



DoD INSTRUCTION 4715.28

MILITARY INSTALLATION RESILIENCE

Originating Component: Office of the Under Secretary of Defense for Acquisition and Sustainment

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Purpose: In accordance with the authority in DoD Directives (DoDDs) 5135.02 and 4715.21, and pursuant to the authorities in Title 10, United States Code (U.S.C.), this instruction establishes policy, assigns responsibilities, and prescribes procedures for ensuring military installation resilience, including energy and climate resilience.

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SECTION 1: GENERAL ISSUANCE INFORMATION

1.1. APPLICABILITY.

This issuance applies to OSD, the Military Departments, the Office of the Chairman of the Joint Chiefs of Staff and the Joint Staff, the Combatant Commands, the Office of Inspector General of the Department of Defense, the Defense Agencies, the DoD Field Activities, and all other organizational entities within the DoD (referred to collectively in this issuance as the “DoD Components”).

1.2. POLICY.

In accordance with statutory authorities in Title 10, U.S.C., DoD Components will:

- a. Undertake appropriate actions to plan for and maintain resilience of DoD’s military installations.
- b. Avoid, prepare for, minimize the effects of, adapt to, and recover from current and future extreme weather, climate change, and facility-related control systems (FRCS) cyber threats and other natural or human-induced hazards, referred to in this issuance as “all hazards” or “all-hazards”.
- c. Undertake planning and assistance with State and local governments to ensure resilience of essential transportation, logistical, or other necessary resources outside of a military installation that are necessary in order to maintain, improve, or rapidly reestablish military installation mission assurance and mission-essential functions.

SECTION 2: RESPONSIBILITIES

2.1. UNDER SECRETARY OF DEFENSE FOR ACQUISITION AND SUSTAINMENT (USD(A&S)).

The USD(A&S):

- a. Establishes and oversees the implementation of DoD policy ensuring military installation resilience planning for all hazards.
- b. Establishes DoD boards, councils, and working groups to integrate military installation resilience considerations into DoD programs, plans, and policies.
- c. Develops options to respond to all-hazards risks posed by emerging vulnerabilities or threats to military installation resilience.
- d. Coordinates with the DoD Chief Information Security Officer to integrate Risk Management Framework policies, processes, and procedures with Defense Acquisition System processes for acquisitions of DoD systems and FRCS cyber resilience, in accordance with DoD Instruction (DoDI) 8510.01.

2.2. ASSISTANT SECRETARY OF DEFENSE FOR ENERGY, INSTALLATIONS, AND ENVIRONMENT (ASD(EI&E)).

Under the authority, direction, and control of the USD(A&S), the ASD(EI&E):

- a. Serves as DoD's primary military installation resilience official.
- b. Develops DoD military installation resilience policies, programs, and budgets.
- c. Promotes military installation mission assurance and mission-essential functions for military installations through direction of appropriate actions by the DoD Components to mitigate climate change and reduce dependence on fossil fuels by increasing the use of low emission, emission-free, and net-zero emission energy technologies in DoD operations, programs, projects, and activities.
- d. Develops sustainment and modernization requirements relating to all-hazards resilience for DoD military installation facilities in concert with DoDI 4165.70. All-hazards resilience will be considered in design and construction when facilities are sustained, repaired, and modernized.
- e. In coordination with Principal Staff Assistants, integrates military installation resilience considerations into appropriate existing policies, procedures, and programs as part of their regular revision process.
- f. Develops and provides guidance to the DoD Components for managing facility energy resources and serves as their primary advisor for facility energy policy matters.

g. In coordination with the Assistant Secretary of Defense for Homeland Defense and Hemispheric Affairs and the Chairman of the Joint Chiefs of Staff, accounts for military installation resilience to all hazards during planning processes across the spectrum of military operations.

h. In coordination with the Assistant Secretary of Defense for Readiness:

(1) Provides investments for military installations, including operational and training ranges, in resilience and adaptation projects to all current and projected hazards. This includes existing DoD programs, such as the ASD(EI&E)'s Readiness and Environmental Protection Integration Program.

(2) Incorporates climate considerations into education and training programs to support a climate-literate workforce that can avoid, prepare for, minimize the effects of, adapt to, and recover from climate hazards and risks to military installations.

i. Uses existing DoD programs, including Defense Community Infrastructure Program and Installation Resilience Program through the Office of Local Defense Community Cooperation, to implement community-led measures and projects (to include resilience measures and projects involving the protection, restoration, and maintenance of natural features) that will contribute to maintaining, improving military installation resilience, prevent, or mitigate encroachment that could affect operations of the DoD.

j. Integrates the military installation resilience efforts and military family readiness programs in coordination with the Assistant Secretary of Defense for Manpower and Reserve Affairs.

k. In coordination with the Director of the Test and Resource Management Center, uses existing DoD programs, including the ASD(EI&E)'s Readiness and Environmental Protection Integration Program, to provide investments in the lands of the military testing and training ranges to increase the resilience and adaptation of such lands to all current and projected impacts from hazards.

l. In coordination with the Office of the Under Secretary of Defense for Research and Engineering, ensures DoD research, science, and technology program protection activities, development, testing, and evaluation include all-hazards military installation resilience and adaptation.

m. In coordination with the Military Departments and other Federal agencies, establishes all-hazards-related research with respect to military installation resilience and its applications to produce actionable science.

n. In coordination with the Assistant to the Secretary of Defense for Public Affairs, promotes community outreach focused on community resilience with respect to all hazards, climate hazard awareness, and information sharing with community organizations and stakeholders.

o. In coordination with the DoD Components and other Federal agencies, supports efforts by other Federal entities, non-governmental organizations, and the private sector to identify, develop, and demonstrate technologies, engineering standards, tools, and approaches that enable

climate change adaptation, mitigation, and resilience at military installations, in accordance with Executive Orders 14008 and 14057.

2.3. ASSISTANT SECRETARY OF DEFENSE FOR HOMELAND DEFENSE AND HEMISPHERIC AFFAIRS.

Under the authority, direction, and control of the Under Secretary of Defense for Policy, and in coordination with the USD(A&S), the Assistant Secretary of Defense for Homeland Defense and Hemispheric Affairs:

- a. Provides policy and planning oversight for DoD homeland defense, defense continuity, and mission assurance as they relate to military installation resilience.
- b. Establishes defense critical infrastructure resilience and risk management priorities to inform military installation all-hazards risk assessments and investments derived from the mission assurance construct.
- c. Advances priority military installation resilience issues with DoD and non-DoD partners.

2.4. GENERAL COUNSEL OF THE DEPARTMENT OF DEFENSE.

The General Counsel of the Department of Defense, through the Deputy General Counsel for Environment, Energy, and Installations:

- a. Provides authoritative legal advice and counsel to OSD organizations and, as appropriate, other DoD Components regarding military installation resilience issues.
- b. Determines the DoD position on specific legal problems and matters of legal policy related to military installation resilience.
- c. Responds to congressional, inter-agency, and inter-governmental requests for information related to military installation resilience legal matters.

2.5. DOD COMPONENT HEADS.

The DoD Component heads:

- a. Integrate and prioritize all-hazards resilience considerations into DoD Component military installation policy, guidance, plans, and operations, in accordance with DoDI 4170.11 and DoDD 4715.21.
- b. Manage Component FRCS cyberspace security risks to respective systems in accordance with the principles and processes contained in DoDI 8510.01 and Unified Facilities Criteria 4-010-06.

- c. Direct inclusion of appropriate military installation resilience requirements that assure mission readiness in programming and budget submissions in a timely manner.
- d. Ensure military installation commanders integrate information from military installation master plans and other assessments and plans relating to all-hazards threats for military installations in accordance with this issuance.
- e. Ensure results of engagement with tenant units, State, regional, local agencies, and communities are integrated into plans for all-hazards resilience.
- f. Coordinate military installation resilience planning with the responsible Combatant Commander(s) to ensure integration of mission priorities as part of building all-hazards resilience for the DoD.
- g. Direct military installation commanders to integrate military installation resilience into military family readiness programs, including the Emergency Family Assistance Program established by DoDI 6055.17, pursuant to DoDI 1342.22.
- h. Collect and report metrics to the ASD(EI&E) in accordance with Paragraph 3.3.

2.6. COMBATANT COMMANDERS.

In addition to the responsibilities in Paragraph 2.5., the Combatant Commanders:

- a. Assess and implement mission critical infrastructure, including ranges and training facilities, identify risks, and prioritize measures necessary to adapt to risks from all hazards.
- b. Integrate military installation resilience-related vulnerability risks into appropriate plans and operations that address the full range of military operations, including planning for steady-state campaign, operations, and contingency.
- c. Monitor internal policy and guidance provided to other DoD Components for preparation and review of program and budget submissions regarding all-hazards military installation resilience projects.

SECTION 3: PROCEDURES

3.1. INTEGRATION OF MILITARY INSTALLATION RESILIENCE PLANS.

The DoD Components will integrate information from military installation master plans and other assessments and plans relating to all-hazards threats for military installations, in accordance with this issuance. The integrated information will incorporate requirements from Title 10, U.S.C. and guidance from the documents listed in the References under “Issuances, Policies, and Guidance Related to Military Installation Resilience Planning.” The documents listed there will also be updated, as appropriate, to reflect the need for integrated military installation resilience planning.

3.2. MILITARY INSTALLATION RESILIENCE CONSIDERATIONS.

DoD Components, in alignment and coordination with Combatant Commands to the extent possible, will ensure integrated planning to address resilience in consideration of:

a. Risk to Mission.

Military installation resilience planning will include evaluation of the impacts of all hazards on mission assurance. For those scenarios resulting in impact to mission assurance, include assessment of the level of risk to mission realized from these events and potential contingency solutions to eliminate mission failure points.

b. Climate Resilience.

Planning and programming to address climate resilience will support the evaluation of climate exposure to military installations using DoD-designated and authoritative tools for risk identification, and to identify and implement adaptation opportunities for increased climate resilience, in accordance with DoDD 4715.21 and the Department of Defense Climate Adaptation Plan. Resilience planning will prioritize the use of construction materials that reduce carbon footprint, increase structure life cycle, reduce maintenance cost, and reduce energy demand.

c. Energy Resilience.

Planning and programming for energy resilience as documented in military installation energy plans (pursuant to the March 31, 2016 ASD(EI&E) Memorandum) will promote the use of multiple and diverse sources of energy and will prioritize carbon pollution-free electricity and energy generation and storage resources sited on the military installation. For contingency operations, plans will prioritize on-site energy generation and storage solutions above solutions that are dependent on outside-the-fenceline fuel sourcing. For installations at which energy is being generated or stored on-site, plans will prioritize the co-location of cyber-resilient microgrids alongside such energy assets to ensure the energy security and energy resilience of critical missions.

d. Water and Wastewater Resilience.

Planning and programming for water and wastewater resilience will emphasize designs, systems, storage, and equipment that support conservation, reuse, efficiency, and security. Resilience planning will consider varied water sources, drought conditions, low-energy wastewater treatment, and water disposal. Additional considerations include return on investment, usage, and distribution when examining opportunities in support of military installation resilience.

e. Integrated Solid Waste Resilience.

Planning and programming for integrated solid waste resilience will emphasize procedural changes, storage, and equipment that will ensure adequate processes are in place to safely manage solid waste during a loss of service event or extreme weather. This will promote the reduction and diversion of solid waste pursuant to the July 19, 2023 ASD(EI&E) Memorandum. Key factors to address include examination of opportunities to prioritize source reduction, sustainable procurement, and reuse of critical materials to minimize generation and disposal. Additional considerations include optimizing cost avoidance, lowering the environmental impact, and using local and regional markets to increase military installation resilience.

f. FRCS Cyber Resilience.

Planning and programming for FRCS cyberspace security should be included in resilience planning, military construction and facility sustainment, restoration, and modernization considerations as appropriate, as well as from other sources allowed by statute, including the Energy Resilience and Conservation Investment Program pursuant to Section 2914 of Title 10, U.S.C. and stand-alone resilience projects pursuant to the DoD Chief Information Officer Cyber Budget Certification and Capability Planning Guidance requirements outlined in the September 2020 Command, Control, and Communications Modernization Strategy. For guidance, see also Unified Facilities Criteria 4-010-06.

g. Community Resilience.

Planning and programming for community resilience will incorporate efforts to assess community vulnerabilities that have the potential to impair or degrade military response activities. These efforts will be conducted in collaboration with States and local governments, as well as through direct, meaningful engagement with defense communities. Plans and products developed through the Office of Local Defense Community Cooperation's Installation Resilience Program (pursuant to Section 2391 of Title 10, U.S.C.) may support the identification of vulnerabilities and adaptation strategies. Planning and programming will also include evaluation of exposure to current and projected hazards.

h. Environmental Justice.

Key considerations include utilization of existing tools and data (e.g., White House's Climate and Economic Justice Screening Tool) to identify communities of environmental justice concern and assess their unique vulnerabilities. Appropriate communication strategies will be developed

and improved to identify and overcome barriers to meaningful communication with defense communities.

i. Life-Cycle Costs.

Military installation projects will be developed to satisfy mission requirements by achieving the highest-performing all-hazards resilience outcomes at the lowest life-cycle costs. Life-cycle cost analyses will only inform decision-making between alternatives that otherwise equally satisfy both mission and resilience requirements.

3.3. METRICS AND REPORTING.

a. DoD Components will collect metrics for military installation resilience in accordance with guidance as provided by the ASD(EI&E). Performance metrics will be reviewed and updated to reflect evolving knowledge of observed and reasonably foreseeable all-hazards impacts to built infrastructure and natural features.

b. The responsible Military Department will report data and metrics upon request by the ASD(EI&E) to support monitoring, oversight, and reporting responsibilities on the DoD's resilience posture of military installations.

GLOSSARY

G.1. ACRONYMS.

| ACRONYM | MEANING |
|----------------|---|
| ASD(EI&E) | Assistant Secretary of Defense for Energy, Installations, and Environment |
| DoDD | DoD directive |
| DoDI | DoD instruction |
| FRCS | facility-related control system |
| U.S.C. | United States Code |
| USD(A&S) | Under Secretary of Defense for Acquisition and Sustainment |

G.2. DEFINITIONS.

Unless otherwise noted, these terms and their definitions are for the purpose of this issuance.

| TERM | DEFINITION |
|-----------------------------------|---|
| adaptation | Defined in DoDD 4715.21. |
| all hazards or all-hazards | Current and future extreme weather, climate change, FRCS cyber threats, and other natural or human-induced hazards. |
| climate change | Defined in DoDD 4715.21. |
| cyberspace security | Defined in the DoD Dictionary of Military and Associated Terms. |
| energy resilience | Defined in Section 101(f)(6) of Title 10, U.S.C. |
| facility | Defined in DoDI 4165.14. |
| FRCS | Defined in Unified Facilities Criteria 4-010-06. |
| human-induced hazards | Hazards induced entirely or predominantly by human activities and choices such as wildfires. |

| TERM | DEFINITION |
|---|--|
| installation master planning | In accordance with Section 2864 of Title 10, U.S.C., installation master planning is comprehensive planning for a military installation developed with these components: <ul style="list-style-type: none">Environmental planningSustainable design and developmentSustainable range planningReal property master planningMilitary installation resilienceTransportation planning |
| integrated military installation resilience planning | Planning across functional areas impacted by all-hazards threats, for an integrated approach to support military installation resilience. |
| integrated solid waste | Integrated solid waste includes both non-hazardous solid waste and construction and demolition waste. |
| military installation | Defined in Section 2801(c)(4) of Title 10, U.S.C. |
| military installation resilience | Defined in Section 101(f)(8) of Title 10, U.S.C. |
| mission assurance | Defined in DoDD 3020.40. |
| mitigation | Measures to reduce the amount and speed of future climate change by reducing emissions of heat-trapping gases or removing carbon dioxide from the atmosphere. |
| project | A project is broadly defined as any activity requiring planning and programming, such as infrastructure upgrades, improved management practices, new facility construction, changes to administrative or acquisition processes, etc. |
| resilience | Defined in DoDD 4715.21. |

REFERENCES

Issuances, Policies, and Guidance Related to Military Installation Resilience Planning

- Assistant Secretary of Defense for Energy, Installations, and Environment Memorandum, “Distribution of the Facility-Related Control Systems Master List,” October 19, 2020
- Assistant Secretary of Defense for Energy, Installations, and Environment Memorandum, “Installation Energy Plans,” March 31, 2016
- Assistant Secretary of Defense for Energy, Installations, and Environment Memorandum, “Installation Energy Plans – Energy Resilience and Cybersecurity Update and Expansion of the Requirement to All DoD Installations,” May 30, 2018
- Assistant Secretary of Defense for Energy, Installations, and Environment Memorandum, “Integrated Installation Resilience Policy,” January 19, 2024
- Assistant Secretary of Defense for Energy, Installations, and Environment Memorandum, “Managing Cyber Risks to Facility-Related Control Systems,” February 18, 2020
- Assistant Secretary of Defense for Energy, Installations, and Environment Memorandum, “Metrics and Standards for Energy Resilience at Military Installations,” May 20, 2021
- Assistant Secretary of Defense for Energy, Installations, and Environment Memorandum, “Revision to the Department of Defense Integrated Solid Waste Management Metrics,” July 19, 2023
- Assistant Secretary of Defense for Energy, Installations, and Environment Memorandum, “Water Resilience Policy,” April 16, 2024
- Directive-type Memorandum 22-003, “Flood Hazard Area Management for DoD Installations,” June 7, 2022, as amended
- DoD Directive 3020.40, “Mission Assurance (MA),” November 29, 2016, as amended
- DoD Directive 3200.15, “Sustaining Access to the Live Training Domain,” December 18, 2013, as amended
- DoD Directive 4180.01, “DoD Energy Policy,” April 16, 2014, as amended
- DoD Directive 4270.5, “Military Construction,” February 12, 2005, as amended
- DoD Directive 4715.1E, “Environment, Safety, and Occupational Health (ESOH),” March 19, 2005, as amended
- DoD Directive 4715.21, “Climate Change Adaptation and Resilience,” January 14, 2016, as amended
- DoD Instruction 3020.45, “Mission Assurance Construct,” August 14, 2018, as amended
- DoD Instruction 3030.03, “Joint Land Use Study (JLUS) Program,” July 13, 2004, as amended
- DoD Instruction 3200.21, “Sustaining Access to the Live Training Domain,” September 15, 2015, as amended
- DoD Instruction 4105.72, “Procurement of Sustainable Goods and Services,” September 7, 2016, as amended
- DoD Instruction 4165.70, “Real Property Management,” April 6, 2005, as amended
- DoD Instruction 4170.11, “Installation Energy Management,” December 11, 2009, as amended
- DoD Instruction 4715.03, “Natural Resources Conservation Program,” July 22, 2024

DoD Instruction 4715.05, “Environmental Compliance at Installations Outside the United States,” November 1, 2013, as amended

DoD Instruction 4715.06, “Environmental Compliance in the United States,” May 4, 2015, as amended

DoD Instruction 4715.07, “Defense Environmental Restoration Program (DERP),” May 21, 2013, as amended

DoD Instruction 4715.16, “Cultural Resources Management,” September 18, 2008, as amended

DoD Instruction 4715.18, “Emerging Chemicals of Environmental Concern,” February 9, 2024

DoD Instruction 4715.19, “Use of Open-Air Burn Pits in Contingency Operations,” November 13, 2018

DoD Instruction 4715.22, “Environmental Management Policy for Contingency Locations,” February 18, 2016, as amended

DoD Instruction 4715.23, “Integrated Recycling and Solid Waste Management,” October 24, 2016, as amended

DoD Instruction 4715.24, “The Readiness and Environmental Protection Integration (REPI) Program and Encroachment Management,” November 9, 2016, as amended

DoD Instruction 6055.01, “DoD Safety and Occupational Health (SOH) Program,” October 14, 2014, as amended

DoD Instruction 6055.05, “Occupational and Environmental Health (OEH),” November 11, 2008, as amended

DoD Instruction 6055.17, “DoD Emergency Management (EM) Program,” February 13, 2017, as amended

DoD Instruction 8510.01, “Risk Management Framework for DoD Systems,” July 19, 2022

DoD Manual 4715.03, “Integrated Natural Resources Management Plan (INRMP) Implementation Manual,” November 25, 2013, as amended

Under Secretary of Defense for Acquisition and Sustainment Memorandum, “Improving Defense Installation Resilience to Rising Sea Levels,” February 24, 2020

Other References

Department of Defense Climate Adaptation Plan, current edition

DoD Chief Information Office, “Command, Control, and Communications Modernization Strategy,” September 2020

DoD Directive 5135.02, “Under Secretary of Defense for Acquisition and Sustainment (USD(A&S)),” July 15, 2020

DoD Instruction 1342.22, “Military Family Readiness,” August 5, 2021

DoD Instruction 4165.14, “Real Property Inventory and Reporting,” September 8, 2023

Executive Order 14008, “Tackling the Climate Crisis at Home and Abroad,” January 27, 2021

Executive Order 14057, “Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability,” December 8, 2021

Office of the Chairman of the Joint Chiefs of Staff, “DoD Dictionary of Military and Associated Terms,” current edition

Unified Facilities Criteria 4-010-06, “Cybersecurity of Facility-Related Control Systems,”
September 16, 2016

United States Code, Title 10, Sections 101, 2285, 2391, 2801, 2815, 2815a, 2864, 2866, and
2914