



NARUC

National Association of Regulatory Utility Commissioners

Defense Energy Resilience Key Resources Guide



*Prepared for the National Association of Regulatory Utility Commissioners
By Converge Strategies, LLC*

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CONVERGE
STRATEGIES

Contents

- Acronyms 2
- Overview and Background 3
- Key Organizations, Offices, and Contacts 3
 - Department of Defense Headquarters and Policy Offices 3
 - DoD Headquarters 4
 - Energy Program Offices 4
 - Department of Defense Installations. 5
 - Installation Leadership 6
 - State and Community Engagement 6
- Frequently Asked Questions (FAQs) 8
 - DoD and DCEI Overview 8
 - DoD Engagement 9
 - Examples of DoD and Utility Collaboration 10
- Additional Resources 14
- Appendix A: Key Policies and Documents for Critical Infrastructure 15

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Acronyms and Definitions

ACC	Arizona Corporation Commission
CAISO	California Independent System Operator
CEC	California Energy Commission
DOE	Department of Energy
DCEI	Defense Critical Electric Infrastructure
DCI	Defense Critical Infrastructure
DHS	Department of Homeland Security
DoD	Department of Defense
DoDI	Department of Defense Instruction
DON	Department of the Navy
DMAFB	Davis-Monthan Air Force Base
DPW	Department of Public Works
EEI	Edison Electric Institute
E.O.	Executive Order
ESF	Emergency Support Function
FAST Act	Fixing America's Surface Transportation Act
HQ	Headquarters
IEP	Installation Energy Plan
IOU	Investor-Owned Utility
MOU	Memorandum of Understanding
NARUC	National Association of Regulatory Utility Commissioners
ODASD E&ER	Office of the Deputy Assistant Secretary of Defense for Environment & Energy Resilience
OEI	Army Office of Energy Initiatives
OEM	Office of Emergency Management
OLDCC	Office of Local Defense and Community Cooperation
PMRF	Pacific Missile Range Facility (Barking Sands, Kaua'i, Hawai'i)
PUC	Public Utility Commission
REPI	Readiness and Environmental Protection Integration Program
SEO	State Energy Office
TEP	Tucson Electric Power
UESC	Utility Energy Service Contract

Overview and Background

U.S. Department of Defense (DoD) installations rely on the commercial electric grid for their operations and mission readiness. Consequences of long-duration power outages on a DoD installation can extend well beyond the base itself and affect national security operations globally. As utilities and states consider how to invest in future energy infrastructure, there is an opportunity to align their priorities with the clean energy and resilience requirements of DoD installations and jointly invest in a safer system.

This Key Resources Guide aims to provide regulators with an overview of the main stakeholders and necessary actions at play in joint DoD-civilian critical electric infrastructure investments. In this guide, the National Association of Regulatory Utility Commissioners (NARUC) has included several Frequently Asked Questions (FAQs) derived from a series of interviews with commissioners who have engaged DoD partners in the past. The FAQs may serve as a framework for understanding what challenges tend to arise during defense energy resilience investments so that interested regulators can proactively develop the relationships and expertise that will help them support critical infrastructure energy customers in their state.

This Guide should serve to empower regulators to approach, engage, and work with the military installations in their jurisdictions on energy infrastructure projects. This guide also includes a list of additional resources that regulators can access if they are interested in learning more about DoD energy policy, the value of energy resilience, or examples of DoD-state collaboration.

Key Organizations, Offices, and Contacts

Several federal laws and policies call for civilian-military collaboration around energy resilience. For example, [Congressional legislation](#) in 2015 gave the U.S. Department of Energy (DOE) responsibility to protect civilian electric infrastructure that serves critical defense facilities. Executive Orders and Presidential Directives (Appendix A) from the past decade have also established requirements for identifying and protecting critical infrastructure within DoD, and for ensuring the cybersecurity of infrastructure critical to national security.

Policies like these focus attention on defense energy resilience partnerships between civilian and military sectors at both federal and state levels. These policies codify the roles and responsibilities of DOE and DoD, but closer collaboration regarding defense critical electric infrastructure (DCEI) might reveal pathways for utilities, regulators, and other state and local stakeholders to provide input on procedures and decisions.

Below are key organizations, offices, and contacts that NARUC members should be familiar with when initiating DCEI conversations among DoD customers and utilities within their states.

DoD Headquarters and Policy Offices

Energy resilience is a central tenet of DoD energy policy, and each of the Military Services have policies requiring domestic installations be able to operate independently of the power grid for one to two weeks. In the coming years, DoD will need to significantly accelerate the pace of energy resilience investment both inside and outside the fence line to meet national security requirements.

DoD faces several challenges in scaling its resilience investments, including cybersecurity and communications barriers, contractual limitations, and misalignment between mission execution and installation infrastructure. DoD does not have sufficient funding to achieve these targets on its own and is actively working with regulated utilities to develop and finance on-site energy resilience projects. DoD is also exploring partnerships for defense energy resilience improvements “outside the fence line,” that is, beyond the borders of its installations.

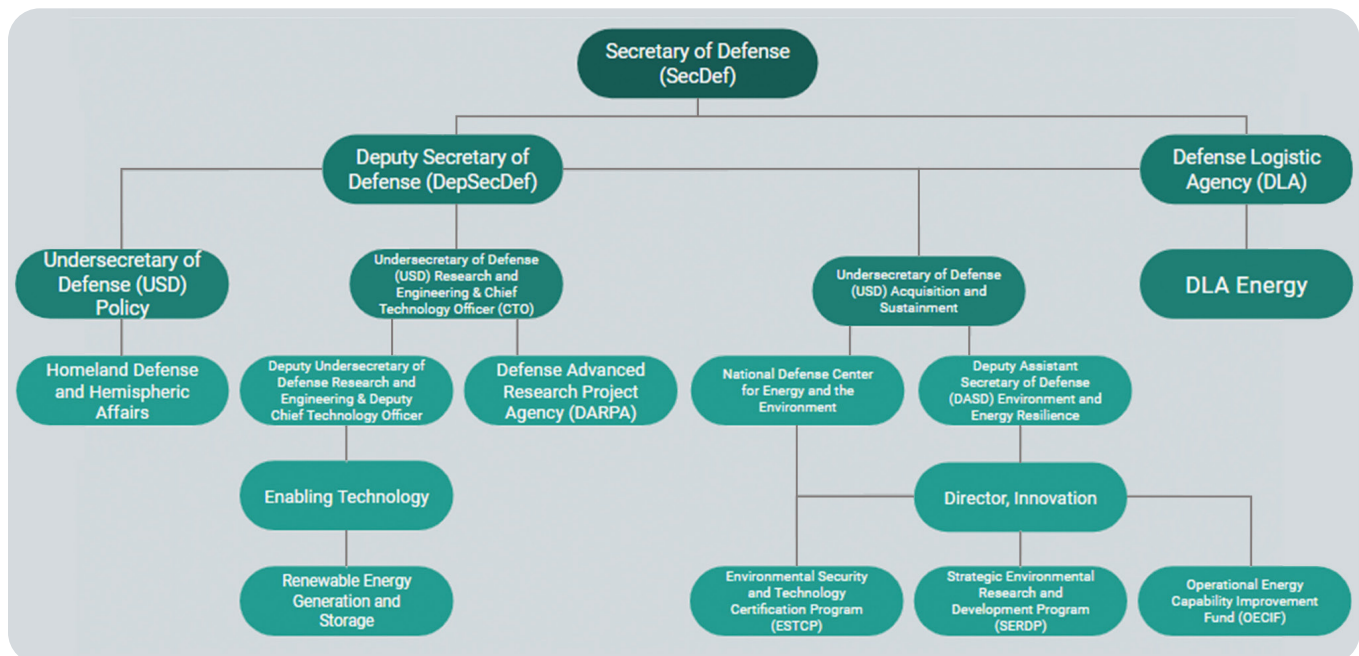
Regulators may see an increase in the appearance of national security-related infrastructure project proposals from their regulated utilities as the DoD addresses financial barriers and its increasing energy resilience needs. As these projects develop, it is useful to have an awareness of how the DoD operates. Below is a high-level overview of various stakeholders in the DoD organization that may be involved in utility engagement to enhance energy security and resilience on installations.

DoD Headquarters

The Office of the Secretary of Defense contains the Office of the Deputy Assistant Secretary of Defense for Environment & Energy Resilience (ODASD E&ER), which falls under the Office of the Assistant Secretary of Defense for Sustainment. See Figure 1 for more detail. The ODASD E&ER office is responsible for developing policy and governance for programs and activities that enable resilience and cyber secure energy across the DoD.

DoD headquarters (HQ) offices are primarily engaged in strategic decisions, including policy development. DoD HQ offices are responsible for coordination with DOE and the development of policies related to DCEI and utility engagement. At the Department level, Assistant Secretary offices develop guidance to execute high-level DoD policies. Each Military Department (Air Force, Army, Navy) has identified at least one Senior Executive for energy at the HQ level.

Figure 1. OSD Power & Energy Offices



Energy Program Offices

DoD department energy program offices coordinate large-scale energy project development between installations, HQ, and the private sector. The program offices play a large role in any utility scale energy project, from the project ideation phase through rate negotiations. Program offices support the execution of DoD energy policy in coordination with installations. These offices were created to foster community engagement and drive innovative project concepts and partnerships to achieve the DoD's energy resilience goals.

Figure 2. Department Energy Program Offices



ARMY
Office of Energy Initiatives (OEI)



NAVY
Acquisition Modernization Office (AMO)



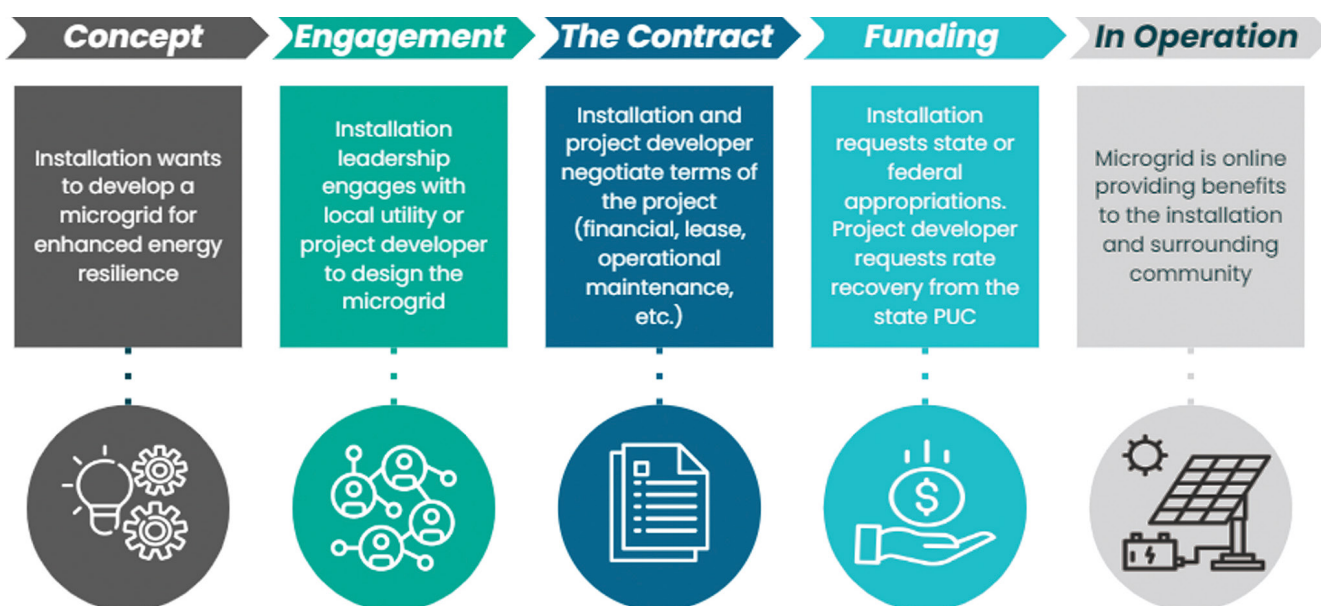
AIR FORCE
Office of Energy Assurance (OEA)

Joint Energy Resilience Planning Memorandum of Understanding (MOU)

Program offices work with utilities to align interest and optimize investments. In 2021, the Army OEI executed a [Memorandum of Understanding](#) (MOU) with the Edison Electric Institute (EEI). The agreement outlines efforts by the Army and electric companies to collaborate and identify best practices for joint resilience planning and future investment opportunities. The MOU has led to a pilot project underway at Fort Belvoir. Dominion Energy is both the electric distribution utility and the privatized utility contractor for the installation. The pilot project focuses on identifying:

- Key communication constraints restricting utility-installation cooperation.
- Opportunities to align DoD and Army resilience goals with those of the nearby electric companies to achieve enhanced grid and community resilience.¹

Figure 3. Project Roadmap

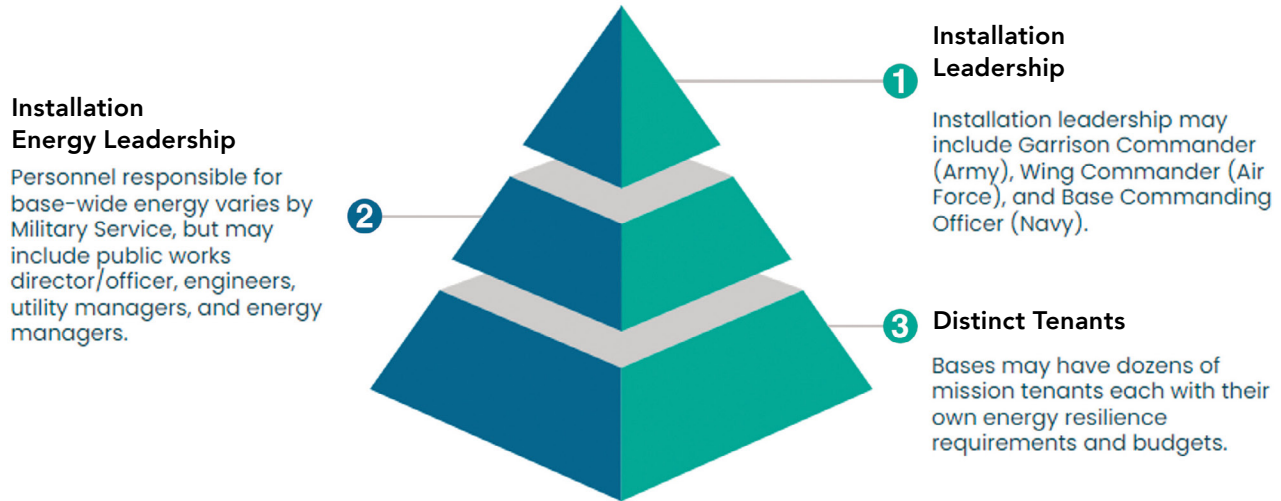


DoD Installations

DoD installations are complex organizations. It is common for DoD installation utility providers to coordinate with the installation energy leadership team, such as the Department of Civil Engineering or the Department of Public Works (DPW). Installation energy leadership teams vary from installation to installation but generally include individuals responsible for paying utility bills, identifying energy project opportunities, and responding to installation and tenant organizations maintenance concerns, specifically regarding energy and water.

¹ https://www.army.mil/article/255594/enhancing_collaboration_with_electric_companies




Figure 4. DoD Installation Leadership



Installation Leadership

Across the Military Departments, titles and roles differ slightly within installation and energy leadership organizations. Figure 5 provides standard titles and ranks across the Military Departments.

Figure 5. DoD Installation Leadership — Titles and Organizations

	ARMY	NAVY		AIR FORCE
 INSTALLATION LEADERSHIP	Garrison Commander (Colonel)	Installation Commander (Captain)		Wing Commander (Colonel)
 INSTALLATION ENERGY LEADERSHIP	Director of Public Works	Public Works Officer (Lieutenant Commander or Commander)		Mission Support Group Commander (Colonel)
	Director of Engineering	Utilities Manager	Energy Manager	Base Civil Engineer (Lieutenant Colonel)
	Energy Manager			Energy Manager
 DISTINCT TENANTS	Bases may have dozens of mission tenants each with their own energy resilience requirements.			

State and Community Engagement

State and community governments and organizations have supported military energy resilience through a variety of different channels. Historically, these efforts have primarily been project-specific and focused on inside the fence line activities, rather than coordinated or concerted efforts to address defense energy resilience. Over the past five years, the DoD has engaged more proactively with non-DoD organizations to implement infrastructure resilience projects.

- **State Energy Offices.** Some state energy offices (SEOs) have partnered directly with DoD and provided funding to specific military energy resilience projects. The California Energy Commission (CEC), for example, signed an MOU with the Department of the Navy (DON) to support renewable energy development, energy security, and energy reliability ([CEC, 2016](#)), following recommendations from the [California Governor's Military Council](#). The CEC has provided grant funding to a range of DoD projects, such as adding battery storage to the microgrid at Marine Corps Air Station Miramar in San Diego ([Rickerson, Wu, and Pringle, 2018](#)).

SEOs can play an integral role in the development of installation energy projects. As with Public Utility Commissions (PUCs), SEOs have not historically directly engaged with DoD. But there is an opportunity for increased collaboration to discuss common state and DoD goals and to identify mutually beneficial projects. Successful collaborations start with identifying a dedicated point of contact at the SEO to interface with installations and DoD HQ officials regarding project development, emergency response, and DCEI.

Department of the Navy and the California Energy Commission

In December 2021, the DON Office of the Assistant Secretary of the Navy (Energy, Installations & Environment) and the California Energy Resources Conservation and Development Commission (Energy Commission) signed a [MOU](#) to share information and collaborate on energy and water projects of mutual interests in support of each organizations' respective goals in the areas of energy assurance and resiliency, climate initiatives, energy efficiency, and water consumption, among others.

- **Emergency Support Function #12 (ESF-12).** Emergency Support Functions (ESFs) provide structure for coordinated interagency support for a federal response to an incident.² There are 15 ESFs outlined in the [National Response Framework](#). ESF-12 is the Energy ESF. ESF-12 outlines the roles and responsibilities of federal agencies required to support energy infrastructure systems. It also outlines public and private services and resources during disasters and incidents that require a coordinated Federal Response.³ DOE is the lead agency with 12 supporting agencies, including DoD. There are three models for state emergency management plans to engage with ESF-12.⁴
 - Model 1: The PUC is the primary ESF-12 coordinator with a state's office of emergency management (OEM) and SEO in supporting roles.
 - Model 2: OEM or SEO is the primary ESF-12 coordinator with the PUC in a supporting role.
 - Model 3: The PUC shares roughly equal responsibility with the OEM or the SEO.

Per these models, commissioners have varying degrees of responsibility relating to ESF-12 responses. Nevertheless, PUCs should consider participating in scenario-based emergency response exercises with key energy stakeholders, including the DoD, to simulate responses, refine roles and responsibilities, and build relationships.

- **National Guard.** The primary connection many PUCs have with their state's National Guard is likely through ESF-12 or Mission Ready Packages. These are both emergency directives that are designed to support energy requirements. The National Guard falls under DoD purview when [Title 32](#) federal status is activated. Outside of Title 32 activation, the National Guard is state operated. National Guard units should be engaged as potential partners during emergency response exercises and may be engaged in response and restoration during and after natural disasters. The National Guard's scope focuses on emergency response, not energy planning, therefore when developing energy infrastructure projects, National Guard units should be seen as any other type of power procurer.
- **Military Coordination Organizations.** More than 35 states have military advisory bodies dedicated to examining the unique needs of military communities and providing information to the governor and state legislature on ways to assist and strengthen the relationship between installations and communities ([National Conference of State Legislatures, 2016](#)). Advisory boards typically include the state legislators, the lieutenant governor, the adjutant general, heads of relevant state agencies, city and county officials, local business leaders, and active duty or retired military officials. These advisory bodies serve as a liaison

2 <https://www.fema.gov/emergency-managers/national-preparedness/frameworks/response#esf>

3 <https://www.energy.gov/oe/emergency-support-function-12>

4 <https://pubs.naruc.org/pub.cfm?id=41DF9BEF-DEFF-B995-4865-37AB2367FA84>

between state legislatures, DoD, and the surrounding communities. The primary purpose of these offices and funds is economic development. Some of the funds have supported military installation energy resilience to align with DoD's energy resilience objectives. The Connecticut Office of Military Affairs, for example, provided a grant to the microgrid at Naval Submarine Base New London ([CT Office of Military Affairs, 2021](#)).

- **Funding Opportunities.** State and local governments and community organizations are now eligible for specific DoD funding focused on infrastructure, resilience, and climate adaptation. The projects are required to address vulnerabilities and needs of military installations in addition to the surrounding communities.
- The [DoD Office of Local Defense Community Cooperation](#) (OLDCC) furthers the priorities of the National Defense Strategy by supporting the readiness and resiliency of military installations and defense communities across the country. The [Military Installation Sustainability](#) grant program includes funding to address installation and key infrastructure access and energy and water security threats.
- The [DoD Readiness and Environmental Protection Integration Program](#) (REPI) had the authority to address climate change hazards and increase military installation resilience. State and local governments and nongovernmental organizations are eligible to enter into agreements with the DoD and receive funding through agreements like an [Intergovernmental Support Agreement](#).

Frequently Asked Questions (FAQs)

While writing [Regulatory Considerations for Utility Investments in Defense Energy Resilience](#), NARUC identified several recurring challenges that state officials have faced in supporting defense energy resilience investments. While the FAQs evolved through iterative review, the problem that undercuts them did not: regulators, utilities, and DoD officials rarely know how, when, and whom to engage on potential defense energy resilience investments. The FAQs below aim to provide an initial framework for building that knowledge at the commission level.

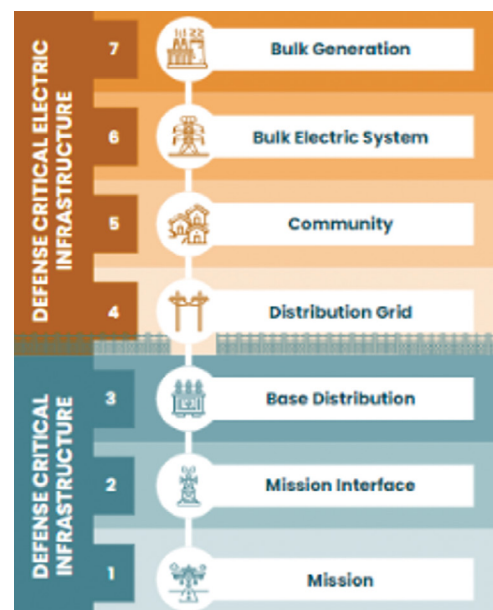
DoD and DCEI Overview

1. Why does the DoD want to engage with utilities and utility regulators?

DoD is increasingly vulnerable to electricity interruptions and is heavily dependent on the commercial electricity grid. In tandem with this, DoD's globally networked forces rely on secure, reliable communications from domestic installations. Power outages at U.S. bases can significantly impact critical missions around the world. In 2020, the DoD experienced hundreds of power outages lasting eight hours or longer including at installations with missions that cannot tolerate interruptions.

Natural and man-made hazards impacting critical infrastructure are also evolving at a rapid pace, resulting in a substantial increase in risk to defense energy resilience. Extreme weather events, such as hurricanes in the Southeast and wildfires in the West, have degraded or damaged DoD's ability to execute its missions. Winter storm Uri, which hit Texas in January 2021, exposed inter-utility vulnerabilities as gas pipeline failures drove electricity outages and water treatment interruptions.⁵ Sophisticated state-sponsored cyber adversaries have also demonstrated that adversaries possess the resources to conduct protracted and damaging attacks on critical infrastructure.

Figure 6. DCI v. DCEI



⁵ <https://www.austintexas.gov/sites/default/files/files/HSEM/2021-Winter-Storm-Uri-AAR-Findings-Report.pdf>

2. What is the difference between DCEI and Defense Critical Infrastructure (DCI)?

Regulators should be aware of the distinctions between DCEI and DCI for the purposes of defense energy resilience. The delineation between DCEI and DCI can be thought of as whether the asset in question is “beyond the fence line”—that is, outside the DoD installation (and outside of DoD control)—or inside the fence line. In terms of energy systems, DCEI includes infrastructure from the bulk power system down to the distribution systems that serve the base. DCI-relevant electricity systems include the distribution system within the installations, the systems that support missions’ connections to other locations, and the on-base energy systems that provide resilience to the missions themselves.

3. Why should utilities invest in energy resilience for DoD installations?

DCEI was first defined by congress in the [Fixing America’s Surface Transportation \(FAST\) Act of 2015](#). The FAST Act added section 215A, entitled Critical Electric Infrastructure Security, to the Federal Power Act. The Federal Power Act regulates interstate transmission and sales of electricity and natural gas, including interstate transportation and wholesale sale of electricity. The terms energy security, resilience, and renewable energy have been found in DoD policies for the past two decades, with foci shifting depending on administration goals. Some recent policies include:

- [DoDI 4170.11](#). In 2016, the Department of Defense Instruction (DoDI) was updated and broadened to require that DoD “take necessary steps to ensure energy resilience on military installations...and have the capability to ensure available, reliable, and quality power to continuously accomplish DoD missions from military installations and facilities.”
- [H.R. 2810, 2017](#). The FY18 National Defense Authorization Act codified and defined energy resilience for the first time in law and made energy resilience a central focus of DoD energy policy.
- **Military Department requirements.** Each of the Military Departments have established their own energy resilience mandates for their installations.
 - In 2020, the Army and Navy both established requirements stipulating that installations’ mission essential functions must be able to operate independently from the electric utility grid for a minimum of 14 days ([U.S. Secretary of the Army, 2020](#); [U.S. Department of Navy, 2020](#)).
 - The Air Force currently maintains a critical mission’s requirement of at least seven days ([U.S. Secretary of the Air Force, 2020](#)).

DoD Engagement

4. Who should I first approach in the defense community when considering collaboration?

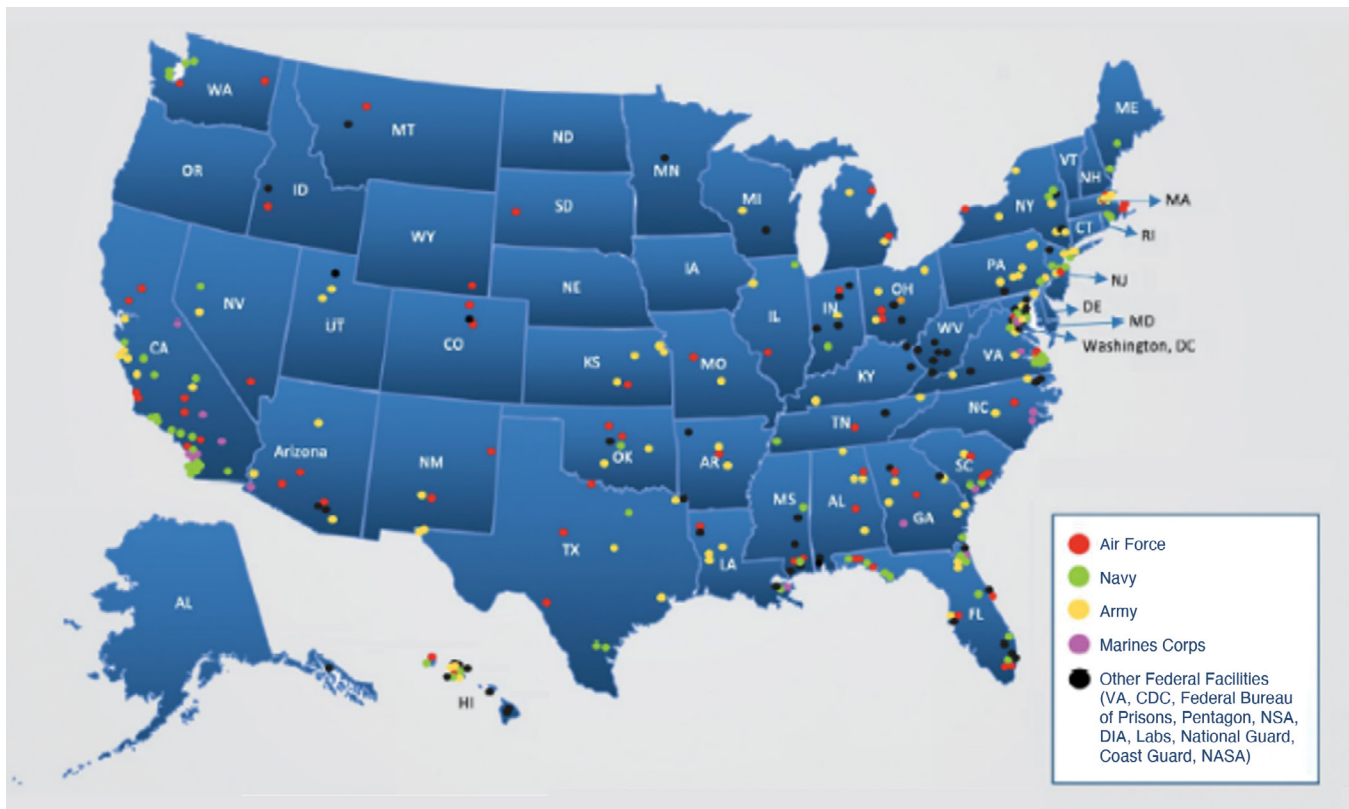
Installations vary in size, mission sets, and processes, so there is no one-size-fits-all approach to outreach. Engagement could start at the program office level for states where there are less dedicated state level resources or there may be a DoD liaison at the SEO that has experience developing MOUs and public-private partnership opportunities. Some questions to consider when determining who to approach on the defense side could include:

- What areas of collaboration am I interested in?
- What interdependencies or areas of mutual benefit could drive the development of a relationship with defense communities in my state?

5. Where are DoD and federal installations served by investor-owned utilities (IOUs)?

DoD is served by hundreds of different utilities, of all types, and across different electricity market structures. Across the country, IOUs [serve](#) over 300 military and national security installations (**Figure 7**).

Figure 7. Installations Served by IOUs



6. How can I benefit customers in my state through engagement with defense communities?

There have been multiple instances over the past several years where military bases have used their on-base generating assets to support grid stability, and therefore community resilience, in the event of severe climate events. In addition to emergency response during “black-sky” days, new on-base generating assets may also offer additional opportunities to support state clean energy goals if those resources are renewable or cleaner energy sources.

Marine Corps Air Station (MCAS) Miramar, San Diego CA

In August 2020, the California Independent System Operator (CAISO) issued an alert to reduce energy demand statewide in response to a record breaking heat wave ([California ISO, 2020](#)). In response to the alert, San Diego Gas and Electric began hour-long rotating black outs to prevent region-wide power interruptions. MCAS Miramar in San Diego has an installation-wide microgrid that incorporates battery storage, landfill gas, solar photovoltaic, natural gas, and diesel generation ([Booth et al., 2020](#)). During the event, MCAS Miramar activated the microgrid to reduce demand on the commercial grid. The base was able to remove six megawatts of its demand from the grid which helped keep an estimated 3,000 homes online ([Carlisle, 2020](#); [Dockery, 2021](#)).

Offutt Air Force Base, Omaha NE

A polar vortex in February 2021 brought extreme cold temperatures across the southwestern and midwestern United States. The cold caused widespread power outages across the United States and Mexico and precipitated a power crisis in Texas. In Nebraska, parts of the state experienced temperatures nearing -20 degrees. In Omaha, NE, the Omaha Public Power District contacted Offutt Air Force Base to help alleviate the strain on the grid ([Starr and Kaufman, 2021](#)). Offutt Air Force Base activated its on-base power plants and emergency back-up power systems and reduced their demand on the grid by 6 MW. The base utilized its on-site generation assets to support the grid for 75 hours ([U.S. Air Force, Offutt Air Force Base, 2021](#)).

7.Does the size/impact of the DoD in my state matter?

When developing project concepts and planning community engagement, the DoD may give states with a larger DoD presence more consideration than others. The preference is often due to additional infrastructure, policies, and programs that have been put in place by the state to support the installation, current military service members, and local veterans. DoD's OLDCC releases a yearly [report](#) on defense spending by state, which can help states and communities understand the broader picture of DoD-state engagement. In states with a large DoD presence, there may be additional organizations that already are collaborating with the DoD for community investment and public-private partnerships that could be leveraged by utility providers.

The DoD also prioritizes installations with critical missions and enhanced resilience requirements when developing project prioritization lists. However, information pertaining to critical missions is generally Classified or Control Unclassified Information and can be challenging to access.

Examples of DoD and Utility Collaboration

8.Where has the PUC been involved in DoD energy resilience projects before?

There is an increasing number of instances in which state regulators have regulatory proceedings that have taken DoD energy resilience into account. There are three landmark DoD projects that involve different types of infrastructure and focus at different scales: generation infrastructure cited on DoD land, transmission surrounding a DoD base, and multi-utility engagement in a region containing multiple DoD installations. The report [Regulatory Considerations for Utility Investments in Defense Energy Resilience](#) includes additional information on the case studies.

Pacific Missile Range Facility (PMRF) Barking Sands (Kaua'i, HI)

The State of Hawaii Public Utilities Commission approved a utility-scale solar photovoltaic and battery project that was sited on land leased from the DoD by a cooperative utility. The project provides firm renewable electricity to the power grid during normal operations and will serve the installation as an "island-able" microgrid during power interruptions and during mission critical operations.

Davis-Monthan Air Force Base (DMAFB) (Tucson, Arizona)

The Arizona Corporation Commission (ACC) approved an environmental compatibility certificate for a planned project by Tucson Electric Power (TEP) to expand and upgrade the transmission system in the region surrounding Davis-Monthan Air Force Base. The project is being undertaken to enhance service reliability for current and new customers, and in response to DoD energy resilience policies and requirements.

Detroit Arsenal Regional Defense Assessment of Resilience

A polar vortex in January 2019 increased demand for natural gas for heating in Michigan at the same time a fire shut down one of the state's largest natural gas storage and delivery facilities. The event and resulting supply crisis prompted the governor to direct the Michigan Public Service Commission (MPSC) to assess energy supply vulnerabilities across the state. In parallel, DoD, municipalities, manufacturing facilities, and utilities partnered to launch a joint energy resilience planning process in Michigan—through the DoD Military Installation Resilience grant program—to address gaps such as those exposed by the polar vortex. DoD is engaging MPSC during the regional planning process.

9. What are some emerging issues I need to be aware of?

Though progress has been made in defense energy resilience, the role of state utility commissions remains in the early stages of discussion. Going forward, regulators may proactively engage with issues related to defense energy resilience, or they may increasingly see issues related to defense energy resilience integrated into their normal course of business. In either case, there are several uncertainties and unresolved questions that regulators will need to navigate when considering defense-related projects.

- **Rate recovery — who pays?** Although many stakeholders are active in areas related to defense energy resilience, clear responsibilities for coordinating and resourcing investments have not been established. The rapidly evolving policy landscape at the federal and state levels has created different avenues to support defense energy resilience, but each has benefits and drawbacks. Options for funding include DoD funding, other federal funding, or rate payer funding.
- **How to weigh project benefits?** When there are clear benefits to ratepayers, above and beyond national security, such as when an installation has the capacity to self-power and assist beyond the fence line during an emergency, utility costs may be easier to recover. In the case of PMRF Barking Sands, the project will provide additional energy and capacity to the grid while helping the state cost-effectively achieve its renewable energy target. In reviewing TEP's proposal in the region around DMAFB, ACC recognized the project's broader benefits in its 2021 Order.
- **Energy-water nexus.** Energy and water systems are interdependent, meaning that if one system is compromised there can be degradation to the other. Most DoD installations have water and wastewater facilities on their installation that are powered by electricity, and downed water systems can have as much of an impact, or more, on critical missions systems. More sophisticated and intense physical, cyber, and climate events exacerbate security concerns about the energy-water nexus on DoD installations. Although interdependent, there is often little communication between electric and water utilities, and the end customer.
- **Other emerging issues.** There are also a range of related, emerging issues that commissions may encounter when weighing the benefits of proposed military resilience projects, including economic development, cybersecurity, equity for disadvantaged communities, and assigning a value for energy resilience or for national security.

10. How do I find out about specific opportunities for collaboration?

The following are resources for additional information on DoD and utility collaboration opportunities.

- **Webinars and Information Sessions.** Many of the organizations referenced throughout this guide have regular webinars and information sessions when a new project or program is being developed. NARUC has hosted two webinars on defense energy resilience topics that can be found on its website.
- **State and Community Military Affairs Offices or State Energy Offices.** As referenced above, there are often well-developed state or community affairs offices that support community and DoD engagement. They may have regular meetings with installation leadership, or a standing relationship with the military.

SEOs may also work in collaboration with military installations across their state. For example, the DON and the CEC formalized a relationship in a 2021 MOU.

- **Utility Companies.** Utility companies may already be providers and partners with the installation. Many DoD installations have utility privatization contracts with utility companies or may be in contractual relationships through utility energy service contracts. Through these contractual arrangements, utility companies may have the best insight into collaboration with the DoD on future energy resilience projects which may have mutual benefits with the surrounding communities.

If you are interested in learning more about DoD, utility, and regulator opportunities for collaboration, connect with NARUC for more information.

Additional Resources

Introduction to DoD Energy Policy

Greenly, H.L. (2019). [“Department of Defense Energy Management: Background and Issue for Congress”](#) (R45832). Washington DC: Congressional Research Service.

Marqusee, J., C. Schultz, and D. Robyn. (2017). [“Power Begins at Home: Assured Energy for U.S. Military Bases.”](#) Reston, VA: Noblis. Commissioned by the Pew Charitable Trusts.

Pinson, A.O., K.D. White, E.E. Ritchie, H.M. Conners, and J.R. Arnold. (2021). [“DoD Installation Exposure to Climate Change at Home and Abroad.”](#) Washington, DC: U.S. Army Corps of Engineers.

Value of Resilience

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DoD-State Collaboration

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U.S. Department of Defense, Office of Local Defense Community Cooperation (OLDCC). (2019). [“Defense Spending by State—Fiscal Year 2019.”](#) Washington, DC.

Appendix A: Key Policies and Documents for Critical Infrastructure

Document	Publication Date	Summary
Presidential Policy Directive (PPD-21): Critical Infrastructure Security and Resilience	February, 2013	PPD-21 establishes a national policy and approach for critical infrastructure security. It identifies the roles and responsibilities for government agencies, specifically the Department of Homeland Security (DHS), DoD, and DOE to strengthen and maintain secure, resilient, and functioning critical infrastructure.
E.O. 13920 Securing the United States Bulk Power System	May, 2020	The Securing the United States Bulk Power System Executive Order addresses looming threats to critical infrastructure components which make up the bulk power system.
E.O. 14008 Tackling the Climate Crisis at Home and Abroad	January, 2021	The Tackling the Climate Crisis at Home and Abroad Executive Order addresses critical infrastructure vulnerabilities derived from climate threats. The Executive Order (E.O.) states climate change must be considered to help increase resilience across the U.S. economy.
E.O. 14028 Improving the Nation's Cybersecurity	May, 2021	The Executive Order on Improving the Nation's Cybersecurity outlines nine actions the federal government and private sector companies must take to increase deterrence against cyber threats.
Department of Defense Summary of the 2018 National Defense Strategy of the United States of America: Sharpening the American Military's Competitive Edge.	January, 2018	The Summary of the National Defense Strategy discusses adversarial threats contributing to the homeland no longer being a sanctuary. The document outlines DoD's approach to combating increasing threats.
Niemeyer HASC Testimony, House Committee on Armed Services Subcommittee on Readiness Fiscal Year 2019 Department of Defense Budget Request for Energy, Installations and Environment.	April, 2018	The Honorable Lucian Niemeyer's testimony presents eight objectives DoD aims to accomplish from its FY '19 Energy, Installations, and Environment budget request.
Department of Defense. Instruction 4170.11.	December, 2009	The section titled Energy Security and Flexibility outlines the steps DoD will take to ensure the security of energy and water resources.

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<u>Office of the Assistant Secretary of Defense. Memorandum for Assistant Secretary of the Army (Installations Energy and Environment).</u>	March, 2016	The Assistant Secretary of Defense is requiring all installation offices across DoD to develop an installation energy plan (IEP). The IEP is a roadmap for installations to meet DoD energy efficiency, renewable energy, and energy resilience goals.
<u>CDR Walter Ludwig's "DoD's Installation Energy Plan Policy" Presentation</u>	August, 2017	Commander Ludwig's presentation is an overview of IEPs. He says that each bases' IEP will ultimately be a unified document that coordinates and drives the installation to ensure their Mission Readiness and Assurance.
<u>Army Directive 2017-07 Installation Energy and Water Security Policy</u>	February, 2017	This directive establishes overarching Army energy and water security policy to sustain critical mission capabilities and mitigate risks posed by energy and water interruptions affecting installations. There are several policies listed for actions that Army installations will take to reach energy and water resilience goals.
<u>Homeland Security Presidential Directive-7: Critical Infrastructure Identification, Prioritization, and Protection</u>	December, 2003	This Directive establishes a national policy for Federal departments and agencies to identify and prioritize critical infrastructure and to protect them from terrorist attacks. The 31 policy statements in Directive 7 define what the directive covers and the roles various federal, state, and local agencies will play in carrying it out.
<u>Joint Publication 3-27 Homeland Defense</u>	April, 2018	Joint Publication 3-27 introduces Defense Critical Infrastructure (DCI). DCI is defined as "Department of Defense and non-Department of Defense networked assets and facilities essential to project, support, and sustain military forces and operations worldwide".
<u>DoD Directive 3020.40 Mission Assurance</u>	November, 2016	This Directive designates responsibilities assigned in PPD-21 for the execution of critical infrastructure roles. It also maintains a DCI line of effort to sustain programming, resources, functions, and activities to meet the national and DCI requirements established by PPD-21. PPD-21 assigns the Under Secretary of Defense for Policy the responsibilities to coordinate DCI with DHS for inclusion in the defense critical asset list.



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