

RECORD VERSION

STATEMENT BY

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**ON MINDING THE GAP: HOW OPERATIONAL ENERGY CAN HELP US ADDRESS
LOGISTICS CHALLENGES**

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COMMITTEE ON ARMED SERVICES**

Chairman Garamendi, Ranking Member Lamborn, and Members of the Subcommittee: on behalf Secretary Wormuth and General McConville, thank you for the opportunity to discuss Operational Energy contributions to defense readiness, the role Army platforms and installations play in supporting these efforts, and the Army's efforts to improve our Operational Energy posture.

Introduction

The Army defines Operational Energy (OE) as the energy and associated systems, information, and processes required to train, move, and sustain forces and systems for military operations. It provides advantages in the form of extended range and endurance, flexibility and resilience, enhanced mobility, and freedom of action. Energy is the key enabler that drives operational capabilities. The primary objective of Army OE efforts is to improve warfighter capability and win the Nation's wars.

Army Strategy

The Army Modernization Strategy, the Army Installations Strategy, and the forthcoming Army Climate Strategy are nested to meet the end state of the Army Strategy, which is to achieve a Multi-Domain Operations (MDO)-capable force by 2028 and an MDO-dominant force by 2035. Under the Army Strategy, the main focus of Army OE efforts for the last several years was to rebuild readiness in our current force. Many of the Army's OE investments in readiness aimed to return a degree of mobility to current tactical ground vehicle fleets that was lost to weight increases from supplemental armor and protective, weapon, and Command, Control, Communications, Computers, Cyber, Intelligence, Surveillance and Reconnaissance (C5ISR) systems. The Army sought to enhance mobility while providing the power necessary for all current and planned capabilities. At the same time, the Army has been setting the conditions for the future force through a focused effort on science and technology. In the near future, the Army will shift that focus to modernization while maintaining the readiness we have painstakingly rebuilt.

The future force may often require more energy to support new capabilities such as directed-energy weapons. However, Army efforts to electrify the battlespace and improve the overall efficiency of the force will ultimately reduce the total amount of energy required. Army installations must modernize with the operational force to be able to receive, sustain, and employ new capabilities as they emerge. This includes planning and preparing the infrastructure required to maintain future tactical electric vehicle fleets. The OE capabilities being fielded and developed to restore readiness and modernize the force are consistent with the Army Climate Strategy, which provides guidance for protecting the operational environment at home and abroad.

Army Climate Strategy

The Army developed the Army Climate Strategy as a roadmap for actions that will enhance readiness and resilience and address climate-related threats. The first line of effort (LOE) in the strategy is “Improve Energy-Related Capability and Efficiency of the Force.” The goal of this LOE is to equip the force with state-of-the-art technologies that improve overall energy-related capability and reduce the demand for energy resources. An overall reduction in energy consumption will mitigate tactical, operational, and strategic risks while significantly reducing greenhouse gas emissions. This will, in turn, mitigate harmful climate impacts.

OE and Installation Intersection

Army installations are essential to maintaining and strengthening force readiness. Installations are playing increasingly active operational roles, blurring the lines between OE and installation energy. Installations serve as strategic assets and Power Projection Platforms. The Army trains, sustains, moves, and projects combat power from these facilities. Installations’ reach-back capability is expanding with advancing C5ISR technology, enabling the Army to provide direct support to forward-deployed formations from home station.

Central to readiness and sustainment, the Army’s Organic Industrial Base is within installations’ purview. The Organic Industrial Base includes Army manufacturing

arsenals, maintenance depots, ammunition plants, rebuild lines, and the greater commercial supply chain. Without the energy to produce and deliver from these facilities, forward-deployed forces would lack the resources needed to dominate the battlefield.

The ability of Army installations and the industrial base to generate readiness on demand, project and sustain power overseas, and increasingly conduct forward operations from the homeland will depend on the Army's ability to develop resource-secure and resilient installations adapted to a changing climate.

Mission success overseas is largely contingent on the ability of installations to perform their core mission. Installations must maintain their ability to sustain Soldier readiness; launch forces, resources, and combat power; and provide reach-back capabilities undeterred by growing asymmetric threats. Because the fenceline has become the new frontline in many respects, installations' energy resilience and cybersecurity are paramount to National Security.

Synthetic Training Environment (STE)

The Army is expanding training and simulation technologies to outpace the military modernization efforts of U.S. adversaries. The STE offers Soldiers immersive training scenarios that combine live, virtual, and constructive training with gaming environments, enabling the Army to train better, smarter, and with fewer resources. These simulated gaming environments allow Soldiers to conduct standardized training that builds muscle memory and refines Tactical Standard Operating Procedures, all while saving on costly fuel consumption and limiting wear and damage to vehicles and equipment. Installations must upgrade facilities to handle the increased energy loads associated with simulation systems. This will help ensure the Army maintains its ability to generate readiness on demand and that energy supply is hardened against outages.

New Operating Environment

During the two decades the U.S. Army spent conducting continuous combat and counterinsurgency operations in Southwest Asia, China and Russia narrowed their

capability gaps with the U.S., particularly in the realm of Anti-Access / Area Denial. The U.S. must be prepared to deploy to theaters of operation with contested lines of communication and supply, and to prevail against nations or proxy forces with near-peer capabilities. This new operating environment necessitates a significant reduction from current operating requirements in the demand for supplies and services, including energy.

Effective OE capability will be imperative to success in future operating environments. Investments in OE development are advancing demand-reduction technologies that enable our forces to maneuver farther and operate longer without resupply on increasingly dispersed and lethal battlefields. This increased autonomy and expeditionary capability will significantly reduce the frequency of dangerous resupply missions, reducing Soldier exposure to enemy action. The Army's goal is dispersed, continuous operations for up to seven days, semi-independent of external resupply. This will help mitigate risks to lines of communication.

Primary OE Efforts

The Army is modernizing our systems to increase lethality, mobility, and protection while enabling mission command. The objective is to maintain battlefield overmatch in large-scale combat operations in a contested future operating environment. The Army must develop energy capabilities to power modern systems that require more energy while reducing energy demand.

Tactical Ground Vehicle Electrification (TGVE) is an area in which the Army is making considerable progress to reduce overall fuel demand. Current vehicle electrification technologies, such as intelligent anti-idle technology, can reduce fuel consumption by as much as 25% in tactical vehicles. Hybrid-electric architectures in our tactical systems could reduce fuel consumption by as much as 35%. The advantages of TGVE include: (1) extended range and persistence; (2) increased onboard power for energy-based capabilities, such as directed-energy weapons, C5ISR, jammers, and electrified armor; (3) reduced maintenance costs and associated logistics footprint; (4)

enabled or extended silent watch and silent mobility; and (5) reduced thermal and acoustic signatures.

The Army is also making significant progress in demand reduction within the rotary-wing aircraft fleet while improving capability. Advanced powertrains allow manned and unmanned aircraft to fly faster and higher with greater payloads and for longer durations. They also reduce fuel burn and maintenance requirements while increasing reliability. The new T901 Improved Turbine Engine will replace the 1970s-era T700 design. The T901 will retrofit UH-60 Blackhawk and AH-64 Apache fleets, and will power the Future Attack Reconnaissance Aircraft (FARA). The T901 is expected to reduce fuel consumption by 13-25%, increase horsepower by 50%, and decrease maintenance burden by 30%. The increased power will enable the fleet to fly higher, in hotter temperatures, at full payload, and for extended ranges.

Conclusion

Readiness begins with our ability to train, project power, and sustain forces. Improving OE-related capability will increase combat advantage on contested battlefields while mitigating harmful impacts to the environment. Through adaptation, mitigation, and innovation, the Army will secure the readiness and resilience of forces, functions, and facilities in order to fight and win our Nation's wars.

Your continued advocacy helps to ensure we remain an attractive option for current and future generations who want to serve their Nation and that we retain the current force by meeting the expectations of an all-volunteer Army with capable and high-quality equipment, resources, and installations. Thank you for the opportunity to present this testimony and for your continued support of our Soldiers, Families, and Civilians.