

ENVIRONMENTAL DECONFLICTION 2021: THE NATIONAL DEFENSE AUTHORIZATION ACT FOR FY 2021

by Rachel Jacobson, Matthew F. Ferraro, and Cary Glynn

Rachel Jacobson, former U.S. Department of Defense deputy general counsel for environment, energy, and installations, is Special Counsel at Wilmer Cutler Pickering Hale and Dorr LLP.

Matthew F. Ferraro is Counsel at WilmerHale, and a visiting fellow at the National Security Institute at George Mason University. Cary Glynn is an Associate at WilmerHale.

SUMMARY

As in prior years, the National Defense Authorization Act for Fiscal Year 2021 contains a variety of provisions setting U.S. Department of Defense priorities for energy, environmental, and natural resource issues. These include measures that represent some degree of consensus on these often-politicized topics. In this Article, the fourth in an annual series, the authors canvass how the Act addresses a host of issues in the areas of climate resiliency, energy management, hazardous substances, and environmental and natural resource management, and its implications for practitioners in these areas.

In early November 2021, the U.S. Congress passed a \$1 trillion infrastructure bill with broad bipartisan support. The bill was the result of months of negotiation between the Joseph Biden Administration and a bipartisan group of senators. It constitutes the largest infusion of federal investment into infrastructure projects in more than 10 years.¹ In addition to spending hundreds of billions of dollars on “hard infrastructure” like roads and bridges, the bill funds major environmental and energy projects, providing billions to manage the risks of climate change, reduce wildfires, modernize the electric grid, support electric car charging stations, and buttress water and wastewater infrastructure, among other like initiatives.²

The infrastructure bill is proof positive that important energy and environmental priorities can be advanced through laws that may not be directly aimed at those issues but are nonetheless related. Nowhere is that truer than with regard to the omnibus yearly defense policy bill, the National Defense Authorization Act (NDAA). Although fundamentally tied to national security and military readiness, many provisions of the NDAA signal consequential energy, environmental, and natural resources policy, in light of the enormity of the U.S. Department of Defense (DOD) and the American military. So significant has defense policymaking become in these areas that one observer called the NDAA Congress’ “hidden green-infrastructure bill.”³

The U.S. military is the greatest energy consumer in the world, as well as one of the globe’s major greenhouse gas emitters.⁴ DOD manages more than 27 million acres of land—double the size of all American state parks combined—that is home to hundreds of threatened and endangered species.⁵ With a budget that is several times larger than that of other federal agencies, and with outposts

Authors’ Note: The authors express their sincere appreciation to WilmerHale Associate Mark L. Hanin and senior paralegal Caryn P. Garvin for their contributions.

1. Jonathan Weisman et al., *House Passes \$1 Trillion Infrastructure Bill, Putting Social Policy Bill on Hold*, N.Y. TIMES (Nov. 5, 2021), <https://www.nytimes.com/2021/11/05/us/politics/house-infrastructure-reconciliation.html>; Emily Cochrane, *Senate Passes \$1 Trillion Infrastructure Bill, Handing Biden a Bipartisan Win*, N.Y. TIMES (Aug. 11, 2021), <https://www.nytimes.com/2021/08/10/us/politics/infrastructure-bill-passes.html>.
2. Mary Clare Jalonick, *What’s Inside the Senate’s Bipartisan Infrastructure Bill*, AP (Aug. 11, 2021), <https://apnews.com/article/joe-biden-business-bills-38b84f0e9fcc8e68646eedf6608c4c70>; Paul Nelson, *Infrastructure Bill Provides Money for Wildfires, Drought, and Schools*, KTVN (Aug. 9, 2021), <https://www.ktvn.com/story/44485692/infrastructure-bill-provides-money-for-wildfires-drought-and-schools>.

3. Dan Farber, *The Hidden Green-Infrastructure Bill*, LEGAL PLANET (June 14, 2021), <https://legal-planet.org/2021/06/14/the-hidden-green-infrastructure-bill/>.
4. Neta C. Crawford, *The Defense Department Is Worried About Climate Change—And Also a Huge Carbon Emitter*, CONVERSATION (June 12, 2019), <https://theconversation.com/the-defense-department-is-worried-about-climate-change-and-also-a-huge-carbon-emitter-118017>.
5. YA-WEI LI & TIM MALE, ENVIRONMENTAL POLICY INNOVATION CENTER, THE CONSERVATION OF DEFENSE: OPPORTUNITIES TO PROMOTE CONSERVA-

bestriding the globe, DOD's influence on energy, environment, and natural resource management can have national and even worldwide impact. As we have written of previous such defense authorization bills, the NDAA may be one of the most significant pieces of energy and environmental legislation most people have never heard of.

For years, the NDAA's impact on energy, environment, and natural resources has been steadily evolving. The William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021 (the 2021 NDAA), which became law on New Year's Day 2021, reinforces that trajectory.⁶ Judged by the breadth, depth, and volume of the law's provisions addressing this suite of issues, the 2021 NDAA represents another significant foray into law making in the energy, environment, and natural resources management regime. At about 1,500 pages in length, the 2021 NDAA authorized \$731.6 billion in defense spending for fiscal year (FY) 2021, including a base budget of \$635.5 billion, \$69.0 billion for overseas contingency operations, \$26.6 billion for defense-related nuclear energy expenses, and \$500 million for other federal agencies.⁷

Of that sum, the law authorizes a total of \$7.35 billion for environmental remediation, including \$1.07 billion for DOD's environmental restoration accounts, which fund the remediation of environmental contamination and unexploded ordnance; \$300.4 million to fund the remediation at defense installations closed as a result of a Base Realignment and Closure (BRAC) process; \$5.82 billion for the U.S. Department of Energy's (DOE's) defense environmental cleanup account that funds the cleanup of former U.S. nuclear weapons production sites; and \$163.3 million for DOE's Office of Legacy Management charged with long-term stewardship of nuclear sites after cleanup is complete.⁸ These are among the many provisions touching on environment, energy, and natural resources.

The 2021 NDAA elicited extraordinarily strong bipartisan support: it was passed by a Democratic U.S. House of Representatives and a Republican U.S. Senate, and it then garnered the support of 322 House members and 81 senators, north of 78% and 86% of each chamber's voting members, respectively, to overcome a presidential veto.⁹

The 2021 NDAA sets important defense policy as it relates to many key areas. For example, it seeks to promote the energy resilience of DOD installations and reduce the dependence of U.S. forces on fossil fuels while promoting renewable energy. The law mandates a greater focus by military planners on how to prepare for, and adapt to, climate change. And it continues a years-long effort to stop

the use of per- and polyfluoroalkyl substances (PFAS) in firefighting foam and to remediate residual PFAS contamination. The law also expands certain DOD authority for environmental cleanup projects while authorizing billions of dollars to that end, bolsters wildlife conservation, and establishes new research policies on sustainable chemistry.

In this Article, the fourth in an annual series,¹⁰ we provide an overview of the 2021 NDAA's major provisions as they relate to energy, the environment, and natural resources. Those provisions can generally be grouped into four broad categories: (1) climate and infrastructure resiliency; (2) energy management; (3) PFAS and remediation of contaminants; and (4) environment and natural resources management. We summarize in Part I the most significant provisions, then explore and analyze each category in detail.

I. Executive Summary

A. Climate and Infrastructure Resiliency

(1) Assessing and combatting climate change.

The NDAA advances several policies to address climate change. *First*, it directs a pilot program on alternative fuel purchasing, which may have significant consequences for the transition of the federal car fleet to green energy. *Second*, it calls for several major reports—including an updated climate change adaptation road map, which must set out the Department's plan to address the potential adverse impact of a changing climate on the military, a report on the impacts of climate change on the U.S. Coast Guard, and a report on DOD's greenhouse gas emissions over a decade. *Third*, breaking new ground, the NDAA requires the inclusion of top-line estimates of the investments required to address costs attributed to climate change, bringing transparency to a complex issue. *Finally*, the law requires studies related to environmental disasters like wildfires.

(2) Infrastructure construction and installations resilience.

The 2021 NDAA made significant changes to military construction policy; in particular, it placed installation resilience near the center of its

TION THROUGH MILITARY READINESS 4 (2020), <https://nri.tamu.edu/media/2960/conservation-of-defense.pdf>.

6. 2021 NDAA, Pub. L. No. 116-283, <https://www.congress.gov/bill/116th-congress/house-bill/6395/text/enr>.

7. PAT TOWELL, CONGRESSIONAL RESEARCH SERVICE, R46714, FY2021 NATIONAL DEFENSE AUTHORIZATION ACT: CONTEXT AND SELECTED ISSUES FOR CONGRESS 1 (2021), https://www.everycrsreport.com/files/2021-03-08_R46714_fa874f9662ce23860de513d02a7339dbbe58b221.pdf.

8. *Id.* at 16-17.

9. Congress.gov, *Actions Overview H.R.6395—116th Congress (2019-2020)*, <https://www.congress.gov/bill/116th-congress/house-bill/6395/actions> (last visited Oct. 19, 2021) [hereinafter *Actions Overview H.R.6395*].

10. Rachel Jacobson & Matthew F. Ferraro, *Environmental Deconfliction 2020: The National Defense Authorization Act for FY 2020*, 50 ELR 10983 (Dec. 2020), <https://elr.info/news-analysis/50/10983/environmental-deconfliction-2020-national-defense-authorization-act-fy-2020> [hereinafter Jacobson & Ferraro, *Environmental Deconfliction 2020*]; Rachel Jacobson & Matthew F. Ferraro, *Environmental Deconfliction 2019: The National Defense Authorization Act for FY 2019*, 49 ELR 10220 (Mar. 2019), <https://elr.info/news-analysis/49/10220/environmental-deconfliction-2019-national-defense-authorization-act-fy-2019> [hereinafter Jacobson & Ferraro, *Environmental Deconfliction 2019*]; Rachel Jacobson et al., *Environmental Deconfliction: The National Defense Authorization Act for Fiscal Year 2018 and Its Implications for Energy, Environment, and Natural Resources*, 18 PRATT'S ENERGY L. REP. 223 (2018), <https://www.wilmerhale.com/en/insights/publications/20180720-environmental-deconfliction-the-national-defense-authorization-act-for-fiscal-year-2018-and-its-implications-for-energy-environment-and-natural-resources> [hereinafter Jacobson et al., *Environmental Deconfliction 2018*].

analysis of existing and new construction. The 2021 NDAA expands the military's construction authority to address installation resilience by enlarging the scope of projects that can be undertaken under this authority to include certain Readiness and Environmental Protection Integration (REPI) Program projects.¹¹ The NDAA also calls for (1) a report to be part of each new national defense strategy on sustainment and logistics, and (2) a biannual report on a U.S. Navy program to improve the conditions of shipyards, in part out of concerns about sea-level rise.

(3) Water sustainment and maritime policy. The NDAA requires DOD to research, develop, and deploy "water sustainment technologies" to address anticipated water shortages at certain military bases. It also seeks to improve water management on military installations through (1) a "risk-based approach," (2) creation of an assessment methodology for analyzing risks to sustainable water management and security, and (3) improved landscaping practices to increase water resiliency. On maritime policy, the NDAA reauthorizes the National Oceanographic Partnership Program, which facilitates partnerships among federal agencies, academia, and industry to advance ocean science research and education. It likewise authorizes \$5 million for the National Maritime Heritage Grant Program for education and preservation projects designed to preserve historic maritime resources. The law also requires a report on how foreign governments leverage distant-water fishing fleets to extend their maritime security power.

(4) Arctic prioritization. The NDAA expresses the "sense of Congress" that the strategic importance of the Arctic region "continues to increase." To that end, the law calls for the establishment of an Arctic Shipping Federal Advisory Committee to advise the Secretary of Transportation on emerging opportunities for Arctic maritime transportation; calls for the establishment of an Arctic Security Studies Center; and directs DOD to assess risks stemming from the Arctic and to align training, research, and development requirements against those risks.

B. Energy Management

(1) Energy resilience. The 2021 NDAA proceeds on several tracks to improve the military's energy resilience and energy conservation activities. The law continues efforts of the past several years to place considerations of energy resilience at the heart of military construction policy. It imposes new requirements on DOD to ensure that sufficient energy is provided at all U.S. bases to power critical missions, and it imposes energy-consumption-conscious

requirements on DOD contractors. Likewise, the law directs the military to consider how energy issues factor into the life-cycle costs of new construction, and authorizes funds for energy generation and conservation projects at several bases.

The NDAA also directs a study on creating a fuel reserve for the western United States; seeks to promote energy resilience and energy security policies in privatized utility systems; directs the Secretary of Defense to consider using on-site energy production to promote energy resilience on military installations themselves; requires improvements in electrical metering at domestic DOD infrastructure; and authorizes DOD to create an emergency diesel generator microgrid pilot program to test assumptions about their use. And it reestablishes the position of assistant secretary of defense for energy, installations, and environment, which had been abolished in 2018.

(2) Operational energy. Operational energy is the energy required for training, moving, and sustaining military forces and weapons for military operations. The law extends policies made in previous NDAs to allow DOD to apply energy cost savings from "operational energy" to a broad range of activities, further incentivizing the Department to save energy. The law strengthens insight into the use of operational energy by creating a dedicated budget line for operational energy requirements, mandating an assessment of the use of operational energy by DOD, and authorizing increased funding for an account dedicated to operational energy.

(3) Energy sources. The NDAA contains several provisions that promote various sources of energy. These include provisions to assess the feasibility of energetics (a branch of mechanics that deals primarily with energy and its transformations) and to expand military authority to assist green energy projects near military installations. These provisions also relate to the acquisition of furnished energy¹² for a military installation in Germany, require a report on the feasibility of liquefied natural-gas-fueled vessels, expand authority relating to non-mineral energy resources on the continental shelf, and authorize nuclear-energy-related expenditures.

C. PFAS and Remediation of Contaminants

(1) PFAS. Successive NDAs have spearheaded congressional efforts to address the effects of historically oft-used fire suppressants known as perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) (or, collectively, PFAS). The 2021 NDAA continues Congress' endeavors to remediate alleged PFAS contamination and search for alternatives. The

11. As discussed *infra* Section VI.B, the REPI Program promotes public-private partnerships in conserving natural habitats near military bases to further military goals.

12. "Furnished energy" is a term of art that means "energy furnished to a covered military installation in any form and for any purpose, including heating, cooling, and electricity." Defense Federal Acquisition Regulation Supplement §252.225-7053.

NDAA requires that DOD provide notifications to Congress of all releases of firefighting foam containing PFAS, authorizes prizes for the development of firefighting chemicals that do not contain PFAS, and calls for a survey of technologies DOD could use to phase out aqueous film-forming foam (AFFF), which can contain PFAS. The law also directs the awarding of grants for research and development of alternatives to AFFFs that contain PFAS or fluorine. The NDAA creates an interagency working group to coordinate federal activities related to PFAS research and development, directs DOD to notify agricultural operations near military facilities where PFAS has been detected in the groundwater, prohibits DOD from procuring certain products that contain PFOS or PFOA, and directs a study that will examine the presence of PFAS in firefighting equipment.

(2) Burn pits. For years, lawmakers have used the yearly NDAs to force the military to stop using open burn pits to incinerate waste in war zones and to address the alleged health effects of their use. The 2021 NDAA continues those efforts by requiring the sharing of certain information on service-members' health and requiring extended health assessments of certain veterans exposed to open burn pit operations.

(3) Other contaminants. The NDAA promotes the remediation of the effects of a range of contaminants. It requires the Navy to regularly review technology that could help contain a fuel spill at the Red Hill Bulk Fuel Storage Facility in Hawaii; directs the U.S. Army to submit to Congress a plan for completing remediation of wastewater and chemicals in Umatilla, Oregon; and addresses nuclear waste at the Hanford site in Washington State, by prohibiting efforts to reclassify some such material as low-level radioactive waste and by requiring continued analysis for the supplemental treatment of Hanford-related waste. In the area of servicemember health, the NDAA expands the number of diseases that the law presumes are connected with military service during the Vietnam War, requires an audit of the medical conditions of residents in certain privatized military housing, directs a study of the exposure of military personnel to toxic substances at an air base in Uzbekistan, and requires the Department to submit a study on establishing a service medal to recognize veterans exposed to radiation.

D. *Environment and Natural Resource Management*

(1) Environmental cleanup. The law expands DOD's authority for environmental restoration projects, including those intended to mitigate the environmental effects of military activities on Native American lands. It also requires an annual public statement by the Secretary of Energy on the environ-

mental liabilities of defense nuclear facilities where defense environmental cleanup activities are occurring, as well as a report to Congress on any missed milestones for defense environmental cleanup plans at DOE sites. The NDAA also directs an independent study on the potential environmental effects of nuclear war. The NDAA includes several provisions related to oil spill remediation and to the funding of defense environmental cleanups in the United States and in Vietnam. Notably, the law makes several changes to the Oil Pollution Act of 1990 (OPA),¹³ which was enacted after the *Exxon Valdez* oil spill, to (among other things) direct the Coast Guard to lead and revitalize interagency efforts to coordinate oil spill research and response technology development. The NDAA also requires a report on how liability limits for oil discharges are set, and repeals a loan program for fishermen related to losses from oil discharge incidents.

(2) Land, space, and wildlife conservation. The NDAA broadens the reach of the REPI Program, which promotes public-private partnerships in conserving natural habitats near military bases to further military goals. The law includes several provisions addressing wildlife conservation, including those related to orcas, promotes the use of wildlife conservation banks, and protects lands that contain valuable natural resources. Congress also enlists DOD in efforts to mitigate the impact of wastewater entering the United States from Mexico's Tijuana River Valley. And, related to mineral extraction and mining, the NDAA directs DOD to source critical materials either domestically or from its closest allies, and not from far-flung international supply chains that involve China, amid growing Sino-American competition. The law also directs a report on how the United States can compete with China in space.

(3) Noise pollution. Noise emitted by military equipment and operations constitutes its own form of pollution. To help address it, the NDAA requires real-time sound monitoring at Navy installations that house Navy fighter aircraft, and requires DOD to create a process to receive, track, and analyze complaints of noise emanating from military helicopters in the Washington, D.C. area. The law also requires the Secretary of Defense to write a comprehensive report on the effect of noise restrictions on military operations and to recommend cost-effective measures for mitigating noise pollution.

(4) Sustainable chemistry. The NDAA includes a series of bipartisan provisions to establish a comprehensive national strategy for the research and development of sustainable chemistry, which is the design of chemical products that reduce or eliminate the generation of hazardous substances.

13. 33 U.S.C. §§2701-2761, ELR STAT. OPA §§1001-7001.

II. Overview of Authorization and Appropriations Processes

Congress has the constitutional authority to appropriate money from the U.S. Treasury to fund the federal government.¹⁴ Congress exercises this authority through a two-step authorization-appropriations process. First, Congress enacts authorization legislation that authorizes the appropriation of funds for specific purposes. Second, Congress must enact an appropriations law (or budget bill) to provide funds for the authorized agency, program, or activity.¹⁵ Both bills must be signed by the president to become law.

The House Armed Services Committee (HASC) and the Senate Armed Services Committee (SASC) have jurisdiction over the annual NDAA, which authorizes the appropriations of funds for DOD, nuclear weapons programs of DOE, and defense elements of the U.S. intelligence community.

The NDAA also “establishes defense policies and restrictions, and addresses organizational administrative matters related to [DOD].”¹⁶ The HASC and SASC work in parallel. Each committee holds hearings and writes its own national defense authorizing legislation, both of which are then reconciled by a conference committee. Once both houses of Congress approve the reconciled bill, it is presented to the president for signature.

The House and Senate approved the conference version of the 2021 NDAA on December 8, 2020, and December 11, 2020, respectively. It was presented to President Donald Trump for signature on December 11, 2020.¹⁷ In an unprecedented move, the president vetoed the legislation on December 23, offering a litany of sometimes conflicting justifications.¹⁸ He tweeted, for instance, that the NDAA was “weak,” failed to confront China sufficiently, and neglected to remove unrelated immunity protections from Internet platforms.¹⁹ Congress overruled the president’s veto by votes of 322-87 in the House on December 28, 2020, and 81-13 in the Senate on January 1, 2021, making the bill law on New Year’s Day.²⁰

III. Climate and Infrastructure Resiliency

The NDAA addresses climate change and infrastructure resiliency in a variety of ways. It requires an alternative fuel-purchasing pilot program, which could have ramifications for the federal automotive fleet, and mandates a series of reports on the military’s preparation for and contribution to climate change. The law expands policies undertaken in the previous NDAA to emphasize installation resiliency in military construction.

Further, the NDAA recognizes that a warming planet poses threats to potable water essential to military readiness. Hence, the NDAA requires research and deployment of water sustainment technologies and the development of trailer-mounted water-harvesting systems for use at forward operating bases. Finally, the NDAA echoes years of defense policy bills in raising the alarm over the importance of the Arctic region to national security interests, and establishes Arctic policies that implicate DOD, the U.S. Department of Transportation, and others.

A. Assessing and Combatting Climate Change

Section 321—Pilot Program on Alternative Fuel Vehicle Purchasing. Furthering the federal government’s shift to electric vehicles, the NDAA establishes an alternative fuel vehicle pilot program that will require the military services to expand their use of alternative fuel non-tactical vehicles, such as hybrid and electric vehicles. The Secretary of Defense is to carry out this pilot program at two or more facilities of each military department in the continental United States.²¹

Section 327—Requirement to Update Department of Defense Adaptation Roadmap. A pair of Executive Orders from 2012 and 2014 compelled DOD to release a 2014 Climate Change Adaptation Roadmap.²² The road map, signed by then-Secretary of Defense Chuck Hagel, details the threats to military readiness and national security posed by climate change, and sets forth a series of actions to identify and assess the effects of climate change on the Department, integrate climate change considerations across the Department and manage associated risks, and collaborate with internal and external stakeholders on climate change challenges.²³

The 2021 NDAA requires the Secretary of Defense to update the 2014 Roadmap by February 1, 2022. The law directs that the report outline DOD’s comprehensive strategy for addressing the effects of climate change, including worsening storms, drought, flooding, wildfires, and melting sea ice. “Unlike previous DoD Climate Roadmaps, the updated version must provide top-line estimates of the investments required to address costs incurred by climate change over the next five, ten, and 20 years,” observed the American Security Project, a nonpartisan

14. U.S. CONST. art. I, §9, cl. 7.

15. See BILL HENIFF JR., CONGRESSIONAL RESEARCH SERVICE, RS20371, OVERVIEW OF THE AUTHORIZATION-APPROPRIATIONS PROCESS 1 (2012), <https://www.senate.gov/CRSPubs/d2b1dc6f-4ed2-46ae-83ae-1e13b3e24150.pdf>.

16. VALERIE HEITSHUSEN & BRENDAN W. MCGARRY, CONGRESSIONAL RESEARCH SERVICE, IF10515, DEFENSE PRIMER: THE NDAA PROCESS 1 (2021), <https://fas.org/sgp/crs/natsec/IF10515.pdf>.

17. *Actions Overview H.R.6395*, *supra* note 9.

18. Amanda Macias & Kevin Breuninger, *House Overrides Trump Veto of \$740 Billion Defense Bill, Sends to GOP-Led Senate*, CNBC (Dec. 28, 2020), <https://www.cnn.com/2020/12/28/house-votes-to-override-trump-ndaa-veto.html>.

19. Claudia Grisales, *Trump Vetoes Defense Bill, Setting Up Congressional Vote to Potentially Override Him*, NPR (Dec. 23, 2020), <https://www.npr.org/2020/12/23/949586964/trump-vetoes-defense-bill-setting-up-congressional-vote-to-override-him>.

20. *Actions Overview H.R.6395*, *supra* note 9.

21. 2021 NDAA §321(a), (b).

22. DOD, 2014 CLIMATE CHANGE ADAPTATION ROADMAP 3 (2014), https://www.acq.osd.mil/eie/downloads/CCARprint_wForward_e.pdf.

23. *Id.* at 1.

national security organization.²⁴ These investments may address heightened demand for disaster or humanitarian relief operations, climate threats to testing and training and military installations, and enlarged operations in an increasingly ice-free Arctic.²⁵

Section 328—Department of Defense Report on Greenhouse Gas Emissions Levels. The NDAA requires the Secretary of Defense to submit a report to Congress and to the comptroller general on DOD’s total level of greenhouse gas emissions measured yearly for each of the past 10 FYs. “Such emissions levels shall include the agency-wide total, breakdowns by military department, and delineations between installation and operational emissions.” The report is due 180 days after the date of the NDAA’s enactment.²⁶ This data may be used to provide a baseline from which greenhouse gas emissions reductions can be measured.

Section 8250—Report on Effects of Climate Change on Coast Guard. The NDAA calls for the commandant of the Coast Guard to submit to the Senate Committee on Commerce, Science, and Transportation, along with the House Committee on Transportation and Infrastructure, a report on vulnerabilities of Coast Guard installations from climate change and on increased demands on the service resulting from the same. The report must list the 10 most vulnerable Coast Guard installations based on the anticipated effects of climate change, including rising sea tides and increased flooding, and address potential mitigations. On increased demands, the report must consider any possible increase in the frequency of the Coast Guard’s need to provide humanitarian assistance and deploy disaster relief missions due to extreme weather events, as well as contingency plans.

Section 339—Assessment of Department of Defense Excess Property Programs With Respect to Need and Wildfire Risk. Federal excess personal property refers to U.S. Forest Service-owned property that is on loan to state entities for firefighting. Most of the property originally belonged to DOD. Once the Forest Service acquires the property, it loans it to state cooperators to fight fires.²⁷ The Firefighter Property Program is a DOD program in which firefighters can receive excess DOD property for firefighting and emergency services.²⁸ The NDAA calls for a study of these programs, specifically analyzing “community need and risk.”²⁹ This study is very timely, given the extraordinary cost and destruction wrought by the West’s worsening year-round fire season and the government’s

interest in allocating DOD resources to support civilian wildfire suppression.³⁰

Section 519B—Study and Report on National Guard Support to States Responding to Major Disasters. The NDAA calls for a DOD study on National Guard support to federal agencies and states during major disasters. The study must include a review of the authorization of full-time National Guard duty and the speed of such an authorization. In addition, the study must cover the effectiveness of the funding transfer process between the Federal Emergency Management Agency and DOD, training materials, and lessons learned from the response to COVID-19.³¹

B. Infrastructure Construction and Installations Resilience

Section 315—Modification of Authority to Carry Out Military Installation Resilience Projects. For several years, defense authorization bills have focused on developing “military installation resilience.” The term was first inserted into the federal code by the 2019 NDAA, which defined it as the capability of a military installation to prepare for and recover from “extreme weather events” and “changes in environmental conditions” that “adversely affect the military installation.”³² The 2020 NDAA included several provisions that placed the concept more at the center of DOD’s military construction program by requiring changes in DOD’s construction planning documents, directing that they take into consideration the projected changes in sea-level rise and the long-term effects of climate change.³³ The 2020 NDAA also provided permanent general authority to DOD to carry out military construction projects for installation resilience.³⁴

The 2021 NDAA continues Congress’ efforts to expand military construction authority to address installation resilience.³⁵ It does so by enlarging the scope of projects that can be undertaken under this authority. Now, projects carried out pursuant to the law can be on a military installation; on a facility used by DOD that is owned by or operated in any state, if the Secretary of Defense “determines that the facility is subject to significant use by the armed forces for testing or training,” or outside of a military installation if the Secretary “determines that the project would preserve or enhance the resilience of” a “military installation”; certain DOD-owned facilities; or “community infrastructure determined by the Secretary concerned to be necessary to

24. Katherine SeEVERS, *Climate & Energy Resiliency in the FY2021 NDAA*, AM. SECURITY PROJECT (Jan. 26, 2021), <https://www.americansecurityproject.org/climate-energy-resiliency-in-the-fy2021-ndaa/>.

25. 2021 NDAA §327(b)(2)(A)-(D).

26. *Id.* §328(a). As of this writing, the report has not been made available to the public.

27. Forest Service, U.S. Department of Agriculture, *Federal Excess Personal Property Program & Firefighter Property Program*, <https://www.fs.usda.gov/managing-land/fire/fepp> (last visited Oct. 19, 2021).

28. *Id.*

29. 2021 NDAA §339(a).

30. See, e.g., Rosmary Izaguirre, *Worst Fires in California History: Dixie, Camp, and More*, L.A. TIMES (Aug. 24, 2021), <https://www.latimes.com/california/story/2021-08-24/worst-fires-in-california-history-dixie-camp-and-more>.

31. 2021 NDAA §519B(a).

32. Jacobson & Ferraro, *Environmental Deconfliction 2020*, *supra* note 10, at 10988-89 (quoting 10 U.S.C. §101(e)(8)); see also Jacobson & Ferraro, *Environmental Deconfliction 2019*, *supra* note 10, at 10226 (discussing 2019 NDAA §2805).

33. See Jacobson & Ferraro, *Environmental Deconfliction 2020*, *supra* note 10, at 10988-91 (discussing relevant provisions).

34. *Id.* at 10989 (discussing 2020 NDAA §2801(b), which modified 10 U.S.C. §2815).

35. *Id.*

maintain, improve, or rapidly reestablish installation mission assurance and mission-essential functions.”³⁶

REPI is DOD’s authorization to invest in conservation projects that protect military installations, such as buffer partnerships for easements near installations to preserve natural habitats. Section 315 of the 2021 NDAA modifies this program. The 2019 NDAA had originally expanded the REPI Program to allow the public-private partnerships to include agreements that enhance or improve “military installation resilience.” The 2021 NDAA amends federal law to allow REPI fund recipients to use those funds “to satisfy any matching funds or cost-sharing requirement of any conservation or resilience program of any Federal agency notwithstanding any limitation of such program on the source of matching or cost-sharing funds.”³⁷ Importantly, conservation programs that receive federal funding from other agencies, such as the U.S. Fish and Wildlife Service, that require a nonfederal match, can now use REPI funding for that nonfederal match. Doing so, the law says, will “facilitate interagency cooperation and enhance the effectiveness of actions that will protect the environment, military installation resilience, and military readiness.”³⁸

Section 341—National Defense Sustainment and Logistics Review. The NDAA adds a new requirement at the submission of each national defense strategy: a regular report to the congressional defense committees on the sustainment and logistics requirements necessary to support force structure, modernization, and deployment capabilities over periods up to 25 years.³⁹ Among many other components, each report must analyze “the location, infrastructure, and storage capacity for petroleum, oil, and lubricant products, as well as the ability to store, transport, and distribute such products from storage supply points to deployed military forces, required to meet steady state and contingency requirements,” and “the cybersecurity risks to military and commercial logistics networks and information technology systems.”⁴⁰

Section 346—Biannual Briefings on Status of Shipyard Infrastructure Optimization Plan. The Shipyard Infrastructure Optimization Plan (SIOP) is a program of the Navy to improve the conditions of shipyards. For instance, the Navy has determined that the “Norfolk Naval Shipyard is particularly at risk to flooding and ground subsidence,” in part because “local sea level rise for Norfolk, Virginia, will be about 0.16 inches per year, twice the global rate.”⁴¹ The NDAA calls for twice yearly briefings by the Secretary of the Navy to the congressional defense committees on the SIOP.⁴² The briefing must

include discussion of infrastructure development, human capital management, and performance metrics.⁴³

C. Water Sustainment and Maritime Policy

Section 226—Research, Development, and Deployment of Technologies to Support Water Sustainment.

The NDAA includes a provision introduced by Army veteran Sen. Tammy Duckworth (D-Ill.)⁴⁴ that requires the Secretary of Defense to research, develop, and deploy advanced technologies that support water sustainment with technologies that capture ambient humidity and harvest, recycle, and reuse water. The law requires the Secretary to develop modular and trailer-mounted water-harvesting systems, implement storage requirements for water-harvesting systems at forward operating bases, consider using commercially available off-the-shelf items to achieve cost savings, and share related information with foreign militaries if necessary. The law requires the deployment of these technologies for use by expeditionary forces no later than January 1, 2025.⁴⁵ Such technological advancements could help reduce the logistical support required for military transportation and sustainment efforts, particularly in arid climates where U.S. military forces have often deployed.

Section 2827—Improving Water Management and Security on Military Installations. The NDAA calls for a “risk-based approach” to water management and security on military installations.⁴⁶ It also mandates the creation of an assessment methodology for analyzing risks to sustainable water management and security. The methodology must include evaluation of the water sources and supply connections for a military installation; the condition and jurisdictional control of water infrastructure serving the military installation; the military installation’s water security risks related to drought-prone climates; and impacts of defense water usage on regional water demands, water quality, and legal issues, such as water rights disputes. The methodology must include analysis of the resiliency of the military installation’s water supply and the overall health of the aquifer basin.

In addition, each military installation must be analyzed to determine its potential for achieving net-zero water usage when practicable. Section 2827 also calls for improved landscaping management practices to increase water resilience. For instance, in non-arid climates, these practices should include the use of native grasses. Within one year of enactment, the Secretary of Defense must submit to the Committees on Armed Services of the Senate and the House a report on the progress made in implementing this section.

36. 2021 NDAA §315(a) (amending 10 U.S.C. §2815).

37. *Id.* §315(b) (amending 10 U.S.C. §2684a).

38. *Id.*

39. *Id.* §341(a).

40. *Id.*

41. Naval Sea Systems Command, *Frequently Asked Questions*, <https://www.navsea.navy.mil/Home/Shipyards/SIOP/SIOP-FAQs/> (last visited Oct. 19, 2021) (see Q&A7).

42. 2021 NDAA §346(a).

43. *Id.* §346(b).

44. Press Release, Office of Sen. Tammy Duckworth, Senate Passes Several Duckworth Provisions as Part of 2021 Defense Bill (Dec. 11, 2020), <https://www.duckworth.senate.gov/news/press-releases/senate-passes-several-duckworth-provisions-as-part-of-2021-defense-bill>.

45. 2021 NDAA §226(b), (c), (d).

46. *Id.* §2827(a).

Section 1055—Reauthorization of National Oceanographic Partnership Program. The National Oceanographic Partnership Program is a 23-year-old program that facilitates “ocean-related partnerships between federal agencies, academia and industry to advance ocean science research and education.”⁴⁷ In the 2021 NDAA, Congress reauthorized the program. Retired Navy Rear Adm. Timothy Gallaudet, Ph.D., assistant secretary of commerce for oceans and atmosphere and deputy National Oceanic and Atmospheric Administration (NOAA) administrator, described the reauthorization as “great news for the ocean that Americans rely on for environmental and economic well-being,” and explained that it “will help increase exciting and cost-effective partnerships that improve ocean science and education, strengthen the Blue Economy, and our national security.”⁴⁸

Examples of prior projects include a partnership between private company Saildrone and researchers from the University of New Hampshire and Monterey Bay Aquarium Research Institute to develop an uncrewed seagoing system called the Saildrone Surveyor. The system can complete mapping functions and identify the presence or absence of organisms or toxins.⁴⁹ The express purpose of the program is “[t]o promote the national goals of assuring national security, advancing economic development, protecting quality of life, ensuring environmental stewardship, and strengthening science education and communication through improved knowledge of the ocean.”⁵⁰

Section 1063—Support for National Maritime Heritage Grants Program. The National Park Service (NPS) runs the Maritime Heritage Program as part of its NPS Park History Program. The Maritime Heritage Program seeks to promote understanding of the role of maritime affairs in the history of the United States.⁵¹ The National Maritime Heritage Grants Program provides funding for education and preservation projects designed to preserve historic maritime resources in pursuit of this goal.⁵² The 2021 NDAA authorizes DOD to contribute \$5 million to the grant program.⁵³

Section 1260I—Report on Directed Use of Fishing Fleets. The NDAA requires the commander of the Office of Naval Intelligence to submit an unclassified report to Congress on the use of distant-water fishing fleets by foreign governments as extensions of their official maritime security forces, including how these fleets are leveraged in support of naval operations and foreign policy.⁵⁴ Sen. Sheldon Whitehouse (D-R.I.) championed this provision to particularly target China and its distant-water fishing

fleet. Beijing has used what has been called its “invisible armada” to contest the sovereignty of other nations across maritime Asia.⁵⁵

D. Arctic Prioritization

Section 8421—Coast Guard Arctic Prioritization. The NDAA contains findings and the sense of Congress on Coast Guard Arctic prioritization. Congress finds that “[t]he strategic importance of the Arctic continues to increase as the United States and other countries recognize the military significance of the sea lanes and choke points within the region and understand the potential for power projection from the Arctic into multiple regions.”⁵⁶ It specifically highlights the threat posed by China and Russia. It is the sense of Congress that “the increasing freedom of navigation and expansion of activity in the Arctic must be met with an increasing show of Coast Guard forces capable of exerting influence through persistent presence.”⁵⁷ In addition, Congress finds that with respect to the Arctic, “additional measures are needed to protect vital economic, environmental, and national security interests of the United States.”⁵⁸

Section 8426—Arctic Shipping Federal Advisory Committee. The NDAA calls for the establishment of an Arctic Shipping Federal Advisory Committee. The Committee will be tasked with “provid[ing] policy recommendations to the Secretary of Transportation on positioning the United States to take advantage of *emerging* opportunities for Arctic maritime transportation.”⁵⁹ As Sen. Lisa Murkowski (R-Alaska) explained in introducing the legislation, “[w]ith environmental changes opening sea routes potentially year-round and an increased global interest in the area, we continue to see greater opportunities but also greater challenges in the Arctic.”⁶⁰ Of note, one of the specific functions of the Committee will be to develop policy recommendations to create a U.S. entity that would improve Arctic environmental protection. The Committee must also submit a report to the Senate Committee on Commerce, Science, and Transportation and the House Committee on Transportation and Infrastructure with recommendations within two years of the enactment of the NDAA.

Section 1060—Arctic Planning, Research, and Development. The NDAA instructs DOD to “continue

47. *Congress Reauthorizes Law Supporting Partnerships to Advance Ocean Science*, NOAA RSCH. NEWS (Jan. 13, 2021), <https://research.noaa.gov/article/ARTMID/587/ArticleID/2703/Congress-reauthorizes-law-supporting-partnerships-to-advance-ocean-science>.

48. *Id.*

49. *Id.*

50. 2021 NDAA §1055(a).

51. NPS, *Maritime Heritage Grants*, <https://www.nps.gov/subjects/maritime-heritage/maritime-heritage-grants.htm> (last updated Sept. 7, 2021).

52. *Id.*

53. 2021 NDAA §1063.

54. *Id.* §1260I.

55. Press Release, Office of Sen. Sheldon Whitehouse, *Whitehouse Maritime Security Amendment on Its Way to Becoming Law in NDAA* (July 23, 2020), <https://www.whitehouse.senate.gov/news/release/whitehouse-maritime-security-amendment-on-its-way-to-becoming-law-in-ndaa>; Ian Urbina, *The Deadly Secret of China's Invisible Armada*, NBC NEWS (July 22, 2020), <https://www.nbcnews.com/specials/china-illegal-fishing-fleet/>.

56. 2021 NDAA §8421(a).

57. *Id.* §8421(b).

58. *Id.*

59. *Id.* §8426(a) (emphasis added).

60. Press Release, Office of Sen. Lisa Murkowski, *Murkowski, Wicker, Sullivan Introduce Legislation to Prioritize Arctic Maritime Transportation Opportunities, Safety, and Security* (Nov. 7, 2019), <https://www.murkowski.senate.gov/press/release/murkowski-wicker-sullivan-introduce-legislation-to-prioritize-arctic-maritime-transportation-opportunities-safety-and-security>.

assessing” risks stemming from the Arctic and to implement “training, equipping, and doctrine requirements” necessary to mitigate these risks.⁶¹ The NDAA permits DOD to conduct training exercises in the Arctic in pursuit of this objective.⁶² It also authorizes research and development on the “current and future requirements and needs of the Armed Forces for operations in the Arctic.”⁶³ For instance, this research and development may include “[d]evelopment of capabilities to monitor, assess, and predict environmental and weather conditions in the Arctic and the effect of such conditions on military operations,” or “[d]evelopment of materiel solutions for operating in extreme weather environments of the Arctic, including equipment for individual members of the Armed Forces, ground vehicles, and communications systems.”⁶⁴

Section 1089—Ted Stevens Center for Arctic Security Studies. The NDAA calls for the establishment of a Ted Stevens Center for Arctic Security Studies with the goal of “enhancing understanding of the dynamics and national security implications of an emerging Arctic region, including increased access for transit and maneuverability.”⁶⁵ DOD is tasked with determining whether it would be wise to locate the center, which would be named in honor of the legendary late Alaska senator, near the Arctic region and the armed forces positioned in that area.⁶⁶

IV. Energy Management

DOD is the largest single consumer of energy in the nation, “accounting for more than three-quarters of total government energy usage and 15 times the energy consumption of the Post Office, the No. 2 consumer—and it emits about 1 percent of the total U.S. carbon emissions.”⁶⁷ The 2021 NDAA continues policies enacted by previous NDAs to promote energy resilience in military construction and energy generation, as well as energy conservation projects. It also seeks to increase energy savings through various incentives, reorganize how DOD addresses operational energy, and promote various sources of energy.

A. Energy Resilience

Section 316—Energy Resilience and Energy Security Measures on Military Installations. DOD policy emphasizes “energy resilience”—the goal of enhancing military capability by providing assured access to durable fuel and power.⁶⁸ The 2021 NDAA promotes this policy by requiring that DOD ensure there is sufficient energy

available at every military installation to maintain critical missions essentially year-round. It also requires DOD to impose requirements on defense contractors “appropriate to ensure energy resilience and energy security, including requirements for metering to measure, manage, and verify energy consumption, availability, and reliability consistent with this section and the energy resilience metrics and standards.”⁶⁹

Specifically, the 2021 NDAA amends Subchapter I of Chapter 173 of Title 10 of the U.S. Code, by adding a section on energy resilience and energy security measures on military installations.⁷⁰ The new section requires the Secretary of Defense, by the end of FY 2030, to ensure each year a minimum level of 99.9% energy “availability” to maintain the “critical missions” of each installation. “Availability” is defined as “the availability of required energy at a stated instant of time or over a stated period of time for a specific purpose.” And the term “critical mission” is defined to mean “those aspects of the missions of an installation, including mission essential operations, that are critical to successful performance of the strategic national defense mission,” including “operational headquarters” and like facilities, but not military housing and similar structures.⁷¹

The law requires the Secretary to issue standards for establishing levels of energy availability relative to specific critical missions, establish interim goals to take effect prior to FY 2025, and ensure each military agency meets those requirements. The law also directs a robust planning effort to effectuate these goals. This effort includes requiring that planning “promote the use of multiple and diverse sources of energy with an emphasis favoring energy resources originating on the installation such as modular generation,” promoting installation of microgrids, and favoring the use of full-time installed energy sources rather than emergency generation.⁷² The NDAA lays out testing criteria to monitor and measure the data necessary to comply with these energy-related requirements and directs the Secretary to notify Congress no later than 90 days after the end of FY 2029 if the Secretary determines the Department will be unable to meet the requirements of the section.

Finally, the law requires that for contracts for energy and utility services, the Secretary of Defense shall “specify methods and processes to measure, manage, and verify compliance” with the law and “ensure that such contracts include requirements appropriate to ensure energy resilience and energy security, including requirements for metering to measure, manage, and verify energy consumption, availability, and reliability consistent with” federal law.⁷³

Section 904—Assistant Secretary of Defense for Energy, Installations, and Environment. Section 904 of the NDAA reestablishes the position of assistant secretary of defense for energy, installations, and environment

61. 2021 NDAA §1060(a)(1).

62. *Id.* §1060(a)(2).

63. *Id.* §1060(b)(1).

64. *Id.* §1060(b)(2).

65. *Id.* §1089(a)(2)(B)(i).

66. *Id.* §1089(a)(2)(D).

67. Eric Wolff, *How the Department of Defense Could Help Win the War on Climate Change*, POLITICO (Jan. 4, 2021), <https://www.politico.com/news/2021/01/04/biden-pentagon-climate-change-454404>.

68. See DOD, Office of the Assistant Secretary of Defense for Sustainment, *Welcome to Energy*, <https://www.acq.osd.mil/log/ENR/index.html> (last visited Oct. 19, 2021).

69. 2021 NDAA §316(a) (adding 10 U.S.C. §2920(e)(2)).

70. *Id.* (adding 10 U.S.C. §2920).

71. *Id.* (adding 10 U.S.C. §2920(h)).

72. *Id.* (adding 10 U.S.C. §2920(b)).

73. *Id.* (adding 10 U.S.C. §2920(e)).

(ASD(EI&E)). The assistant secretary will be responsible for “the overall supervision of matters relating to energy, installations, and the environment.”⁷⁴ As part of a reorganization on February 1, 2018, the ASD(EI&E) had been abolished and combined into an assistant secretary of defense for sustainment reporting to the undersecretary of defense for acquisition and sustainment.⁷⁵

Section 2401—Authorized Defense Agencies Construction and Land Acquisition Projects. The 2021 NDAA authorizes the Secretary of Defense to carry out military construction projects in certain areas. The 2020 NDAA authorized construction of a backup generator at the Pentagon. The 2021 NDAA subsequently authorizes the Secretary of Defense to replace and upgrade existing generators to obtain additional power generation capacity.⁷⁶

Section 2402—Authorized Energy Resilience and Conservation Investment Program Projects. The law authorizes funds for energy conservation projects at various bases and other locations. These include \$24 million for energy conservation projects at Fort Rucker, Alabama; more than \$60 million for energy conservation projects in California (at Marine Corps Air Ground Combat Center Twentynine Palms, Military Ocean Terminal at Concord, Naval Support Activity Monterey, and Naval Air Weapons Station China Lake); more than \$44 million for projects at Joint Base Anacostia-Bolling, Washington, D.C.; \$32 million for Creech Air Force Base, Nevada; and \$35 million for Wright-Patterson Air Force Base, Ohio, among many others.⁷⁷

Section 2404—Independent Study on Western Emergency Refined Fuel Reserves. Section 2404 calls for the Secretary of Defense to seek to contract with a federally funded research center to conduct a study on the feasibility of creating emergency fuel reserves for refined fuel in the western United States.⁷⁸ The research center must assess, in the event of a 30-day interruption of oil refineries in the western United States, the capacity of DOD to meet defense mission requirements in the event of limited connection to refined petroleum supply infrastructure. The study will also examine the capacity of the Strategic Petroleum Reserve to support energy needs of the western United States.

The study must also include an assessment of the practicability of long-term storage of military specification fuels in a salt cavern, hard-rock storage, or tanks. Finally, it must discuss options for long-term storage of refined fuels in the western United States, including through the establishment of Western Emergency Refined Fuel Reserves.⁷⁹ DOD already has substantial experience in fuel storage, including at sites such as the Red Hill Bulk Fuel Storage

Facility in Hawaii.⁸⁰ There, the military can store up to 250 million gallons of fuel in steel-lined storage tanks underneath a volcanic mountain ridge.⁸¹

Section 2804—Consideration of Energy Security and Energy Resilience in Life-Cycle Cost for Military Construction. U.S. law empowers the Secretary of Defense and the secretaries of the military departments to carry out military construction projects.⁸² As part of that authority, DOD assesses the life-cycle costs of proposed military construction.⁸³ Section 2804 of the 2021 NDAA adds a new section to the U.S. Code that specifically directs the military to consider how energy issues factor into the life-cycle costs of new construction.

Specifically, the NDAA provides that the evaluation of life-cycle costs for certain covered military construction projects must include in the design phase as a facility requirement,

the long-term consideration of energy security and energy resilience that would ensure that the resulting facility is capable of continuing to perform its missions, during the life of the facility, in the event of a natural or human-caused disaster, an attack, or any other unplanned event that would otherwise interfere with the ability of the facility to perform its missions.⁸⁴

The covered military construction projects include facilities used to perform critical functions during a disaster or other unplanned event, such as air defense facilities and nuclear command-and-control facilities.

Section 2805—Congressional Project Authorization Required for Military Construction Projects for Energy Resilience, Energy Security, and Energy Conservation. U.S. law permits the Secretary of Defense to carry out military construction projects for energy resilience, energy security, and energy conservation, using funds appropriated by Congress. The 2021 NDAA generally amends the section that grants this authority. It requires that, when submitting information to Congress regarding potential appropriations for military construction projects for energy conservation, the Secretary of Defense include expected savings-to-investment ratio information as well as a brief description of the measurement and verification plan. And for military construction projects for energy resilience or energy security, the Secretary must explain how the project would enhance mission assurance, support mission critical functions, and address vulnerabilities.⁸⁵

74. *Id.* §904 (amending 10 U.S.C. §138).

75. Aaron Mehta, *The Pentagon's Acquisition Office Is Gone. Here's What the Next 120 Days Bring*, DEF. NEWS (Feb. 1, 2018), <https://www.defensenews.com/pentagon/2018/02/01/the-pentagons-acquisition-office-is-gone-heres-what-the-next-120-days-bring/>.

76. 2021 NDAA §2401(a), (c).

77. *Id.* §2402(a).

78. *Id.* §2404(a).

79. *Id.* §2404(b).

80. *See infra* “Section 325—Five Year Reviews of Containment Technologies Relating to Red Hill Bulk Fuel Storage Facility” in Section V.C.

81. Commander, Navy Region Hawaii, *Red Hill Bulk Fuel Storage Facility*, <https://www.cnic.navy.mil/regions/cnrh/om/red-hill-tank.html> (last updated Sept. 1, 2021).

82. *See* 10 U.S.C. §2802(a).

83. *See id.* §2801(c)(3).

84. 2021 NDAA §2804(a) (amending Chapter 169 of Title 10 of the U.S. Code by adding §2816).

85. *Id.* §2805(a) (amending 10 U.S.C. §2914).

Section 2823—Promotion of Energy Resilience and Energy Security in Privatized Utility Systems. The NDAA expands the Secretary of Defense’s authority to carry out a military construction project for energy resilience, security, or conservation related to mission support,⁸⁶ to include projects related to privatized utility systems. Energy resilience and conservation investments may be directed to privatized utility systems, notwithstanding the fact that the U.S. government may not own that utility system.⁸⁷

Section 2825—Use of On-Site Energy Production to Promote Military Installation Energy Resilience and Energy Security. Federal law already directs the Secretary of Defense to ensure the readiness of the armed forces for their military missions by pursuing energy security and energy resilience.⁸⁸ The NDAA adds a new subsection that directs the Secretary to consider projects for the production of energy on *military installations* that benefit readiness and promote installation energy security and resilience. Specifically, such projects might entail locating energy-production infrastructure on the military installation that will consume the energy, or incorporating energy resilience features, such as microgrids, to ensure that energy remains available to the installation even when the installation is not connected to energy sources located off the installation.⁸⁹

The NDAA calls for the Secretary to carry out at least four projects to promote installation energy security and resilience. One project must develop technology that can connect on-site solar energy generation with installation facilities performing critical missions, such that it can provide power to these facilities even if the installation is disconnected from the commercial power supply. Additionally, at least one project must accomplish the same objective with electricity from a renewable source other than solar. Finally, at least two projects must be designed to develop technology that demonstrates the ability to *store* sufficient electrical energy from an on-site energy generation facility that uses a renewable energy source to provide the electrical energy required to continue operation of installation facilities performing critical missions during nighttime operations.⁹⁰

The NDAA also requires the Secretary of Defense to brief congressional defense committees on plans to carry out the on-site energy production projects.

Section 2826—Improved Electrical Metering of Department of Defense Infrastructure Supporting Critical Missions. Proper electric metering is important to ensuring efficient energy usage by providing useful information on energy consumption.⁹¹ To improve energy effi-

ciency, the NDAA requires improvements to the metering of electrical energy usage at military infrastructure. The objective is to accurately determine energy consumption by these structures in order to improve energy efficiency and resilience.

The legislation provides the following options to improve metering:

1. Installation of smart meters at electric power supply cable entry points, which would have remote data storage and retrieval capability using cellular communication to provide hourly energy usage data
2. Use of an energy usage audit firm to individually meter defense structures using clamp-on meters and data storage
3. Manual collection and calculation of the connected load via nameplate data survey of all the connected electrical devices

This section also includes cybersecurity provisions that require consultation with the chief information officer of DOD to ensure that these electrical energy metering options do not compromise the cybersecurity of DOD networks.⁹²

Section 2864—Pilot Program to Test Use of Emergency Diesel Generators in a Microgrid Configuration at Certain Military Installations. The NDAA authorizes the Secretary of Defense to conduct a pilot program—called the Emergency Diesel Generator Microgrid Program—which would evaluate the feasibility and cost-effectiveness of connecting existing diesel generators at a military installation to create and support microgrid configurations at the installation capable of providing electrical power for defense critical facilities during an emergency involving the loss of external electric power supply.⁹³ The goals of the program are (1) to test assumptions about lower operating and maintenance costs, parts interchangeability, lower emissions, lower fuel usage, increased resiliency, increased reliability, and reduced need for emergency diesel generators; and (2) to establish design criteria that could be used to build and sustain emergency diesel generator microgrids at other installations.

Section 336—Reporting on Energy Savings Performance Contracts. Under 10 U.S.C. §2925, DOD must submit to Congress an annual report related to energy resilience at military installations. The NDAA adds to this requirement, providing that DOD must include in this report a “description of the use of energy savings performance contracts.”⁹⁴ Energy savings performance contracts are agreements in which federal agencies procure energy savings and facility improvements with no upfront capital costs or special appropriations from Congress.⁹⁵

86. See 10 U.S.C. §2914.

87. 2021 NDAA §2823(a), (b) (amending 10 U.S.C. §2688).

88. 10 U.S.C. §2911(a).

89. 2021 NDAA §2825(a) (amending 10 U.S.C. §2911). A microgrid is an integrated energy system consisting of interconnected loads and energy resources that can be removed from the local utility grid and function as a stand-alone system.

90. *Id.* §2825(b).

91. Dennis Bouley, *Why Smart Meters Are Key to Achieving High Efficiency Buildings*, Schneider Electric (Aug. 4, 2016), <https://blog.se.com/energy-management-energy-efficiency/2016/08/04/smart-meters-key-achieving-high-efficiency-buildings/>.

92. 2021 NDAA §2826(a), (b), (c).

93. *Id.* §2864(a).

94. *Id.* §336(a) (amending 10 U.S.C. §2925(a)).

95. DOE, Office of Energy Efficiency and Renewable Energy, *Energy Savings Performance Contracts for Federal Agencies*, <https://www.energy.gov/eere/>

B. Operational Energy

Section 317—Modification to Availability of Energy Cost Savings for Department of Defense. Federal law allows DOD in certain circumstances to use the money it saves from energy cost savings.⁹⁶ The 2019 NDAA revised how that money may be spent, directing that half of the savings be used for the implementation of energy resilience, mission assurance, and similar measures.⁹⁷ The 2020 NDAA amended the law once again to allow DOD to apply energy cost savings to a broad range of ventures, including plans “for the implementation of additional operational energy resilience, efficiencies, mission assurance, energy conservation, or energy security within the department, agency, or instrumentality that realized that savings.”⁹⁸

The 2021 NDAA continues this trend by making available to DOD money it saves from “operational energy”—the energy required for training, moving, and sustaining military forces and weapons platforms for military operations⁹⁹—“from both training and operational missions.”¹⁰⁰ The result of these changes to the law facilitates more energy resilience projects by allowing components of DOD to reinvest cost savings from energy efficiency without further appropriation.

Section 322—Budgeting of Department of Defense Relating to Operational Energy Improvement. The 2021 NDAA created a dedicated budget line for operational energy requirements. As Rep. John Garamendi (D-Cal.), chairman of the Armed Services Subcommittee on Readiness, wrote, this dedicated budget line will “enhance transparency and congressional oversight of [the Defense] Department’s efforts to reduce fossil fuel usage and make conservation gains on operational platforms.”¹⁰¹ The significance of this provision is that it provides strengthened insight (and the potential for congressional oversight) of important DOD efforts to enhance military capability, readiness, and resilience in the operational field.

Section 323—Assessment of Department of Defense Operational Energy Usage. Section 323 directs the Secretary of Defense to enter into an agreement with a federally funded research and development center to conduct an assessment of DOD’s operational energy usage. The Secretary is to enter into such an agreement within two months of the NDAA’s enactment. The report, which is

to be submitted in an unclassified form but may contain a classified appendix, will assess the extent to which the Department develops an integrated operational energy strategy, the extent to which each of the military departments has implemented it, and the viability of implementing net-zero initiatives within the operational energy enterprise without negatively impacting mission capability, among other factors.¹⁰²

Section 324—Improvement of the Operational Energy Capability Improvement Fund of the Department of Defense. Section 324 of the 2021 NDAA realigns the Operational Energy Capability Improvement Fund (OECIF) under the newly reestablished ASD(EI&E) (see discussion of 2021 NDAA §904 above). The OECIF, which is currently overseen by the assistant Secretary of Defense for sustainment, works “to improve the Department’s military capabilities through targeted investments in operational energy science and technology.”¹⁰³ The NDAA directs that the assistant secretary coordinate related programs and carry out a program for the demonstration of technologies related to operational energy prototyping.¹⁰⁴

DOD notes that, since FY 2012, the OECIF has invested more than \$255 million. These investments have been directed toward better utilizing energy in base camps and enhancing warfighting capabilities through innovative consortia. The OECIF has also invested in improving “the role of operational energy in Department modeling and simulation” to increase the range and capability of DOD’s tactical ground vehicle fleet, “transform the operational energy performance of unmanned systems, advance thermal and power management technologies for high pulse power systems, and assess the wireless transmission of energy in the far-field.”¹⁰⁵

C. Energy Sources

Section 273—Modification of Requirements Relating to Energetics Plan to Include Assessment of Feasibility and Advisability of Establishing a Program Office for Energetics. The 2021 NDAA modifies a section of the 2020 NDAA to require an assessment of the feasibility of establishing a program office for energetics—a branch of mechanics that deals primarily with energy and its transformations.¹⁰⁶ The previous NDAA directed DOD to develop a plan that “maintains United States technological superiority in energetics technology critical to national security.”¹⁰⁷

Section 311—Military Aviation and Installation Assurance Clearinghouse for Review of Mission Obstructions. In 2011, Congress created the DOD Sit-

femp/energy-savings-performance-contracts-federal-agencies (last visited Oct. 19, 2021).

96. 10 U.S.C. §2912.

97. Jacobson & Ferraro, *Environmental Deconfliction 2019*, *supra* note 10, at 10228 (discussing 2019 NDAA §312).

98. Jacobson & Ferraro, *Environmental Deconfliction 2020*, *supra* note 10, at 10992 (quoting 2020 NDAA §317).

99. DOD, Office of the Assistant Secretary of Defense for Sustainment, *Operational Energy*, https://www.acq.osd.mil/eie/OE/OE_index.html (last visited Oct. 19, 2021).

100. 2021 NDAA §317 (amending 10 U.S.C. §2912(a)).

101. Press Release, Office of Rep. John Garamendi, Readiness Chairman Garamendi Secures Major Wins in FY21 National Defense Authorization Act Conference Report (Dec. 11, 2020), <https://garamendi.house.gov/media/press-releases/readiness-chairman-garamendi-secures-major-wins-fy21-national-defense>.

102. 2021 NDAA §323.

103. DOD, Office of the Assistant Secretary of Defense for Sustainment, *supra* note 99.

104. 2021 NDAA §324(b), (c).

105. DOD, Office of the Assistant Secretary of Defense for Sustainment, *supra* note 99.

106. 2021 NDAA §273.

107. 2020 NDAA, Pub. L. No. 116-92, §253(a)(1), 133 Stat. 1198, 1287 (2019).

ing Clearinghouse, which identifies and helps mitigate the impact of “energy projects”—such as wind turbines and solar power towers—on the operational and training needs of nearby military installations.¹⁰⁸ For example, where it determines that constructing wind turbines would interfere with military airspace and thus have an “adverse impact on military operations and readiness,” the Clearinghouse may work with the developer to adjust the construction plans to avoid affected flight paths.¹⁰⁹ The Clearinghouse laws were revised in the 2019 NDAA to expand and clarify its authority.¹¹⁰

The 2021 NDAA further amends the law to alter the procedures for the review of proposed wind energy projects by requiring the parties to identify actions that DOD and project developers can take “to mitigate any adverse impact on military operations and readiness.”¹¹¹ If the project will not have an adverse impact on military readiness, the Clearinghouse is to notify the applicant and the applicable governor. Sen. Martin Heinrich (D-N.M.), who supported the section, wrote, “[r]educing or eliminating any potential impact of energy projects on military radar, training or operations will help protect the missions of New Mexico’s Air Force Bases and the White Sands Missile Range,” which is in New Mexico.¹¹²

Section 326—Limitation on Use of Funds for Acquisition of Furnished Energy for Rhine Ordnance Barracks Army Medical Center. As part of congressional efforts to reduce DOD dependence on Russian energy sources, this section requires the Secretary of Defense to submit a certification that none of the energy used by Rhine Ordnance Barracks Army Medical Center in Germany was sourced from the Russian Federation.¹¹³

Section 8248—Report on the Feasibility of Liquefied Natural Gas Fueled Vessels. The NDAA requires the commandant of the Coast Guard to submit to the Senate Committee on Commerce, Science, and Transportation and the House Committee on Transportation and Infrastructure a report on the feasibility of using liquefied natural gas (LNG)-fueled vessels. The report will address feasibility, safety, and costs of the Coast Guard’s potential use of LNG for new vessels. It will also address the possibility of converting existing vessels to run on LNG.

Section 9503—Affirmation of Authority for Non-Oil and Gas Operations on the Outer Continental Shelf. The Outer Continental Shelf Lands Act governs the reach of U.S. law into the submerged lands of the continental shelf.¹¹⁴ Specifically, the Act covers equipment

attached to the seabed, often constructed for exploring or producing resources.¹¹⁵ The NDAA amends that law to specify that its coverage extends to “installations and other devices permanently or temporarily attached to the seabed, which may be erected thereon for the purpose of exploring for, developing, or producing resources, *including non-mineral energy resources.*”¹¹⁶ This addition makes clear that the Act covers wind energy installations as “non-mineral energy resources.”

Section 3104—Nuclear Energy. The NDAA authorizes the appropriation of funds for nuclear energy-related expenditures, including weapons dismantlement and stockpile management and modernization.

V. PFAS and Remediation of Contaminants

Congressional interest in mitigating the potentially harmful effects of once commonly used fire suppression chemicals known as PFOA and PFOS, or collectively as PFAS, has deepened remarkably in the past few years, and this attention has manifested itself in successive NDAAs. For example, the 2018 NDAA provided \$7 million for a study of the human health effects of PFOA and PFOS in drinking water and groundwater. It also authorized the Navy and the U.S. Air Force to perform environmental remediation related to PFOA and PFOS, and authorized more than \$72 million for groundwater remediation.¹¹⁷

The 2019 NDAA expanded on these efforts. It authorized a \$10-million health study, directing the Secretary of Defense to submit to Congress an assessment on remediating PFAS contamination in drinking water and on the health implications of PFAS exposure, and authorizing the services to prevent PFAS chemicals from entering water supplies.¹¹⁸

The 2020 NDAA included major PFAS-related legislation. It ordered the military to phase out the use of firefighting foam containing PFAS chemicals, authorized using funds to remediate PFAS contamination, and ordered studies and data-gathering on PFAS contamination. Collectively, the 2020 NDAA was “the most substantial piece of legislation to address PFAS substances of any federal law to date.”¹¹⁹

The 2021 NDAA continues Congress’ efforts to remediate alleged PFAS contamination, and search for firefighting alternatives. It also continues policies of previous NDAAs to address the alleged dangers of burn pits to the health of servicemembers and establishes policies to remediate the harms of a range of hazardous chemicals.

108. 10 U.S.C. §183a; Jacobson et al., *Environmental Deconfliction 2018*, *supra* note 10, at 226.

109. Jacobson et al., *Environmental Deconfliction 2018*, *supra* note 10, at 226.

110. *Id.* at 227.

111. 2021 NDAA §311 (amending 10 U.S.C. §183a(c)).

112. MARTIN HEINRICH, U.S. SENATOR MARTIN HEINRICH HIGHLIGHTS FY21 NATIONAL DEFENSE AUTHORIZATION ACT 7, <https://www.heinrich.senate.gov/download/fy21-ndaa-heinrich-highlights> (last visited Oct. 19, 2021).

113. 2021 NDAA §326; *see also* Scott A. Freling et al., *Targeting DoD’s Reliance on Russian Energy*, COVINGTON (June 9, 2020), <https://www.insidegovernmentcontracts.com/2020/06/targeting-dods-reliance-on-russian-energy/>.

114. 43 U.S.C. §1333(a)(1). The outer continental shelf is administered by DOI, and thus this provision is not specifically directed at DOD.

115. *Id.*

116. 2021 NDAA §9503 (emphasis added).

117. Jacobson et al., *Environmental Deconfliction 2018*, *supra* note 10, at 228-29.

118. Jacobson & Ferraro, *Environmental Deconfliction 2019*, *supra* note 10, at 10230.

119. Jacobson & Ferraro, *Environmental Deconfliction 2020*, *supra* note 10, at 10993.

A. PFAS

Section 318—Increased Transparency Through Reporting on Usage and Spills of Aqueous Film-Forming Foam at Military Installations. Section 318 of the 2021 NDAA adds a provision to the U.S. Code that requires DOD to provide notification to Congress of all releases of firefighting foam containing PFAS. The deputy assistant secretary of defense for environment must notify the Armed Services Committees of the House and Senate “[n]ot later than 48 hours after” receiving notice of the usage or spill of such firefighting foam “at any military installation.”¹²⁰

Section 330—Prizes for Development of Non-PFAS-Containing Fire-Fighting Agent. The 2020 NDAA prohibited the use of PFAS-containing firefighting foam after October 1, 2024, and immediately prohibited its use in training.¹²¹ The 2021 NDAA authorizes the Secretary of Defense, acting through the assistant secretary of defense for sustainment and the Strategic Environmental Research and Development Program, to carry out a program to award cash prizes, and other incentives, to recognize achievements in the development of a non-PFAS-containing firefighting agent to replace AFFF¹²² with the potential for application to the performance of DOD military missions. No prize can be worth more than \$5 million, and no cash prize can exceed \$1 million without the approval of the assistant secretary of defense for sustainment. The authority for this competition expires on October 1, 2024.¹²³

Section 331—Survey of Technologies for Department of Defense Application in Phasing Out the Use of Fluorinated Aqueous Film-Forming Foam. The NDAA directs the Secretary of Defense to conduct a survey of relevant technologies, other than firefighting agent solutions, to determine whether any such technologies are available and can be adapted for use by DOD to facilitate the phase-out of fluorinated AFFF as directed by the 2020 NDAA. The technologies are to include “hangar flooring systems, firefighting agent delivery systems, containment systems, and other relevant technologies the Secretary determines appropriate.”¹²⁴ The Secretary is to provide a briefing on the results of that survey within one year of the enactment of the 2021 NDAA.

Section 332—Interagency Body on Research Related to Per- and Polyfluoroalkyl Substances. Section 332 directs the director of the White House Office of Science and Technology Policy to establish an interagency working group to coordinate federal activities related to PFAS

research and development. The interagency working group is to include representatives from the U.S. Environmental Protection Agency (EPA), National Institute of Environmental Health Sciences, DOD, National Institutes of Health, Department of Homeland Security, Agency for Toxic Substances and Disease Registry, and many other agencies. It is to be co-chaired by the director of the Office of Science and Technology Policy and, on a biannual rotating basis, a representative from a member agency, as selected by the director of the Office of Science and Technology Policy. The group is to provide for interagency coordination of federally funded PFAS research and development and, within one year of the NDAA’s enactment, “develop and make publicly available a strategic plan for Federal support for PFAS research and development.”¹²⁵

Section 333—Restriction on Department of Defense Procurement of Certain Items Containing Perfluorooctane Sulfonate or Perfluorooctanoic Acid. PFOS and PFOA are the most extensively produced PFAS chemicals.¹²⁶ The NDAA prohibits DOD from procuring certain products that contain PFOS or PFOA. These products are nonstick cookware or cooking utensils for use in galleys or dining facilities, and upholstered furniture, carpets, and rugs that have been treated with stain-resistant coatings.¹²⁷

Section 334—Research and Development of Alternative to Aqueous Film-Forming Foam. The NDAA instructs DOD, acting through the National Institute of Standards and Technology (NIST), to award grants for research and development on alternatives to AFFF containing PFAS or fluorine.¹²⁸ DOD must also submit a report to Congress on “the priorities and actions taken with respect to finding an alternative to AFFF and the implementation of such priorities; and . . . any alternatives the Secretary has denied, and the reason for any such denial.”¹²⁹

Section 335—Notification to Agricultural Operations Located in Areas Exposed to Department of Defense PFAS Use. The NDAA requires DOD to notify agricultural operations near military facilities where PFAS has been detected in groundwater and linked to a local water source.¹³⁰ The notification must include the specific PFAS detected and the level at which it is present.¹³¹ DOD must also submit a report to the Senate Committee on Agriculture, Nutrition, and Forestry and the House Committee on Agriculture on the status of these notices (and their content).¹³²

Section 338—Guaranteeing Equipment Safety for Firefighters Act of 2020. The NDAA mandates that NIST complete a study of the composition of new and unused personal protective equipment for firefighters. In

120. 2021 NDAA §318(a) (adding 10 U.S.C. §2712).

121. Jacobson & Ferraro, *Environmental Deconfliction 2020*, *supra* note 10, at 10993 (discussing 2020 NDAA §322).

122. AFFF is a fire suppressant used to extinguish flammable liquid fires such as fuel fires. “Many AFFF formulations contain other unintended PFAS side products that have similar health and environmental concerns.” Alaska Department of Environmental Conservation, *Aqueous Film Forming Foam (AFFF)*, <https://dec.alaska.gov/spar/csp/pfas/firefighting-foam/> (last visited Oct. 19, 2021).

123. 2021 NDAA §330.

124. *Id.* §331.

125. *Id.* §332(d)(2).

126. U.S. EPA, *Our Current Understanding of the Human Health and Environmental Risks of PFAS*, <https://www.epa.gov/pfas/our-current-understanding-human-health-and-environmental-risks-pfas> (last updated Nov. 3, 2021).

127. 2021 NDAA §333.

128. *Id.* §334(a).

129. *Id.* §334(c).

130. *Id.* §335(a).

131. *Id.* §335(b).

132. *Id.* §335(d).

particular, the study must examine the presence of PFAS, the potential release of PFAS over time due to degradation of the equipment, and firefighters' risk of exposure to PFAS from their equipment.¹³³ Additionally, following the study, NIST must issue a solicitation for research proposals on improvements to firefighter equipment that could reduce occupational exposure to PFAS and award grants to meritorious research projects.¹³⁴

B. Burn Pits

Section 720—Addition of Burn Pit Registration and Other Information to Electronic Health Records of Members of the Armed Forces. Previous versions of the NDAA have focused on illnesses caused by the military's use of open burn pits to dispose of trash in Iraq and Afghanistan. The Secretary of Veterans Affairs established the Airborne Hazards and Open Burn Pit Registry in order to gather information on the long-term health effects of burn pits.¹³⁵ The 2021 NDAA requires that electronic health records for members of the Armed Forces registered with the registry be updated with any information contained in it. It also mandates that any occupational or environmental health exposure recorded in the Defense Occupational and Environmental Health Readiness System be linked to the electronic health record system of DOD.¹³⁶

Section 721—Inclusion of Information on Exposure to Open Burn Pits in Postdeployment Health Reassessments. DOD must conduct post-deployment health reassessments after members of the Armed Forces are deployed outside the United States.¹³⁷ The NDAA requires adding to this reassessment an explicit question concerning exposure to open burn pits.¹³⁸ This provision is expected to “increase reporting of burn pit exposure.”¹³⁹

Section 735—Health Assessments of Veterans Diagnosed With Pandemic Diseases to Determine Exposure to Open Burn Pits and Toxic Airborne Chemicals. Within its provisions addressing the COVID-19 pandemic, the NDAA includes a requirement that if the U.S. Department of Veterans Affairs (VA) administers a positive pathogen test for a veteran, the VA must evaluate whether the veteran was based near an open burn pit or was otherwise exposed to airborne contaminants. If this evaluation establishes such exposure, the veteran will be enrolled in the Airborne Hazards and Open Burn Pit Registry unless the individual opts out.¹⁴⁰ The NDAA also calls for a study on the health impacts of infection with a pathogen, such as SARS-CoV-2, to members of the Armed Forces and vet-

erans who have been exposed to open burn pits and other toxic exposures.¹⁴¹

C. Other Hazardous Contaminants

Section 325—Five-Year Reviews of Containment Technologies Relating to Red Hill Bulk Fuel Storage Facility. The Red Hill Bulk Fuel Storage Facility in Hawaii is a massive complex built into the side of a mountain during World War II to store fuel.¹⁴² In January 2014, the Navy identified a substantial release of jet fuel from a tank at Red Hill, which led to a spike in levels of hydrocarbons in soil vapor and groundwater.¹⁴³ The fuel release led to an administrative order of consent (AOC) among EPA, the Hawaii Department of Health, and the U.S. Navy and Defense Logistics Agency. The AOC requires the Navy to implement environmental analyses and infrastructure improvements to protect human health and the environment.¹⁴⁴

Against this backdrop, §325 of the 2021 NDAA requires the Navy to conduct a review at least once every five years of “available technologies relating to the containment of fuel to determine whether any such technology may be used to improve the containment” at the Red Hill Bulk Fuel Storage Facility.¹⁴⁵

Section 2703—Plan to Finish Remediation Activities Conducted by the Secretary of the Army in Umatilla, Oregon. The NDAA requires the Secretary of the Army to submit to Congress a plan for completing remediation activities being conducted in Umatilla, Oregon. The plan must provide for finishing remediation activities within three years of the enactment of the NDAA.¹⁴⁶ The Umatilla Army Depot site covers approximately 20,000 acres in Hermiston, Oregon. The Army operated a storage depot for conventional munitions and chemical warfare agents on the site since the beginning of World War II. After the war, the Army discharged wastewater from explosive wash-out operations, which contaminated soil and groundwater with heavy metals and explosive compounds.¹⁴⁷

Section 2817—Promulgation of Guidance on Relocation of Residents of Military Housing Impacted by Presence of Mold. In the Military Construction Authorization Act for Fiscal Year 2020, Congress provided for a process for the Secretary of Defense to identify and resolve environmental health hazards in military housing.¹⁴⁸ The

133. *Id.* §338(b).

134. *Id.* §338(c).

135. *See id.* §720(b).

136. *Id.* §720(a).

137. 10 U.S.C. §1074f.

138. 2021 NDAA §721(a).

139. Press Release, Office of Rep. Raul Ruiz, House Passes Dr. Ruiz's Burn Pits Bills as Part of Defense Bill (July 22, 2020), <https://ruiz.house.gov/media-center/press-releases/house-passes-dr-ruiz-s-burn-pits-bills-part-defense-bill>.

140. 2021 NDAA §735(a).

141. *Id.* §735(b).

142. U.S. EPA, *What Is the Red Hill Bulk Fuel Storage Facility?*, <https://www.epa.gov/red-hill/what-red-hill-bulk-fuel-storage-facility> (last updated Jan. 5, 2021).

143. U.S. EPA, *About the 2014 Fuel Release at Red Hill*, <https://www.epa.gov/red-hill/about-2014-fuel-release-red-hill> (last updated Sept. 2, 2021).

144. U.S. EPA, *Red Hill Bulk Fuel Storage Facility in Hawaii*, <https://www.epa.gov/red-hill> (last updated Sept. 9, 2021).

145. 2021 NDAA §325(a).

146. *Id.* §2703.

147. *See* U.S. EPA, *Superfund Site: Umatilla Army Depot (Lagoons), Hermiston, OR, Cleanup Activities*, <https://cumulis.epa.gov/supercpad/SiteProfiles/index.cfm?fuseaction=second.cleanup&cid=1000546> (last visited Oct. 19, 2021). For further background on the Umatilla Depot, see Jacobson et al., *Environmental Deconfliction 2018*, *supra* note 10, at 233-34.

148. 2020 NDAA, Pub. L. No. 116-92, div. B, §3053, 133 Stat. 1198, 1943 (2019).

2021 NDAA requires the Secretary to issue guidance, as part of that process, for circumstances in which mold in a unit of housing under the jurisdiction of DOD creates “an emergency situation” that requires relocation of residents of the unit.¹⁴⁹

Section 3124—Extension of Limitation Relating to Reclassification of High-Level Waste. A debate has endured for years about whether waste now managed at the Hanford Nuclear Reservation in Washington State, which is the byproduct of decades of nuclear weapons production and research, has low enough radioactivity that it could be treated and disposed of under the standards for low-level radioactive waste. Critics contended that treating the Hanford waste under a lower standard would permit DOE “to cut corners on cleanup, while supporters say it could speed up environmental cleanup and get radioactive waste shipped off of Hanford and other sites for disposal sooner.”¹⁵⁰

Under the leadership of HASC Chairman Rep. Adam Smith (D-Wash.), the 2020 NDAA prohibited using any funds authorized for DOE to apply a weaker definition of “high-level radioactive waste” (HLW) to the Hanford site.¹⁵¹ In a win for environmentalists, the 2021 NDAA extends into FY 2021 the 2020 NDAA’s prohibition on the use of funds authorized for DOE to apply the weaker definition of HLW to waste at the Hanford site.¹⁵²

Section 3125—Continued Analysis of Approaches for Supplemental Treatment of Low-Activity Waste at Hanford Nuclear Reservation. The NDAA requires the Secretary of Energy to enter into an arrangement with the National Academies of Sciences, Engineering, and Medicine to conduct an analysis concerning approaches for treating the Hanford Nuclear Reservation’s portion of low-activity waste intended for supplemental treatment. The analysis must be designed to provide decisionmakers the means “to make a direct comparison between approaches for the supplemental treatment of low-activity waste.”¹⁵³ Therefore, it must include a framework of decisions to be made among the treatment technologies, waste forms, and disposal locations, covering topics such as immobilization, permanent disposal, radiation exposure, and public acceptance.

Section 9109—Additional Diseases Associated With Exposure to Certain Herbicide Agents for Which There Is a Presumption of Service Connection for Veterans

Who Served in the Republic of Vietnam. Under the statutes governing the VA, certain diseases are designated as having a presumption of a connection to certain periods of military service during the Vietnam War.¹⁵⁴ The 2021 NDAA supplements that list by adding “Parkinsonism,” “[b]ladder cancer,” and “[h]ypothyroidism.” These illnesses are all associated with exposure to tactical herbicides such as Agent Orange.¹⁵⁵

Section 748—Audit of Medical Conditions of Residents in Privatized Military Housing. The NDAA instructs the Inspector General of DOD to conduct an audit of the association between medical conditions of residents of privatized military housing and any exposure to certain substances and conditions, including lead-based paint, asbestos, biocides, carbon monoxide, volatile organic compounds, fine particulate matter, and others. The NDAA also calls for the Inspector General to recommend potential solutions to these exposures.¹⁵⁶ This audit was begun in April 2021.¹⁵⁷

Section 751—Study on Exposure to Toxic Substances at Karshi-Khanabad Air Base, Uzbekistan. The U.S. military used the Karshi-Khanabad Air Base in Uzbekistan between 2001 and 2005 to support the war effort in Afghanistan.¹⁵⁸ Advocacy groups have been pressing the VA to extend benefits to veterans who believe they were sickened by exposure to toxins at the former Soviet base, referred to as K2.¹⁵⁹ The NDAA requires that DOD conduct a study on exposure to toxic substances by members of the Armed Forces deployed to Karshi-Khanabad Air Base at any time between October 1, 2001, and December 31, 2005. The study must include identification of the toxic substances and an epidemiological analysis of their consequences.¹⁶⁰

Section 563—Feasibility Study on Establishment of Service Medal for Radiation-Exposed Veterans. The NDAA requires DOD to submit to the Senate and House Committees on Armed Services a study on establishing a service medal for radiation-exposed veterans. The report must cover any plan to recognize current or former members of the Armed Forces exposed to toxic materials or

149. 2021 NDAA §2817.

150. Annette Cary, *Congressman Blocks DOE From Reclassifying High Level Hanford Radioactive Waste*, TRI-CITY HERALD (July 12, 2019), <https://www.tricityherald.com/news/local/hanford/article232613402.html>.

151. In a 2019 notice, DOE had stated that it interpreted the term “to mean that not all wastes from the reprocessing of spent nuclear fuel (reprocessing wastes) are HLW.” Instead, “some reprocessing wastes may be classified as not HLW (non-HLW) and may be disposed of in accordance with their radiological characteristics,” but “DOE has not made, and does not presently propose, any changes or revisions to current policies, legal requirements or agreements with respect to HLW.” Supplemental Notice Concerning U.S. Department of Energy Interpretation of High-Level Radioactive Waste, 84 Fed. Reg. 26835, 26835 (June 10, 2019).

152. 2021 NDAA §3124.

153. *Id.* §3125(b).

154. 38 U.S.C. §1116(a)(1).

155. 2021 NDAA §9109; *BREAKING: VA Plans Expansion of Benefits for Disability Claims for Conditions Related to Certain Toxic Exposures*, VANTAGE POINT (May 27, 2021), <https://blogs.va.gov/VAntage/89496/breaking-news-va-plans-expansion-benefits-disability-claims-conditions-related-certain-toxic-exposures/>.

156. 2021 NDAA §748.

157. Memorandum from Theresa S. Hull, Assistant Inspector General for Audit Acquisition, Contracting, and Sustainment, DOD Office of Inspector General, to Assistant Secretaries of Defense (Sustainment and Health Affairs), and Auditor Generals of the Departments of the Navy, Army, and Air Force, Audit of Medical Conditions of Residents in Privatized Military Housing (Apr. 1, 2021), <https://www.dodig.mil/Reports/Audits-and-Evaluations/Article/2570346/project-announcement-audit-of-medical-conditions-of-residents-in-privatized-mil>.

158. Karin Zeitvogel, *“They’re Trying to Deny Us Until We Die”: Veterans Hope New Toxic Exposure Bill Will Spur Change at VA*, STARS & STRIPES (Apr. 12, 2021), <https://www.stripes.com/veterans/they-re-trying-to-deny-us-until-we-die-veterans-hope-new-toxic-exposure-bill-will-spur-change-at-va-1.669445>.

159. *Id.*

160. 2021 NDAA §751.

environments in the course of military service, including radiation-exposed veterans. Finally, DOD must hold at least one meeting with representatives of organizations that advocate for radiation-exposed veterans (including leadership of the National Association of Atomic Veterans, Inc.) to discuss the study.¹⁶¹

VI. Environment and Natural Resource Management

The 2021 NDAA authorizes \$7.35 billion for environmental cleanup at military and DOE sites, funds Agent Orange-related remediation in Vietnam, and amends a law on oil spills. The law also supports public-private partnerships to conserve natural habitats near military bases, enlists DOD assistance to mitigate the impact of transnational flows of wastewater, seeks to protect critical mineral supply chains, and orders a review to help keep pace with the Chinese space program. It also directs steps to lesson noise pollution and to support sustainable, green chemistry.

A. Environmental Cleanup

Section 314—Modification of Authority for Environmental Restoration Projects of National Guard. Federal law provides the Secretary of Defense and the secretaries of the military departments with the authority to carry out certain environmental restoration projects either under the Superfund law (technically, the Comprehensive Environmental Response, Compensation, and Liability Act, or CERCLA) or other authorities.¹⁶² The 2021 NDAA amends federal law to allow these environmental restoration authorities to be used “where military activities are conducted by the National Guard of a State” acting under federal authorities (known as Title 32 authorities).¹⁶³ This provision will have the effect of expanding DOD’s authority for environmental restoration projects.

Section 319—Native American Lands Environmental Mitigation Program. This section amends federal law to authorize the Secretary of Defense to participate in a program to mitigate the environmental effects of DOD activities on Indian lands and culturally connected locations. The provision, supported by Sen. Dan Sullivan (R-Alaska),¹⁶⁴ permits the Secretary of Defense to establish a program to mitigate the environmental effects on Indian land if the Department, the Indian tribe, and the current landowner “agree that such mitigation is appropriate.”¹⁶⁵ The law allows the Secretary to enter into a cooperative agreement with an Indian tribe or tribal government instrumentality to carry out such a program. The law is

161. *Id.* §563.

162. 10 U.S.C. §2707; 42 U.S.C. §§9601-9675, ELR STAT. CERCLA §§101-405.

163. 2021 NDAA §314(a) (amending 10 U.S.C. §2707(e)).

164. Press Release, Office of Sen. Dan Sullivan, Congress Passes 60th Consecutive Annual National Defense Authorization Act (Dec. 11, 2020), <https://www.sullivan.senate.gov/newsroom/press-releases/congress-passes-60th-consecutive-annual-national-defense-authorization-act>.

165. 2021 NDAA §319 (adding 10 U.S.C. §2713).

clear that it does not authorize “access to any lands without the landowner’s consent.”¹⁶⁶

Section 3121—Public Statement of Environmental Liabilities for Facilities Undergoing Defense Environmental Cleanup. The NDAA requires that the Secretary of Energy release an annual report regarding environmental liabilities. Each year, the Secretary must make available to the public a statement of these liabilities “for each defense nuclear facility at which defense environmental cleanup activities are occurring.”¹⁶⁷

Section 3122—Inclusion of Missed Milestones in Future-Years Defense Environmental Cleanup Plan. Under the Atomic Energy Defense Act, the Secretary of Energy must submit to Congress each year a “future-years defense environmental cleanup plan” that reflects the estimated expenditures and proposed appropriations included in the budget for DOE for defense environmental cleanup.¹⁶⁸ For each site covered in the plan, the Secretary must describe each milestone “included in an enforceable agreement governing cleanup and waste remediation.”¹⁶⁹ The NDAA amends this requirement by stating that for any milestones missed or renegotiated, the Secretary must also state the current, original, and interim (if any) milestones.

Section 3123—Classification of Defense Environmental Cleanup as Capital Asset Projects or Operations Activities. The NDAA calls for the assistant secretary of energy for environmental management—in consultation with other officials at DOE—to create requirements for classifying defense environmental cleanup projects as capital asset projects or operations activities. In addition, the assistant secretary is required to submit a report to congressional defense committees. The report will lay out the requirements created and assess whether any ongoing defense environmental cleanup projects need to be reclassified based on those new requirements.

Section 3171—Independent Study on Potential Environmental Effects of Nuclear War. The NDAA mandates that the administrator for nuclear security seek to enter into an agreement with the National Academies of Sciences, Engineering, and Medicine for the latter to conduct an independent study on the environmental effects of nuclear war. The National Academies’ study will include an evaluation of the non-fallout atmospheric effects of plausible scenarios for nuclear war, ranging from low-quantity regional exchanges to large-scale exchanges between major powers.

Additionally, the study will analyze current models of nuclear explosions, including consideration of the fires such explosions may cause, the atmospheric transport of the gases from such explosions, and the radioactive material from such explosions. In particular, the study will examine the atmospheric, terrestrial, and marine consequences of these effects, with specific attention paid to potential changes in weather patterns, airborne particulate

166. *Id.*

167. *Id.* §3121(a) (adding 50 U.S.C. §4410).

168. 50 U.S.C. §2582a(a).

169. *Id.* §2582a(b)(3).

concentrations, stratospheric ozone, agriculture, and ecosystem viability. Of note, the NDAA directs DOD and the director of national intelligence to provide to the National Academies information necessary to conduct the study. The study may include a classified annex.¹⁷⁰

Section 8246—Report on Liability Limits Set in Section 1004 of the Oil Pollution Act of 1990. Section 1004 of OPA caps liability for certain responsible parties for oil discharges, though it permits the president to adjust those caps by regulation.¹⁷¹ The NDAA requires the commandant of the Coast Guard to submit to the Senate Committee on Commerce, Science, and Transportation and the House Committee on Transportation and Infrastructure a report outlining the liability limits set under that provision. In addition, the commandant must address potential modifications to those limits.

Section 8303—Loan Provisions Under Oil Pollution Act of 1990. The NDAA repeals a loan program under §1013 of OPA.¹⁷² Under that provision, Congress established a loan program “to provide interim assistance to fishermen and aquaculture producer claimants during the claims procedure” for oil discharge incidents.¹⁷³ The NDAA amends OPA by eliminating this loan program.

Section 8304—Oil Pollution Research and Development Program. Under §7001 of OPA, an interagency committee coordinates oil pollution research.¹⁷⁴ The NDAA adds to the research agenda topics related to marine species and simulated environmental testing.

Section 8432—Northern Michigan Oil Spill Response Planning. The NDAA requires the Coast Guard to update its Northern Michigan Area Contingency Plan, which addresses oil-related environmental emergencies. The NDAA calls for the plan to address a “worst-case discharge from a pipeline in adverse weather conditions.”¹⁷⁵

Section 8436—Waters Deemed Not Navigable Waters of the United States for Certain Purposes. The NDAA deems Coalbank Slough in Coos Bay, Oregon, to not be “navigable waters of the United States for all purposes of subchapter J of Chapter I of title 33, Code of Federal Regulations,”¹⁷⁶ placing those waters outside the Clean Water Act (CWA) authority of the U.S. Army Corps of Engineers.¹⁷⁷

Section 3102—Defense Environmental Cleanup. The NDAA authorizes the appropriation of funds for defense environmental cleanup activities in states such as Idaho, Nevada, Oregon, South Carolina, and Washington.

Section 1253—Authority to Transfer Funds for Bien Hoa Dioxin Cleanup. Following a request by Vietnam, the U.S. government agreed to remediate dioxin in soil and sediment in the Bien Hoa Air Base area remaining

from the Vietnam War.¹⁷⁸ The U.S. Agency for International Development (USAID) completed an assessment of dioxin contamination there and found a very large volume of soil and sediment in need of remediation, which will cost at least \$183 million over 10 years.¹⁷⁹ The 2021 NDAA permits DOD to transfer to USAID \$15 million in 2021 toward these efforts.¹⁸⁰

B. Land, Space, and Wildlife Conservation

Section 312—Readiness and Environmental Protection Integration Program. REPI promotes public-private partnerships in conserving natural habitats near military bases, including National Guard facilities.¹⁸¹ The REPI Program is a “key tool for combating encroachment that can limit or restrict military training, testing, and operations,” DOD says.¹⁸² The program also “preserves and enhances these military missions by helping remove or avoid land-use conflicts near installations, ranges, and their associated facilities, range infrastructure, and airspace, as well as addressing regulatory restrictions that inhibit military activities,” the Department adds.¹⁸³

The 2019 NDAA expanded the program to allow the public-private partnerships to include agreements that enhance or improve “military installation resilience,” and in the 2020 NDAA, Congress authorized \$25 million in increased funding for REPI, even though the Administration’s FY 2020 request included no such proposal.¹⁸⁴ Continuing that trend, the 2021 NDAA authorized an additional \$25 million beyond what was authorized the previous year.¹⁸⁵ Congress has appropriated \$275 million to REPI in the past three years, including \$100 million in FY 2020.¹⁸⁶

Section 312 of the 2021 NDAA also modified federal law to clarify what entities are eligible for participation in REPI. The new text clarifies that “[f]unds obligated to carry out” a REPI agreement “shall be available for use with regard to any property in the geographic scope specified in the agreement” at the time the funds are obligated and in any subsequent modification of the agreement.¹⁸⁷ The net effect of this change is to broaden the geographic reach of REPI funds.

178. U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT, FACT SHEET: DIOXIN REMEDIATION AT DANANG AIRPORT AND BIEN HOA AIRBASE AREA (2019), https://www.usaid.gov/sites/default/files/documents/1861/FS_DioxinRemediation_Dec2019_Eng.pdf.

179. *Id.*

180. 2021 NDAA §1253.

181. Jacobson & Ferraro, *Environmental Deconfliction 2020*, *supra* note 10, at 10997.

182. DOD, REPI, Home Page, <https://www.repi.mil/> (last visited Oct. 19, 2021).

183. DOD, REPI, *REPI 101: A Guide for State, Local, and Private Partners*, <http://repiprimers.org/repi101/> (last visited Oct. 19, 2021).

184. Jacobson & Ferraro, *Environmental Deconfliction 2020*, *supra* note 10, at 10997.

185. 2021 NDAA §4301 (Operation and Maintenance, Defense-wide, Operating Forces, I. 490).

186. DOD, READINESS AND ENVIRONMENTAL PROTECTION INTEGRATION PROGRAM 2021: 15TH ANNUAL REPORT TO CONGRESS 3 (2021), https://www.repi.mil/Portals/44/Documents/Reports_to_Congress/REPI2021RTC.pdf.

187. 2021 NDAA §312 (amending 10 U.S.C. §2684a(i)).

170. 2021 NDAA §3171(c).

171. 33 U.S.C. §2704.

172. *Id.* §2713(f).

173. *Id.*

174. *Id.* §2761.

175. 2021 NDAA §8432.

176. *Id.* §8436.

177. 33 C.F.R. §329.1 (2020); 33 U.S.C. §§1251-1387, ELR STAT. FWPCA §§101-607.

Section 320—Study on Alternatives to Address Impacts of Transboundary Flows, Spills, or Discharges of Pollution or Debris From the Tijuana River on Personnel, Activities, and Installations of Department of Defense. For years, contaminated water from Mexico’s Tijuana River Valley has entered the United States through what are called “transboundary flows.” Such flows include treated and untreated wastewater, groundwater, and stormwater that move across international boundaries. These flows damage the environment, degrade water quality, and endanger public health.¹⁸⁸ In early 2020, the United States-Mexico-Canada Agreement Implementation Act (Public Law No. 116-113) appropriated \$300 million to support treatment facilities to address transboundary flows.¹⁸⁹

The 2021 NDAA furthers the U.S. government’s efforts to mitigate the transboundary flow issues. It requires that, within 90 days of the NDAA’s enactment, the Secretary of Defense—in coordination with several other agency heads—develop criteria for the selection of project alternatives to address the impacts of transboundary flows, spills, or discharges of pollution from the Tijuana River on the personnel, activities, and installations of DOD.¹⁹⁰ The projects will address the “short-term, long-term, primary, and secondary impacts of transboundary flows, spills, or discharges of pollution or debris from the Tijuana River and include recommendations to mitigate such impacts.”¹⁹¹

Section 848—Supply of Strategic and Critical Materials for the Department of Defense. The NDAA states that DOD must strive to “the maximum extent practicable” to attain strategic and critical materials from, in order of preference, (1) the United States,¹⁹² (2) the United Kingdom, Australia, or Canada,¹⁹³ and then (3) other sources.¹⁹⁴ In a statement of policy, Congress declared that DOD should seek to “[m]aintain secure sources of supply for strategic and critical materials required to maintain current military requirements in the event that international supply chains are disrupted.”¹⁹⁵

Section 1614—Report and Strategy on Space Competition With China. The NDAA orders the National Space Council to submit to Congress a report on the ability of the United States to compete with China’s space programs. The report will cover a comparative assessment of capabilities related to space launch, spaceflight, human exploration, and cislunar space. Notably, it must also cover the viability and “potential environmental impacts” of the extraction of space-based precious minerals, the on-site

exploitation of space-based natural resources, and use of space-based solar power.¹⁹⁶ The NDAA also calls for the report to address China’s threat to commercial communications and navigation in space, as well as national security issues. Finally, following submission of the report, the president must submit to Congress a strategy “to ensure the United States can . . . compete with other national space programs.”¹⁹⁷ The strategy must address unfair competition from China and critical supply chains, among other key issues.

Section 2844—Establishment of Interagency Committees on Joint Use of Certain Land Withdrawn From Appropriation Under Public Land Laws. The NDAA requires the Secretary of the Navy and the Secretary of the Interior to jointly establish an executive committee to exchange views, information, and advice concerning the management of the natural and cultural resources of Naval Air Station Fallon Ranges, Nevada. Among other members, the committee must include representatives of the Nevada Departments of Wildlife and Conservation and Natural Resources. The NDAA also sets up a similar interagency committee with the Air Force for Nellis Air Force Range, Nevada, with a focus on operating the Desert National Wildlife Refuge.

Section 8284—Southern Resident Orca Conservation and Enforcement. The NDAA mandates a report and action plan by the commandant of the Coast Guard on efforts to enforce southern resident orca vessel buffer zones and other vessel-related regulations in Puget Sound, Washington. The report must include recommendations on what resources, appropriations, and assets are needed to meet orca conservation needs. Beyond the report, the NDAA requires the Coast Guard to undertake efforts to reduce vessel noise impacts on southern resident orcas in Puget Sound, the Salish Sea, and the Strait of Juan de Fuca—all in or near Washington State.

Section 329—Objectives, Performance Standards, and Criteria for Use of Wildlife Conservation Banking Programs. The NDAA requires the Secretary of the Interior to work through the U.S. Fish and Wildlife Service to issue within one year of the NDAA’s enactment regulations related to wildlife conservation banking.¹⁹⁸ Wildlife conservation banks are “permanently protected lands that contain natural resource values. These lands are conserved and permanently managed for species that are endangered, threatened, candidates for listing as endangered or threatened, or are otherwise species-at-risk.”¹⁹⁹

Congress’ joint explanatory statement includes a note from the legislative conferees that these programs “are a potential tool to assist the Department of Defense with managing encroachment on military bases, ranges, and test facilities.” The conferees “urge the Secretary of the

188. See U.S. EPA, WATER QUALITY IN THE TIJUANA RIVER VALLEY (2021), https://www.epa.gov/sites/default/files/2021-04/documents/tijuana_valley-overview-final.pdf.

189. *Id.*

190. 2021 NDAA §320(a).

191. *Id.* §320(b).

192. *Id.* §848(a).

193. See 10 U.S.C. §2500.

194. 2021 NDAA §848(a). Elsewhere in the NDAA, it defines “strategic and critical materials” as “materials, including rare earth elements, that are necessary to meet national defense and national security requirements, including requirements relating to supply chain resiliency, and for the economic security of the United States.” *Id.* §851(d).

195. *Id.* §848(b).

196. *Id.* §1614(a).

197. *Id.* §1614(b).

198. *Id.* §329(a), (b).

199. U.S. Fish and Wildlife Service, *For Landowners: Conservation Banking*, <https://www.fws.gov/endangered/landowners/conservation-banking.html> (last updated Jan. 30, 2020).

Interior to promulgate regulations pursuant to this section in consultation with the States” and to be solicitous of state wildlife conservation banking programs.²⁰⁰

C. Noise Pollution

Section 313—Extension of Real-Time Sound Monitoring at Navy Installations Where Tactical Fighter Aircraft Operate. The 2020 NDAA directed the Secretary of the Navy to conduct real-time sound-monitoring over a 12-month period at Navy installations that housed Navy fighter aircraft.²⁰¹ The law also required the Navy to report to Congress on its efforts to monitor noise, with the intent of addressing local concerns regarding noise.²⁰² The 2021 NDAA expands the period of the sound-monitoring for another year.²⁰³

Section 2872—Report on Effect of Noise Restrictions on Military Installations and Operations and Development and Implementation of Noise Mitigation Measures. The NDAA calls for the Secretary of Defense to prepare a report on the effect of noise restrictions on military operations. The Secretary must submit the report to congressional defense committees by July 1, 2021.²⁰⁴ The report will describe the varieties of noise restrictions that affect military installations in the United States, including training ranges. It must cover the impact of these restrictions on operational readiness of aviation units. It must also explain any voluntary noise mitigation measures or community relations initiatives that military departments have undertaken to lessen the need for the restrictions. Finally, the report will address progress made in developing and implementing cost-effective technological measures for mitigating noise.

Section 1087—Mitigation of Military Helicopter Noise. The NDAA requires DOD, in coordination with the Metropolitan Washington Airports Authority, to create a process to receive, track, and analyze complaints of noise emanating from military helicopters in the D.C. area. These complaints are lodged on the noise inquiry websites of the Ronald Reagan Washington National Airport and Dulles International Airport.²⁰⁵

D. Sustainable Chemistry

Sections 261-267—Sustainable Chemistry. “Sustainable chemistry,” or “green chemistry,” refers to “the design of chemical products and processes that reduce or elimi-

nate the use or generation of hazardous substances.”²⁰⁶ Sens. Chris Coons (D-Del.), Susan Collins (R-Me.), Amy Klobuchar (D-Minn.), and Shelley Moore Capito (R-W. Va.) introduced a bipartisan bill, the Sustainable Chemistry Research and Development Act of 2019, to create a cohesive national vision for sustainable chemistry research and development.²⁰⁷ Its provisions were adopted into the 2021 NDAA in Title II, Subtitle E, §§261 to 267.

The law directs the director of the White House Office of Science and Technology Policy to convene an interagency entity under the National Science and Technology Council to coordinate federal programs and activities in support of sustainable chemistry. The working group will sunset in 10 years.²⁰⁸

The law directs the working group to consult with relevant stakeholders, including industry and academia representatives, national labs, the federal government, and international entities, to develop and update, as necessary, a consensus definition of “sustainable chemistry.” In addition, the working group will develop a working framework of attributes for characterizing, and metrics for assessing, sustainable chemistry.²⁰⁹

VII. Conclusion

Reviewing the NDAAs of the past several years, one is struck most by their continuity. Adopted by different Congresses at different times, facing varying political and policy exigencies, the NDAAs’ overall approach to energy, environment, and natural resources issues has remained largely consistent. Taken together, one recognizes that we are witnesses to the development of a distinct body of law—a unique subfield that is neither “defense law” nor “environmental law” but “defense environmental law.” It carries with it its own lexicon, canons, and priorities.

For example, policies on military installation resilience, energy resilience, and PFAS have drawn bipartisan support as they have developed and deepened over the past half-decade of NDAAs. Even the issue of climate change, often anathema in certain political circles, has been addressed with increasing focus and institutionalized rigor through successive defense policy bills.²¹⁰ And that Congress passed the 2021 NDAA and then overcame a quixotic presidential veto in short order suggests that, for all of Washington’s political polarization, there is more agreement on some of the core issues of DOD’s navigation of energy and the environment than appears on the surface.

200. U.S. CONGRESS, JOINT EXPLANATORY STATEMENT OF THE COMMITTEE OF CONFERENCE: H.R. 6395, at 70 (2020), <https://docs.house.gov/billsthisweek/20201207/116hrpt617-JointExplanatoryStatement.pdf>.

201. 2020 NDAA §325(a)(1).

202. Press Release, Office of the Navy Chief of Information, Navy Aircraft Noise Monitoring at NAS Whidbey Island and NAS Lemoore (Mar. 27, 2020), <https://www.nepa.navy.mil/Media/Press-Releases/Article/2129441/navy-aircraft-noise-monitoring-at-nas-whidbey-island-and-nas-lemoore/>.

203. 2021 NDAA §313.

204. As of this writing, the report has not been made available to the public.

205. 2021 NDAA §1087.

206. U.S. EPA, *Basics of Green Chemistry*, <https://www.epa.gov/greenchemistry/basics-green-chemistry> (last updated Dec. 18, 2020).

207. Press Release, Office of Sen. Chris Coons, Senator Coons’ Bipartisan Bill to Promote Sustainable Chemistry to Become Law (Dec. 11, 2020), <https://www.coons.senate.gov/news/press-releases/senator-coons-bipartisan-bill-to-promote-sustainable-chemistry-to-become-law>.

208. 2021 NDAA §261.

209. *Sustainable Chemistry Research and Development Act Passed as Part of National Defense Authorization Act*, NAT’L L. REV. (Jan. 20, 2021), <https://www.natlawreview.com/article/sustainable-chemistry-research-and-development-act-passed-part-national-defense>.

210. See Farber, *supra* note 3.