. Two ARNG ABCTs will receive cascaded M2A3s by the end of FY25. The Army plans to procure and field its final ABCT set of M2A4s by FY 2030 and cascade M2A3s to the final ODS-SA equipped ARNG ABCT, but resources have yet to be programmed for this final ABCT set of M2A4s. This is a change from the plan as it stood last year because of fiscal pressures. The M2A3 and ODS-SA vehicles are largely similar, with the primary difference that the M2A3 is equipped with the Commander's Independent Viewer (CIV), a thermal sight which enhances the survivability and lethality of the M2A3 variant.

Parity Assessment. The ARNG will receive M2A3 variants from the AC beginning in FY 2023. Once the planned fielding of the cascaded equipment is complete in FY 2030 or beyond, ARNG ABCTs will be pure fleeted with the M2A3 variant. AC ABCTs will have a mix of M2A3s and M2A4s.

C. Stryker Vehicle



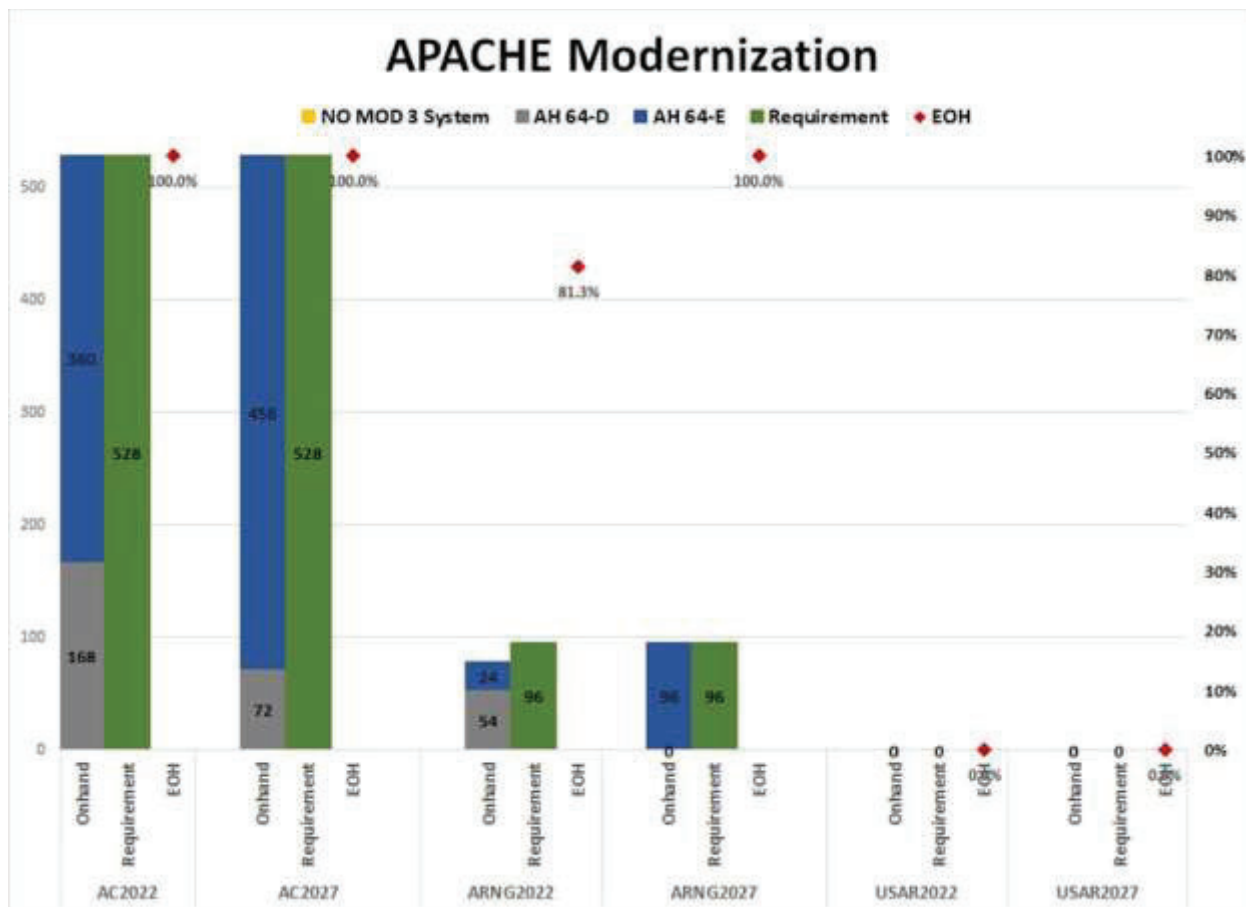
	AC2022	AC2027	ARNG2022	ARNG2027	USAR2022	USAR2027
FBH	1003	401	648	319	56	56
DVH	951	951	0	0	0	0
DVHA1	323	969	0	331	0	0
Requirement	2361	2361	662	662	64	64
EOH	96%	98%	98%	98%	88%	88%

Currently, there are nine Stryker Brigade Combat Teams (SBCTs) in the Army: one Double-V Hull A1 (DVHA1) SBCT, three Double-V Hull (DVH) SBCTs, and five Flat Bottom Hull (FBH) SBCTs. The seven AC SBCTs are comprised of: one DVHA1, three DVH, and three FBH. There are two FBH Stryker BCTs in the ARNG. There are 56 Nuclear Biological Chemical Reconnaissance Stryker variants (FBH MOD3) in the Army Reserve.

Stryker modernization includes two parallel efforts: FBH to DVHA1 conversions and lethality upgrades. Lethality enhancements include upgrading remote weapon stations to Common Remotely Operated Weapon Station-Javelin systems; upgrading the Tube-launched, Optically Tracked, Wire-guided missile launch systems; and integrating a 30mm Medium Caliber Weapon System in an unmanned turret. The FBH SBCTs (three AC and two ARNG) have greater strategic mobility but reduced protection to underbelly blast when compared to the DVH SBCTs.

Parity Assessment. The current procurement plan to upgrade to the DHVA1 spans approximately 14 years. The DVHA1 fielding will occur FY 2021–FY 2030 for six SBCTs comprising four COMPO 1 SBCTs (2/4 ID currently receiving their allotment of DVHA1) and two COMPO 2 SBCTs (81st and 56th SBCTs, beginning in ~FY 2026) to achieve full DVHA1 modernization. The Army is at parity for the NBCRV fleet and expects to achieve parity across the rest of the Stryker fleet by FY 2030.

D. AH-64 Apache



	AC2022	AC2027	ARNG2022	ARNG2027	USAR2022	USAR2027
NO MOD 3 System	0	0	0	0	0	0
AH 64-D	168	72	54	0	0	0
AH 64-E	360	456	24	96	0	0
Requirement	528	528	96	96	0	0
EOH	100%	100%	81%	100%	N/A	N/A

The Army has two variants of Apache in inventory, the AH-64D (enduring) and the AH-64E (objective) which is the most modernized version of the Apache in the inventory.

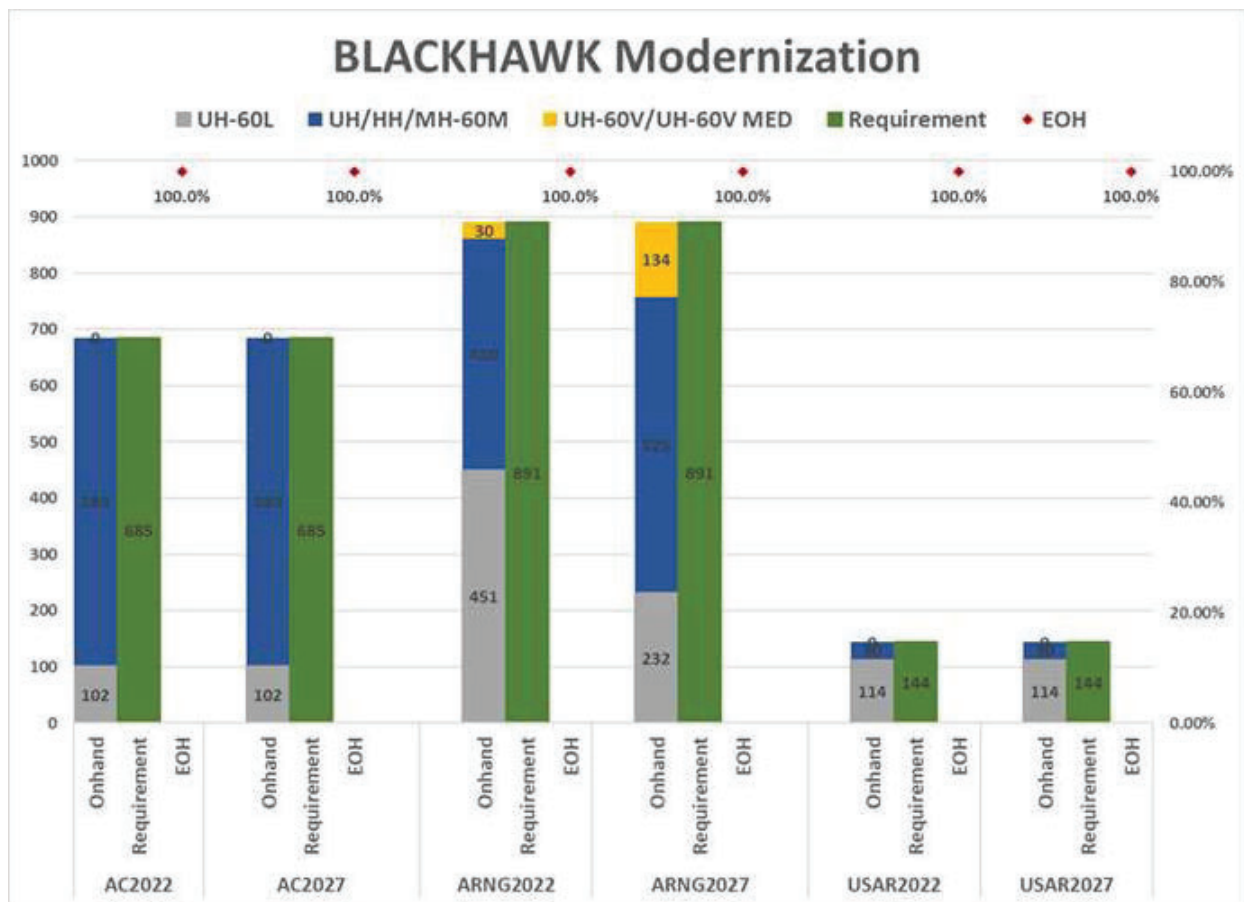
The modernization strategy for Apache is the remanufacture of the current AH-64D using a new airframe and re-using over 700 parts. Improvements to the AH-64E include improved drive and

propulsion systems, composite main rotor blades, unmanned aircraft system (UAS) level III-IV control, improved communications suite, Link-16 radio, Removable Crashworthy Fuel System, Maritime Targeting Mode on the Fire Control Radar, Modernized Radar Frequency Interferometer, Image Blending, multi-mode laser, Joint Air Ground Munition (JAGM), and many others. These improvements make the AH-64E the premier Attack Helicopter in the world for the foreseeable future.

The Army will field all 4 ARNG Attack Reconnaissance Battalions with 24 of 24 required AH-64Es in FY 2022, FY 2023, FY 2025, and FY 2026 (a total of 96 airframes). The Active Component will only field 20 of 22 AH-64E battalions and will retain two D-model battalions until the Army fields Future Attack Reconnaissance Aircraft beginning in FY 2030/2031 timeframe. The risks associated with a mixed fleet of AH-64 variants include the requirement to maintain separate prescribed load list/supply chains, redundant maintenance support for both fleets, interoperability issues, training issues at the institutional and at the unit level, and obsolescence issues.

Parity Assessment. Under the current fielding plan, the Army expects to achieve parity for the AH-64E in the ARNG by FY 2026.

E. H-60 Black Hawk



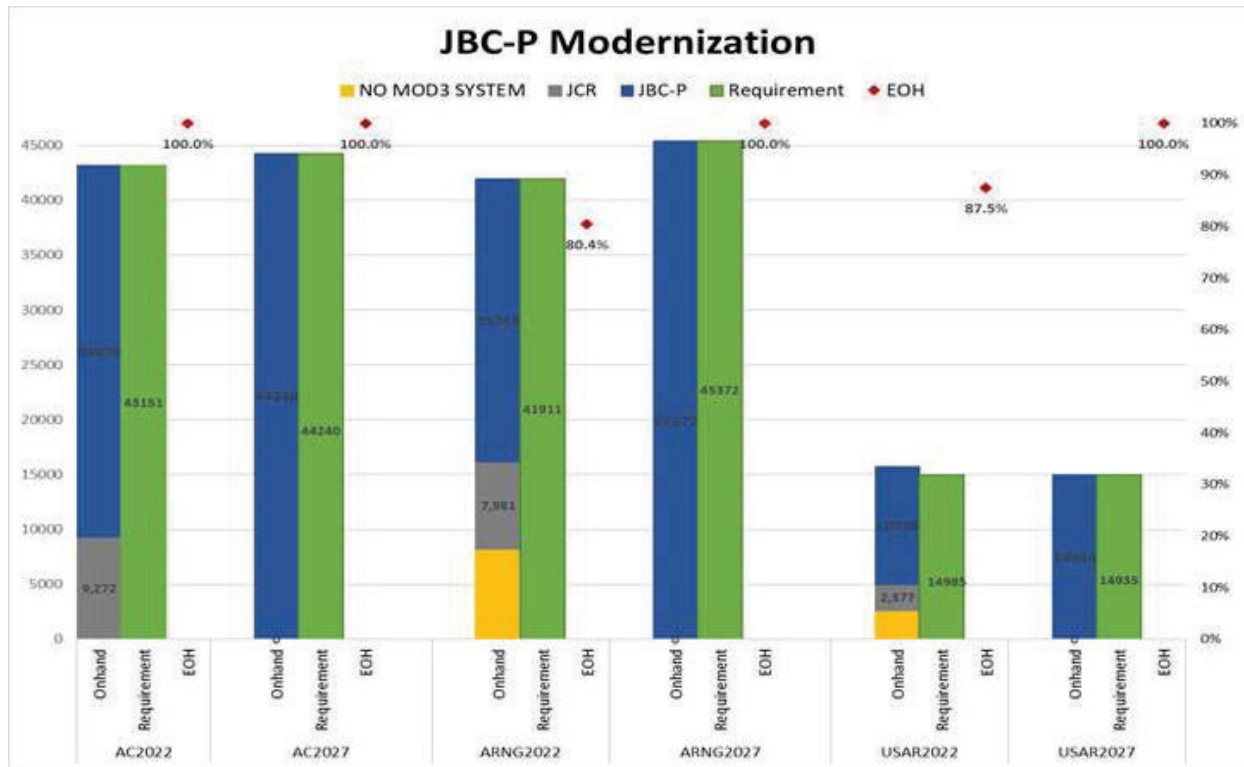
	AC2022	AC2027	ARNG2022	ARNG2027	USAR2022	USAR2027
UH-60A	0	0	0	0	0	0
UH-60L	102	102	451	232	114	114
UH/HH/MH-60M	583	583	410	525	30	30
UH-60V/UH-60V MED	0	0	30	134	0	0
Requirement	685	685	891	891	144	144
EOH	100%	100%	100%	100%	100%	100%

The Black Hawk is the only multi-purpose medium-lift helicopter in the Army’s inventory. During FY 2022–FY 2027, 6 Black Hawk variants (UH-60M/HH-60M/UH-60V/UH-60V MED/UH-60L/UH-60L MED) will fully support Army Utility Helicopter operational mission requirements.

The Army remains on track to divest all assigned UH-60A aircraft by FY 2024, thus completing a critical phase in Utility Helicopter modernization. H-60M procurement ends in FY 2026 with final (Army-wide) fielding in FY28. H-60V Cockpit Kit procurement is currently projected to end in FY 2030 with final (Army-wide) H-60V fielding in FY 2034. Modernization within the Army National Guard will be accomplished through the procurement of new build H-60M aircraft and the fielding of the recapitalized H-60V variant. By the end of FY 2027, the ARNG Black Hawk fleet will consist of 891 UH-60 aircraft: 232 UH-60L, 525 H-60M, and 134 UH-60V, driven by changes in resourcing strategy. The 891 ARNG Black Hawks will support MTOE and Augmented TDA (AUGTDA) unit requirements. An additional 30 aircraft are authorized for Table of Distribution and Allowances (TDA) units and are not typically accounted for in NGRER data submissions. The total ARNG Black Hawk requirement is 921 aircraft.

Parity Assessment. Fulfillment of the ARNG’s end-state requirement of 921 modernized Black Hawks (H-60M/V) will occur in FY 2034, based on completion of H-60M fielding in FY 2027 and H-60V in FY 2034. Future Force Structure decisions could impact the Army’s ability to meet FY 2034 objectives.

F. Joint Battle Command–Platform (JBC-P)



	AC2022	AC2027	ARNG2022	ARNG2027	USAR2022	USAR2027
MOD3 SYSTEM	0	0	8212	0	2608	0
JCR	9272	0	7981	0	2377	0
JBC-P	33879	44240	25718	45372	10738	14935
Requirement	43151	44240	41911	45372	14985	14935
EOH	100%	100%	80%	100%	88%	100%

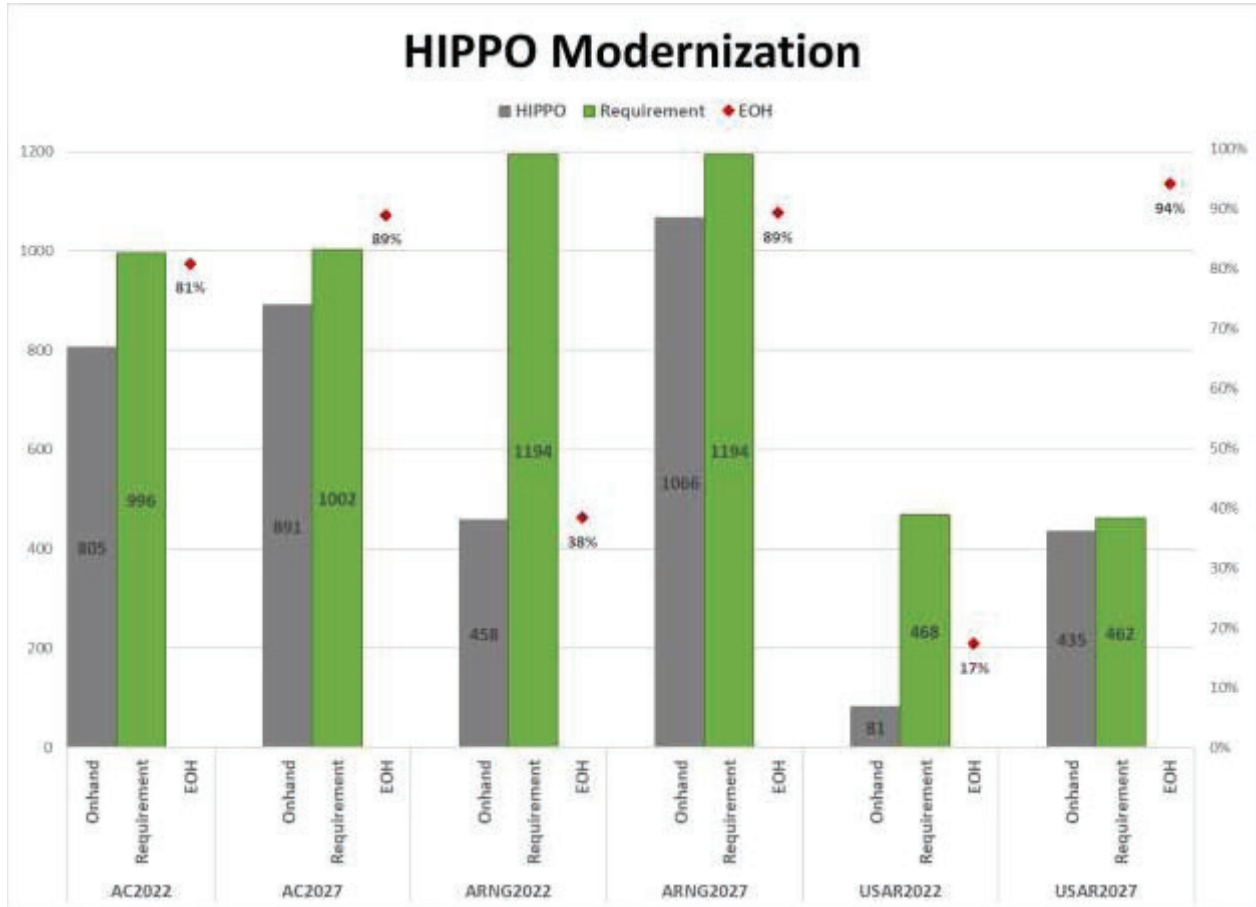
The JBC-P provides Mission Command-on-the-Move and situational awareness across all echelons and formation types. As part of the Mission Command modernization strategy, the Army chose to include JBC-P as an additional system in this report to highlight the importance of mission command interoperability to meet the Army’s requirements in Multi-Domain and Joint operations.

The Army is modernizing the JBC-P family of systems by divesting the Joint Capabilities Release (JCR) and replacing it with the JBC-P. The Army is accelerating the fielding of the newest generation of JBC-P computing software/hardware throughout FY 2022–FY 2025 to address a significant cyber vulnerability of legacy BFT systems, leverage improved capabilities, and get the Army on a common software baseline. The Army accelerated this replacement by increasing JBC-P investments by \$781 million above the previous base in FY 2017–FY 2022.

Parity Assessment. The Army is reviewing requirements to ensure they provide fully interoperable Command and Control and situational awareness capabilities to the Total Force. This review resulted in a correction of previous requirements and is reflected as growth from last year’s report. Further

analysis may increase the objective end-state requirements as Army Force Structure continues to evolve—influencing what is parity and when we achieve it. The Army expects to pure-fleet JBC-P to the Army Procurement Objective by FY 2025.

G. Load Handling System (LHS): 2,000 Gallon Comp Water Tank-Rack (HIPPO)



	AC2022	AC2027	ARNG2022	ARNG2027	USAR2022	USAR2027
FAWPSS	0	0	0	0	0	0
HIPPO	805	891	458	1066	81	435
NO MOD5 System	0	0	0	0	0	0
Requirement	996	1002	1194	1194	468	462
EOH	81%	89%	38%	89%	17%	94%

The HIPPO is the LHS Compatible Water Tank Rack System (HIPPO) with a 2,000-gallon potable water tank mounted in an International Organization for Standardization frame. The HIPPO has freeze protection and has a water pump, hose reel, and filling station. It can execute bulk load and discharge, retail distribution, and bulk storage of potable water. The HIPPOs replaced the 3,000 gallon Semi-Trailer Mounted Fabric Tank and most Forward Area Water Point Supply systems.

The HIPPO provides unit distribution and supply point distribution capability to our force. The Army will employ the HIPPO throughout the theater of operations and as far forward as the Brigade Support

Area (BSA). The HIPPO will support combat arms, combat service, and combat service support units within the corps/division area. The HIPPO allows water transport directly from water purification points to the supported maneuver units.

Consistent with the Army's equipping priorities, the Active Component has been filled to nearly 80 percent of its requirement with prior year funding.

Parity Assessment. Army National Guard and Army Reserves, currently filled at 40 percent and 10 percent respectively, are projected to receive the majority of HIPPOs over the next several years. The Army expects both the Army National Guard and Army Reserves to attain parity by FY 2028.

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Appendix F Acronym Glossary

Acronym	Nomenclature
AAO	Approved Acquisition Objective (Marine Corps)
AAV	amphibious assault vehicle
ABCT	Armored Brigade Combat Team
AC	Active Component
ACA	Aerospace Control Alert
ACC	Air Combat Command
ACS	Agile Combat Support
ACV	Amphibious Combat Vehicle
ADS-B	Automatic Dependent Surveillance-Broadcast
AEA	airborne electronic attack
AEG	Army Equipping Guidance
AESA	Active Electronically Scanned Array
AFB	Air Force base
AFR	Air Force Reserve
AFRC	Air Force Reserve Command
AFSOC	Air Force Special Operations Command
AFSPC	Air Force Space Command
AGSE	aviation ground support equipment
AH	attack helicopter
AIFF	advanced identification, friend or foe
AM	amplitude modulation
AMC	Air Mobility Command (Air Force)
AMCM	airborne mine countermeasures
AMD	Air and Missile Defense
AMP	Avionics Modernization Program
ANG	Air National Guard
AOG	Air Operations Group
AR	Army Reserve
ARB	Air Reserve Base (Air Force)
ARC	Air Reserve Components
ARFORGEN	Army Force Generation
ARI	Aviation Restructuring Initiative
ARNG	Army National Guard
ASW	antisubmarine warfare
ASUW	anti-surface warfare
ATM	Air Traffic Management
BA	Battlefield Airmen
BATS	Battlespace Access Training Systems
BCA	Budget Control Act of 2011
BCC	Battle Control Center (Air Force)
BCT	brigade combat team
BFRMP	Boat Forces Reserve Management Plan
BLOS	beyond line-of-sight
BOIP	Basis of Issue Plan

C2	command and control
C4I	command, control, communications, computers, and intelligence
CAF	combat air forces
CART	cargo afloat rig team
CBPS	chemical/biological protective shelter
CBRN	chemical, biological, radiological, and nuclear
CBRNE	chemical, biological, radiological, nuclear, and high-yield explosives
CBT	common bridge transport
CCDR	combatant commander
CCMD	combatant command
CCT	Combat Controller Team
CDU	Critical Dual Use
CERFP	CBRNE Enhanced Response Force Package
CFT	Conformal Fuel Tanks
CNGB	Chief, National Guard Bureau
CNIFR	Commander, Navy Information Force Reserve
CNO	Chief of Naval Operations
CNS	Communication, Navigation, Surveillance
COMBATCAM	combat camera
CONUS	continental United States
COP	common operational picture
COTS	commercial off-the-shelf
CRC	control and reporting center
CRE	CBRN Response Enterprise
CRF	Coastal Riverine Force
CROWS	Common Remotely Operated Weapon Station
CRP	Core Radio Package
CRS	coastal riverine squadron
CSS	combat service support
CST	Civil Support Team
CTC	Combat Training Center
CTOC	Counter-Transnational Organized Crime
CW	cyber warfare
DC CD&I	Deputy Commander for Combat Development and Integration
DC I&L	Deputy Commander for Installations and Logistics
DCGS	distributed common ground system
DET	Displaced Equipment Training
DHS	Department of Homeland Security
DIB	defense industrial base
DIRECT	Disaster Incident Response Communications Terminal
DMS	distributed mission sites
DMSMS	diminishing manufacturing sources and material shortages
DoD	Department of Defense
DODD	Department of Defense Directive
DoDI	Department of Defense Instruction
DOMOPS	Domestic Operations
DPAS	Defense Property Accountability System
DSCA	defense support of civil authorities
DV	distinguished visitor

EA	electronic attack
EAB	echelons above brigade
EMEDS	Expeditionary Medical Support
EMF	expeditionary medical facility
EO	electro-optical
EOD	explosive ordnance disposal
EOH	equipment on-hand
EPAWSS	Eagle Passive Active Warning Survivability System
ETR	Equipment Transparency Report
EUL	economic useful life
FAA	Federal Aviation Administration
FATS	Firearms Training Simulator
FEMA	Federal Emergency Management Agency
FIAR	Financial Improvement and Audit Readiness
FLSW	Fleet Logistics Support Wing
FM	frequency modulation
FMTV	Family of Medium Tactical Vehicles
FOC	full operational capability
FoV	Family of Vehicles
FPL	Force Protection, Large
FTU	formal training unit
FUA	Fixed Wing Utility Aircraft
FY	fiscal year
FYDP	Future Years Defense Plan
G/ATOR	Ground/Air Task Oriented Radar
GA	Guardian Angel
GBSAA	Ground-based Sense and Avoid
GCS	ground control station
GCSS-A	Global Combat Support System-Army
GFM	Global Force Management
GFMAP	Global Force Management Allocation Plan
GOTS	government off-the-shelf
GPS	Global Positioning System
HD	homeland defense
HEA	Heavy Equipment Airdrop
HEMTT	heavy expanded mobility tactical truck
HH	Hospital Helicopter
HIPPO	Load Handling System Compatible Water Tank Rack
HMEE	High Mobility Engineer Excavator
HMIT	helmet-mounted integrated targeting
HMMWV	high mobility multipurpose wheeled vehicle
HQDA	Headquarters, Department of the Army
HRF	Homeland Response Force
HSC	helicopter sea combat squadron (Navy)
HSM	helicopter maritime strike squadron
HTV	Heavy Tactical Vehicle

HYEX	Hydraulic Excavators
IBCT	Infantry Brigade Combat Team
IEW	intelligence and electronic warfare
IOC	initial operational capability
IP	Internet protocol
IR	infrared
IRST	Infrared Search and Track
ISO	International Organization for Standardization
ISR	intelligence, surveillance, and reconnaissance
ITAS	Improved Target Acquisition System
IUID	Item Unique Identification
JAB	Joint Assault Bridge
JB	Joint Base
JBC-P	Joint Battle Command-Platform
JCR	Joint Capabilities Release
JHMCS	joint helmet-mounted cueing system
JISCC	Joint Incident Site Communications Capability
JLTV	Joint Light Tactical Vehicle
JRB	joint reserve base
JRIC	Joint Reserve Intelligence Center
JSTARS	Joint Surveillance Target Attack Radar System
JTRS	Joint Tactical Radio System
kHz	kilohertz
kW	kilowatt
LAIRCM	Large Aircraft Infrared Countermeasures
LAV	light armored vehicle
LCS	littoral combat ship
LEEK	Law Enforcement Ensemble Kit
LHS	Load Handling System
LOS	line-of-sight
LSRS	littoral surveillance radar system
LTV	Light Tactical Vehicle
LVSR	Logistics Vehicle System Replacement
MAF	mobility air forces
MASS	Modular Aerial Spray System (Air Force)
MAW	Marine Aircraft Wing
MCS	Manuever Control System
MDS	mission design series
MECP	Mobile Entry Control Point
MEDEVAC	medical evacuation
MEOH	Modernized Equipment On-hand (MEOH) (Army)
MFS-TRM	Modular Fuel System-Tank Rack Module
MH	multimission helicopter
MIDS	Multi-functional Information Distribution System
MIO	maritime interdiction operations
MIRCS	Mobile Integrated Remains Collection System

MISO	military information support operations
MMCT	Multi-Mission Crew Trainers
MMEWR	Minimum Mission Essential Wartime Requirement
MPRA	maritime patrol and reconnaissance aircraft
MPRF	Maritime Patrol and Reconnaissance Force
MRAP	Mine Resistant Ambush Protected
MSC	Military Sealift Command
MTOE	modified table of organization and equipment
MTRRS	Mobile Tactical Retail Refueling System
MTV	medium tactical vehicle
MTVR	Medium Tactical Vehicle Replacement
NAS	naval air station
NAVAIR	Naval Air Systems Command
NAVELSG	Navy Expeditionary Logistics Support Group
NBC	nuclear, biological, and chemical
NBCRV	NBC Reconnaissance Vehicle
NCF	naval construction force
NCFA	National Commission on the Future of the Army
NCHB	Navy cargo handling battalion
NCR	naval construction regiment
NDAA	National Defense Authorization Act
NEIC	Navy Expeditionary Intelligence Command
NELR	Navy expeditionary logistics regiment
NET	New Equipment Training
NG	National Guard
NG CIMS	National Guard CRE Information Management System
NGB	National Guard Bureau
NGREA	National Guard and Reserve Equipment Appropriation
NGRER	National Guard and Reserve Equipment Report
NMCB	naval mobile construction battalion
NST	Network Operations Support Team
NSW	naval special warfare
NSWG	naval special warfare group
NUFEA	Navy-unique fleet-essential airlift
O&M	Operation and Maintenance
OA	Open Architecture
OASD(R)	Office of the Assistant Secretary of Defense for Readiness
OASD(R),RP&R	OADR(R), Readiness Programming and Resources
OCO	overseas contingency operations
OM	Operations Module (Air Force)
OPTEMPO	operating tempo
OSD	Office of the Secretary of Defense
OSRVT	One System Remote Video Terminal
P-1	Service Procurement Programs
P-1R	Service Procurement Programs - Reserve Components
PIM	Paladin Integrated Management
PIRL	Prioritized Integrated Requirements List

PLS	palletized load system
PPBE	Planning, Programming, Budgeting, and Execution
PPP	public-private partnerships
Prime BEEF	Prime Base Engineer Emergency Force
PRP	Personnel Retrieval and Processing
PSU	port security unit
PSU	port security unit
PWCS	ports, waterways, and coastal security
RB-S	Response Boat-Small
RC	Reserve Component
RED HORSE	Rapid Engineer Deployable Heavy Operational Repair Squadron Engineer
ERP	reliability enhancement and re-engining program
RPA	remotely piloted aircraft
RSS	Relocatable Simulator Shelter (Air Force)
RTIC	Real Time Information in the Cockpit
RWR	radar warning receiver
RWST	Reconfigurable Weapons System Trainer
S2E2	Survivable/Endurable Evolution
SABIR	Special Airborne Mission Installation and Response
SATCOM	satellite communications
SBIRS	Space-Based Infrared System
SE	support equipment
SEAL	sea-air-land
SELRES	Selected Reserve
SERE	survival, evasion, resistance, and escape
SF	security forces
SHORAD	Short Range Air Defense
SLEP	service life extension program
SLOS	secure line-of-sight
SMP	Strategic Master Plan (Air Force)
SMTC	Special Missions Training Center
SOF	special operations forces
SOW	special operations wing
SPAWAR	Space and Naval Warfare Systems Command
SPCS	space control squadron
SPPAD	Single Pass Precision Airdrop
SRM	Sustainable Readiness Model
SRP	SPAWAR Reserve Program (SRP)
STANO	Surveillance, Target Acquisition, and Night Observation
STUAS	Small Tactical Unmanned Aircraft System
SURGEMAIN	Naval Sea Systems Command - Surge Maintenance
T/A	Training Allowance (Marine Corps)
T/E	Table of Equipment
TACP	tactical air control party
TCAS	Traffic Alert and Collision Avoidance System
TDA	Table of Distribution and Allowances (Army)

TF	Total Force
TF-C	Total Force Continuum
TOA	table of allowance (Navy)
TPSB	transportable port security boat
TSU	tactical support unit
TSW	Tactical Support Wing
TTP	tactics, techniques, and procedures
TWV	tactical wheeled vehicle
U.S.	United States
U.S.C.	United States Code
UAS	unmanned aircraft system
UDLM	unscheduled depot level maintenance
UDP	unit deployment program
UHF	ultrahigh frequency
UPL	Unfunded Priority List
USAF	United States Air Force
USAR	United States Army Reserve
USCG	United States Coast Guard
USCGR	United States Coast Guard Reserve
USMCR	United States Marine Corps Reserve
USNORTHCOM	United States Northern Command
USNR	United States Navy Reserve
USSOCOM	United States Special Operations Command
USTRANSCOM	United States Transportation Command
VAQ	tactical electronic warfare squadron (Navy)
VFA	strike fighter squadron (Navy)
VFC	fighter squadron composite (Navy)
VHF	very high frequency
VITE	Virtual Interconnected Training Environment
VP	patrol squadron (Navy)
VR	Fleet Logistics Support Squadron (Navy)
WIN-T	Warfighter Information Network-Tactical
WMD	weapons of mass destruction
WMD-CST	Weapons of Mass Destruction - Civil Support Team
WR-ALC	Warner Robins Air Logistics Center



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