



**DEPARTMENT OF THE ARMY**  
ASSISTANT SECRETARY OF THE ARMY  
INSTALLATIONS, ENERGY AND ENVIRONMENT  
110 ARMY PENTAGON  
WASHINGTON DC 20310-0110

SAIE-ZE

MAR 27 2024

MEMORANDUM FOR DISTRIBUTION

SUBJECT: Department of the Army Policy Guidance on Resilient Buildings

1. References. See Enclosure 1.

2. Purpose. The purpose of this policy guidance is to innovate the Army's planning, design, and construction processes to ensure resilient buildings across all Army components to promote increased readiness, force generation, and Quality of Life (QOL) at all installations.

3. Objectives. The primary objective of this policy guidance is to establish and clarify criteria for project planning and design processes to create resilient buildings on Army installations. A resilient building portfolio will maximize power projection and training on installations under all conditions; improve QOL for Soldiers, families, and Army civilians; and protect health and the environment. Innovative planning and design processes should also result in buildings with decreased long-term operating costs without significantly increasing upfront project costs.

4. Applicability. This policy guidance applies to projects of all work types –facilities sustainment, restoration, and modernization (FSRM), and construction, as described in Reference (v) – regardless of funding source or authority, including operation and maintenance, military construction, family housing operations and construction, working capital, and non-appropriated funds (NAF). Applicability is predominantly based on real property ownership and congressional reporting thresholds, as described below.

a. All building-related projects on Army installations, readiness and reserve centers, and depots, including government owned/contractor operated installations. This includes, but is not limited to, Army Reserve, Army National Guard, Organic Industrial Base (OIB) facilities, NAF property on Army installations, and donated/gifted buildings on Army installations.

b. All Military Department and defense-wide agency projects on installations where the Army is the lead Service. All Army-funded projects where Army resides as a tenant on the installation of another Service, regardless of location, unless otherwise stated in the site-specific joint base memorandum of understanding or other documentation governing the Army's presence. Commanders of installations where Army is the lead services shall ensure communication of this policy guidance to all tenants.

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c. Overseas construction activities at enduring Army locations except where there are direct conflicts with host nation agreements. In those cases, every effort should be made to comply with the criteria established in this policy guidance.

d. All unspecified minor military construction (UMMC) and FSRM projects where projected costs are equal or greater to the cost thresholds for notification to Congress set by 10 U.S.C. 2805 and 10 U.S.C. 2811.

5. Effective Dates. This policy guidance is effective immediately for all projects as described below.

a. All construction projects, other than FSRM, starting in FY2027 shall comply with this guidance. For all FY2025 and FY2026 projects, project proponents shall evaluate reasonable changes to planning and design to maximize resilience and energy and water efficiencies in accordance with the resilient building criteria in Section 11, unless such changes result in significant cost increases or the project acquisition timeline is delayed beyond established completion dates.

b. All FSRM projects where design or design acquisition has not commenced.

6. Definitions. The following definitions apply for the following terms used in this policy guidance:

a. Resilient building. A building that (1) maximizes the ability of the military to withstand and recover from a potentially disruptive event that may adversely affect mission assurance and mission-essential functions, including extreme weather (as defined by 10 U.S.C. 101(a)(20)) or a disruption to energy or water supplies; (2) has minimal energy and water demand; and (3) has an indoor environment optimized to promote human safety, physical and psychological health, and productivity.

b. Project proponent. The individual or organization responsible for completing the project milestone in the section where the term appears. For example, in Section 5, the project proponent responsible for evaluating changes to a project in design may be a district of the U.S. Army Corps of Engineers (USACE), when the district is the design and construction agent.

c. Whole Building Life Cycle Cost. The total cost of a building when consideration is given to the cradle-to-grave costs associated with upfront construction; lifetime building sustainment, maintenance, and operations (including energy and water use); and building disposal.

d. Deep Energy Retrofit (DER). A building renovation that leverages whole building integrative design approaches to reduce a building's annual energy use intensity by at least 40% from its pre-renovation FY 2019 energy use baseline.

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7. Whole Building Life Cycle Cost Analysis. To achieve the criteria of this policy guidance, a Whole Building Life Cycle Cost Analysis (WB LCCA) will be conducted as part of the development of a project's 35% design or equivalent milestone to select the most Life Cycle Cost Effective (LCCE) integrated facility configuration that meets the criteria outlined in this policy guidance and legal mandates. For new military construction, all criteria in Section 11 will be evaluated for inclusion in the final project by using a WB LCCA. This includes major military construction and UMMC regardless of the funding source. For FSRM projects, all criteria in Sections 9, 10 and 11 will be evaluated for inclusion in the final project by using a WB LCCA.

a. Project proponents will evaluate a minimum of three alternatives reflecting substantially different integrated design configurations for the WB LCCAs.

b. A cost-effective WB LCCA will be considered as also validating each individual system or component (i.e., individual systems or components need not be cost effective on their own, provided they contribute to the overall cost effectiveness of the integrated facility). The goal is to select the optimal combination of interdependent building systems (e.g., envelope; heating, ventilation, and air conditioning (HVAC); hot water; lighting; wall and floor thermal mass capacity; etc.) to maximize building performance and meet mission objectives. Chapter 7 of Reference (cc) provides guidance on selecting the optimal combination of interdependent building systems.

c. Project proponents will perform WB LCCAs in accordance with References (l), (cc), (k), and (j). Record all documentation demonstrating the consideration; analysis; incorporation; cost estimates; and integration of components, systems, or techniques addressing the criteria in this policy guidance.

8. Energy Savings. All new construction designs shall target the energy efficiencies described below. The WB LCCA will be used to determine the most cost-effective design to achieve these values.

a. For low-rise residential buildings, defined as buildings having three or fewer stories and designed for permanent residents, reduce modeled energy building consumption by a minimum of 30% from the International Energy Conservation Code baseline specified in 10 CFR 435.

b. For all other buildings, reduce modeled energy building consumption by a minimum of 30% below the ASHRAE 90.1 baseline specified in 10 CFR 433.

9. Deep Energy Retrofit (DER).

a. Per Reference (n), federal agencies must implement DERs for at least 30% of covered facilities by 2030. Per Reference (g) an installation's "covered facilities" are defined, for the purpose of this policy guidance, as those facilities that, in aggregate, "constitute at least 75%" of the installation's facility-driven energy use. All restoration

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and modernization projects encompassed in this policy guidance shall complete a DER assessment and incorporate DER solutions that are LCCE.

10. Building Systems Electrification Standard. In accordance with References (r) and (bb), the use of fossil fuel combustion systems and equipment is generally prohibited for building operations in new military construction at all worldwide Army installations, including Army Reserve and federal Army National Guard facilities and installations. This policy guidance does not modify those requirements. This building systems electrification standard also applies to any project using the repair authority pursuant to 10 U.S.C. 2811.

a. For all projects that are not new construction projects, any large capital investment in an existing building that involves replacement of installed energy-consuming equipment (such as heating and cooling systems) shall employ energy efficient designs, systems, equipment, and controls, with priority consideration of solutions that meet the electrification standard in Reference (r) and (bb) where such solutions do not result in costs or mission risks that jeopardize the execution of a project.

b. While DoD policy allows the continued use of fossil fuel combustion systems and equipment for unique mission requirements, including for manufacturing and industrial loads and emergency operations, the Army shall prioritize all-electric technologies to replace legacy systems whenever such technology is available, cost effective, and not negatively impactful to mission accomplishment.

11. Resilient Building Criteria.

a. Incorporate integrated design and passive design elements into the building project to reduce energy and water use intensity. Passive design elements provide energy and water saving benefits to buildings by taking advantage of natural principles without using energy or increasing water consumption. In the aggregate, these design elements are intended to reduce the total electricity demand necessary to support facility operations, including the backup power needed for mission assurance and/or mission essential functions.

(1) Building designs shall incorporate building form and orientation strategies and consider passive heating and cooling design techniques and systems in appropriate geographies to minimize, or eliminate, the use of mechanical systems, avoid external and internal thermal loss, and maintain building functions during prolonged outages.

(2) Building designs shall consider thermal storage and passive daylight systems to reduce energy use and improve QOL.

b. Integrate carbon-free energy (CFE) generation and storage. Designs shall integrate CFE generation and storage to support critical operational needs and reduce installation grid demand. CFE generation and storage can be incorporated at the

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building level (e.g., rooftop solar) or as part of an integrated installation or campus microgrid that supports the resilience and masterplan of the installation.

c. Use lower embodied carbon emissions building materials as the primary construction material when available and validated to meet engineering specifications. The Army is planning and conducting several pilot projects using lower embodied emissions building materials that will continue to inform future feasibility analysis for use across the military construction program. The use of lower embodied emissions building materials as the primary construction material will depend on several factors, such as regional availability, costs, and impacts on construction timeliness.

(1) In accordance with implementation of Reference (m) and based on recognition of industry best practices, project proponents shall use product-specific type III Environmental Product Declarations as the primary data source for evaluating and selecting materials with lower embodied emissions.

(2) Project proponents must validate that designs consider primary building materials with lower embodied emissions, for example, low Global Warming Potential concrete, recycled steel, or mass timber, are considered in all facility designs. Documentation of the primary material considerations shall be provided in the 35% design submittal.

d. Incorporate natural infrastructure into the building design where appropriate to promote energy and water efficiency. The use of green roofing and vertical plant wall systems can improve indoor air quality, moderate temperatures, and cut life cycle maintenance costs by enhancing the energy efficiency of climate control systems. In accordance with Reference (s) and Reference (i), stormwater management features, such as raingardens and other bioretention structures, shall be incorporated into or nearby the project site for water collection, storage, and reuse, reducing the water use intensity, recharging the aquifer, and improving water resilience in drought-stressed environments. Building designs should adopt nature-based solutions unless alternatives are demonstrated to be more beneficial, when the full range of benefits are considered, or nature-based solutions are not technically suitable for project goals.

## 12. Objective Enablers.

a. Leadership in Energy and Environmental Design (LEED). The Army will continue to expand its LEED-certified footprint by requiring LEED v4 silver-level certification as a minimum standard for new construction and major renovations, in accordance with federal statute and DoD policy. This policy guidance for resilient buildings shall serve to complement, not supersede, requirements related to achieving or reporting LEED standards. Project proponents shall continue to use LEED to advance the objectives of this policy guidance.

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b. Integrated Master Planning. In accordance with References (d), (t), and (s), project proponents shall synchronize the implementation of this policy guidance into the integrated master planning process for an installation.

(1) As required by References (a), (m), (aa), (s), and (q), project proponents shall consider features that enhance energy, water, and climate resilience of the installation, as identified in the Installation Energy and Water Plan and Installation Climate Resilience Plan annexes of an installation master plan to mitigate potential risks to commodity supplies, distribution, and infrastructure that could impact mission assurance.

(2) If all-electric technologies in building operations increase electricity demand and output beyond the load capacity supported by existing switchgear, transformer, substation, or other electrical utility transmission infrastructure, project planning and design must be coordinated with installation and community master planners, energy managers, and privatized utility system owners and housing providers, where applicable.

c. Incorporating Resilience Standards in Project Planning and Conceptualization (35%) and DD 1391 Development. In accordance with Reference (u), project proponents shall:

(1) Perform planning charrettes during DD 1391 development, design charrettes at the start of Concept Design, and document resiliency measures in Basis of Design as required in AR 420-1.

(2) Ensure that applicable elements of this policy guidance are documented as functional requirements and criteria in the planning charrette and DD 1391. The planning charette shall include any conceptual analysis needed to evaluate optimal building massing and orientation, and other resilient building criteria impacted by siting decisions. The DD1391 approving authority will certify that the components of this policy guidance are considered. This includes the criteria in Sections 8, 10, & 11.

d. Training. The Army should maintain a workforce that can successfully implement the objectives in this policy guidance. The Army DCS, G-9 will provide guidance to landholding commands to update any applicable instruction and certification programs for installation public works personnel, such as engineers, master planners, energy and water managers, environmental managers, financial management specialists, and installation senior leadership.

e. Building Automation Systems. All-electric technologies should use digital controls to support energy demand response programs and energy demand management capabilities. Project proponents will design facilities in accordance with References (y), and (z) to ensure standardization of building automation systems (BAS) across all facilities at the installation level.

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13. Exceptions to Policy Guidance. Exceptions will be granted by the ASA(IE&E) or designee.

a. Exceptions to this policy guidance shall be submitted when a project proponent can demonstrate that performing a WB LCCA as described in this policy guidance and incorporating the requirements into project planning is cost prohibitive or puts the project execution in jeopardy. The project proponent must submit an exception to policy guidance in writing to the ASA(IE&E) for review and approval. Exceptions to policy guidance will be made before 35% design completion (or similar stage when applicable) and must document the following:

(1) Recommendation for exception from the organization with the requirement for the project.

(2) An estimate of the impacts that the policy guidance may have on design cost that may necessitate an exception.

(3) An explanation of if and why the planning and design budget was insufficient to account for the costs of performing a WB LCCA as described in this policy guidance.

(4) An assessment of how an exception, if granted, may impact the military installation resilience as defined by 10 U.S.C. 101(e)(8), including with respect to climate risks identified as part of an Installation Climate Resilience Plan required by 10 U.S.C. 2864.

(5) Any other consideration with respect to how implementing this policy guidance for the project may negatively affect the mission.

b. The processes and objectives outlined in this policy guidance are intended to enable project proponents to plan and design Army buildings that will maximize power projection, training, and QOL on installations. The execution of this policy guidance may result in project designs with increased costs, although this should not be expected in every case. Upfront cost increases must be considered against life cycle costs, building resilience, energy and water security, and factors that support mission posture, safety, QOL, environmental protection, and other benefits to the Army and its stakeholders.

(1) If designs developed through this policy guidance result in increased costs or mission risks that jeopardize the execution of the project, project proponents may modify the degree to which the criteria and energy savings in this policy guidance are incorporated into the final design, provided all requirements of applicable laws or other policies are followed.

(2) Modifying the extent to which the resilient building criteria and energy savings in Sections 8 and 11 are incorporated into the final project design to ensure project

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execution does not constitute the need for an official exception to policy. The project proponent is still responsible for documenting deviations from the objectives and energy savings in this policy guidance, and ODCS, G-9 or OASA (IE&E) may request such documentation in writing.

14. Implementation. The ASA (IE&E) and DCS, G-9 shall serve as co-chairs of the Army Resilient Building Oversight Board (ARBOB). Standing members will include the Commanding General of Army Materiel Command; the Commanding General of the USACE; the Director of the Army National Guard; and the Chief of Army Reserve. The ARBOB shall be responsible for implementation and oversight of this policy guidance.

a. The ARBOB shall meet not later than 90 days after the adoption of this policy guidance, and quarterly thereafter.

b. The ARBOB shall develop a governance structure and plan of actions and milestones to implement this policy guidance within 90 days.

c. The ARBOB shall review regular reporting, including exceptions to policy requests, to measure progress and monitor for impediments to implementing this policy guidance.

d. The ARBOB shall review the WB LCCA and trade off analysis processes by analyzing the cost estimates and final costs associated with applying Sections 9 and 10 to projects.

15. The points of contact for this effort is the DASA(IH&P) at 703-697-8161 and the DASA(E&S) at 703-256-4710.

AUTHORITY LINE:



RACHEL JACOBSON

4 Encls.

1. Tab A - References
2. Tab B - DoD Memorandum, Electrification of Standard Building Operations. 28 August 2023
3. Tab C - DA Policy on Building Automation Systems, 28 October 2020
4. Tab D - DOA Memorandum, Army Electrification Guidance for Military Construction (MILCON) and Sustainment, Restoration and Modernization (SRM) Projects, 05 February 2024



## Tab A - References

- a. "Military Installation Resilience" 10 USC 101 (e)(8).
- b. "Repair of facilities" 10 USC 2811.
- c. "Consideration of energy security and energy resilience in life-cycle cost for military construction" 10 USC 2816.
- d. "Master plans for major military installations" 10 USC 2864.
- e. "Energy policy of the Department of Defense" 10 USC 2911.
- f. "Facilities: use of renewable forms of energy and energy efficient products" 10 USC 2915.
- g. "Energy and water management requirements" 42 USC 8253.
- h. "Federal purchase requirement" 42 USC 15852.
- i. "Storm water runoff requirements for federal development projects" 42 USC 17094
- j. "Energy Efficiency Standards for New Federal Commercial and Multi-Family High-Rise Residential Buildings" 10 CFR 433.
- k. "Energy Efficiency Standards for the Design and Construction of New Federal Low-Rise Residential Buildings" 10 CFR 435.
- l. "Methodology and Procedures for Life Cycle Cost Analyses" 10 CFR Part 436, Subpart A.
- m. Executive Order 14057, (Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability).
- n. Implementing Instructions for Executive Order 14057, August 2022.
- o. Department of Defense Instruction 4165.70, *Real Property Management*.
- p. Department of Defense Instruction 4170.11, *Installation Energy Management*.
- q. Department of Defense Memorandum "Metrics and Standards for Energy Resilience at Military Installations", 20 May 2021.
- r. Department of Defense Memorandum, "Electrification of Standard Building Operations," 28 August 2023. (See Encl. 2)
- s. Unified Facilities Criteria 2-100-01, Installation Master Planning.
- t. Army Regulation (AR) 210-20, *Real Property Master Planning for Army Installations*.
- u. Army Regulation (AR) 420-1, *Facilities Management*.
- v. Army Pamphlet 420-11, *Project Definition and Work Classification*.
- w. Army Directive 2020-03 (Installation Energy and Water Resilience Policy).
- x. Army Directive 2020-11 (Roles and Responsibilities for Military Installation Operations).
- y. Army Climate Strategy, Office of the Assistant Secretary of the Army for Installations, Energy and Environment, February 2022.
- z. Department of the Army Memo, Army Policy on Building Automation Systems, 28 October 2020. (See Encl. 3)
- aa. Department of the Army Memorandum, "Guidance for Installation Climate Resilience Plans (ICRPs)," 11 November 2022.
- bb. Department of the Army Memorandum, Army Electrification Guidance for Military Construction (MILCON) and Sustainment, Restoration and Modernization (SRM) Projects, 05 February 2024 (See Encl. 4)
- cc. "Life-Cycle Costing Manual for the Federal Energy Management Program," NIST Handbook 135.



THE UNDER SECRETARY OF DEFENSE

3010 DEFENSE PENTAGON  
WASHINGTON, DC 20301-3010

AUG 28 2023

ACQUISITION  
AND SUSTAINMENT

MEMORANDUM FOR SECRETARIES OF THE MILITARY DEPARTMENTS  
CHAIRMAN OF THE JOINT CHIEFS OF STAFF  
UNDER SECRETARIES OF DEFENSE  
CHIEF OF THE NATIONAL GUARD BUREAU  
COMMANDERS OF THE COMBATANT COMMANDS  
DIRECTORS OF THE DEFENSE AGENCIES AND FIELD  
ACTIVITIES

SUBJECT: Clarification of Electrification of Standard Building Operations

On March 29, 2023, I issued a memorandum requiring DoD Components to take steps to maximize the use of all-electric technologies in building design, construction, repair, and operations. A copy of that memorandum is attached. The following clarifies the scope of the March 29, 2023, memorandum.

The policy and requirements outlined in the March 29, 2023, memorandum apply to all new construction and major renovation projects carried out by the DoD components regarding building design, construction, repair and operations of facilities on military installations regardless of the funding source.

My point of contact for this matter is Mr. Gerald Johnson who may be reached at 703-693-5656 or [gerald.r.johnson62.civ@mail.mil](mailto:gerald.r.johnson62.civ@mail.mil).

  
William A. LaPlante

Attachment:  
As stated

cc:  
Commander, U.S. Army Corps of Engineers  
Commander, Naval Facilities Engineering Systems Command  
Commander, Air Force Civil Engineer Center



## THE UNDER SECRETARY OF DEFENSE

3010 DEFENSE PENTAGON  
WASHINGTON, DC 20301-3010

29 MAR 2023

ACQUISITION  
AND SUSTAINMENT

MEMORANDUM FOR SECRETARIES OF THE MILITARY DEPARTMENTS  
CHAIRMAN OF THE JOINT CHIEFS OF STAFF  
UNDER SECRETARIES OF DEFENSE  
CHIEF OF THE NATIONAL GUARD BUREAU  
COMMANDERS OF THE COMBATANT COMMANDS  
DIRECTORS OF THE DEFENSE AGENCIES  
DIRECTORS OF THE DOD FIELD ACTIVITIES

SUBJECT: Electrification of Standard Building Operations

In accordance with Executive Order (EO) 14057 and the 2022 National Defense Strategy (NDS), the Department of Defense (DoD) will implement steps to reduce its energy consumption and ensure energy resilience and reliability. Effective immediately, DoD Components must incorporate into building design, construction, repair, and operations, requirements that maximize the use of all-electric technologies to leverage the Department's growing investment in microgrid technology to support mission assurance.

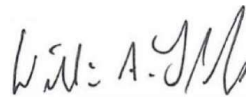
- For new military construction and major renovation projects that has not yet reached schematic design phase (up to 15 percent design), DoD Components will include in building designs the use of all-electric technologies for system components, including for space conditioning, water heating, cooking, and laundry, where market ready technologies exist. Where a project design has progressed past schematic design, but has not yet reached 35 percent design, DoD Components will include in designs the necessary infrastructure to enable future electrification of building systems for space conditioning, water heating, cooking, and laundry. This includes, but is not limited to, increasing sizing of conduit runs, utility chases, and electrical panels and wiring to support future building electrification.
- For existing buildings, DoD Components will implement the use of all-electric technologies where market ready technologies exist, for building system components, including space conditioning, water heating, cooking, and laundry systems, upon a system's expected end of useful life, unexpected system failure, or when buildings will undergo major renovation where various system components will be replaced as part of facility restoration and modernization.
- Components are encouraged to electrify district plants as soon as practical. For buildings connected to a DoD-owned, non-electric powered district plant utility, DoD Components may continue to use the plant through the end of its useful life or until replacement becomes cost effective or advantageous to the Government. Components will not refit existing non-electric powered district plants to extend their useful life or increase their capacity. All new district plants are subject to the same electrification requirements stated above for military

construction projects. DoD Components must ensure the workforce is trained and equipped to operate and maintain all-electric systems.

Exceptions to this policy may be permitted in climate zones where all-electric technologies are not currently practicable. In requesting an exception, DoD Components must provide documentation that all practical electrification of covered systems has been implemented and provide a written analysis of alternatives assessed for any system for which an exception is requested. The Military Department Assistant Secretaries for energy, installation and environment matters will be responsible for adjudicating requests and documenting justifications for all exceptions granted, to include for buildings used by Defense-Wide components on their respective military installations. The Assistant Secretary of Defense for Energy, Installations and Environment (ASD(EI&E)) will be provided a copy at [osd.pentagon.ousd-a-s.mbx.asd-eie-con@mail.mil](mailto:osd.pentagon.ousd-a-s.mbx.asd-eie-con@mail.mil) within 30 days of all exceptions granted.

This policy does not apply to systems and equipment where host nation requirements or agreements prohibit compliance. Systems and equipment are also exempted where they are used for unique agency research, manufacturing, industrial and process loads for which all-electric technology is not practicable, provided the DoD Components separately submeter and account for these loads on a regular basis. Examples include laboratory research activities; equipment research and testing such as jet engines; material heating, melting, forming; or unique ceremonial activities such as eternal flame memorial lighting. Additionally, emergency use generators are exempt from compliance with this policy as long as they are not utilized for non-emergency load shedding or peak demand shaving. This policy with additional guidance will be incorporated into the appropriate DoD Instructions and Unified Facilities Criteria.

My point of contact for this matter is Mr. Gerald Johnson, Office of the Deputy Assistant Secretary of Defense for Construction, at 703-693-5656 or [gerald.r.johnson62.civ@mail.mil](mailto:gerald.r.johnson62.civ@mail.mil).



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William A. LaPlante

cc:

Commander, U.S. Army Corps of Engineers  
Commander, Naval Facilities Engineering Systems Command  
Commander, Air Force Civil Engineer Center



**DEPARTMENT OF THE ARMY  
OFFICE OF THE ASSISTANT SECRETARY  
INSTALLATIONS, ENERGY AND ENVIRONMENT  
110 ARMY PENTAGON  
WASHINGTON DC 20310-0110**

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OCT 28 2020

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Army Policy on Building Automation Systems

1. References. A complete list of references is in enclosure 1.
2. Purpose. This policy requires Army installations to install building automation systems (BAS) monitored from a central location at the installation as a way to reduce energy and water commodity and maintenance costs.
3. Background.
  - a. As defined in Unified Facilities Criteria (UFC) 3-470-01 (reference a), a BAS is the system consisting of the utility monitoring and control system (UMCS) front-end and connected building control systems (BCS) which provides for control of the building electrical and mechanical systems as well as a user interface and supervisory capability (i.e., the portion of the UMCS for building control and excluding any connected utility control system).
  - b. BAS are important tools that installations such as like Fort Benning, Fort Bragg, Fort Hood, and Fort Knox have used to manage the operation of buildings. BAS are used to control building electrical and mechanical systems such as lighting, heating, ventilation, and air-conditioning. BAS, actively monitored from a central location on the installation, can achieve annual energy savings of 5% to 15%, with simple paybacks of 3 to 10 years (References b-e). Real-time system information available through BAS supports predictive and preventive maintenance and has been shown to reduce costs by up to 50% (Reference c). UFC and Unified Facilities Guide Specifications (UFGS) and Army guidance are available to assist with the integration of BCS when constructing or renovating facilities (Reference a and f-k).
  - c. More extensive implementation of cybersecure BAS across Army installations, as well as use of modern analytics, can serve to strengthen readiness while reducing cost. The effective use of BAS can help installations reduce energy through efforts such as establishing heating and cooling set-points and set-back hours; ensuring equipment is not left in manual override mode; enabling operations and maintenance improvements through retro-commissioning; and implementing controls improvements through re-tuning measures. A centralized monitoring system at the installation level enables diagnostics to ensure persistence of retro-commissioning and re-tuning measures designed to continue efficient operation of building systems, while maintaining a healthy indoor working environment.

d. The Army is working to modernize facilities at pace with private sector building technologies. This includes steps to install BAS to achieve utility savings and support preventive maintenance. As a long-term vision, Army installations should also consider collocation and monitoring of BAS with other Army systems like meters, sensors, Supervisory Control and Data Acquisition systems, and physical security systems to increase situational awareness and drive more efficient and responsive facility operations in the strategic support area. BAS, communicating by network configuration using compatible software language and monitored from a central location on the installation is a beginning step toward this future vision, allowing proactive management of building electrical and mechanical systems and ensuring system operations and energy solutions are more efficient, cost effective, and resilient.

4. Applicability. This directive applies to all enduring installations, worldwide (references k-l). This directive does not apply to Army forward operating sites, cooperative security locations, or US Army Corps of Engineers Civil Works facilities.

5. Policy. Army installations will install BAS, monitored from a central location on the installation, where life-cycle cost effective. Additional access points to monitor the system are encouraged, as appropriate.

a. Installations will install BAS in accordance with References a and f-j to meet the requirements in 10 USC 2867 (Reference m).

b. BAS should not introduce unacceptable risk and must comply with appropriate cybersecurity requirements in accordance with References n-q.

c. To realize the full benefits of the centrally monitored BAS, it is recommended that garrisons use the system to identify opportunities for efficiency and conservation measures as well as preventative maintenance. The BAS should be operated by trained, dedicated staff that specialize in the system's operation. The operation can be performed by in-house staff, contractors, or as part of third-party contracts.

6. Implementation.

a. The Deputy Chief of Staff, G-9 will issue BAS implementation guidance within 180 days of approval to this policy to address life-cycle cost analysis assumptions, resource planning, project funding, staffing requirements, network architecture planning (in coordination with the Deputy Chief of Staff, G-6), and cybersecurity approaches to secure and maintain an authority to operate. This guidance will consider development of an initial Army objective architecture to inform modernization and integration with information exchange and data requirements.

b. Landholding Commands, which for the purposes of this policy include the Army Materiel Command (including Installation Management Command), the Army Reserves, the Army National Guard, Army Central Command, and Army Europe will support installation execution of this policy by programming requirements and overseeing execution of resources consistent with G-9 guidance. Depending on the approach, the resource for installing each BAS and BCS could be one of a variety of sources

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SUBJECT: Army Policy on Building Automation Systems

including, but not limited to, Restoration and Modernization, Military Construction, Army Working Capital Fund, Energy Resilience and Conservation Investment Program, or it could be financed through Energy Savings Performance Contracts or Utility Energy Service Contracts.

c. Army installations will:

(1) Install BCS as part of all new construction and major renovation projects, where life-cycle cost effective.

(2) For existing buildings not described in 6.c.(1), give priority to connecting buildings with existing building-level BCS to a centrally monitored, installation-wide BAS. For buildings without existing controls or controls that cannot be connected to a BAS, priority should be given to installing BCS in buildings that support critical missions and buildings with large energy consumption or energy cost.

(3) Where applicable, installations are encouraged to have their utility privatization owner co-locate their monitoring system with the installation's system at a central location, or at least integrate viewing access into the installation's central monitoring location. This effort should not introduce unacceptable risk and must comply with appropriate cybersecurity requirements (References n-q).

(4) Conduct life-cycle cost analysis in accordance with procedures for cost-benefit analysis as outlined in AR 11-18 (Reference r).

7. The point of contact for this policy is Mr. Paul M. Volkman, (703) 697-3765, paul.m.volkman.civ@mail.mil.



Alex A. Beehler

Encl  
as

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Director, Army National Guard  
Deputy Chief of Staff, G-9  
Deputy Chief of Staff, G-6  
Commander  
U.S. Army Materiel Command  
U.S. Army Europe  
U.S. Army Central Command  
U.S. Army Corps of Engineers  
Superintendent, Arlington National Cemetery

CF:  
Chief Information Officer (CIO)

## Enclosure 1. Supplemental BCS and UMCS References

(as of date of issuance)

- a) Unified Facilities Criteria (UFC) 3-470-01, Utility Monitoring and Control System (UMCS) Front End and Integration, January 2018
- b) Katipamula et. al. "Small- and Medium-Sized Commercial Building Monitoring and Controls Needs: A Scoping Study." Pacific Northwest National Laboratory (PNNL-22169), October 2012
- c) Brambley et. al. "Advanced Sensors and Controls for Building Applications: Market Assessment and Potential R&D Pathways." Pacific Northwest National Laboratory (PNNL-15149), April 2005
- d) Fernandez, Taasevigen, and Underhill. "Success of Commercial Building Re-tuning in Federal Buildings: Results and Case Studies." Journal of Architectural Engineering: Advances in Energy Efficient Building Systems and Operations, 2016
- e) Taasevigen et. al. "Business Case for Re-tuning for the Army." Pacific Northwest National Laboratory (PNNL-28529), March 2019.
- f) UFC 3-410-02, Direct Digital Control for HVAC and Other Building Control Systems, (With Change 1) March 2020
- g) Unified Facilities Guide Specifications (UFGS) 23 09 00 Instrumentation and Control for HVAC, November 2015
- h) UFGS 23 09 23.01, LonWorks Direct Digital Control for HVAC and other Building Control Systems, February 2019
- i) UFGS 23 09 23.02, BACnet Direct Digital Control for HVAC and other Building Control Systems, February 2019
- j) UFGS 25 10 10, Utility Monitoring and Control System (UMCS) Front End and Integration, February 2019
- k) Army Regulation (AR) 420-1 (Army Facilities Management), Rapid Action Revision, 24 August 2012
- l) Department of Defense Instruction (DoDI) 3000.12, Management of U.S. Global Defense Posture (GDP), May 6, 2016, Change 1, May 8, 2017
- m) 10 USC 2867: Energy monitoring and utility control system specification for military construction and military family housing activities
- n) Department of Defense Memorandum, Control Systems Cybersecurity, December 18, 2018.



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(as of date of issuance)

- o) AR 25-2, Army Cybersecurity, 4 April 2019.
- p) UFC 4-010-06, Cybersecurity of Facility-Related Control Systems with Change 1, 18 January 2017
- q) UFGS 25 05 11, Cybersecurity For Facility-Related Control Systems, November 2017
- r) AR 11-18 (The Cost and Economic Analysis Program), 29 August 2019.



**DEPARTMENT OF THE ARMY**  
**OFFICE OF THE ASSISTANT SECRETARY OF THE ARMY**  
**INSTALLATIONS, ENERGY AND ENVIRONMENT**  
**110 ARMY PENTAGON**  
**WASHINGTON DC 20310-0110**

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MEMORANDUM FOR SEE DISTRIBUTION

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1. References.

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

b. Department of Defense Memorandum, Electrification of Standard Building Operations, 29 March 2023.

c. Department of Defense Instruction 4170.11, Installation Energy Management, 31 August 2018.

d. Army Regulation 420-1, Army Facilities Management, 12 February 2008.

e. Department of Army Pamphlet 420-11, Project Definition and Work Classification, 18 March 2010.

2. This guidance supersedes the Deputy Assistant Secretary of the Army (Installations, Housing and Partnerships) (DASA(IH&P)) Memorandum, Subject: Army Electrification Guidance for Military Construction (MILCON) Projects, 18 May 2023 and 22 January 2024.

3. In accordance with Reference (a), the Army is taking steps to reduce its energy consumption, reduce its dependence on carbon emitting energy sources, and ensure installation energy resilience and reliability by preparing infrastructure to connect to on-site energy sources and Army microgrids. This electrification guidance will be codified as policy in an Army Directive and/or Army Regulation at a future date.

4. To implement Reference (b), effective immediately, all construction projects funded with MILCON and Operations and Maintenance (O&M) carried out in accordance with 10 U.S.C. § 2805 shall comply with the following:

a. For construction projects that have not completed schematic design (up to 15 percent design) as of 18 May 2023, include in building designs the use of all-electric

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technologies for system components, including, but not limited to, space conditioning, water heating, cooking, and laundry, where market-ready technologies exist.

b. For construction projects that have completed schematic design (15% design) but have not completed concept design (35% design) as of 18 May 2023, include in building designs the necessary infrastructure to enable future electrification of building systems for space conditioning, water heating, cooking, and laundry. This includes, but is not limited to, increasing sizing of conduit runs, utility chases, and electrical panels and wiring to support future building electrification.

5. To implement Reference (b), effective immediately, all Restoration and Modernization (R&M) projects shall comply with the following:

a. For all R&M projects not requiring congressional notification in accordance with 10 U.S.C. § 2811 that are not yet under design or have not issued a design-build Request for Proposal (RFP) as of 18 May 2023, include all-electric technologies, where market-ready technologies exist, for building system components including, but not limited to, space conditioning, water heating, cooking, and laundry systems, upon a system's expected end of useful life, unexpected system failure, or where various systems or major components will be replaced as part of the work.

b. For all R&M projects requiring congressional notification, that are not yet under design or have not issued a design-build RFP as of 18 May 2023, implement the use of all-electric technologies where market ready technologies exist, for building system components, including space conditioning, water heating, cooking, and laundry systems, upon a system's expected end of useful life, unexpected system failure, or when buildings will undergo major renovation where various system components will be replaced as part of facility restoration and modernization.

c. For all R&M projects already in design as of the 18 May 2023, evaluate reasonable changes to planning and design to maximize compliance with the intent of this guidance, unless such changes would delay project acquisition beyond established deadlines.

d. For all R&M projects that are not yet under design or have not issued a design-build RFP, if full compliance results in costs or mission risks that jeopardize the execution of the project, project proponents may modify the degree to which complete electrification is accomplished, provided all other requirements of applicable laws or policies are followed. Rationale for any such modification shall be documented in Basis of Design in accordance with Reference (d). Additionally, the Garrison Commander or designee must provide a memorandum that justifies and documents the decision to the Design and Construction Agent and to the DASA(IH&P).

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6. To implement Reference (b), effective immediately, all Sustainment shall comply with the following:

a. For all Sustainment projects that are not yet under design or have not issued a design-build RFP, include all-electric technologies, where market-ready technologies exist, for building system components including, but not limited to, space conditioning, water heating, cooking, and laundry systems, upon a system's expected end of useful life, unexpected system failure, or where various systems or major components will be replaced as part of the work.

b. For all Sustainment projects that are not yet under design or have not issued a design-build RFP, if full compliance results in costs or mission risks that jeopardize the execution of the project, project proponents may modify the degree to which complete electrification is accomplished, provided all other requirements of applicable laws or policies are followed and exercised with the necessary management controls in place. Rationale for any such modification shall be documented by the Garrison Commander or designee in a memorandum for the project record that justifies and documents the decision.

7. The implementation of this guidance may increase electricity demand beyond the capacity of existing electrical utility infrastructure. As a result:

a. Planning and design of all projects covered by this guidance must evaluate utility infrastructure requirements beyond the immediate boundaries of the facility site, and where appropriate, incorporate necessary infrastructure improvements in the project scope as allowed for the project work classification (Reference e) or seek a waiver to the electrification requirements. Planning and design must also strive to ensure the building design's ability to achieve building energy consumption reduction mandates through holistic, integrated design strategies, which will reduce the building-level electrical demand of equipment, particularly for heating, ventilation, and cooling applications.

b. Installations must assess and update Master Plans and component plans to account for the increased energy requirements resulting from current and future year projects to include capital improvements to district plants.

c. In cases where the utilities are privatized, the utilities service contract with the privatized system owner may require modification to address any increased demand on or improvements needed to utilities infrastructure requirements.

8. In accordance with Reference (b), this guidance does not apply to:

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a. Systems and equipment where host nation requirements or agreements prohibit compliance.

b. Systems and equipment used for unique research, or manufacturing, industrial or process loads for which all-electric technology is not available or its use would increase the risk to mission.

c. Emergency use generators provided they are not utilized for non-emergency load shedding or peak demand shaving.

d. Fuel-based fire water pumps and other equipment used strictly for emergencies.

9. In the absence of governing criteria in the Unified Facilities Criteria (UFC), Headquarter, U.S. Army Corps of Engineers shall publish and regularly update interim criteria reflecting market-ready technologies and best practices to achieve the objectives of this guidance, until specific criteria are incorporated into appropriate UFCs.

10. Exceptions to this guidance will be adjudicated by the Assistant Secretary of the Army for Installations, Energy and Environment, or as delegated, when a bona fide need to waive one or more of the above objectives has been identified by the Design and Construction Agent, and after it has been vetted by the Garrison Commander or equivalent and higher Headquarters. For example, exceptions to this guidance may be granted in climate zones where all-electric technologies are not currently practicable.

11. Points of contact for this action are the DASA(IH&P) Assistant for Facilities Resilience (703) 614-4712 and Assistant for Facilities Investments (703) 693-9919.

CARLA K. COULSON  
Deputy Assistant Secretary of the Army  
(Installations, Housing and Partnerships)

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CF:

Deputy Chief of Staff, G-9 (DAIN-OD)