



Issue brief Dry, dark, and empty

Written by Michael Dunn, Abraham Holland, and Marcus Lee

US installations outside the United States face growing vulnerabilities to power, fuel supplies, and water shortages. A more holistic, real-world exercise framework and infrastructure investment strategy that recognizes electricity, fuel, and water as parts of an interdependent system can create lasting resilience in peacetime and wartime.

Introduction

The ongoing conflicts in Ukraine and Iran demonstrate that utility infrastructure remains a key target in modern warfare. While US adversaries cannot directly match its capabilities, the continued targeting of energy, fuel, and water infrastructure sustaining civilian populations and military operations is forcing a more integrated perspective on military resilience requirements. US installations and operational facilities outside the continental United States (known as OCONUS)¹ are often more exposed to disruption while having less control over the infrastructure on which they depend. This paper focuses on OCONUS facilities, excluding those in Alaska and Hawaii as well as US territories, which typically depend upon the host nation for these services.

To be clear, there is no single broken base or vulnerability across the US military's global forward presence. Adversarial actions such as deliberate kinetic attacks on installation or host-nation power sources, cyberattacks, and disruptions in maritime choke points or supply lines interact with the underlying fragility of each host nation's civilian and

military infrastructure. Even a cursory review of the hundreds of OCONUS military installations reveals a complex mosaic of fuel, water, and electricity infrastructure risks with no single, uniform vulnerability. There also is no single "silver bullet" technology, structure, or system that can address such a complicated threat landscape. True resilience will require a diverse mix of deliberate, mission-driven, and data-driven local investments.

Current US laws and policies have created a patchwork of US military authorities and responsibilities to identify, prepare for, and mitigate potential OCONUS threats to power, fuel, and water. The primary existing framework for evaluating the energy resilience of US military installations focuses primarily on the loss of electricity: the black start exercise (BSE).² In spirit, these exercises are meant to be real-world tests of what happens when power is lost at a military installation. While the Department of Defense (DOD) is obligated to conduct at least fifteen exercises per year, publicly available data and not-for-attribution interviews with subject matter experts indicate that BSE activity appears to be focused primarily on domestic military

1. OCONUS includes Hawaii and Alaska; as noted, this paper excludes the two states as well as US territories.
2. See 10 U.S.C. § 2920.



The world's largest desalination plant operates in Ras al-Khair, Saudi Arabia. REUTERS/Hamad I Mohammed.

installations.³ Further, discussions with a range of subject matter experts have raised concerns that these exercises are at risk of becoming compliance efforts rather than rigorous tests of US resilience.⁴

In response to these challenges, the original BSE concept has it right: In a chaotic and interdependent environment, the best way to discover the truth is to assess what happens when the world goes dark. Counterintuitively, the BSE is too limited in scope to test the real-world operational risks faced by today's warfighter. We propose a more integrated mission-driven, multimodal black start (MMBS) exercise concept. Under an MMBS, the goal is to determine how the United States can maintain mission readiness when the world goes dry (water infrastructure), dark (power infrastructure), and empty (fuel infrastructure), and to assess the impact on operational capabilities. We then discuss ways to maximize the resilience benefits of MMBS efforts, including dedicated funding to

address the vulnerabilities these exercises will inevitably identify. Finally, we describe potential means to integrate these actions with allies, partners, and host nations to form a global resilience posture to meet US national security and operational needs of today and tomorrow.

■ The OCONUS energy security challenge

The United States and its allies operate hundreds of OCONUS military installations. While the largest concentrations of these installations are distributed across Europe, the Indo-Pacific, and the Middle East, the United States and its allies have installations across major operating regions and under a wide range of postures, including permanent bases, rotational sites, access locations, and other operating arrangements. For most of these installations, the default is dependence on host-nation electricity grids, fuel infrastructure used to receive, store, and

3. Authors could not find publicly available data to describe documented OCONUS black start exercises.

4. The DOD Office of Inspector General announced an investigation into Indo-Pacific BSE activity in September 2025. The final report for that effort is still pending. That study is likely to provide a far more detailed understanding of BSE dynamics than what is possible in this report. See US Department of Defense, Office of Inspector General, "Evaluation of the DoD's Black Start Exercises to Assess the Energy Resilience and Energy Security of Military Installations in the U.S. Indo-Pacific Command," Project No. D2025-DEV0SR-0156.000, Memorandum, September 29, 2025, https://media.defense.gov/2025/Nov/14/2003820691-1/-1/1/D2025-DEV0SR-0156.000_REDACTED.PDF.

deliver military-grade fuels for installation needs and combat platforms, and access to fresh water.⁵

Simultaneously, modern warfare is increasingly energy intensive.⁶ Drones, artificial intelligence, distributed sensing, and other advanced systems are erasing the traditional distinction between operational and installation energy requirements.⁷ Installations and the infrastructure they rely on are now inextricably linked to the systems and platforms used in modern warfare. The ongoing conflicts in Ukraine and Iran demonstrate the strategic importance of this linkage, as power, fuel, and water infrastructure remain key targets in those regions. These conflicts also expose the same or even greater vulnerabilities elsewhere. For example, Ukrainian forces are struggling to keep up with hardening existing electricity sources and rebuilding damaged power infrastructure. Similarly, Iran and Houthi rebels in Yemen have targeted multiple desalination plants across the Gulf region in retaliatory strikes.⁸

Although electrification may improve efficiency and resilience, it cannot yet replace the liquid fuels required for tanks, aircraft, ships, generators, and other combat systems, making fuel dependence an enduring strategic requirement. Potential disruptions involving the Panama Canal could delay fuel deliveries or force the use of longer supply routes from the US Gulf Coast to Asia-Pacific installations. In addition, insufficient US and allied refining capacity, particularly on the US West Coast,⁹ inadequate onshore fuel storage and intraregional pipeline capacity,¹⁰ and limited fuel reserves measured in days of supply could undermine the ability of overseas forces to sustain operations during a prolonged crisis. Europe's NATO

Pipeline System provides sufficient coverage for Western and Central European countries but has limited access to NATO's eastern flank.

Distinct from Europe's generally well-connected fuel supply system, there is no region-wide pipeline network serving continental Asia-Pacific countries. Existing national systems vary considerably in coverage and condition, and countries with limited maritime access or aging fuel depots may be especially vulnerable to disruption and damage during a conflict. The closure of the Strait of Hormuz and the lack of regional pipeline systems further demonstrate risks to fuel access in the Middle East.

Additionally, severe water shortages in parts of Europe during recurring drought conditions, together with limited natural freshwater resources across much of the Middle East, underscore growing vulnerabilities in water access. Heavy dependence on desalination, combined with civilian water-storage capacity of only a few days during peacetime, has been recognized for nearly two decades, yet limited attention and investment have been directed toward building adequate reserves for a prolonged wartime footing or in response to damage to existing water supplies.¹¹

Beyond recent cyberattacks on US energy infrastructure, the country's near-peers and adversaries have also considered kinetic attacks against US domestic critical infrastructure, including electricity and other utilities, as part of their war doctrines.¹² The same concern applies to the power and water infrastructure for our allies and partners that host OCONUS installations. Noting these deficiencies, Congress directed

5. Nathan P. Olsen, "Using Microgrids to Provide Energy Security for U.S. Bases in the Middle East," *PolicyWatch* 3671, Washington Institute for Near East Policy, November 21, 2022, <https://www.washingtoninstitute.org/policy-analysis/using-microgrids-provide-energy-security-us-bases-middle-east>.
6. Harry Krejsa and Phoebe Benich, "War: Watt Is It Good For?," *War on the Rocks*, Cogs of War (vertical), August 20, 2026, <https://warontherocks.com/cogs-of-war/war-watt-is-it-good-for/>.
7. Krejsa and Benich, "War."
8. See Zane Irwin, "Water Plants Under Fire in the Gulf Are Crucial to Civilians," *New York Times*, July 21, 2026, <https://www.nytimes.com/2026/07/21/world/middleeast/desalination-water-middle-east.html>; and Annika Hammerschlag, "What Do Trump's Threats to Bomb Iran Desalination Plants Mean for Rest of Mideast?," *Times of Israel*, March 31, 2026, <https://www.timesofisrael.com/what-do-trumps-threats-to-bomb-iran-desalination-plants-mean-for-rest-of-mideast/>.
9. US Energy Information Administration, "U.S. Refining Capacity Decreased During 2025," June 29, 2026, <https://www.eia.gov/todayinenergy/detail.php?id=67807>.
10. See, e.g., "NATO Pipeline System," March 2, 2025, <https://www.nato.int/en/what-we-do/deterrence-and-defence/nato-pipeline-system>; and "Chapter 5: Assessing the U.S. Indo-Pacific Fuel System," in *Tidalwave: Strategic Exploitation and Sustainment in a U.S.-China Conflict*, Special Report No. 324, Douglas and Sarah Allison Center for National Security, Heritage Foundation, January 16, 2026, <https://www.heritage.org/tidalwave/chapters/chapter-5-assessing-the-us-indo-pacific-fuel-system>.
11. Central Intelligence Agency, "Vulnerability of Persian Gulf Desalination Systems: An Emerging Security Issue," March 16, 2010, <https://www.cia.gov/readingroom/docs/CIA-RDP85T00283R000100160006-4.pdf>.
12. Brenda Shaffer, "Four Ways to Harden America's Power Grid before Our Global Enemies Strike," Opinion, Fox News, August 12, 2026, <https://www.foxnews.com/opinion/four-ways-harden-americas-power-grid-global-enemies-strike>.

DOD to assess current days-of-supply guidance, along with war-reserve stocks, especially in contested environments.¹³

DOD already recognizes water as essential for military installation resilience.¹⁴ Further, the linkage between fuel and water logistics and the corresponding implications for combat casualties are well documented.¹⁵ Many fuel or electricity-intensive military systems also use water as a critical input, either directly (e.g., cooling, sanitation, motive fluid) or indirectly (for personnel consumption). As a result, resilience investments that ignore the interdependence between electricity, fuel, and water risk encouraging solutions where military units simply trade one type of mission risk (water, fuel) for another (electricity). A 2016 Defense Science Board report explicitly recognizes this tension in a discussion of new water technologies: “All of these technology systems require energy to operate, the DoD would not wish to exacerbate the energy supply problem through solving water supply and treatment problems.” The same report also notes that civilian power generation systems, such as nuclear power, “all rely on large supplies of water for cooling purposes.”¹⁶ While emerging Generation IV nuclear reactor designs may significantly reduce or eliminate water requirements, the service lives of Generation III+ and earlier reactors are still measured in decades, making water an enduring critical input for civilian power generation and a continuing vulnerability for OCONUS installations in those host nations.

Real energy security at OCONUS installations is a multifaceted problem: US forces need to be able to maintain readiness when the world goes dry (loss of potable water), dark (loss of power), and empty (depleted fuel stocks due to disrupted supply chains). However, the United States does not fight alone. Failures in neighboring allied installations or civilian communities could have a cascading impact on US installations and operations. While the US military cannot directly control other nations’ civilian infrastructure, military bases, or operations, it does have a stake in the allies’ ability to meet their own energy needs in support of coalition missions. The same applies to countries that may not host a US installation

but are allies or partners with which the United States conducts joint exercises, shares cross-border energy infrastructure, or coordinates during a conflict.

Current US laws and policies to promote energy security fall short

The first step in understanding the current approach to addressing the modern energy security challenge is assessing the current legal and policy landscape. The US military has multiple authorities and requirements to promote energy security across all installations, both inside the United States and OCONUS. These requirements, primarily in Chapter 173 of 10 U.S.C.—Energy Security,¹⁷ generally require DOD to pursue energy security and resilience efforts to support mission readiness. Congressional authorization establishes a series of requirements for metrics, standards, implementation plans, performance goals, operational strategies, and exercises, but many of these provisions focus on domestic installations within the Continental United States (or CONUS). In contrast, to the extent that policy-driven requirements address OCONUS installations, those requirements tend to focus more on components within the installation boundaries than on resilience planning beyond the fenceline to host-nation infrastructure. This creates vulnerabilities and risk exposure without clear and direct authority or direction to address external dependencies for OCONUS installations.

For example, DOD’s energy policy¹⁸ authorizes the secretary of defense to establish metrics and standards to measure energy resilience, but there are no set goals or targets for these standards, and the policies do not direct the department to develop separate planning requirements for overseas installations. Further, while the department is required to conduct at least five BSEs per military department per year,¹⁹ these exercises have focused primarily on domestic installations and the legislation has no specific requirement that any of the BSEs occur at OCONUS installations or address any contingencies arising from dependencies on host-nation utilities or fuel supplies.

13. FY 2022 NDAA § 352, Pub. L. No. 117-81, 135 Stat. 1685–86 (2021).

14. See 10 U.S.C. § 101(f)(8), “Military Installation Resilience.”

15. See “Force Multiplying Technologies for Logistics Support to Military Operations,” Chapter 5, Committee on Force Multiplying Technologies for Logistics Support to Military Operations, National Academies of Sciences, Engineering, and Medicine, 2014; and David Eady et al., “Sustain the Mission Project: Casualty Factors for Fuel and Water Resupply Convoys,” Final Technical Report, Army Environmental Policy Institute, September 17, 2009.

16. US Department of Defense, Defense Science Board, *Task Force on Energy Systems for Forward/Remote Operating Bases: Final Report* (Washington, DC: Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics, August 1, 2016), <https://apps.dtic.mil/sti/pdfs/AD1022571.pdf>.

17. See generally, 10 U.S.C. §§ 2911–2928.

18. 10 U.S.C. § 2911.

19. See 10 U.S.C. § 2920.

The department's operational energy strategies²⁰ recognize vulnerabilities in host-nation electricity grids and the availability of fuels, but these strategies include assessments of host-nation infrastructure investments. They do not require investments by host nations or authorize integration of US-backed investments into the host-nation's grids or infrastructure that support military or operational capabilities. Finally, even in policy, there is limited focus on recovery and adaptation, with no specific requirements for OCONUS resilience planning, investments, or coordination.²¹ There is no provision in the underlying authority that directly provides guidance or imposes a requirement to ensure energy security or resilience for OCONUS installations.

The US National Security Strategy and recent executive orders focus on domestic installations, without accounting for country-level interdependency risk

The National Security Strategy states that US policy is to secure access to critical supply chains and restore American energy dominance, especially as they relate to the US military and readiness. However, neither of these priorities specifically addresses OCONUS installations. The resulting policy emphasis therefore focuses on US domestic energy security and industrial capacity. This leaves no specific strategy for promoting or protecting the energy infrastructure supporting OCONUS installations.

Recent executive orders have sought to promote energy security for US installations. However, these actions have either been directed only at domestic installations or are constrained by host-nation laws or policies. For example, Exec. Order No. 14299 seeks to ensure the rapid development, deployment, and use of advanced or next-generation nuclear reactors on at least one military base to support national security objectives by 2028, with the intent to expand to other facilities thereafter. As written, the executive order does not provide a planning pathway for OCONUS installations or clear guidance for deploying these technologies on OCONUS installations, especially where host nations may prohibit nuclear power, such as Germany. As this policy is implemented, further development and demonstration of nuclear technologies on US installations could lead to expanded authorities and additional opportunities to deploy proven technologies in countries that host US installations, particularly those with Section 123 agreements²² in place.

International treaty obligations and cooperation agreements leave potential gaps and vulnerabilities for OCONUS installations

In recent years the United States has entered into numerous bilateral and multilateral agreements and treaties with countries around the world, establishing specific authorities and requirements intended to enhance military readiness and capabilities. These treaties and agreements assign specific authorities and obligations to the United States for military and national security matters. While they are intended to shape and strengthen US national security, either directly or indirectly by bolstering an ally's or partner's capabilities or operational readiness, they are generally silent on key energy-infrastructure requirements and the personnel needs those systems support.

Based on a search of the US Code, there is no general-purpose, dedicated authority or funding mechanism identified by the authors that could support host-nation energy infrastructure needed for OCONUS installation or mission resilience. For example, a major non-NATO ally (MNNA) designation creates eligibility for certain defense trade and security cooperation programs. These programs support our partners and allies in key regions such as the Middle East and Indo-Pacific region but are limited to military articles and training cooperation and do not have a general-purpose authority to finance civilian or dual-use energy, fuel, or water infrastructure. Currently, there is no authority or priority to promote energy resilience or projects in a host nation that would strengthen the resilience of its energy grids, fuel supplies, or water capacity.²³ This is especially true for infrastructure that directly supports an OCONUS installation, supports an ally that is co-located on an OCONUS installation, or could provide enhanced capabilities to US forces during contingency operations.

For NATO countries, mechanisms to directly address resilience exist but lack consistent execution at the country level. The NATO Security Investment Programme (NSIP) provides a multinational mechanism where energy infrastructure satisfies an Alliance-wide requirement rather than an exclusively national requirement. Additionally, an NSIP project generally requires full NATO approval and has certain restrictions and limitations that may not provide the flexibility needed to support an OCONUS installation. NATO coordination is further complicated by Article 3, which obligates NATO members to develop their capacity to resist armed attacks. Article 3 does

20. 10 U.S.C § 2926.

21. See, e.g., DOD Instruction 4715.28, Military Installation Resilience. Although the instruction provides guidance for preplanning across various resilience factors, there is no requirement for the DOD to coordinate with host-nation governments or entities that provide critical connections to OCONUS installations, including power grids, fuel supplies, and water.

22. Section 123 of the United States Atomic Energy Act of 1954, "Cooperation With Other Nations."

23. See 10 U.S.C. § 2350a and 22 U.S.C. § 2321k.

not establish minimum standards for protecting critical energy infrastructure. This leaves host nations to make investments on their own initiative. Such investments are typically smaller, have a lower priority, or may be less comprehensively hardened against attack.²⁴

Other partnership agreements such as Defense Cooperation Agreements (DCA), Enhanced Defense Cooperation Agreements (EDCA), and Major Defense Partner arrangements (MDPA) provide little or no authority or opportunity to promote energy resilience or preparedness for disruption. Even the Compacts of Free Association (COFA) with various Pacific Island nations do not allow the United States to develop energy infrastructure in the region. Where allowed, some energy resilience projects on OCONUS installations themselves may still require host-nation consent.

■ Achieving the best by testing for the worst

Energy security at OCONUS installations is a multifaceted problem that requires reliable and sufficient access to electricity, fuel, and water to stay in the fight.²⁵ A review of public data sources reveals a wide range of electricity, fuel, and water disruption risks that could be relevant to OCONUS military installations and mission resilience. Patrick Gasser, a leading researcher on global energy resilience, and his colleagues, developed multiple electricity supply resilience assessment methodologies and applied them to a sample of 140 countries.²⁶ The results vary widely and, in some cases, diverge. For OCONUS installations and operational commanders, the authors' results indicate that reliable, redundant, resilient, and reconfigurable grid-based power is not consistently available.

In terms of fuel, OCONUS installations may face access challenges based on host-nation domestic refining capacity and/or potential supply chain disruptions. The ongoing military conflict in Iran has demonstrated how geographic chokepoints, such as the Strait of Hormuz, can affect the global availability of crude oil and the price of refined fuel products. Limited host-nation refining capacity can also constrain fuel access during contingency operations. A 2025 report concluded that some US allies, such as the Philippines, face significant vulnerabilities related to Pacific regional refining capacity: "In an extended crisis that resulted in the closure of regional trade routes...the Philippines could have difficulty continuing to provide multilateral fuel supplies to US forces."²⁸

Our own review of publicly available HydroSHEDS and military installation location data across Europe, the Middle East, and Southeast Asia indicates that most US military installations are more than one kilometer (km) away from a potentially fresh surface water source.²⁹ This pattern is consistent with OCONUS installations relying on additional infrastructure (e.g., underground reservoirs, desalination) to support regular water access. If such infrastructure were compromised, operational forces could face difficulties in securing and sustaining sufficient water supplies for military operations.

Figure 1 layers the electricity, fuel, and water dynamics into a single visualization. Each country is color-coded according to its lowest electricity or fuel rating. Individual installations farther than one kilometer from a likely freshwater source are also flagged to indicate potential additional water infrastructure dependencies. The resulting patchwork of potential resilience risks supports the view that OCONUS installations face a complicated threat landscape across electricity, fuel, and water sectors. Thus, true resilience will require a diverse mix of deliberate, mission-focused, and data-driven local investments.

24. Authors' interview with former NATO-connected personnel.

25. To assess the variability of potential electricity, fuel, and water challenges across installations and host nations, we conducted a series of exploratory analyses that are included in the appendix.

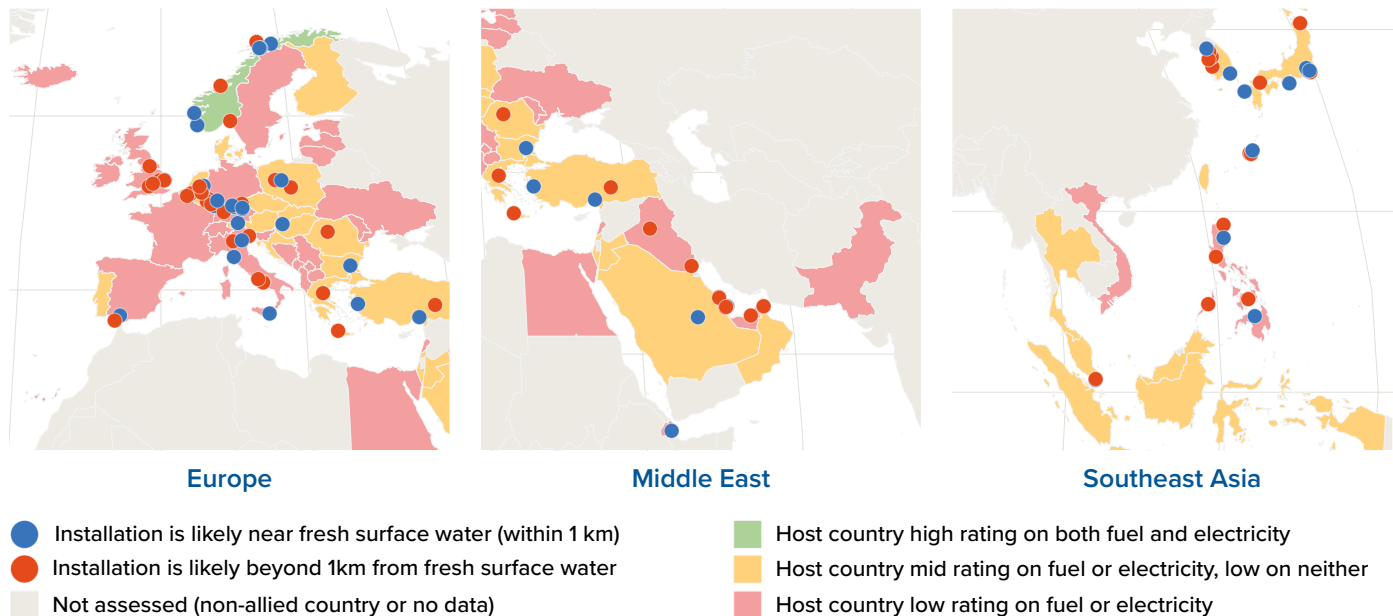
26. Patrick Gasser et al., "Comprehensive Resilience Assessment of Electricity Supply Security for 140 Countries," *Ecological Indicators*, March 2020, <https://doi.org/10.1016/j.ecolind.2019.105731>; Patrick Gasser et al., "Quantifying Electricity Supply Resilience of Countries with Robust Efficiency Analysis," *Energies*, March 25, 2020, <https://doi.org/10.3390/en13071535>.

27. Host-nation electricity assessments followed Gasser et al. (2020). Fuel assessments were based on public data from the United Nations Energy Statistics division (<https://data.un.org/Data.aspx?d=EDATA&f=cmlID%3AJF>), accessed September 14, 2026, and the US Energy Information Administration (<https://www.eia.gov/international/data/world>), accessed September 14, 2026. A country had potentially high fuel resilience if it produced the majority of both crude oil and refined jet fuel products domestically. Conversely, a country had potentially low fuel resilience if it was primarily import-dependent along both dimensions. A country obtained a moderate rating if only one dimension was mainly supported by imports.

28. Michael J. Mazarr et al., "Sustaining U.S. Army operations in the Indo-Pacific: Potential roles of allies and partners," June 5, 2025, RAND Corporation, <https://doi.org/10.7249/RAA2434-3>.

29. HydroSHEDS is a research-grade database suitable for regional or global hydro-ecological analyses. See Bernhard Lehner and Günther Grill, "Global River Hydrography and Network Routing: Baseline Data and New Approaches to Study the World's Large River Systems," *Hydrological Processes*, February 13, 2013, <https://doi.org/10.1002/hyp.9740>; Mathis Loic Messager, "Estimating the Volume and Age of Water Stored in Global Lakes Using a Geo-statistical Approach," December 15, 2016, *Nature Communications*, <https://doi.org/10.1038/ncomms13603>.

Figure 1: OCONUS electricity, fuel, and water resilience trends in Europe, Middle East, and Southeast Asia



Source: UN Energy Statistics division and US Energy Information Administration.

A novel aspect of this analysis in Figure 1 is that it reflects a combined perspective across electricity, fuel, and water infrastructure. While DOD policy mandates certain programs to manage these resources at all US installations, interviews with multiple subject matter experts indicate potentially significant gaps in our understanding of total OCONUS energy demand and resilience.³⁰ This integration gap is reflected in existing BSE efforts, which focus on electrical disruptions, with fuel and water infrastructure treated as secondary systems or exempted from exercise requirements. No BSE-level strategy currently exists for assessing installation and mission resilience to disruptions across electricity, fuel, and water resources.

Multimodal black start exercises: A full, real-world test of resilience

As the world continues to grapple with load growth straining power grids that OCONUS installations rely on, and geopolitical instability challenging energy security across the US operating posture abroad, “stress testing” the real-world

limits of installations has become critical. Congress mandated BSEs to account for unforeseen disruptions and installations’ ability to maintain mission assurance through a sustained loss of off-installation energy resources. BSE execution at OCONUS installations appears particularly limited and has even prompted a recent inspector general evaluation.³¹ More fundamentally, BSEs face a structural limitation because the exercise definition does not expressly encompass liquid fuel stocks or account for water access.³² Accordingly, when these exercises are executed, they do not fully account for the spectrum of energy and mission-critical assets.

BSEs attempt to assess several real-world performance criteria, including system performance, generator start-up and critical load continuity, infrastructure configurations, single points of failure and interdependency mapping, and mission readiness including whether installation personnel are trained and adequately responsive.³³ Taken together, a base should be able to assess its electricity-dependent risk profile. However, installations must also deliberately consider the second-order

30. US Department of Defense, “Installation Energy Management,” DOD Instruction 4170.11, December 11, 2009, incorporating change 2, August 31, 2018, <https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/417011p.pdf?ver=2019-04-15-094505-563>.
31. Department of Defense Office of Inspector General, Evaluation of the DOD’s Black Start Exercises to Assess the Energy Resilience and Energy Security of Military Installations in the U.S. Indo-Pacific Command, Project No. D2025-DEV0SR-0156.000, announced September 29, 2025.
32. See 10 U.S.C. § 2920(h)(4) — Energy Resilience and Energy Security Measures. Further exercise requirements are identified at 10 U.S.C. § 2920(d)(2)(C)(ii), with specific exceptions outlined at 10 U.S.C. § 2920(f).
33. Nicholas Judson, “Resilience of Critical Missions for the Department of Defense,” MIT Lincoln Laboratory, February 11, 2020.

effects of total power loss. A sustained loss of power can expose water and liquid-fuel vulnerabilities. Water is often treated as a separate modality and not tested in sequence, whereas fuel is treated with conventional storage metrics, such as DOD's fourteen-day energy disruption standard.³⁴ On that metric alone, and even if fuel were within scope, the current BSE would be ill-equipped to assess the standard because exercises are capped at five days.³⁵

A three-to-five-day test cannot validate a fourteen-day standard. If diesel-powered generators are the backstop to power outages, installations should consider what backs up the backup. Without electricity, the ability to pump and treat water is jeopardized.³⁶ In fact, DOD's current energy guidance does not specifically reference potable water as a named resilience standard.³⁷ The gap is therefore not only in execution but also in scope. The law requires exercises to identify infrastructure interdependencies yet defines energy narrowly enough to exclude the two dependencies that can be disrupted as a consequence of an extended loss of power.³⁸

An MMBS framework would take the existing BSE framework and measure liquid fuel and freshwater dependencies during the same power-loss exercise. By extending the current assessment's scope, installations can more accurately capture second-order effects and assess the complete restoration sequence. This would provide a standardized, comparable record across installations, even as the remediation measures remain installation specific. Total planned power loss is a rare and valuable occurrence. While the power is turned off, the exercise can collect data throughout the causal chain.

As conceived, a new MMBS framework would assess the system-of-systems dependencies at an installation over a realistic time horizon tailored to unit mission requirements. The exercise could be extended as needed to identify and characterize the operational consequences and dependencies facing installations based on electricity, fuel, and water requirements. The objective of the exercise would be to generate specific, mission-focused assessments that identify

the corrective measures or equipment needed to remediate installation deficiencies. Remediating identified deficiencies would require additional funding and authority, which are addressed in the recommendations. This would go beyond the current goal of a BSE, which focuses only on whether power is adequately restored after a planned exercise shutdown. An MMBS adds a quantitative layer for understanding how the exercise affects real-world performance. With this new capability, aggregated results across installations could support mission planning and answer strategic questions.

Further, as with existing BSEs, an MMBS conducted by a US military department at an OCONUS installation would still require coordination and support from the US interagency. This would typically include the Departments of Energy and State, particularly for host-nation coordination, as well as relevant health agencies and other federal entities, as appropriate. Civil Affairs units would also provide valuable coordination and engagement with host-nation governments, utilities, infrastructure operators, and other relevant entities. Specialized engineering units would be central to testing identified vulnerabilities.³⁹

Much like a multidomain task force synchronizes combat activities across air, land, maritime, space, and cyberspace, an MMBS framework would integrate testing across power, fuel, and water dependencies to produce a comprehensive picture of readiness and the corrective actions required. Similarly, during the exercise, key mission and operational functions must be the central focus. Rather than leading the MMBS, installation energy and engineering forces would play supporting roles. The MMBS is an operational resilience test conducted under conditions in which supporting infrastructure may be compromised, not an infrastructure assessment that may compromise operations. Thus, the purpose of the exercise is to identify the "real-world gaps between critical mission requirements and infrastructure energy resilience" and to provide both installation energy personnel and operational staff the opportunity to practice their response to a real-world,

34. Under Secretary of Defense for Acquisition and Sustainment, Memorandum, Metrics and Standards for Energy Resilience at Military Installations, May 20, 2021.

35. 10 U.S.C. § 2920(d)(2)(D)(i).

36. US Environmental Protection Agency, *Power Resilience: Guide for Water and Wastewater Utilities*, 2016.

37. See 10 U.S.C. §§ 2920(f) and (h)(4).

38. 10 U.S.C. § 2920(h)(2)(D). We consider access to liquid military-grade transportation fuels and potable water as mission-critical dependencies.

39. For example, the 249th Engineer Battalion (the "Prime Power Battalion") and additional specialized units could be used to test and train on microgrid capabilities and mobile water-treatment and distribution technologies, respectively, and other technologies and capabilities as relevant. While many systems are location- or technology-specific, interoperable systems could provide broader opportunities for use during exercises and conflicts.

installation-wide disruption by applying response tactics, procedures, and protocols.⁴⁰

The framework is also designed to accommodate the range of installation types and their unique risk profiles while deliberately considering the follow-on effects of power loss. For example, an island installation in the US Indo-Pacific Command (INDOPACOM) area of responsibility might rely heavily on fuel shipments, creating a fragile dependence on on-base fuel stores and increasing the need to map generator stress points. This becomes particularly important as the US military adopts a more distributed and tactically fragmented posture, such as the US Air Force's distributed agile combat employment (ACE) concept, which seeks to disperse aircraft, equipment, and personnel across a "hub-and-spoke" network using partner-nation airfields rather than traditional, centralized installations with larger airfields. By contrast, a US Central Command (CENTCOM) installation might face real-world threats to power supplied to desalination plants, as demonstrated by recent conflict-related risks in the Gulf states.⁴¹ An MMBS would cover the installation's fuel storage, distribution, and resupply infrastructure, not fuel consumed by platforms in operations.⁴² The framework must remain flexible. What works in one region might not work in another, but the goal remains empirical data.

MMBS is designed to answer questions that can only be assessed when the lights go out, fuel runs empty, or water runs dry. BSE reporting is used as a tracking mechanism for future remediation, and action is typically taken when mission criticality and funding opportunities align. In the MMBS paradigm, expanding what is measured will inevitably expose

more deficiencies. A fixed funding pool can then disincentivize installation participation because unfunded deficiencies remain associated with the commander who surfaced them. As mandated in the Fiscal Year (FY) 2026–FY 2027 DOD Energy Resilience and Conservation Investment Program (ERCIP)⁴³ guidance, the DOD Climate Assessment Tool, or an approved equivalent system, is now a required assessment whose results feed the DD Form 1391 (Military Construction Project Data) justification for ERCIP submission and selection.⁴⁴ By contrast, findings from the existing BSE framework enter the ERCIP submission process as one permissible input among several, rather than a required or weighted criterion.⁴⁵ MMBS findings would provide directly observed, mission-relevant performance data. Those results could justify giving operational exercise findings greater weight alongside other installation-level assessments and provide initial design input for the DD Form 1391 process. The results of MMBS could also feed ERCIP project selection criteria.⁴⁶ After completion of this expanded exercise, the data should carry sufficient weight to prompt meaningful action.

An MMBS would serve as a bridge between identified deficiencies and funding for OCONUS installations and could also serve as a model for reviews of forward operating bases and locations. Planned exercise outages will occur regardless, and deficiencies will always exist. The MMBS framework allows installations to gain more actionable information from a comprehensive, real-world test of installation-wide power loss, fuel-supply shortages affecting base operations and supporting combat platforms, and cutoffs from essential resources such as potable water during these planned outages.

40. Adair Douglas, Alex Pina, and Meredith Pringle, "Exercise Roadmap for Resilience: Requirements, Results, and Resourcing," Winter 2022. Prepared for Naval Postgraduate School (NPS). Monterey, CA: Converge Strategies, LLC.

41. Manal Shehabi, "War on Iran: The Dangers of Attacking Water Desalination Plants in the Gulf," Arab Center DC, April 30, 2026; and Al Jazeera Staff, Agence France-Presse, and Reuters, "Gulf States Come Under Iranian Fire as US Strikes Intensify," via *Al Jazeera*, July 17, 2026.

42. 10 U.S.C. § 2920.

43. 10 U.S.C. § 2914.

44. FY 2026–2027 ERCIP Guidance Amendment, OASD(EI&E), June 2024; and Energy Resilience Questionnaire, Appendix III, Question 7.

45. FY 2026–2027 ERCIP Guidance Amendment, OASD(EI&E).

46. 10 U.S.C. § 2914.

■ Case studies: Illustrative examples for MMBS and potential outcomes in key regions

Reliance on adversary-controlled or influenced power grids creates risks in Southeast Asia.

Existing and planned US installations in the Philippines are vulnerable to disruption because many of these sites rely upon a transmission system that is operated by a concessionaire with significant Chinese state-owned participation. This exposes US and allied forces to potential cyber intrusions or deliberate disruptions by an adversary.⁴⁷ The Philippines is also a net fuel importer, has no strategic petroleum or fuel reserve, and faces significant choke-point exposure via South China Sea shipping lanes.⁴⁸ Similarly, China's influence and financing of dams in Laos affect Thailand's power supply.⁴⁹ Although Thailand does not host a US installation, it partners with the United States through joint operations and could host US airframes as part of the expanded agile concept framework. An MMBS could evaluate issues such as how high levels of adversary-linked energy entanglement, submarine-cable disruptions, domestic fuel-supply weaknesses, and limited fuel-storage capacity could hinder US mission capabilities at OCONUS installations or host-nation air bases used during exercises or contingency operations. The exercise could also identify interventions needed to meet surge needs, especially during contingency operations.



Al Udeid Air Base in Qatar faces fuel logistics challenges.
Source: US National Archives.

Geographic constraints and single points of failure for fuel and water create acute mission and humanitarian risks for Qatar.

Recent events in the US-Israel-Iran conflict, beyond direct attacks on US military facilities, have exposed risks to military operations and personnel arising from power loss at Qatar's desalination plants or the power stations that support them. Qatar has an estimated two to seven days of continuous potable water supply for both civilian and US military personnel.⁵⁰ There are also growing vulnerabilities in fuel logistics through the Strait of Hormuz and in the domestic power systems serving Al Udeid Air Base, particularly during attacks or disruptions affecting Qatar's energy and water infrastructure.⁵¹ An MMBS could explore how vulnerabilities created by single points of failure, chokepoints, and limited access to essential resources such as water could be mitigated through storage investments and integration with host-nation contingency planning. Similar exposure to water shortages could hamper operations and resilience in Kuwait.

47. Raissa Robles, "China Can Turn Off the Philippine National Power Grid, Officials Say," *This Week in Asia*, South China Morning Post (part of Alibaba group), November 20, 2019, <https://www.scmp.com/week-asia/politics/article/3038655/china-can-turn-philippine-national-power-grid-officials-say>.
48. "Philippines Down to Its Last Three Weeks of Fuel Reserves, Turns to Russia for Help," Jakarta Office, Intellinews, March 18, 2016, <https://www.intellinews.com/philippines-down-to-its-last-three-weeks-of-fuel-reserves-turns-to-russia-for-help-431862/>.
49. Cui Qiwen, "Laos First Country to Trade Renewable Power in China's Electricity Market," *Dialogue Earth*, April 30, 2026, <https://dialogue.earth/en/digest/laos-first-country-to-trade-renewable-power-in-chinas-electricity-market/>.
50. Sean Mathews, "Threats to Water Supply and Food Inflation Stalk Gulf States," *Middle East Eye*, March 6, 2026, <https://www.middleeasteye.net/news/threats-water-supply-and-food-inflation-stalk-gulf-states>.
51. Hannah Ellis-Petersen, "Why Iran's Threat to Destroy Water Facilities Could Spell Disaster for Gulf Countries," *Guardian*, March 23, 2026, <https://www.theguardian.com/world/2026/mar/23/iran-threat-to-destroy-water-facilities-gulf>.

Germany's former dependencies on Russian-linked infrastructure and domestic energy policies potentially hamper US energy security.

While Germany is no longer dependent on Russian pipeline gas or Russian oil and petroleum products to the extent it was before 2022, it remains highly dependent on imported oil and gas and on interconnected civilian infrastructure for military capabilities. Germany has also limited its use of self-sufficient energy sources such as nuclear energy and other advanced technologies due to statutory limitations on commercial nuclear generation.⁵² Because Article II of the NATO Status of Forces Agreement (SOFA) explicitly requires the sending state (in this case, the United States) to respect the laws of the receiving state (for this case study, Germany), Germany's national law phasing out nuclear power prevents the United States from purchasing or seeking nuclear power generation outside of installation boundaries and also applies to the construction of various types of nuclear energy facilities on US military installations.⁵³ Further, Europe's recent droughts have affected regional maritime transit capacity on rivers such as the Danube and have also impacted regional municipal water supplies.⁵⁴ An MMBS could explore solutions to potential vulnerabilities on a regional basis. A German case could focus on a regional NATO-US energy assurance network, including pipeline and fuel-storage infrastructure that was historically connected to Russian-sourced energy supplies. Additionally, an MMBS could evaluate policy or SOFA-related alternatives that could create incentives for Germany to change its domestic legislation to support US military capability needs. Similar assessments of restrictions on nuclear power or other long-duration, self-sufficient power options could be conducted in key European countries to determine reliable alternatives and supply chains.

52. US International Trade Administration, "Germany Country Commercial Guide," US Department of Commerce, August 1, 2025, <https://www.trade.gov/country-commercial-guides/germany-energy>.
53. Jens Thurau, "Germany Won't Return to Nuclear Power, Chancellor Says," *Deutsche Welle*, March 11, 2026, <https://www.dw.com/en/germany-nuclear-power-plants-european-union-energy-policy/a-76305267>.
54. Marko Drobnjakovic and Jovana Gec, "Europe's Summer Drought Threatens Fish in Rivers, Lakes and Farms," August 29, 2026, <https://abcnews.com/International/wireStory/europes-summer-drought-threatens-fish-rivers-lakes-farms-136051976>.

A twofold approach: Expanded real-world exercises and targeted investments

The US military and particularly its OCONUS installations face significant vulnerabilities across multiple dimensions. Some of these are localized, such as a base relying on a vulnerable host-nation electricity grid. Others are subject to geographic choke points (like those discussed in this paper), which threaten supply chains and resupply operations. Some installations will be disadvantaged by limited freshwater access or reliance on seaborne fuel resupply, while others may be exposed to vulnerable host-nation grids. Despite these unique profiles, all OCONUS installations can benefit from enhanced resilience planning to harden against unforeseen disruptions. These disruptions include natural disasters, cyberattacks, or local or regional conflicts, such as those seen recently in Eastern Europe and the Middle East. A multimodal exercise that focuses on assessing the spectrum of disruptions and informing long-term resilience investments is necessary.

Build and adopt a multimodal black start framework

A new framework within DOD's mission is most viable when it begins under existing authority and expands from there. Together, these recommendations are cumulative and sequential. In the first phase, no new funding or authority is required. From there, a congressional mandate is needed to make the MMBS framework durable in statute, and sufficient funding is necessary to properly address identified deficiencies. In its fully realized form, there must be consistent funding, priority alignment, and program buy-in from senior leaders and installation commanders. This is especially important for overseas installations and across the military departments, combatant commands (COCOMs), and combined or joint missions.

1. Expand BSEs into a more comprehensive framework across military departments.

Aligning statutory mandates to congressional intent often requires detailed technical drafting and iterative development. MMBS's flexible nature makes its first phase actionable from day one: use an existing program with limited additional funding for an exercise that has an expanded but focused scope. Thus, there would be no stand-alone program or exercise requirement. This phase calls for enhanced execution of what is already required by law. As referenced previously, existing law calls for identifying these interdependencies.⁵⁵ The Office of the Assistant Secretary of Defense for Energy, Installations, and Environment (ASD(EI&E)) holds department-wide policy oversight, while the assistant secretary of defense for sustainment (ASD(S)) currently sets exercise scheduling.⁵⁶ Formalizing the schedule would increase the durability of execution. At the command level, these data can inform larger tabletop exercises that simulate regional interdependencies under contested conditions. In these regions, larger, colocated installation footprints common at OCONUS locations could be addressed simultaneously, easing the scheduling burden of MMBS execution.

ASD(S) should then schedule at least one of each department's five annual exercises to be conducted at an OCONUS installation, an action available today without amendment.⁵⁷ These exercises should be planned and developed in coordination with installation leadership but could also be conducted without prior notification to determine response capability in a real-world scenario. DOD, working with the military departments and COCOMs, would prioritize which installations would conduct the exercises based on global mission priorities and current risks. Some regions, such as the INDOPACOM area of responsibility, may warrant earlier resilience testing because of elevated threats, but exercise sequencing should ultimately reflect the operational threat posture in contested areas.

DOD should bolster those exercises by measuring the spectrum of fuel, water, and electricity interdependencies as outlined in this brief. ASD(EI&E) would continue to oversee reporting and should direct observers to account for potable water and military-grade fuels as explicit assessment elements. However, the profile of each OCONUS installation and the region it occupies require flexibility to address each installation's unique needs. Therefore, installation managers and observers would be directed to work with installation commanders to plan for relevant metrics.

Similar to the intended goal of the current BSE framework, MMBS's value should not be viewed as a list of unfunded problems but as a coordinated assessment that identifies actionable deficiencies. ASD(EI&E) should receive installation reporting and synthesize it into a cross-COCOM readiness picture, with support from relevant functional COCOMs, to inform the operational force. This would shift the culture away from placing responsibility on installation commanders for surfacing deficiencies and toward treating the identification of deficiencies as an expected exercise outcome. However, a change in reporting structure alone will neither fully incentivize commanders' participation nor eliminate concerns about negative top-down assessments of individual commanders. Therefore, senior-leader commitment to resilience is also needed. Additional training on resilience concepts should be integrated into senior-leader curricula at command and staff colleges to give these concepts sufficient weight and show how resilience enables modern warfighting.

2. Ensure statutory durability for MMBS with minimum standards, assessments, and tangible outcomes.

The purpose of an expanded MMBS framework is to account for evolving conditions facing US military operations, especially abroad. In this second phase, the most durable approach to addressing the limited statutory scope of resilience is to make targeted amendments that more directly advance congressional intent for mission assurance. For example, Congress should amend:

- 10 U.S.C. § 2920(h)(4) to add liquid fuel stocks and potable water; and
- 10 U.S.C. § 2920 to require at least one of the five mandated exercises per military department per year to be conducted at a mission-prioritized OCONUS installation, and to establish a minimum five-day duration for MMBS-designated exercises while permitting extensions beyond five days. This would provide sufficient time to assess real-world outcomes in detail under degraded conditions, including second- and third-order effects on operations, personnel, repair and restoration activities, host-nation coordination, mission and unit requirements, and other relevant operational factors.

55. 10 U.S.C. § 2920(h)(2)(D).

56. See, e.g., Department of Defense Instruction (DoDI) 4170.11, Installation Energy Management (policy oversight); Under Secretary of Defense for Acquisition and Sustainment (USD(A&S)), Memorandum, May 20, 2021.

57. 10 U.S.C. § 2920.

Even with incentives, some “gamesmanship” is likely. Military culture can create incentives for commanders to avoid surfacing problems when systems appear to meet readiness standards.⁵⁸ However, to ensure that MMBS results directly inform specific funding and prioritization decisions, a gating process is required. Any deficiency identified through an MMBS should meet all three of the following proposed criteria:

- It must have been identified and documented in the MMBS after-action report. This prevents simple rebranding of pre-existing deficiencies. However, completion of the report should not preclude immediate actions to improve resilience in the short term.
- It must affect a critical mission, as defined in statute.⁵⁹ This excludes housing-related issues and other non-mission deficiencies.
- It must constitute a critical failure point (such as a single point of failure) or demonstrably inhibit restoration in a real-world scenario or contingency.

A primary DOD funding source for improving installations through large-scale or energy-related projects is the military construction (MILCON) appropriation, which primarily supports major installation projects that meet mission needs. This recommendation would not remove or displace existing MILCON funding. Rather, we recommend additional funding to address deficiencies revealed during an MMBS, complement planned requirements and condition assessments, and remediate failures that become apparent only while the power is off. Anything outside these gates would follow traditional channels.⁶⁰

3. Funding for MMBS program implementation and ensuing corrective measures must be durable, multi-year, and timely to ensure mission readiness.

In the fully realized version of this proposal, funding would be disbursed in a timely manner to the highest-priority installations. Examples of supporting authorities and requirements for the program should include at least the following:

- Multiyear or no-year appropriations that provide consistent funding beyond MILCON, as explored in the following recommendation. These authorities better enable projects where funding is spread across multiple

years. For example, a project to procure and install multiple power generators over multiple years can result in different models being used due to separate low-bid contracts each year. Fragmented annual procurement can create equipment incompatibilities that complicate maintenance, integration, and reliable backup-power operations.⁶¹ MMBS would then generate the requirements that could be funded under these authorities by entities such as Defense Logistics Agency (DLA) Energy or COCOMs.

- OCONUS areawide contracting vehicles, under which installations in a particular utility service territory contract directly rather than through individual procurements, mirroring the US General Services Administration areawide contracts authorized in the FY 2024 National Defense Authorization Act and piloted in fiscal year 2026.⁶²
- A baseline exercise for installation commanders, with implementation of corrective actions and a remediation assessment later in the commander’s tour of duty.
- Institutionalize an annual audit of projects addressing MMBS-derived deficiencies submitted for ERCIP funding to assess whether they resolve or mitigate the identified problem.
- Amend DOD’s statutory energy authority⁶³ to standardize exercise findings and reporting across the military departments to reflect associated risk determinations and remediation status.
- Expand specialized units responsible for electrical-grid enhancement, such as the 249th Engineer Battalion, or designate other relevant units, to provide teams that support MMBS exercises through microgrid testing and operator training. These specialized units would also work with host-nation civilian workforces to prepare for urgent outage or crisis-response needs when military units are delayed in providing repair or restoration support.

No military program is infallible, and these recommendations are intended to move DOD toward the most resilient OCONUS posture possible. Implementation would need to be iterative and should adapt to critical mission needs as they develop or change based on new priorities or directives.

58. Authors’ interview with Alex Pina of Converge Strategies, a black start exercise policy developer and practitioner.

59. See 10 U.S.C. § 2920(h)(3).

60. For example, funding through the Operational Energy Capability Improvement Fund (OECIF) and the Operational Energy Prototyping Fund (OEPF).

61. Based on authors’ interview with an energy practitioner.

62. FY 2024 NDAA § 2811(b); and FY 2026 NDAA § 2888.

63. For example, 10 U.S.C. §§ 2920 et seq.

Protecting the future by investing now

Even while expanding and implementing this new MMBS framework, a number of immediate actions can be taken across the globe to promote resilience for OCONUS installations and supply chains for critical mission needs. Priority areas include electricity, military-grade transportation fuels, potable water, and the critical infrastructure required to deliver these resources to military personnel on installations and to associated naval and air forces.

1. Build strategic energy infrastructure solutions.

Congress should expressly authorize DOD to spend US funds on energy infrastructure located outside a US installation and/or on host-country or partner-owned property when that infrastructure is necessary to sustain a covered US installation or combined operational network. This authorization should be specifically focused on OCONUS energy resilience under an authority separate from traditional MILCON and similar mechanisms to allow flexible, multiyear and rapid acquisition-style purchasing to meet immediate and enduring energy, fuel, and water resilience needs.⁶⁴

In coordination with this new authority, DOD should adopt a coordinated energy-resilience investment strategy centered on targeted capital projects at the highest-risk overseas installations and in priority allied countries. Congress should authorize the Office of Strategic Capital to help finance infrastructure that supports both US installations and combined allied operations, while the Defense Production Act—particularly a Title III determination—could expand domestic production of critical energy systems and secure additional fuel supplies.

Additionally, Congress should establish a military-wide strategic fuel and water reserve program to provide sufficient storage and distribution capacity for liquid fuels and potable water and, where appropriate, production capacity. The program should also protect domestic and forward-region refining and storage assets and restore a Naval Petroleum Reserve-type capability. Congress should also amend the Energy Act of 2020 to recognize refined petroleum products, including diesel, jet fuel, gasoline, and specialty fuels (including a range of synthetic drop-in fuels), as critical materials to strengthen the US military's authority to prevent supply-chain disruptions affecting these fuels, thereby strengthening mission resilience.

2. Expand military treaty and agreement authorities.

Congress should authorize and fund executive-branch efforts and encourage the president to negotiate new or amended treaties and security agreements (such as DCAs, EDCAs, MDPAs, and other security relationships, including MNNA designations) to include energy resilience projects as authorized actions that US military departments and services can fund or support cooperatively. This would authorize the executive branch to negotiate with allies and partners on energy and resilience-related matters as part of defense agreements, including investments and cost-sharing, while recognizing the mutual benefits of military readiness and civilian resilience. Congress could advance these authorities through annual defense authorization and appropriations legislation and refine them over subsequent legislative cycles.

Similarly, allied defense-investment commitments should be aligned more directly with shared energy infrastructure, such as through NATO's partnership frameworks and spending commitments, including the Partnership Interoperability Initiative and Defence Investment Pledge, with a comparable framework established for Indo-Pacific partners. Priority projects should include natural gas import terminals, interconnectors, and storage, expanded small modular reactor deployment, modernization of the NATO Pipeline System, new Indo-Pacific fuel-distribution networks, stronger cross-border electricity interconnections, hardened regional grids, and cyber-defense platforms that protect critical energy assets.

DOD should assess the feasibility of funding military-grade bulk fuel supply chains, including funding or support for domestic or allied refineries to ensure sufficient military-grade fuel supplies, as well as expansion of Defense Logistics Agency Energy authorities and arrangements such as Fuel Support Agreements (FSAs) and Fuel Exchange Agreements (FEAs).

Conclusion

The old adage that a military's capability to project force is 10 percent related to its weapons and personnel and 90 percent logistics is even more stark when considering our overseas posture and mission set. The few hundred overseas installations and posts, including small forward operating locations, face growing threats to mission capability from natural disasters, supply-line choke points, cyber intrusions, and long-distance drones that pose an outsized threat to electricity, fuel, and water systems.

64. This new authority would be subject to host-nation consent or separate negotiated approvals under applicable treaties or status of forces agreements.

Growing threats to US national interests make a comprehensive review of installation infrastructure and electricity, fuel, and water systems increasingly urgent. Such a review would clarify the tools needed to keep all military departments ready for the next conflict.

DOD's existing tools and authorities do not provide senior leaders with adequate mechanisms to conduct real-world evaluations and assessments that can lead to specific, tangible, and timely outcomes that improve effectiveness for today's warfighter. An expanded and more comprehensive exercise

linked to investments in force-multiplying capabilities would strengthen mission readiness. Dedicated funding that can meet these needs while reducing the risks of fragmentation, internal political wrangling, and mission creep will more effectively support mission readiness.

Finally, because US forces operate in combined and joint environments with allies, partners, and host nations, integrating additional evaluation tools, funding resources, and long-term strategic planning is vital to sustaining mission-essential capabilities for today's fight and tomorrow's war.

About the authors

Michael Dunn is a 2025-2026 Veterans Advanced Energy fellow with the Atlantic Council's Global Energy Center and is a senior manager of market intelligence and policy analysis at Hanwha Qcells, where he leads cross-functional analysis on US solar manufacturing, clean-energy policy, and market dynamics.

Previously, Dunn worked in the energy practice at Boston Consulting Group, where he advised utilities and energy companies on market strategy, infrastructure planning, and regulatory impacts. His work has spanned the full solar value chain, supporting project development, manufacturing economics, and policy-driven demand growth.

Dunn served six and a half years in the United States Army, including three and a half years on active duty and three years in the Army National Guard, separating at the rank of sergeant. He served in the Signal Corps, supporting SATCOM operations. Dunn holds an MBA from Georgetown University and a bachelor's in finance from the University of Alabama.

Abraham Holland is a 2025-2026 Veterans Advanced Energy fellow with the Atlantic Council's Global Energy Center and an applied microeconomist at the Institute for Defense Analyses (IDA), leading analyses across military manpower, operations, and infrastructure topics. One of Holland's key areas of active research is military installation energy acquisition.

Holland also co-founded IDA's Strategic Planning for Actionable Resilience Working Group, which enhances IDA's ability to apply cutting-edge science to address national security challenges. His work in this area includes assessments of environmental impacts on military equipment, personnel, and operations.

A US Air Force veteran, Holland holds a PhD in public policy from Harvard University and a bachelor's degree in economics and Chinese literature from Dartmouth College.

Marcus Lee is a 2025-2026 Veterans Advanced Energy fellow at the Atlantic Council's Global Energy Center and currently serves as a US-based public affairs manager with QatarEnergy, leading government affairs and stakeholder engagement in the United States.

Prior to joining QatarEnergy, Lee served in multiple policy positions with the US government, most recently as a senior energy policy adviser with the Bureau of Energy Resources at the US Department of State. There, he served as the lead adviser for global natural gas markets and infrastructure, presidential permit coordinator, and a delegate to the International Energy Agency. He also led commercial business diplomacy and congressional affairs for the bureau.

Lee is a judge advocate with the US Army at the rank of major and served as chief, National Security Law, during a one-year combat deployment in Iraq and Syria. He holds a juris doctor from the Seattle University School of Law, a master's degree in environmental science and policy from Johns Hopkins University, and a BA in political science and environmental policy from the University of Washington.

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Atlantic Council
1400 L Street NW, 11th Floor
Washington, DC 20005
(202) 463-7226
www.AtlanticCouncil.org