



# Saving the Government Money

Recent Examples from RAND's National Security–Related Federally Funded Research and Development Centers

AND's federally funded research and development centers (FFRDCs) help the U.S. government organizations responsible for national defense and homeland security meet novel and urgent challenges that call for both (1) sustained analytic attention from multidisciplinary teams over many years and (2) trust engendered by rigorous safeguards against conflicts of interest and financial entanglements typical of commercial contractors.

An enduring collaboration with defense and homeland security policymakers and a commitment to the public good have allowed RAND's national security FFRDCs (see box) to develop unsurpassed expertise on issues of defense policy; homeland safety and security; and interrelated technological, operational, and financial dimensions. Often, the FFRDCs apply this research capital by helping their Department of Defense (DoD) and Department of Homeland Security (DHS) sponsors save the government money while solving national security problems. The list on page 2 illustrates projects that have saved the government money or have the potential to do so if acted on. Subsequent pages contain summaries of the projects in this list. (In some cases, publicly accessible documents are available; when this is the case, their references and links also appear at the bottom of the entry. If no reference is provided, those materials are not available to the public.) These projects are representative of numerous analyses that have been conducted within RAND's FFRDCs and have yielded similar benefits over the years. Together, the analyses account for billions of dollars in savings and cost avoidance for the federal government.

#### Defense and Homeland Security FFRDCs at RAND

#### **Arroyo Center**

Founded in 1982 at the Jet Propulsion Laboratory; moved to RAND in 1984 Sponsor: the U.S. Army

#### Homeland Security Operations and Analysis Center (HSOAC)

Founded in 2016 at RAND Sponsor: the U.S. Department of Homeland Security

#### National Defense Research Institute (NDRI)

Founded in 1984 at RAND Sponsors: the Office of the Secretary of Defense, the Joint Staff, the Unified Combatant Commands, the Navy, the Marine Corps, the defense agencies, and the defense Intelligence Community

#### Project AIR FORCE (PAF)

Founded in 1946 as Project RAND, renamed in the 1970s to distinguish work for the Department of the Air Force (DAF) from RAND work for other sponsors Sponsor: the DAF, consisting of the U.S. Air Force and U.S. Space Force

## Ways That RAND Analyses Have Saved DoD and DHS Money

RAND projects have helped the government with cost savings and cost avoidance. In some cases, savings have been achieved or are ongoing; in others, the savings are projected but not yet realized.

#### **Recent Savings Achieved, Ongoing, or Projected by RAND Research**

#### **Savings Achieved or Ongoing**

RAND Project	Saving
Preparing the Tanker Fleet for Future Operations	\$30 billion cost spike avoided between 2028 and 2038
Better Aligning Military Pay with the Civilian Market	\$17 billion saved over ten years; potential to save billions more
Helping the Federal Emergency Management Agency (FEMA) Manage Coronavirus Disease 2019 (COVID-19) Reimbursements for Hospitals and Health Systems	\$2.2 billion in recommended savings over two years; potential to save an additional \$2 billion by 2026
Cost-Effective Ways to Represent Adversary Capabilities in U.S. Air Force (USAF) Fighter Pilot Training	\$110 million cost avoidance
Improving Spare Parts Inventories for Army Brigade Combat Teams (BCTs)	\$36 million annual savings ongoing; \$26 million to \$38 million additional annual savings projected; total savings of \$62 million to \$74 million annually
Special Operations Seaplane Capabilities: An Analysis of Alternatives	\$23 million saved over two years

#### **Savings Projected**

RAND Project	Saving
Cost-Effective Options for Armed Overwatch	Billions of dollars of savings in annual operating costs
Gaming Options to Reduce Military Personnel (MILPERS) Costs While Ensuring a Ready Workforce	\$500 million to more than \$2 billion in potential annual savings
Using Host Nation Support (HNS) and Operational Contract Support (OCS) to Reduce the Cost of Prepositioning War Reserve Materiel in Europe	\$575 million to more than \$1 billion in potential up-front cost savings
Strategic Data Discovery for Army Contracting	\$1 billion or more in savings
Army Recruiting Resource Models	Potential cost savings of hundreds of millions of dollars per year
Helping U.S. Customs and Border Protection (CBP) Identify Solutions to Counter Uncrewed Aerial Vehicles	Potential savings of \$143 million to \$416 million over the life of the Border Patrol's counter systems.
Increasing Availability and Lowering Costs of Depot-Level Reparable (DLR) Parts	At least \$100 million savings annually
Optimizing Army Enlistment Incentives	\$18 million to \$121 million annual cost savings
Flexible Spending Accounts (FSAs) for Active-Duty Service Members	About \$38 million per year in potential savings

NOTE: Dollar amounts are in nominal dollars current with the year of the study or savings. Some savings are thus underestimated in 2024 terms.

## **Savings Achieved or Ongoing**

## Preparing the Tanker Fleet for Future Challenges (2023)

The U.S. aerial refueling enterprise faces two potential challenges in the coming years: higher demand and more-hostile operating environments. In a conflict, adversary missile threats to air bases could force the United States and its allies and partners to operate aircraft from farther away or to disperse over larger areas than in the past. Having enough tankers that can survive threats and keep other aircraft in the air will be vital to conducting air missions. The USAF is pursuing the Next-Generation Aerial Refueling System (NGAS) to meet these challenges in the mid-2030s, but it had questions about how to manage the tanker fleet in the meantime.

To inform future tanker design and force structure decisions, PAF researchers analyzed the trade-offs between legacy tankers (with and without upgrades), the new NGAS, and potentially a "bridge" aircraft to fill needs before the NGAS comes online. The team examined mission effectiveness, cost, emerging technologies, and other issues. The findings and recommendations from this project were a key input to Air Mobility Command's analysis of alternatives on aerial refueling.

The project informed senior DAF leaders' decision not to pursue a new bridge tanker but to upgrade current systems and pursue the NGAS. This decision enabled needed tanker recapitalization with a more capable fleet while maintaining a relatively constant average annual cost of \$10 billion, thus avoiding a \$30 billion cost spike in the 2028–2038 time frame.

## Better Aligning Military Pay with the Civilian Market (2010–2020)

In 2012, NDRI examined several options to help DoD realize savings in the MILPERS budget without jeopardizing the United States' ability to sustain a high-quality all-volunteer force. Among these options was a multiyear period of lower-than-usual increases in basic pay or a one-year freeze in basic pay. Over the period from 2014 to 2016, Congress acted to slow increases in basic pay. The increases totaled 2.6 percentage points less than they otherwise would have been, and the lower resulting pay scales also implied lower subsequent basic pay costs. **These ongoing reductions were forecast to generate an estimated cost savings of** 

\$30 BILLION cost spike avoided

BILLION
over ten years;
potential to save billions more

**\$17 billion over ten years, through 2021,** according to the Congressional Budget Office.

In 2018, NDRI updated its evaluation of the military compensation system and found that actual military pay substantially exceeded the benchmark used to set the military pay level—about the 70th percentile of earnings for similar civilians, given the unusual demands and arduous nature of military service. Because retention remains strong, **this finding suggests the continued potential to further slow pay growth on the order of billions of dollars annually.** Although the tide is moving toward a pay increase for service members to address inflation and food insecurity, this research finds that, from a recruiting standpoint, increasing pay is the least cost-effective approach for addressing recruiting challenges.

Setting the Level and Annual Adjustment of Military Pay, Beth J. Asch et al., 2020, www.rand.org/t/RRA368-1

#### Helping FEMA Avoid Duplicate COVID-19 Reimbursements for Hospitals and Health Systems (2024)

\$2.2 BILLION

in duplicate spending potentially avoided

The COVID-19 pandemic created a massive administrative undertaking for FEMA, which was tasked with distributing public assistance funds simultaneously across every state, local, tribal, and territorial area to help hospitals and health care systems recover costs incurred during the pandemic. To assist FEMA, HSOAC created new processes to identify claims already reimbursed from other sources and avoid duplicate payouts. This support is also helping FEMA avoid overpaying for wasteful or fraudulent claims. To date, HSOAC has evaluated \$30 billion in COVID-19 public assistance claims over two years and **identified more than \$2.2 billion in potential savings on duplicative claims.** When this work is completed by March 2026, HSOAC will have evaluated more than \$50 billion in claims and **recommended at least \$4 billion in savings.** 

Methods of Assessing Duplication of Benefits with Patient Care Revenue: As Applied by the Federal Emergency Management Agency to Health Care Providers' Public Assistance Claims During the COVID-19 Emergency, Federal Emergency Management Agency Coronavirus Disease 2019 Public Assistance Technical Assistance Study Development and Implementation Group, 2024, www.rand.org/t/RRA3326-1

### Cost-Effective Ways to Represent Adversary Capabilities in USAF Fighter Pilot Training (2022)

To train fighter pilots for combat, the USAF needs a fleet of aircraft that can mimic current and future adversary capabilities. But budgetary pressures have driven the USAF to reexamine how it meets the evolving demand for adversary air support. Air Combat Command asked PAF to analyze current and future demand for adversary air support; evaluate supply options, including current USAF and contractor platforms; and assess the cost-effectiveness of these options against specific training needs. PAF developed a framework to characterize the quality required for adversary air training and evaluate various aircraft (and their associated costs) against these needs in multiple environments. Among other conclusions, researchers found that the commercial aircraft being used at Nellis Air Force Base was the lowest-value option for training missions required by the USAF Warfare Center. In 2022, Air Combat Command canceled its contract with that commercial provider, thereby avoiding the remaining \$110 million on the contract's ceiling. A few months after cancellation, Air Combat Command activated a squadron of the more capable F-35 to provide organic air capability.

\$110 MILLION in cost avoidance

## Improving Spare Parts Inventories for Army BCTs (2021)

Historically, Army BCTs independently determined their *authorized stockage lists* (ASLs)—the spare parts that units maintain to repair equipment damaged in training or operations. Maintaining ASLs established in this fashion led to significant variations in performance and relatively high costs, about \$130 million annually. An Arroyo team developed a process for mathematically optimizing these ASLs that both improved performance and required only \$10 million to fund. **The reduction in inventory has lowered carrying costs by about \$36 million annually.** 

By leveraging the optimization algorithm to compute additional ASL updates (e.g., combat aviation brigades, PATRIOT batteries, other active and Army National Guard units), the Army is likely to achieve **similar reductions in obligation authority (e.g., 20 percent of \$120 million per year, or \$24 million annually).** Approximately 50 percent of these savings are already underway, and the remaining 50 percent are projected with further expansion of this effort. The algorithm has also been applied to theater-level ASLs in both Europe and South Korea. **Avoiding unnec**-



essary inventory investment and workload going forward by reducing inventory churn will save \$2 million to \$4 million per year, depending on demand volumes in theater.

In a recently completed project, the Arroyo team applied a similar optimization algorithm to shop stocks in the Army's ground BCTs. Simulations showed substantial improvement in performance, and the **reduced inventory carrying costs are expected to be in the range of \$10 million to \$20 million annually. The total estimated savings from the project are between \$62 million and \$74 million annually.** 

Common Authorized Stockage Lists for the U.S. Army's Brigade Combat Teams, Kenneth Girardini, Candice Miller, and Rick Eden, 2023, www.rand.org/t/RRA1376-1

Extending the Use of the Mixed Integer Program (MIP) Algorithm, Kenneth Girardini and Candice Miller, forthcoming

## Special Operations Seaplane Capabilities: An Analysis of Alternatives (2024)

The special operations forces (SOF) community has explored amphibious aircraft as a promising innovation for supporting special operations in contested and gray zone littorals. To inform Special Operations Command (SOCOM) decisions about acquiring amphibious aircraft, NDRI researchers conducted a systematic analysis of seaplane solutions to emerging SOF needs, assessing concepts and specific seaplane options.

The analysis showed that seaplanes have the potential to make significant contributions to SOF and overall joint force operational effectiveness across a variety of scenarios. However, seaplane designs in production or development do not offer the combination of range, payload, seakeeping (how a ship acts), and aircraft configuration required to fulfill this potential. One option that SOCOM had already budgeted for was an amphibious version of the MC-130J transport plane. The analysis showed that the aircraft's expected contributions did not justify its cost. The researchers recommended that SOCOM not pursue development. Based on this recommendation, SOCOM canceled the project, saving \$23 million over two years.



## **Savings Projected**

## Cost-Effective Options for Armed Overwatch (2022)

In 2020, SOCOM asked NDRI to assess the cost-effectiveness of acquiring a new armed overwatch aircraft for intelligence, surveillance, and reconnaissance and attack missions. Researchers employed innovative methods of operational analysis, flight performance modeling, and cost analysis to evaluate the case for Congress to appropriate \$3 billion for SOCOM to acquire 75 OA-1K armed overwatch aircraft. The assessment indicated that employing the OA-1K instead of existing aircraft in the DoD inventory would save billions of dollars in operating costs each year. As of 2023, for example, the USAF has a squadron of A-10 Thunderbolt II attack aircraft deployed to U.S. Central Command to support special operations forces fighting the Islamic State; if even just one detachment—four A-10s—were allocated to special operations forces at any given time, the annualized life cycle and operating costs of that support would exceed \$1 billion per year. The OA-1K requires less than one-third of that amount for the same mission. SOCOM is fielding the OA-1K, which will free up conventional aircraft for other strategic priorities and, with enduring operations continuing in several combatant commands, provide essential air support to special operations forces for billions of dollars less per year than DoD would have spent otherwise.

## **Billions**in annual operating cost savings projected

## Gaming Options to Reduce MILPERS Costs While Ensuring a Ready Workforce (2023)

The MILPERS budget provides financial resources to compensate active-duty personnel. This refers to pay and allowances, health care and retirement pay accruals, and permanent-change-of-station travel. Since 2000, spending on MILPERS has grown steadily as the cost of maintaining an airman has increased. The increased cost of personnel threatens to undermine the DAF's ability to field a ready workforce. The resulting growth in the MILPERS budget threatens to divert resources from modernization and sustainment efforts.

The USAF asked PAF to evaluate a variety of policy options that control personnel costs without increasing risks to mission or force. PAF designed and conducted a workforce futures policy game—Operation Retrenchment Specter—that simulates the monetary and nonmonetary effects of



workforce and personnel policies in real time. More than 50 USAF participants competed in a gaming activity to generate novel options that were projected to yield annual savings ranging from \$500 million to more than \$2 billion. Options were consolidating or eliminating organizations (including major commands) or functional communities, shifting to a more junior-grade mix, and converting officer positions to the enlisted force.

These options revealed a fundamental trade space among cost, workforce size, and experience. Although the options are still in the formative phase, they provide a basis for developing future actions to limit MILPERS costs.

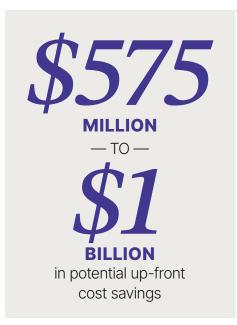
Assessing the Implications of Policy Options for the Military Personnel Budget: An Analytic Framework for Evaluating Costs and Trade-Offs, Matthew Walsh, Thomas Light, and Raymond E. Conley, 2023, www.rand.org/t/RRA1218-1

 $\label{lem:managing Military Personnel Costs: Operation Retrenchment Specter, a Workforce Futures Game, Matthew Walsh, Lisa M. Harrington, and Thomas Light, 2023, www.rand.org/t/RRA1218-2$ 

## Using OCS or HNS to Reduce the Cost of Prepositioning War Reserve Materiel in Europe (2020)

The European Deterrence Initiative and the 2018 National Defense Strategy provided a once-in-a-generation opportunity for the USAF to prepare for potential high-end conflict in Europe. A key part of these strategies is to preposition war reserve materiel—the facilities, equipment, and vehicles needed to quickly set up bases and begin combat operations—at strategic locations throughout the theater. U.S. Air Forces in Europe and Air Forces Africa (USAFE-AFAFRICA) developed the concept of a deployable air base system (DABS), which consists of the resources needed to establish forward operating locations and begin executing high-volume combat operations in the first 30 days of a conflict.

As part of a larger analysis of the feasibility, cost, and risks of this strategy, PAF examined how the use of operational contract support (OCS) or host nation support (HNS) to provide certain types of equipment could help reduce the cost of the DABS kits. Researchers identified 11 categories of equipment that could be supplied by OCS or HNS and that USAFE-AFAFRICA might be willing to source externally. The researchers estimated that USAFE-AFAFRICA could source \$33.8 million (40 percent of the total cost) from OCS or \$61.4 million (73 percent of the total cost) from HNS. Given USAFE-AFAFRICA's plan to acquire 17 DABS kits, use of OCS or HNS could save between \$575 million and more than \$1 billion in up-front costs. This estimate does not include additional



savings from storage, maintenance, and transportation. It also does not include the potential costs of sourcing capabilities through OCS or HNS at the time of need. PAF recommended that USAFE-AFAFRICA examine the risks associated with relying on external sources of supply.

## Strategic Data Discovery for Army Contracting (2021)

The Army annually awards hundreds of thousands of contracts worth tens of billions of dollars. In fiscal year (FY) 2016, Army Contracting Command awarded almost 170,000 contracts, valued at \$56.4 billion. The Army's ability to analyze these contracts and identify potential efficiencies is limited by the nature of the data and Army Contracting Command's information technology infrastructure—such as hardware, software, and policy—that preclude adequately querying across all data. In particular, contract data are often stored as PDFs, which are unstructured and cannot be read by computers.

The Arroyo team identified an approach to rendering these data machinereadable by developing the tools required to query, expose, and index unstructured data. These tools make visible the full scope of goods and services, customer requirements, and other information related to Army contracts that are not fully communicated in structured data. To demonstrate the approach's utility, the team pursued a proof-of-concept effort that identified contracts with **more than \$1 billion in unliquidated obligations that could be available for reallocation.** 

Army Analytic Capabilities: A Case Study Within Army Contracting Command and Its Implications, William Marcellino et al., 2021, www.rand.org/t/RRA106-1

## **S1**BILLION or more in projected savings

#### **Army Recruiting Resource Models (2018)**

Since the early 2000s, the Army has spent \$1.5 billion to \$2 billion dollars annually on recruiting resources—such as recruiters, enlistment bonuses, and advertising—to meet its accession requirements. To make the best use of funds, the Army needs to understand how recruiting resources and recruit eligibility policies work together as a system under varying requirements and environments. An Arroyo team developed the Recruiting Resource Model to estimate the optimal recruiting resource levels and mix needed to support future recruiting under changing enlisted accession requirements, varying labor market conditions and recruiting environments, and alternative recruit eligibility policies. The model also allows the Army to assess alternative courses of action. In addition to the initial study, which focused



on Regular Army recruitment, a follow-on study focused on the U.S. Army Reserve. By estimating a variety of possible scenarios involving alternative economic factors, resourcing strategies, eligibility policies, and accession goals, the Recruiting Resource Model has predicted that the Army could save hundreds of millions of dollars a year by optimizing the mix of recruiting resources it uses to achieve its accession mission.

 $Resources\ Required\ to\ Meet\ the\ U.S.\ Army's\ Enlisted\ Recruiting\ Requirements\ Under Alternative\ Recruiting\ Goals,\ Conditions,\ and\ Eligibility\ Policies,\ David\ Knapp\ et\ al.,\ 2018,\ www.rand.org/t/RR2364$ 

Resources Required to Meet the U.S. Army Reserve's Enlisted Recruiting Requirements Under Alternative Recruiting Goals, Conditions, and Eligibility Policies, Bruce R. Orvis et al., 2022, www.rand.org/t/RRA1304-1

## Helping CBP Identify Solutions to Counter Uncrewed Aerial Vehicles (2024)

Advances in technology have made uncrewed aerial vehicles (UAVs) cheaper, more capable, and widely available, increasing the potential for such systems to threaten various DHS missions. However, CBP has limited capabilities to engage in counter-UAV (C-UAV) activities. HSOAC conducted an alternatives analysis to help CBP acquire greater C-UAV capabilities in increments to address the growing threat from UAVs along U.S. border regions. The HSOAC project team identified multiple solutions and potential alternatives that enable CBP to acquire C-UAV capabilities while effectively managing cost. The variability of the UAV threat along the border creates a high degree of uncertainty for CBP and precludes a one-size-fits-all solution, but hybrid alternatives might satisfy mission requirements to manage the UAV threat. If the government adopts HSOAC's recommendations along the border regions, the team identified savings of between \$143 million and \$416 million. This range is derived from the number of options and alternatives generated by HSOAC for CBP to consider.

## Increasing Availability and Lowering Costs of DLR Parts (2021)

Army depots are often tasked with restoring complex components (also known as DLRs), such as vehicle engines and transmissions, which are used to repair Army equipment. In cases in which depots are unable to service such components, the Army relies on the efficient and effective return and repair of parts to support equipment readiness and to avoid expensive new purchases. However, the return process is complex and has multiple segments involving different process owners, leading to delays



\$100 MILLION

minimum savings annually projected

in parts being fixed and restored to the supply chain. The Arroyo team analyzed data from the Global Combat Support System–Army Wave 2, developed performance metrics for the process to return parts from the unit to the depot, identified significant inefficiencies, and recommended improvements for managing DLRs. In addition to increasing equipment readiness, **improved DLR management below the national level has the potential to help the Army avoid at least \$100 million in new DLR purchases annually through improved timeliness.** 

## Optimizing Army Enlistment Incentives (2022)

To meet its accession goals, the Army offers enlistment bonuses to recruits. However, many recruits would enlist for lower dollar amounts than the Army offers. A more tailored system that allows potential recruits to choose among alternative enlistment options—both monetary and nonmonetary—could increase enlistment and save the Army money.

Arroyo researchers were asked to develop an enlistment options optimizer to create bundles of enlistment incentives that appeal to both prospective recruits and the Army. Arroyo was also asked to develop a strategy to implement the optimizer to improve satisfaction and enlistment among potential recruits, generate cost savings for the Army, and provide the Army with desired recruit characteristics. Arroyo researchers surveyed a national population of young adults ages 18–27 with no prior military experience to ask about their probability of enlisting in the Army and which incentives—from a menu listing student loan repayment, a guaranteed job interview when leaving the Army, choice of location of first assignment, choice of job, and traditional enlistment bonuses—they value most. The study found that nonmonetary options compare well with \$10,000-\$15,000 bonuses and that adding a bonus to other incentives increases their appeal to the level of larger stand-alone bonuses. Among higher-aptitude survey respondents, the largest estimated increases in stated probability of joining the Army came from those choosing nonmonetary incentives. Offering a wider variety of incentives has the potential to save the Army from \$18 million to \$121 million per year, depending on which options potential recruits select.

Army Enlistment Options Optimizer: Research Approach, Findings, and Implications, James Hosek and Bruce R. Orvis, 2023, www.rand.org/t/RRA2214-1



## FSAs for Active-Duty Service Members (2022)



per year in potential savings

In 2023, DoD expanded eligibility for the Dependent Care Flexible Spending Account (DCFSA), a benefit intended to support the economic wellbeing of military families by reducing the burden of dependent care costs. In 2021—in support of an Office of the Secretary of Defense report to Congress on the feasibility of implementing FSAs within DoD—NDRI evaluated the benefits and costs to service members of FSAs (for both dependent care and health care) and the potential costs and savings to DoD. Researchers used information from the Office of Personnel Management on the cost of administering FSA options for federal employees together with military pay data, personnel data, and tax code software. The study found that, because of how DoD provides child-care benefits, a potentially large share of military families might not have eligible child-care expenses, and most members would have few or no eligible out-of-pocket medical care expenses associated with the military health care program, TRI-CARE. However, even if only 25 percent of members participated in each program, DoD would save \$6 million annually for the Health Care FSA program and about \$32 million for the DCFSA program after the first year. Although these figures exclude implementation costs and ongoing overhead costs, the overall implication is that adding FSA options for service members and their families would both produce a cost savings for DoD and provide an overall net benefit to service members who have eligible expenses, although most members will have small or no eligible expenses.

 $\label{lem:eq:counts} \begin{tabular}{l} Evaluation of Flexible Spending Accounts for Active-Duty Service Members, Beth J. Asch et al., 2022, www.rand.org/t/RRA1553-1 \end{tabular}$ 

## Additional information about the projects highlighted in this document can be obtained by contacting the following:

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