Department of Defense
Operational Energy Strategy

Under Secretary of Defense for Acquisition and Sustainment

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MEMORANDUM FOR SENIOR PENTAGON LEADERSHIP
COMMANDERS OF THE COMBATANT COMMANDS
DEFENSE AGENCY AND DOD FIELD ACTIVITY DIRECTORS

SUBJECT: Department of Defense *Operational Energy Strategy*

This memorandum outlines the Department of Defense (DoD) *Operational Energy Strategy*, as required by section 2926 of title 10 United States Code (U.S.C.) and driven by increasing risks to the assured delivery of power and fuel to the warfighter.[1] To ensure the Joint Force can fight and win in contested environments, the *Operational Energy Strategy* includes four lines of effort, supported by near-, mid-, and long-term goals. Attachment A identifies the specific actions that implement the strategy over the near-term (Fiscal Years (FYs) 2023-2024), mid-term (FYs 2025-2028), and long-term (FYs 2028-2035) time periods.

Introduction

Successful military capabilities are underwritten by assured access to sufficient and secure supplies of energy. The dual realities of a homeland that is no longer a sanctuary and increasingly contested logistics ensure that access to energy will only grow more challenging over time. The *Operational Energy Strategy* is the Department's response to the opportunities and challenges of providing resilient energy to the Joint warfighter and details the Department's plans to reduce energy demand while enhancing capabilities of weapon systems and forces. In alignment with the *National Defense Strategy*, the Department is prioritizing energy demand reduction and seeking to adopt more efficient and clean energy technologies that reduce logistics requirements in contested environments.[2]

The *Operational Energy Strategy* meets the requirements, as prescribed in 10 U.S.C. § 2926, for a plan to integrate efforts to mitigate contested logistics challenges through the reduction of operational energy demand. Updated every five years, the strategy establishes near-, mid-, and long-term goals and a plan for implementation across the DoD Components.

Based on the authorities found in 10 U.S.C. § 2911 and 2926, the Assistant Secretary of Defense for Energy, Installations, and Environment (EI&E) establishes and maintains the *Operational Energy Strategy* to set the overall direction for the Office of the Secretary of Defense (OSD), the Combatant Commands (CCMDs), the Defense Agencies, the Joint Staff, and the Military Departments/Services (hereinafter "DoD Components").

Strategic Environment

[1] 10 U.S.C. 2924 defines operational energy as the "energy required for training, moving, and sustaining military forces and weapons platforms for military operations. The term includes energy used by tactical power systems and generators and weapons platforms." Operational energy does not include the energy consumed by facilities on permanent DoD installations and does not include the fuel consumed by non-tactical vehicles.
[2] *National Defense Strategy*, October 2022, Department of Defense, https://media.defense.gov/2022/Oct/27/2003103845/-1/-1/1/2022-National-Defense-Strategy-Npr-Mdr.Pdf

Energy is an essential enabler of military capability, and the Department depends on energy-resilient forces and weapon systems to achieve its mission. However, contested logistics, reliance on commercial technology and infrastructure, and the imperative to understand the Department's energy use each pose challenges to ensuring energy secure forces in competition, crisis, and conflict.

The 2022 *National Defense Strategy* (NDS) emphasizes the Department's primary focus to strategic competition against adversaries – primarily China and Russia – armed with long–range weapons, significant anti–access/area– denial (A2/AD) systems, and substantial cyber capabilities that can degrade the ability of the Department to provide energy to forces and facilities. These adversary capabilities are threatening to fundamentally undermine our ability to deploy, operate, and sustain Joint Forces.

At the same time, concerns about climate change and rapid advancements in clean energy technologies are driving significant changes in global energy markets. This energy transition will have profound implications for the Department, particularly given the military's requirement for energy-dense, liquid fuels for mobile applications. While reliant on fossil fuels to support operations in the near- to mid-term, the Department should pursue all opportunities to leverage the energy transition to increase operational capability, reduce risk, and ensure a decisive advantage for the Joint Force.

Regarding changes to force posture and capabilities, the Department is increasingly aware of the role of energy demand reduction in enabling operations in contested environments. Reflecting this shift, in April 2022, the Deputy Secretary of Defense directed that the "Department's capability development activities, from requirements to acquisition to sustainment, must increase energy supportability and must reduce energy demand across all capability solutions."[3] Decreasing demand can reduce the volume and frequency of resupplying Joint Forces with energy, reducing the logistical burden of energy requirements and enhancing the energy resilience in the face of all hazard threats. To enhance energy supportability and drive energy demand reduction across the Joint Force, the Department is assessing how capabilities in Major Capability Acquisition programs, capability modernization efforts, and other technology development programs, can improve energy supportability, reduce operational energy demand, and enhance combat capability.

While defined separately, the Department also recognizes the mutual dependence between installation and operational energy. For instance, effective operations of liquid-fueled platforms require power for a range of infrastructure and command functions. In addition, the advent of electrified forces will further break down the practical distinctions between energy used on base and in the field. While this strategy necessarily focuses on operational energy, linkages to installation energy should be considered and integrated as appropriate.

Supporting Assessments

[3] Kathleen Hicks, Deputy Secretary of Defense, Energy Supportability and Demand Reduction in Capability Development, April 21, 2022.

In alignment with section 10 U.S.C. § 2926, the Department assessed trends across commercial industry, technology drivers, and energy infrastructure investments by allied and partner countries.

Availability of Internal Combustion Engine Components. Industry trends include the transition away from the use and production of internal combustion engines (ICE). The Department assesses that the challenges associated with the long-term availability of parts for military equipment, the fuel costs for such equipment, and the sustainability of such equipment are manageable over the near-, mid- and long-term. However, the Department must synchronize its transition away from ICE-powered tactical vehicles with the electrification of passenger and heavy-duty vehicles to maximize the use of lower cost commercially available spare parts and engine components.

New Energy Supply Chains. New developments in electric propulsion, hydrogen, and other sustainable fuel technologies have the potential to reduce energy demand and sustainment requirements in contested operating environments. The Department's view is that platform and equipment electrification offer opportunities for reductions in operational energy demand, but the long-term availability of sufficiently capable batteries and the unknown risks of reliance on new supply chains to provide the needed electricity may challenge the fielding of fully electrified forces. Similarly, hydrogen as a direct source of fuel or as in input to fuel cells is promising, but the composition and risks of these hydrogen supply chains require additional analysis and integration with Service operating concepts. Finally, if available and cost competitive, drop-in compatible sustainable aviation fuels (SAFs) will mitigate the Department's carbon footprint, but – without the local production of these fuels – would not necessarily reduce the risks of distributing high volumes of liquid fuel in contested environments.

Energy Delivery Systems. Developments in innovative energy delivery systems, distributed storage, flexible contracting, and improved automation present opportunities to mitigate challenges in a contested logistics environment. Unmanned distribution capabilities, forward arming and refueling points, and joint petroleum over-the-shore capabilities can reduce logistics burdens associated with transporting fuel. Distributed storage systems can disperse storage infrastructure and offset risks of adversarial targeting. Improved automation and decision support tools can inform the optimization of battlefield energy sourcing, distribution, and use. For instance, adding energy metering and management capabilities at remote, unmanned locations would provide real-time data to a common operating picture, enhancing decision-making at multiple command echelons.

Host Nation and Partner Infrastructure. As a globally deployed force, the Department depends on fuel infrastructure owned by commercial companies and host countries around the globe. The Department purchases much of its fuel overseas (nearly 50 percent in FY2022) and is concerned about the shift in investments in upstream and downstream petroleum infrastructure to national oil companies (NOCs) in China and the Middle East. The Department needs to assess the potential rise of political-economic influence on the availability of jet fuel that may come with greater NOC market share and the shifts in refining capacity. At the same time, the worldwide availability of refining infrastructure provides significant alternative sources of petroleum which should be considered in operational plans.

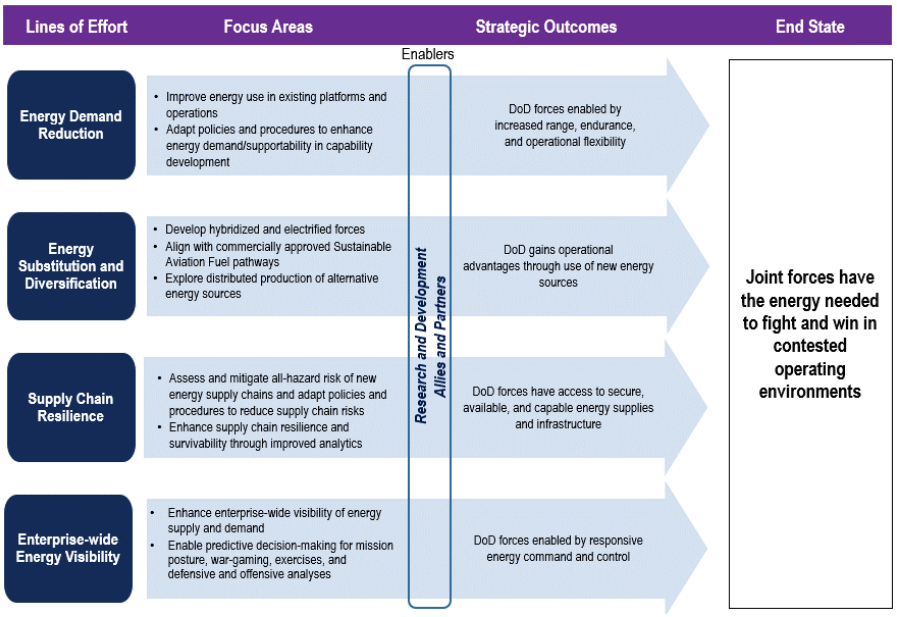
Beyond petroleum, investments in SAF infrastructure are growing mostly in Europe, driven by mounting pressure from government mandates. However, the Department's ability to procure SAF in bulk will be dependent on the availability of a product that is cost competitive with petroleum-based jet fuels. Likewise, current production of bulk hydrogen is dominated by Europe, with this trend likely to continue in the short- and mid-term. As an alternative to fossil fuels, the Department will need to assess the readiness of hydrogen and related fuel cells for deployment across different platforms, as well as the logistical requirements needed to support widespread use of hydrogen in the battlefield. As identified in the *National Blueprint for Lithium Batteries*, Department capabilities require cyber secure and advanced energy storage from reliable domestic or allied sources. However, the Department is presently unable to leverage much of the large commercial investments in advanced battery technology due to the unique nature of batteries for weapons systems, and the Department's relatively small percentage of the larger commercial market.[4]

The Department's ability to operate within a contested logistics environment and respond to changing technology and infrastructure developments is dependent on having a dynamic, enterprise-wide view of operational energy supply and demand. Currently, the Department has limited visibility of operational energy distribution and use. Enhanced energy command and control will enable decision-makers to optimize scarce energy deployment and distribution assets, mitigate risk, and better support unpredictable and dispersed operating concepts. Agile command and control will be increasingly important as energy options expand and add greater flexibility and complexity to logistics decision-making.

Operational Energy Strategy Framework

The graphic below summarizes the lines of effort and focus areas that support strategic outcomes and the Department's overall end state.

[4] *National Blueprint for Lithium Batteries*, June 2021, Federal Consortium for Advanced Batteries, https://www.energy.gov/sites/default/files/2021-06/FCAB%20National%20Blueprint%20Lithium%20Batteries%200621_0.pdf



End State. The *Operational Energy Strategy* is designed to ensure that Joint Forces have access to the energy needed to fight and win while operating *in all domains* within contested environments.

This end state includes resilient and interoperable worldwide energy supply chains that address increasing all-hazard risks to operational energy. The Department's dependence on commercial infrastructure and partners will be integrated into risk analyses, and the Department will ensure a range of organic, allied, partner, and alternative commercial options are available to mitigate these risks. The costs and benefits of these resilience measures should be included in resource decision-making. As forces adopt more alternative energy technologies, enhanced in-situ energy generation, energy storage, and advanced energy management will enable the effective employment of new weapons and sensors while reducing operational energy demand. The Department will invest in propulsion, design, and energy command and control technologies that increase range, performance, and capability, and enable reductions in the energy needed for Joint Force maneuver.

Lines of Effort. The *Operational Energy Strategy* will ensure that Joint Forces have the energy needed to fight and win in contested environments through four lines of effort:

- Energy Demand Reduction;
- Energy Substitution and Diversification;
- Supply Chain Resilience; and
- Enterprise-wide Energy Visibility.

While implementing these interdependent initiatives, the Department will balance the pursuit of one line of effort against another (e.g. demand reduction and resilient supply chain) and recognize that one line of effort may enable others (e.g., increased energy visibility can help reduce demand). The table at Attachment A includes time-phased goals aligned to each line of

effort and assigned to the DoD Components to ensure progress toward implementing the *Operational Energy Strategy*. The near-term goals reflect current and budgeted resources over FYs 2023 – 2024, while the mid-term goals represent efforts for resourcing in the FYs 2024 – 2028 Program Objective Memorandum (POM), and long-term goals represent efforts for FYs 2028 – 2035.

Energy Demand Reduction

Foremost, the Department needs to reduce operational energy demand to reduce risks and enhance military effectiveness in contested environments.

In the near-term, the Department will focus on enhancing the supportability and reducing operational energy demand of all current platforms and acquisition programs, but will be weighted significantly to the largest single users of energy, including mobility aircraft (airlift and aerial refueling) and ships, followed by ground vehicles. In the case of ships, the Department will continue to explore innovative propulsion options for surface fleet that reduce energy demand and increase the ability to support future upgrades and capability enhancements. For aircraft, the Department will continue investing in energy improvements to current aircraft as well as new and scalable propulsion technologies and alternative airframe designs that can enhance warfighting capabilities while reducing energy needs. For ground vehicles, the Department will focus on maturing electrification technologies that save fuel and support flexible ground-based power, beginning with anti-idle capabilities, progressing to hybrid-electric and then all-electric drivetrains, while enhancing vehicle electrical production and the ability to import and export power.

While changes to existing equipment are the primary means of reducing operational energy demand in the near-term, the Department also will identify opportunities for changing how we employ current forces in steady-state operations. This includes improvements in routing, scheduling, ingress-egress, and training. The use of planning tools, simulators, exercises, and experimentation will improve the way the Department is deploying and operating the force to provide the same or better warfighting effect while using less energy. As the Department fields new equipment, the Services will ensure sufficient technical training to maintain, sustain, and operate the equipment in a manner that contributes to operational effectiveness.

In the near-term, the Department will establish a recurring reporting process of energy demand reduction and supportability in programs. This effort will identify the role of energy in program requirements, acquisition, and sustainment, and highlight opportunities for policy adaptation and additional resources. In the mid-term, the Department will leverage this recurring reporting to update applicable policies and procedures to close gaps and ensure appropriate review of energy demand and supportability across requirements, acquisition, and sustainment.

In the near-term, the Joint Staff also will conduct a Capability Portfolio Management Review to evaluate Joint Force capability development efforts that are reducing energy demand while also building resiliency. This effort will assess the Department's current alternative and reduced energy capabilities and determine warfighter demand reduction requirements. In the mid-term, the assessment results will provide options to inform capability investments that address priority energy demand reduction gaps while mitigating risk to the warfighter.

Together, these efforts will support the long-term goal of leveraging new technologies to increase range, endurance, tempo, and operational flexibility while reducing energy demand of platforms and operations.

Energy Substitution and Diversification

In addition to reducing how much energy is required to conduct effective military operations, the Department will consider the adoption of new energy sources that reduce logistical burdens in contested environments. Broadly, the Department will explore hybridization, electrification, SAF, hydrogen, and other energy technologies, to power land, sea (surface and subsurface), and air platforms.

The current state of the market and the Department's need for high performance capabilities in austere environments suggests continued reliance on liquid fuels in the near- to mid-term. However, industry and the Department continue to explore and develop alternatives to fossil fuels that maintain or enhance operational effectiveness while also improving supply chain resilience.

One potential alternative is SAF. In the near-term, the Department will continue ongoing inter-agency, academic, and industry collaboration and sustain the appropriate testing and qualification of commercially approved SAF pathways for use in DoD equipment and infrastructure. While availability and cost challenges are currently significant, the Department is taking steps to be postured to use all approved SAF pathways in the global marketplace and ready to take advantage of alternatives to fossil fuels. Over the mid-term, the Department will identify any infrastructure requirements associated with the use of SAF and pursue investments that support the drop-in compatibility of alternatives fuels with increasing proportions of SAF (e.g., 100 percent SAF).

The Department already is investing in the electrification of combat platforms, most notably the Army's pursuit of hybrid and fully electric tactical vehicles. Hybrid propulsion and full electrification offers a range of improvements related to combat capability (silent watch, sprint speed, reduced heat signatures), reducing the need for liquid fuels, allowing a more diverse set of energy sources (e.g., fossil fueled generator, wind, solar, existing grid, nuclear), and/or the ability to support increasing power needs on the battlefield. Reflecting this opportunity, the Department will pursue, over the near-term, sequential hybridization of tactical vehicles and development of integrated power and energy system technology with rapid recharge rates sufficient to maintain full mission capabilities without degradation.

The Department will consider additional alternative energy sources that support operations in contested operating environments. Reducing the need for moving energy over long distances to support dispersed forces will help counter adversary capabilities to track and target our logistics forces. Over the mid-term, this means the Department will pursue pilot demonstration projects that support the generation of alternative energy sources (e.g., renewables, SAF, nuclear, hydrogen, others) that are closer to the point of need and improve energy supportability.

Over the long-term, these efforts will support the fielding of electric tactical vehicles by 2050, and the fielding of air, sea, and land systems – to include unmanned – that use a broader set of alternative energy sources to overcome the challenges of contested logistics.

Supply Chain Resilience

Given the strategic end state of assuring energy to deployed forces, the Department needs to understand the supply chain implications (e.g., cost, risks, effects on energy demand and supportability) of leveraging new energy technologies in capability development.

In the near-term, the Military Departments will assess the political, economic, kinetic, and cyber risks of energy supply chains, to include alternative energy sources (e.g., electricity, hydrogen, SAF, battery storage, etc.), and the overreliance on unfriendly foreign sources for energy components and rare-earth elements essential for end-user energy systems required to support the full spectrum of defense readiness and response. In the mid-term and incorporating the results of the assessments, the Department will identify and execute required updates to energy acquisition and standardization policies to reduce supply chain risks and facilitate rapid adoption of these technologies.

Supporting Efforts – Supply Chain Resilience

DoD Lithium Battery Strategy 2022-2030. In alignment with the *Department of Defense Lithium Battery Strategy 2022-2030*, stringent testing and certification governing the use of batteries – particularly lithium-ion batteries – on land, air, and sea platforms pose a challenge to implementing new capabilities and concepts. In support of the *DoD Lithium Battery Strategy*, the Department will establish policy to support the use of affordable, interoperable, tested, and certified energy storage, and ensure investments in domestic supply chains.

Single Manager for Global Bulk Fuel Management and Delivery. As the single manager for bulk fuel, U.S. Transportation Command (USTRANSCOM) assessments will be incorporated into overall reviews of operational energy supply chain posture and risk. Across planning, posture, and execution, USTRANSCOM will lead the governance of the Joint Petroleum Enterprise and ensure Department-wide awareness of bulk fuel posture, including readiness, capability development, Joint Force capacity, and fixed bulk fuel infrastructure.

In partnership with DoD Components, the Department has a better, yet still incomplete, understanding of the risks associated with energy distribution and storage in the last tactical mile. To gain a better understanding of the risks, in the near-term, the Department will develop logistics and supportability concepts with a specific focus on hybrid and electrical tactical systems. These concepts will be incorporated into the Energy Key Performance Parameter and tested through the application of Energy Supportability Analyses during new capability development. In the mid-term, the Department will identify improvements needed in Department-wide analytical capabilities (e.g., modeling and simulation tools) to assess operational risks related to energy distribution, and storage, identify those risks, and develop an implementation plan to reduce those risks.

Over the long-term, the Department will improve supply chain resilience and survivability through continuous innovation and analytics.

Enterprise-wide Energy Visibility

The Department's efforts to reduce energy demand and increase capability are contingent on the ability to understand the scope, scale, and distribution of energy use and availability across a worldwide battlespace, and to make that information accessible to commanders and decision-makers. The Department will enhance energy command and control capabilities to improve its understanding of the energy required to create the desired effects. To this end, each DoD Component will define requirements for improved energy information in planning including establishing baselines, comparing alternatives, and enabling decision making that mitigates warfighting risks.

In the near-term, the Department will focus on enhancing enterprise-wide planning for energy supply and demand by updating all relevant equipment-level usage characteristics and rates to ensure accurate and timely assessments (e.g., logistic factor files). These efforts will enhance the quality of Joint planning and improve energy resilience in contested operating environments.

In the mid-term, the Department will assess existing metering, monitoring, and other analytical capabilities to support these requirements – including all operational activities from home station training to expeditionary operations – and prioritize investments to support integration of energy information in predictive decision-making.

In the long-term, the Department will seek real-time and enterprise-wide energy visibility for the full spectrum of military activities, to include peacetime competition and offensive and defensive planning for contingency operations.

Enablers. The Department's Research, Development, Testing and Evaluation (RDT&E) efforts are a key enabler of this strategy. Adoption of commercial sector technologies and the development and fielding of DoD-specific innovations are essential to energy demand reduction, energy diversification and substitution, supply chain resilience, and enterprise-wide energy visibility. Within this portfolio, the Operational Energy Capability Improvement Fund (OECIF) and Operational Energy Prototype Fund (OEPF) are particularly focused on operational energy technologies that improve Joint combat effectiveness. As Department-wide programs, these investments support advanced technology demonstrations and prototyping of operational energy technologies, processes, and standards that enhance capability, reduce costs, and decrease carbon emissions.

With appropriate analysis (e.g., doctrine, organization, training, materiel, leadership and education, personnel, and facilities), Service and DoD-wide RDT&E investments will be utilized across each line of effort, and relevant to multiple near-, mid-, and long-term goals. To maximize the impact and avoid any redundancy of these RDT&E activities it is essential that DoD components synchronize and collaborate on their investments, both within the Department as well as across allies and partners.

Allies and partners also are an important enabler of this strategy. The interoperability and standardization of energy generation, storage, and distribution capabilities are essential to resilient and effective coalition capabilities. This is particularly significant for multilateral alliances like NATO, as well as important bilateral relationships in INDOPACOM. In addition, the Department recognizes the role of host nation infrastructure and the significance of rapid and resilient use of allied and partner capabilities in contested environments.

Implementation

Aligned across the four lines of effort, the Department's time-phased goals for implementing the *Operational Energy Strategy* are found in Attachment A. These goals will be executed in FYs 2023-2035, and include actions assigned to OSD, Joint Staff, and the Military Departments.

The ASD(El&E) is responsible for the implementation of the strategy and will use the Contested Logistics Operational Energy (CLOE) Working Group to monitor progress. As described in Section 351 of the FY 2022 National Defense Authorization Act and codified at 10 U.S.C. § 2926(d), the CLOE Working Group was established to integrate efforts to mitigate contested logistics challenges through the reduction of operational energy demand. Based on the results of the actions in this strategy, the CLOE Working Group will provide recommendations to inform the annual Defense Planning Guidance and following program reviews.

The DoD Components noted in Attachment A are responsible for ensuring the timely and effective completion of assigned goals and reporting such progress to the ASD(El&E). The CLOE Working Group will regularly review progress made against the goals identified in this strategy and determine if any additions or modifications are required to meet emerging needs.

Conclusion

In summary, the Department will adopt operational concepts, training, command and control, and develop more efficient combat systems and technologies that reduce energy demand, mitigate risk, and enhance operations in contested environments. To ensure that Joint Forces have access to the energy needed to fight and win while operating within contested environments, the Department will reduce operational energy demand, diversify our energy sources, improve supply chain resilience, and enhance the enterprise-wide visibility of energy supply and demand.

William A. LaPlante

Attachment A: OPERATIONAL ENERGY STRATEGY LINES OF EFFORT AND GOALS

Lines of Effort and Focus Areas	Near-term Goals (FYs 2023 – 2024)	Mid-term Goals (FYs 2024 – 2028)	Long-term Goals (FYs 2028 – 2035)
Energy Demand Reduction • Improve energy use in existing platforms and operations • Adapt policies and procedures to enhance energy demand/ supportability in capability development	• Identify and field improvements to existing platforms that enhance supportability and reduce operational energy demand (**OPR**: MILDEPs) • Identify and implement opportunities to reduce energy demand in steady-state operations (e.g., routing, scheduling, ingress-egress, training, etc.) (**OPR**: MILDEPs and CCMDs) • Implement reporting of programs to evaluate energy demand/supportability (**OPR**: OSD) • Assess application of the energy Key Performance Parameter and make recommendations to ensure that energy supportability analyses are conducted and standardized (OPR: Joint Staff and OSD) • Conduct Capability Portfolio Management Review to evaluate Joint Force capability development efforts that are reducing energy demand (**OPR**: Joint Staff)	• Assess projected energy demand through 2040 and align improvements to existing platforms and operations to maintain or reduce energy demand (**OPR**: MILDEPs) • Update applicable policies and procedures to ensure appropriate review of energy demand and supportability across requirements, acquisition, and sustainment (**OPR**: MILDEPs, Joint Staff, OSD) • Utilize Joint Requirements Oversight Council guidance to inform the prioritization of energy supportability risks and guide investments in energy demand reduction (OPR: Joint Staff)	• Leverage new technologies that increase range, endurance, and operational flexibility while reducing energy demand of platforms, systems, and operations
Energy Substitution and Diversification • Align with commercially approved Sustainable Aviation Fuel (SAF) pathways • Develop hybridized and electrified forces • Explore distributed production of alternative energy sources	• Maintain alignment with commercially approved SAF pathways (**OPR**: DLA, MILDEPs) • Develop broad portfolio of research to support hybridization, electrification, and use of alternative energy sources for land, air, and sea systems (**OPR**: MILDEPs) • Pursue sequential hybridization of tactical vehicles and development of integrated power and energy system technology (**OPR**: MILDEPs)	• Assess SAF infrastructure implementation challenges and pursue investments to increase drop-in compatibility (**OPR**: DLA, MILDEPs) • Pursue pilot demonstration projects for on-site generation of alternative energy sources (e.g., SAF, nuclear, hydrogen, others) (**OPR**: MILDEPs)	• Prioritize investments to field fully electrical vehicles by 2050 • Field air, sea, and land energy systems that leverage alternative energy sources
Supply Chain Resilience • Assess and mitigate all-hazard risk of new energy supply chains and adapt policies and procedures to reduce supply chain risks • Enhance supply chain resilience and survivability through improved analytics	• Assess the political, economic, kinetic, and cyber risks of new energy supply chains (**OPR**: USTRANSCOM, Joint Staff, DLA, MILDEPs) • Develop logistics or supportability concepts for alternative energy platforms with a specific focus on hybrid and electrified tactical systems (**OPR**: MILDEPs)	• Implement required updates to energy acquisition and standardization policies to reduce supply chain risks (**OPR**: DLA, OSD) • Identify improvements needed in Department-wide analytical capabilities (i.e. modeling and simulation tools) to assess operational risks related to energy generation, distribution, and storage (**OPR**: MILDEPs, OSD, Joint Staff, DLA, USTRANSCOM)	• Improve supply chain resilience and survivability for existing and new energy technologies through continuous innovation and analytics
Enterprise-wide Energy Visibility • Enhance enterprise-wide visibility of energy supply and demand • Enable predictive decision-making for mission posture, war-gaming, exercises, and defensive and offensive analyses	• Update all relevant equipment-level usage characteristics and rates to ensure accurate and timely assessments (e.g., logistics factor files) (**OPR**: MILDEPs)	• Assess existing metering, monitoring, and other analytical capabilities to support integration of energy information in predictive decision making (**OPR**: MILDEPs, DLA) • Prioritize investments to close identified analytical gaps (**OPR**: MILDEPs, DLA)	• Leverage real-time and enterprise-wide energy visibility for offensive and defensive planning