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SECRETARY OF THE AIR FORCE**

**DEPARTMENT OF THE AIR FORCE  
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***Special Management***

**INSTALLATION ENERGY AND WATER  
MANAGEMENT**

**COMPLIANCE WITH THIS PUBLICATION IS MANDATORY**

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This instruction implements the installation energy and water-related portions of Department of the Air Force Policy Directive (DAFPD) 90-17, *Energy and Water Management*. This Instruction applies to all Department of the Air Force organizations and activities, to include all civilian employees and uniformed members of the Regular Air Force, Space Force, Air National Guard and Air Force Reserve, located on an Air Force installation or facility. Ensure all records generated as a result of processes prescribed in this publication adhere to Department of the Air Force Instruction (DAFI) 33-322, *Records Management and Information Governance Program*, and are disposed in accordance with the Air Force Records Disposition Schedule, which is located in the Air Force Records Information Management System. Refer recommended changes and questions about this publication to the office of primary responsibility using the Air Force Form 847, *Recommendation for Change of Publication*; route Air Force Forms 847 from the field through major command publications or forms managers. This publication may be supplemented at any level, but all supplements must be routed to the OPR of this publication for coordination prior to certification and approval. The authorities to waive wing- or unit level requirements in this publication are identified with a Tier (“T-0, T-1, T-2, T-3”) number following the compliance statement. See DAFI 33-360, *Publications and Forms Management*, for a description of the authorities associated with the Tier numbers. Submit requests for waivers through the chain of command to the appropriate Tier waiver approval authority, or alternately, to the requestor’s commander for non-tiered compliance items. Compliance with the attachments in this publication is mandatory.

## ***SUMMARY OF CHANGES***

This document has been substantially rewritten and must be completely reviewed. The rewrite is based on updates to Department of Defense (DoD) Instruction (DoDI) 4170.11, *Installation Energy Management*, and DAFPD 90-17. Outdated requirements have been removed and new terms have been clarified. The revisions include new guidance on energy and water resource management, energy and water resilience, project development, and project funding. Additionally, the instructions regarding the use of fuel and energy for aviation assets have been removed.

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## Chapter 1

### OVERVIEW

**1.1. Overview.** This publication establishes directive guidance and procedures for installation energy and water management across the Department of the Air Force (DAF). Air Force units at all levels must ensure compliance with the energy and water requirements in this instruction. (T-1).

**1.2. Primary Focus.** The primary focuses of the energy and water management programs are to provide mission assurance through energy and water assurance. All projects should be undertaken with a focus on enhancing DAF energy and water resilience.

**1.3. Installation Energy.** Installation energy includes facility energy, process energy, expeditionary energy, and the energy and fuel used by non-tactical ground vehicles and aerospace ground equipment servicing non-aviation assets. Installation energy management includes energy use, conservation, resilience, and assurance.

**1.4. Water.** For this DAFI, water includes both potable and non-potable water used in facilities and processes, to include industrial, landscaping, and agricultural uses. Water management includes water use, conservation, and resilience. It does not include quality or water rights requirements. Waste water is not covered under this DAFI.

**1.5. Operational Energy.** All fuel and energy required for aviation assets and aerospace ground equipment servicing aviation assets are categorized as operational energy and are addressed under AFI 90-1702, *Operational Energy*. Water is not included under operational energy.

## Chapter 2

### ROLES AND RESPONSIBILITIES

#### 2.1. Assistant Secretary of the Air Force for Installations, Environment and Energy (SAF/IE).

2.1.1. Serves as the principal advisor to the Secretary of the Air Force on all energy and water-related issues, in accordance with DAFPD 90-17.

2.1.2. May delegate responsibilities for the management of the Air Force installation energy and water program to the Deputy Assistant Secretary of the Air Force for Environment, Safety, and Infrastructure.

2.1.3. Deputy Assistant Secretary of the Air Force for Environment, Safety, and Infrastructure (SAF/IEE).

2.1.3.1. Serves as the single point of contact for DAF installation energy and water issues for Congress, the Office of the Secretary of Defense (OSD), DoD components, and other federal agencies. Such issues may include, but are not limited to, energy and water resilience, efficiency, generation, conservation, and innovation.

2.1.3.2. Establishes and executes the overarching DAF installation energy and water program management structures. These structures should focus on ensuring energy and water resilience to meet Air Force mission requirements.

2.1.3.3. Develops and maintains the DAF's installation energy and water master plan (see [paragraph 5.1.1](#)).

2.1.3.4. Provides coordination, integration, and oversight of installation energy and water policy, strategy, projects, and issues, to include assessments of the resourcing and execution requirements of DAF installation energy and water programs, for use by SAF/IE.

2.1.3.5. Develops metrics, processes, and frameworks to analyze installation energy and water investments and project execution.

2.1.3.6. Develops internal and external installation energy- and water-related awareness programs.

2.1.3.7. Provides recommendations to SAF/IE on matters related to installation energy and water strategy, guidance, direction, and oversight (including governance). SAF/IEE will provide this for all such matters pertaining to the formulation, review, and execution of plans, policies, programs, and budgets.

2.1.3.8. Provides inputs to positions regarding federal, state, and local legislation and regulations that affect installation energy and water.

2.1.3.9. Develops policies and directive guidance related to facility, process, and vehicle and ground support equipment energy and water resilience, including installation prioritization, based on the priorities and requirements of combatant and major commands.

2.1.3.10. Develops, in coordination with the Air Force Directorate of Civil Engineers (AF/A4C), the overarching DAF strategies, priorities, goals, and metrics for installation energy and water consumption and resilience.

2.1.3.11. Develops energy- and water-related policy for contingency basing and aerospace ground equipment servicing non-aviation assets.

2.1.3.12. Establishes requirements and structure for installation energy plans, which should include water planning (see [paragraph 5.1.2](#)), and water systems risk and resilience assessments (see [paragraph 5.2.7](#)).

2.1.3.13. Provides oversight on energy resilience and water systems risk assessments and exercises.

2.1.3.14. Submits programmatic reports related to installation energy and water on behalf of the DAF to OSD and other outside organizations. For such reporting requirements, SAF/IEE will maintain and distribute internal guidance and guidance originating from outside the Air Force (e.g., OSD). On behalf of the DAF, SAF/IEE will ensure compliance with the energy and water reports required by this DAFI and its references. SAF/IEE may delegate this to other DAF organizations.

2.1.3.15. Approves annual overarching installation energy and water execution plans.

#### 2.1.4. Deputy Assistant Secretary of the Air Force for Installations (SAF/IEI).

2.1.4.1. Coordinates installation energy- and water-related opportunities identified through the community partnership program with SAF/IEE to avoid conflict with installation energy plans.

2.1.4.2. Coordinates installation energy- and water-related availability and sustainment requirements identified through the strategic basing program with SAF/IEE to ensure basing considerations and decisions are addressed in installation energy and water planning documents.

2.1.4.3. Supports installation energy and water resilience programs and projects with real estate transactions where appropriate, including coordinating with SAF/IEE on real estate issues pertaining to energy and water initiatives on DAF installations.

**2.2. Deputy Chief of Staff of the Air Force for Operations (AF/A3).** AF/A3 provides SAF/IEE access to critical mission requirements with potential energy or water needs under the mission assurance construct.

#### **2.3. Deputy Chief of Staff of the Air Force for Logistics, Engineering, and Force Protection (AF/A4).**

2.3.1. Establishes policy and guidance necessary to execute the requirements and initiatives related to installation energy and water management, ground vehicles, and support equipment. This role is identified in Headquarters Air Force Mission Directive 1-38, *Deputy Chief of Staff of the Air Force for Logistics, Engineering, and Force Protection*. The policies and guidance are subject to policies established by SAF/IE, and exclude roles and responsibilities delegated to the Air National Guard.

2.3.2. May delegate responsibilities related to facility energy to AF/A4C and responsibilities related to ground vehicles to Air Force Directorate of Logistics (AF/A4L).

2.3.3. Collaborates with AF/A3 and major commands to identify the task critical assets required to execute missions and the infrastructure required to support those assets. Communicate results to the appropriate organizations and personnel (e.g., Headquarters Air Force, major commands, installation commanders) for consideration for future projects.

2.3.4. Air Force Directorate of Civil Engineers (AF/A4C).

2.3.4.1. Oversees, in coordination with SAF/IEE, policies and program resource requirements necessary to execute the facility energy program.

2.3.4.2. Develops programming and execution guidance for facility energy investments.

2.3.4.3. Establishes training and performance requirements for installation energy managers.

2.3.4.4. Develops directive guidance related to acquiring and providing utilities, including facility-related control systems and the consumption and assurance of commodities.

2.3.4.5. Establishes DAF-specific doctrine related to facility energy and water resource management.

2.3.4.6. Facilitates energy and water improvements at contingency locations, such as materiel and non-materiel improvements in energy generation and in energy and water storage, distribution, and consumption.

2.3.4.7. Develops and maintains the planning, resourcing and execution guidance for energy resilience assessments and exercises, in accordance with [paragraph 5.2.6](#), and water systems risk and resilience assessments and exercises, in accordance with [paragraph 5.2.7](#)

2.3.5. Air Force Directorate of Logistics (AF/A4L).

2.3.5.1. Provides policy and guidance necessary to manage the Air Force non-tactical fleet, as defined in [paragraph 1.3](#)

2.3.5.2. Establishes procedures and processes to collect data for non-tactical fleet reporting requirements.

2.3.5.3. Identifies opportunities to optimize fleet performance and reduce associated costs.

2.3.5.4. Coordinates with SAF/IEE and AF/A4C on the infrastructure requirement necessary to support the non-tactical fleet.

2.3.6. Air Force Directorate of Security Forces (AF/A4S) provides information on the risks to Air Force utility systems from malevolent acts.

## **2.4. Air Force Installation and Mission Support Center (AFIMSC).**

2.4.1. Provides resource advocacy for Air Force facility energy and water management programs.

2.4.2. Provides program element monitoring to support the Air Force's planning, programming, and budgeting execution process.

2.4.3. Assists Headquarters Air Force in delivering the capabilities to implement facility energy strategic policy and guidance.

2.4.4. Develops annual investment requirements, utilizing available energy and water funding sources, such as direct financed, Energy Resilience and Conservation Investment Program (ERCIP), and third-party financing opportunities.

2.4.5. Air Force Civil Engineer Center (AFCEC).

2.4.5.1. Serves as the execution agent for Air Force facility energy and water management programs, except for roles and responsibilities identified for the Air National Guard (ANG) Civil Engineering Technical Service Center (CETSC) in [paragraph 2.10](#)

2.4.5.2. Establishes and maintains a public-facing entry point (commonly known as a “storefront”), through the Air Force Office of Energy Assurance, for future facility energy and water projects. This will serve as the single point of entry for any private or public organization looking to develop energy and water projects on Air Force installations.

2.4.5.3. Develops an annual installation energy and water execution plan, with tailored goals and output-based metrics, to enable achievement of the Air Force’s installation energy and water priorities and goals, and execute upon SAF/IEE approval.

2.4.5.4. Notifies SAF/IEE and AF/A4C of any unique technical requirements (i.e., military-specific requirements beyond accepted voluntary consensus and industry standards) for Air Force projects. Provides appropriate technical recommendations and guidance to the field.

2.4.5.5. Aids installations in training qualified personnel to serve as installation energy managers.

2.4.5.6. Develops and executes programs that result in facilities designed, constructed, operated, maintained, and renovated to achieve optimum performance and help maximize an installation’s energy and water efficiency. AFCEC should execute these programs according to sustainable design principles while contributing to mission assurance.

2.4.5.7. Ensures installation energy and water vulnerability assessments and audits are performed on Air Force installations to assess the risk of disruptions and, where applicable, assist with any remedial actions approved by the installation commander to remove unacceptable risks.

2.4.5.8. Establishes non-directive guidance for facility energy and water management programs.

2.4.5.9. Manages third-party financing opportunities in coordination with installation personnel, in accordance with [paragraph 6.5](#)

2.4.5.10. Conducts resiliency and business opportunity assessments for potential facility energy and water projects.

2.4.5.11. Advocates for resiliency or energy assurance value through the project lifecycle.



2.4.5.12. Maintains non-directive facility energy and water playbooks identifying best practices and processes across installation energy and water programs.

## **2.5. Major Command and Direct Reporting Unit Commanders.**

2.5.1. Provide installation commanders and AFIMSC with overarching priorities, mission requirements, and high-level perspectives to assist with installation energy and water planning.

2.5.2. Coordinate with AF/A3, AF/A4, and AFIMSC to identify the task critical assets required to execute missions and the infrastructure required to support those assets.

## **2.6. Installation Commanders.**

2.6.1. Determine investment needs and priorities for all assets located on the installation (to include tenants) to enhance installation energy and water resilience. When more than one unit utilizes a proposed project site, installation commanders will coordinate in the best interest of overall installation energy and water resilience, in conjunction with mission requirements. **(T-2)**.

2.6.2. Provide the mission vision to all subordinate commanders and installation development vision supporting this to the base civil engineer. **(T-3)**.

2.6.3. Ensure installation energy plans are developed and maintained. **(T-0)**.

2.6.4. Encourage mission owners and the base civil engineer to exercise systems to ensure capabilities and identify vulnerabilities.

2.6.5. Approve remedial actions to reduce or remove unacceptable risks resulting from installation energy and water vulnerabilities. Work with the appropriate organizations (e.g., Headquarters Air Force, major commands, AFIMSC) to implement remedial actions. **(T-1)**.

2.6.6. Approve risk and resilience assessments and emergency response plans for Air Force-owned community water systems. **(T-0)**.

2.6.7. Support DAF reporting responsibilities per [paragraph 2.1.3.14](#) by providing data about and access to installation assets as required. This approach may vary depending on the requirement, but will typically be reported to AFCEC in accordance with [paragraph 5.2.8](#)

**2.7. Mission Owners.** As delegated by installation commanders, mission owners on Air Force installations will collaborate with the base civil engineer and other appropriate stakeholders to identify mission requirements with potential vulnerabilities due to disruptions of energy or water. **(T-1)**.

## **2.8. Base Civil Engineers.**

2.8.1. Oversee and manage installation energy and water programs, initiatives, and projects. **(T-3)**.

2.8.2. Collaborate with local energy and water utility providers to identify and address potential installation energy and water vulnerabilities, in partnership with SAF/IEE, AF/A4C, AFCEC, and ANG CETSC as needed. **(T-3)**.

2.8.3. Collaborate with mission owners and other stakeholders to identify mission requirements with potential vulnerabilities due to a disruption of energy or water. **(T-1)**.

2.8.4. Provide and deliver necessary utilities to installation locations and facilities consistent with mission requirements as addressed under Air Force Manual (AFMAN) 32-1061, *Providing Utilities to U.S. Air Force Installations*.

2.8.5. Designate installation energy managers to be responsible for implementing the installation-level requirements of all applicable statutes and Air Force directive guidance.

2.8.6. Facilitate the development and annual maintenance of the installation energy plan.

## **2.9. Installation Energy Managers.**

2.9.1. Design and implement installation-level programs in support of DAF installation energy and water goals. **(T-0)**.

2.9.2. Provide required project documentation, including site data packages and evaluation criteria, to AFCEC or other appropriate parties (e.g., ANG CETSC, U.S. Army Corps of Engineers), to ensure project execution is proceeding appropriately. **(T-2)**.

2.9.3. Identify and develop opportunities, and submit to the Air Force Office of Energy Assurance via the storefront or the ANG CETSC for inclusion into execution tools, such as third-party performance contracts, and to installation planners for inclusion in installation planning documents. **(T-3)**.

2.9.4. Use metered consumption data for baselining, benchmarking, reporting, preventive maintenance, demand response, installation energy and water awareness, project performance compliance, energy and water analyses, and project development. **(T-0)**.

2.9.5. Report installation energy and water data using the Air Force approved energy management reporting information technology system(s), as determined by AFCEC. **(T-0)**.

2.9.6. Develop and execute campaigns to encourage awareness of installation energy and water program requirements, goals, and achievements. **(T-3)**.

2.9.7. Maintain awareness of and execute responsibilities to provide utilities to installations, as addressed under AFMAN 32-1061. **(T-1)**.

2.9.8. Work with mission partners to communicate energy requirements, identify efficiency opportunities and implement improvements.

## **2.10. The Chief of the National Guard Bureau.** Develop policies, instructions, and guidance unique to Air National Guard energy and water programs and oversee management of those programs through the ANG CETSC.

2.10.1. Provides resource advocacy for Air National Guard facility energy and water management programs.

2.10.2. Provides program element monitoring to support the Air National Guard's planning, programming, and budgeting execution process.

2.10.3. Assists Headquarters Air Force in delivering the capabilities to implement facility energy strategic policy and guidance.

2.10.4. Develops annual investment requirements, utilizing available energy and water funding sources, such as direct financed, Energy Resilience and Conservation Investment Program (ERCIP), and third-party financing opportunities.

- 2.10.5. Serves as the centralized program management office for Air National Guard facility energy and water projects.
- 2.10.6. Supports the planning and programming function for future Air National Guard facility energy and water projects, and serve as the single point of entry for any private or public organization looking to develop energy and water projects on Air National Guard installations.
- 2.10.7. Develops an annual installation energy and water execution plan, with tailored goals and output-based metrics for Air National Guard installations, to enable achievement of the Air DAF's installation energy and water priorities and goals.
- 2.10.8. Aids installations in training qualified personnel to serve as installation energy managers.
- 2.10.9. Notifies SAF/IEE and AF/A4C of any unique technical requirements (i.e., military-specific requirements beyond accepted voluntary consensus and industry standards) for Air Force projects. Provides appropriate technical recommendations and guidance to the field.
- 2.10.10. Develops and executes programs that result in facilities that are designed, constructed, operated, maintained, and renovated to achieve optimum performance and maximize installation energy and water efficiency according to sustainable design principles while contributing to mission assurance.
- 2.10.11. Ensures installation energy and water vulnerability assessments and audits are performed on Air National Guard installations to assess the risk of disruptions and, where applicable, assist with any remedial actions approved by the installation commander to remove unacceptable risks.
- 2.10.12. Establishes non-directive guidance for facility energy and water management.
- 2.10.13. Manages third-party financing opportunities for Air National Guard installations in coordination with installation personnel, in accordance with [paragraph 6.5](#)
- 2.10.14. Conducts resiliency and business opportunity assessments for potential facility energy and water projects.
- 2.10.15. Advocates for resiliency or energy assurance value through the project lifecycle.

## Chapter 3

### INSTALLATION ENERGY AND WATER MANAGEMENT

**3.1. Overview.** The DAF, under the direction of SAF/IEE, will establish and manage an overarching program to ensure the approach to installation energy and water resilience is in line with mission requirements. **(T-0)**.

3.1.1. The intent of the installation energy and water program is to develop and maintain effective management practices and processes in accordance with mission-derived priorities.

3.1.2. The DAF should identify assets and infrastructure dependencies critical to mission execution, capabilities, and core functions.

3.1.3. The DAF, under the oversight of SAF/IE, will ensure energy and water management programs address legal and policy requirements covered under DoDI 4170.11. **(T-0)**. Unless otherwise noted, DoDI 4170.11 covers the T-0 requirements identified in this AFI.

#### **3.2. Facility and Process Energy.**

3.2.1. Facility and process energy are often linked and should be addressed together, whenever possible.

3.2.1.1. Facility energy is consumed in real property and provides for the comfort of building occupants. It is managed by the mission support function, as the host installation.

3.2.1.2. Process energy is used to produce an output in mission activities such as industrial production, computational labs, and test programs. It is managed by the mission owner, as a tenant on the installation.

3.2.2. Mission owners, in coordination with installation energy managers, shall work together to identify all major energy and water consuming task critical assets, facilities, and infrastructure under their responsibility, based on guidance and direction from AF/A3 and AF/A4. **(T-1)**.

3.2.3. Control systems must be cyber-secure and manage installation energy and water supply and demand, support installation energy and water resilience, and improve mission assurance. **(T-0)**.

3.2.4. As part of installation energy and water management, SAF/IEE will provide guidance on how the Air Force can consider the installation's energy and water requirements. **(T-1)**. This includes making reliability and sustainability trade-offs, and in balancing energy and water needs with other drivers, such as readiness, cost, and performance.

#### **3.3. Demand-side Management Programs.**

3.3.1. Air Force installations are authorized to participate in demand-side management and load management programs with third parties (e.g., electric utilities, independent system operators, and state agencies) and their authorized contractors.

3.3.2. Demand-side programs provide incentives to reduce electric power demand during peak usage periods.

3.3.3. SAF/IEE will monitor participation in demand-side management programs. Installations participating in such programs must demonstrate a reduction in installation energy use and cost as well as cybersecurity without compromising mission requirements or security. **(T-1)**.

**3.4. Expeditionary Energy.** The Air Force, led by SAF/IEE, will assess and manage energy- and water-related risks at expeditionary locations. **(T-1)**. These risks can be to operations, training, and testing, to include assets, supporting infrastructure, equipment, supplies, platforms, and personnel.

**3.5. Non-tactical Ground Vehicles.**

3.5.1. The Air Force, under the direction of AF/A4L, will acquire, manage, and effectively maintain a right-sized (i.e., mission-driven) and energy-efficient fleet of non-tactical vehicles. **(T-1)**.

3.5.1.1. New vehicle purchases shall be low greenhouse gas emitting light duty and medium duty passenger vehicles. **(T-0)**. If no such vehicle is available to meet the functional need, the acquiring organization must obtain a waiver from SAF/IEE. **(T-1)**.

3.5.1.2. At least 75 percent of light-duty vehicle leases and acquisitions must be alternative fuel vehicles, in accordance with 42 United States Code Section 13212. **(T-0)**. Emergency, law enforcement, and national defense vehicles are exempt under this requirement. **(T-0)**.

3.5.1.3. At a minimum, the Air Force should strive to maintain 2015 target levels for petroleum reduction and alternative fuel use.

3.5.2. Any built infrastructure requirements or impacts on facility energy, such as the installation of electric vehicle supply equipment, will be coordinated with SAF/IEE and AF/A4C by AF/A4L. **(T-1)**.

3.5.3. AFI 24-302, *Vehicle Management*, provides additional details concerning the management of the Air Force tactical and non-tactical vehicle fleets.

## Chapter 4

### CATEGORIZING INSTALLATION ENERGY CONSUMPTION

**4.1. Overview.** The Department of the Air Force is frequently required to categorize facility or process energy consumption to meet reporting requirements.

4.1.1. This categorization is for energy reporting purposes only; it does not apply to water consumption or fuel consumed by ground vehicles, equipment, or aviation assets. AFI 24-302 further categorizes Air Force ground vehicles, while AFI 90-1702 governs operational energy.

4.1.2. All energy used at an expeditionary location (e.g., electricity and fuels used in facilities, grounds vehicles, common support equipment, and processes) is categorized as expeditionary energy. Expeditionary energy is a subset of installation energy, but is often exempt from reporting requirements.

4.1.3. SAF/IEE will issue annual business rules related to how installation energy should be categorized for reporting purposes. **(T-1)**.

**4.2. General rules.** The following general consumption reporting rules apply:

4.2.1. Installations may consume facility, process, and operational energy.

4.2.2. If more than 50 percent of the energy use for a particular asset (e.g., building, aircraft, or ground vehicle) fits in one category, then the asset's entire energy use should fall under that category. This initial baseline should be re-examined as needed and adjusted to support data availability.

4.2.3. Energy used for heating, ventilation, and air conditioning systems and lighting specifically needed for a process, such as a data center or industrial equipment, is considered process energy.

4.2.4. Energy consumed during basic military and skills training is categorized as installation energy and not considered operational energy. All buildings, assets, and vehicles on bases used solely for basic military and initial skills training are categorized as either facility or process energy (both under installation energy).

## Chapter 5

### ENERGY AND WATER PLANNING AND MANAGEMENT.

**5.1. Required plans.** The Department of the Air Force will develop and maintain a comprehensive plan at the DAF-level and a separate plan at each installation, focused on achieving energy and water goals. **(T-0)**. Installation planning and reporting requirements may include the use of metrics and encompass other issues that may impact energy and water management (e.g., cybersecurity).

#### 5.1.1. DAF Installation Energy and Water Plan.

5.1.1.1. The DAF, led by SAF/IEE, will develop a comprehensive plan to identify department-level installation energy and water strategic priorities, targets and performance goals. **(T-0)**.

5.1.1.2. Regarding the development of performance goals and implementing the plan, the Air Force should consider at a minimum:

5.1.1.2.1. Opportunities to enhance installation energy and water resilience to ensure the Air Force has the ability to prepare for and recover from energy or water disruptions that impact mission assurance on military installations.

5.1.1.2.2. Opportunities to increase the efficiency of the installation's energy and water consumption and reduce future demand.

5.1.1.2.3. Opportunities to pursue alternative energy initiatives, including the use of alternative fuels and hybrid-electric drive in vehicles and common support equipment.

5.1.1.2.4. Opportunities for the construction, lease, operation, and maintenance of high-performing buildings.

5.1.1.2.5. Cost effectiveness, cost savings, and net present value of alternatives.

5.1.1.2.6. The value of diversification of types and sources of energy and water used.

5.1.1.2.7. The value of economies-of-scale associated with fewer energy types used.

5.1.1.2.8. The value of the use of renewable energy sources.

5.1.1.2.9. The potential for an action to serve as an incentive to reduce energy or water consumption or adopt an improved energy or water performance measure.

5.1.1.2.10. Opportunities for improving installation energy and water resilience.

5.1.1.2.11. Opportunities to leverage third-party financing to address installation energy and water needs.

#### 5.1.2. Installation energy plans.

5.1.2.1. Each installation will develop an installation energy plan. **(T-0)**. The plans will incorporate detailed plans for energy and water resilience capabilities to ensure available, reliable and quality utilities for each of the installation's critical missions. **(T-0)**. The

plans will be developed in accordance with the template maintained by AFCEC, through the Air Force Office of Energy Assurance. **(T-1)**.

5.1.2.2. The plan will incorporate applicable cybersecurity plans for any identified energy or water project, including any installation or modification of operational technology encompassing platform information technology, control systems, or facility-related control systems. **(T-1)**.

5.1.2.3. Plans may incorporate the installation's implementation and execution strategy(ies) for energy and water conservation and potential generation opportunities available to that installation. The strategies and opportunities should support the enhancement of an installation's energy and water resilience and evaluated based on resilience attributes (see [paragraph 6.2](#)).

5.1.2.4. Detailed installation energy and water plans should be developed utilizing asset management principles and incorporated as a component plan to installation development plans. Installation development plans are addressed under AFI 32-1015, *Integrated Installation Planning*.

5.1.2.5. Where utility systems are privatized, and where feasible, system owners should be made aware of the installation energy plans.

5.1.2.6. Installation energy plans will be reviewed and updated annually, and maintained on web-based platform (e.g., AFCEC's Comprehensive Planning Platform). **(T-0)**.

## **5.2. Infrastructure Metering and Data Management.**

5.2.1. To execute the most resilient, effective, and efficient installation energy and water program, the Air Force should use enabling systems, to include: advanced metering infrastructure; facility energy audits; and smart building and base energy management operating systems.

5.2.2. All enabling systems must comply with cybersecurity requirements. **(T-0)**.

5.2.3. Mission Assurance and Critical Infrastructure.

5.2.3.1. To ensure installation energy and water resilience, AF/A3 will determine task critical assets requirements and AF/A4 will conduct the appropriate analysis for these requirements when metering data are not available (e.g., an engineering facility energy load analysis). **(T-1)**.

5.2.3.2. Task critical asset requirements should be reviewed and updated by AF/A3 on an annual basis.

5.2.3.3. The critical requirements and facility energy loads may be used to comply with guidelines for emergency preparedness requirements and the identification, design, and implementation of energy generation systems, infrastructure, equipment, fuel, and testing.

5.2.4. Advanced Metering Electricity, Natural Gas, Water, and Steam.

5.2.4.1. AFCEC will establish and maintain an advanced metering capability (minimal requirements include near real-time measurements of consumption and daily data reports at the installation level) for electricity, natural gas, water, and steam. **(T-0)**.



5.2.4.2. Application of meters and sub-meters is required as a management enhancement tool for awareness of utility loads and identification of potential cost saving opportunities. **(T-0)**.

5.2.4.3. Installations commanders with privatized utilities should ensure system owners are aware of any suggested metering projects that could potentially affect their systems.

#### 5.2.5. Energy Audits.

5.2.5.1. The DAF, under the direction of AFCEC, will execute annual comprehensive energy audits for approximately 25 percent of Air Force covered facilities, so at least once every four years each of those facilities will be audited. **(T-0)**. Covered facilities are those installations and buildings that include central utility plants and distribution systems and other energy intensive operations that constitute at least 75 percent of facility energy used by the Air Force.

5.2.5.2. AFCEC is responsible for conducting the audits, under the oversight of SAF/IEE.

5.2.5.3. The audits are to identify cost effective infrastructure improvements to enhance energy and water resilience, with a secondary consideration for improving energy and water efficiency.

5.2.5.4. Results of the audits will be used to certify compliance with auditing requirements, identify potential energy and water improvement projects, provide other installations with potential issues and best practices, and monitor Air Force progress towards energy and water goals. **(T-1)**.

5.2.5.5. Utilize alternative financing opportunities, such as energy savings performance contracts (ESPCs) and utility energy service contracts (UESCs), to conduct energy audits where possible.

5.2.6. Energy Resilience Assessments and Exercises. Installations commanders will ensure periodic energy resilience assessments of energy systems for critical mission operations and supporting infrastructure are conducted. **(T-0)**. Black start exercises (i.e., “pull-the-plug” events) are required as part of these assessments. **(T-0)**.

5.2.6.1. Resilience assessments will demonstrate the installation’s capabilities to continue critical mission operations in the event of a power or water outage, and will address the DoD metrics and standards for energy resilience assessments. **(T-0)**.

5.2.6.2. Black start exercises may also include additional upfront analysis or tabletop studies.

5.2.6.2.1. Analyses, tabletop studies, and exercises should highlight previously-identified areas of risk (e.g., cyber) to missions, capabilities, and installations.

5.2.6.2.2. Annual exercises will be planned in coordination with mission or capability owners to ensure a risk management strategy is in place for one-of-a-kind capabilities or high value assets. **(T-3)**.

5.2.6.3. At a minimum, energy resilience assessments will be conducted in accordance with guidance maintained by SAF/IEE and AF/A4C. **(T-1)**.

5.2.6.4. Installation commanders will ensure any findings from these assessments and exercises will be incorporated into installation energy plans. **(T-1)**. Findings will be utilized to develop projects to mitigate resilience risks and increase resilience posture. **(T-1)**. Installation commanders will ensure any corrective action required to resolve any areas of non-compliance. **(T-1)**.

#### 5.2.7. Water Systems Risk and Resilience Assessments (RRAs) and Exercises.

5.2.7.1. Installations with DAF-owned community water systems serving more than 3,300 people must develop and maintain risk and resilience assessments and emergency response plans, in accordance with Public Law 115-270, *America's Water Infrastructure Act of 2018*. **(T-0)**.

5.2.7.2. At a minimum, the assessments will assess risks to the water system, specifically the requirements included under Public Law 115-270. **(T-0)**.

5.2.7.3. These assessments and plans will need to be reviewed, and updated where appropriate, at least once every five years. **(T-0)**. The assessments and plans must be completed in accordance with the requirements and structure developed by SAF/IEE. **(T-1)**.

5.2.7.4. Installations commanders will ensure periodic water resilience assessments and exercises of water systems are conducted for critical mission operations and supporting infrastructure. **(T-1)**.

5.2.7.4.1. Water resilience or shortage events should be exercised as part of periodic assessments to identify gaps in planning and plan feasibility. Exercises should highlight unknown areas of risk to missions and installations.

5.2.7.4.2. Exercises should include, at minimum, drawing water from all water sources, exercise agreements with lateral agencies, conducting a table top exercise under the direction of the base civil engineer with key offices and leadership.

#### 5.2.8. Data Collection, Management, and Reporting.

5.2.8.1. Installation energy managers will provide energy and water data to AFCEC to incorporate into department-wide databases for use in program management and analysis and to meet higher level reporting requirements. **(T-0)**. AFCEC will provide all offices identified in **Chapter 2** with the ability to query these databases, if requested.

5.2.8.2. The Air Force, led by AFCEC, should analyze performance data and audit findings to establish baselines for measuring progress, analyze trends in consumption, and benchmark performance against similar buildings.

## Chapter 6

### ENERGY AND WATER PROJECTS

**6.1. Overview.** Energy and water projects will focus on meeting mission requirements, improving resilience, and providing the best value for the DAF. **(T-1)**. The DAF is technology agnostic and can consider any technologies related to energy or water resilience, conservation, or generation. Energy and water projects are those efforts, to include material and non-material solutions, primarily designed to research, generate, produce, transmit, distribute, store, operate, or conserve energy or water.

**6.2. Attributes of resilience.** The DAF should use the following three preventative attributes and two performance attributes to evaluate the resilience aspects of energy and water projects. These aspects are conversationally referred to as the “5 Rs.”

#### 6.2.1. Preventative attributes.

6.2.1.1. Robustness incorporates concept of reliability and refers to ability to withstand disturbances.

6.2.1.2. Redundancy involves having excess capacity and back-up systems, which enable the maintenance of core functionality in the event of disturbances.

6.2.1.3. Resourcefulness is the ability to adapt to crises, respond flexibly, and neutralize negative impacts.

#### 6.2.2. Performance attributes.

6.2.2.1. Response is the ability to mobilize quickly in the face of crises.

6.2.2.2. Recovery is the ability to regain a degree of normality after event, including ability of a system to be flexible and to evolve to deal with new circumstances.

### 6.3. Primary Power Generation Systems.

6.3.1. Primary power generation systems play an important role in creating and maintaining energy resilience at DAF installations. By providing an onsite power supply, these systems diversify the installation’s power supply and can help ensure energy for critical missions.

6.3.2. The DAF’s preference is for primary power generation systems to be owned and operated by third parties.

6.3.2.1. Should an installation commander recommend the development of a DAF-owned primary power generation system, the installation commander must obtain a waiver from SAF/IEE prior to project development. **(T-1)**. This includes instances where the installation commander recommends entering into third-party funded contracts which results in government ownership and management of such a system at the conclusion of the contract.

6.3.2.2. For a waiver to be obtained, the proposed system must be included in the installation energy plan and expected to enhance the energy resilience of an installation. **(T-1)**.

### 6.3.3. Primary Power Generation System Sustainment.

6.3.3.1. When developing a project with a primary power generation system that will be owned by the Air Force, the developing organization should prepare an operations and maintenance (O&M) plan. O&M plans are critical to maintaining energy resilience.

6.3.3.2. The developing organization should include the estimated annual costs for the plan, the appropriation that will be utilized to resource the O&M effort, and an agreement to fund the sustainment effort for the entirety of the project's lifecycle. This analysis should be included in the life-cycle cost analysis of the project.

6.3.3.3. Systems that will be conveyed to the Air Force as a result of ESPCs and UESCs should have similar post-conveyance O&M plans.

6.3.3.4. The Air Force is required by the Office of Management and Budget Circular A-11, *Preparation, Submission and Execution of the Budget*, to have the title to the system on or before the end of the ESPC or UESC in order for the project to qualify for annual scoring. **(T-0)**.

## 6.4. Third-Party Contracts.

6.4.1. The Air Force prefers to use alternative financing mechanisms, such as ESPCs and UESCs, to finance energy and water projects, as opposed to direct funding.

6.4.2. Whenever economically feasible, the Air Force should use third-party financing mechanisms to fund energy or water projects. Those projects should provide increased energy or water resilience, an acceptable rate of return, or improvements in energy and water infrastructure.

6.4.3. Prior to awarding a third-party contract, the central program management office for that contract (e.g., AFCEC for ESPCs) will conduct an evaluation to ensure the contract is in the Air Force's best interests to fund the project using third-party funds, as opposed to directly funding the project. **(T-1)**.

### 6.4.4. ESPCs and UESCs.

6.4.4.1. ESPCs and UESCs will be used when they are supported by robust business case analyses and are useful to meet Air Force energy goals. **(T-1)**.

6.4.4.2. The business case analysis should include appropriate community planning factors, the expected lifespan(s) of facilities to be improved, interest rates, technological risks, opportunity costs and risks and other appropriate business considerations.

6.4.4.3. AFCEC serves as the central Program Management Office for ESPCs and UESCs. AFCEC will centrally manage and oversee all ESPC and UESC projects, to include providing reviews and approvals for all stages of the projects and maintaining responsibility for budgets, schedules, and compliance requirements. **(T-1)**. SAF/IEE retains oversight of third-party performance contracts.

6.4.4.4. SAF/IEE will maintain an approval and cancellation process for ESPCs following submittal of the ESPC proposal to AFCEC via the Air Force Office of Energy Assurance. **(T-1)**.

6.4.4.4.1. Phase one decision point. AFCEC will validate installation commander concurrence with the potential scope effort. **(T-1)**. Validation shall include concurrence with impacted tenants. **(T-1)**. The installation commander will approve the project to move forward with a notice of opportunity and subsequent preliminary assessment. **(T-1)**.

6.4.4.4.2. Phase two decision points. The installation commander and AFCEC will review the preliminary assessment proposed scope. **(T-1)**. The installation commander will approve the project to move forward into the investment grade audit (IGA) or feasibility study. **(T-1)**.

6.4.4.4.3. Cancellation after the IGA. Should the installation commander recommend cancellation after the IGA occurs, the installation commander must provide a cancellation notification to SAF/IEE. **(T-1)**. The notification should include an explanation of level of effort, timeline, and detailed cause for cancellation. If the Air Force cancels viable projects after the IGA, the installation will not be authorized to select high return projects from an IGA report and accomplish those projects as independent government funded projects. **(T-1)**. The installation may pursue those if the cancellation is at the request of the energy services company.

6.4.4.5. All ESPCs and UESCs on Air National Guard installations should be coordinated with ANG CETSC prior to opportunity development (e.g., prior to the release of the notice of opportunity). This coordination should be conducted to ensure the projects are in line with ANG goals and priorities.

#### 6.4.5. Power Purchase Agreements.

6.4.5.1. Power Purchase Agreements (PPAs) are contract tools which enable private entities to install, own, operate, and maintain energy generation equipment on or near Department of the Air Force property (i.e., behind the meter). Under the agreement, the DAF will purchase electricity or thermal energy through a long-term contract with specified energy prices.

6.4.5.2. AFCEC serves as the central Program Management Office for PPAs, except for Air National Guard responsibilities.

#### 6.4.6. Enhanced Use Leases.

6.4.6.1. An enhanced use lease (EUL) is a real estate action designed to optimize Air Force resources and obtain value from “non-excess” capacity. AFI 32-9003, *Granting Temporary Use of Air Force Real Property*, provides instructions on such leases.

6.4.6.2. EULs can be used to develop on-site energy projects and can be used in combination with an ESPC, UESC, or PPA.

6.4.6.2.1. Projects which involve an enhanced use lease and yielding energy primarily for use by an installation should be executed as a PPA project, as opposed to an EUL.

6.4.6.2.2. Projects primarily yielding energy for third party off-take (or back to energy grid) use should be executed as EUL projects.

6.4.6.3. If a proposed lease involves a project related to energy production, the Air Force is required to obtain OSD certification prior to contract award that the project is consistent with all applicable and pertinent DoD energy policies, per 10 United States Code Section 2662. **(T-0)**. SAF/IEE will work with Air Force organizations to notify and obtain OSD certification. **(T-0)**.

#### 6.4.7. Utilities Privatization.

6.4.7.1. Utilities privatization is one method for modernizing and recapitalizing Air Force utility systems and should be managed in accordance with AFMAN 32-1061.

6.4.7.2. The Air Force, under the oversight of SAF/IEE, will prioritize privatization of systems that support critical missions, or where the system condition poses a risk to life, health, and safety. **(T-1)**.

### 6.5. Energy Resilience and Conservation Investment Program (ERCIP).

6.5.1. ERCIP is a subset of the Defense-Wide Military Construction Program, specifically intended to fund projects that improve installation energy and water resilience; contribute to mission assurance; conserve installation energy and water; and reduce related costs. The Program is funded through annual Congressional appropriations and administered by OSD, who establishes the overarching evaluation criteria. In advance of each fiscal year, the DAF should submit project proposals to OSD, who allocate the funding based on which projects OSD identifies are in the best interest of DoD. The DAF does not budget for these funds and is not guaranteed to have projects awarded.

6.5.2. Within the DAF, AFCEC serves as the central Program Management Office for ERCIP. AFCEC will centrally manage and oversee all ERCIP projects, to include providing reviews and approvals for all stages of the projects and maintaining responsibility for budgets, schedules, and compliance requirements. **(T-1)**. SAF/IEE retains oversight of all ERCIP projects.

6.5.3. AFCEC will issue annual guidance regarding the DAF timelines, processes, and requirements to request ERCIP funding. **(T-1)**. Installation commanders seeking ERCIP funding will submit proposed projects to AFCEC for evaluation. **(T-1)**. AFCEC will provide a ranked project list to SAF/IEE for approval and submission to OSD. **(T-1)**. Generally, AFCEC should:

6.5.3.1. Evaluate resilience-related projects on how they would enhance mission assurance, support mission critical functions, and address known vulnerabilities using the resilience attributes at [paragraph 6.2](#)

6.5.3.2. Evaluate installation energy and water conservation projects based on the expected savings-to-investment ratio, simple payback estimates, and the project's measurement and verification cost estimate.

6.5.4. AFCEC will strive to obligate 100 percent of ERCIP funds issued by OSD before the end of the third quarter in the fiscal year the DAF receives the funds. **(T-1)**.

6.5.5. ERCIP projects should support installation energy plans and ERCIP project nomination proposals should specifically identify the portion of the plan the project will support.

**6.6. Incentives and Rebates.** The Air Force is authorized to participate in utility incentive and rebate programs sponsored by third parties (electric utilities, independent system operators, and state agencies). These programs provide financial incentives or rebates to replace inefficient equipment with energy efficient equipment, or in the case of new construction, install high efficiency equipment.

**6.7. Energy Monitoring and Utility Control Systems.**

6.7.1. The Air Force, under guidance provided by AF/A4C, will utilize installation-wide energy monitoring and control systems to optimize the capabilities of the system to the fullest extent possible and identify potential resilience improvements and cost saving opportunities. **(T-0)**.

6.7.2. All new military construction and non-privatized family housing activities will include and utilize energy monitoring and utility control systems. **(T-0)**.

6.7.3. The systems will adopt the DoD-wide protocol and meet all cybersecurity requirements, and address energy monitoring and utility control system specifications. **(T-0)**.

**6.8. Non-Air Force Assets.** Energy and water projects developed or activities conducted by non-Air Force assets on an Air Force installation are governed by the separate host agreements in place. This is applicable only to those assets utilizing facilities not considered Air Force real property; however, it is not applicable to Air Force operated joint bases.

## Chapter 7

### EXTERNAL STANDARDS AND CERTIFICATIONS

**7.1. Overview.** Opportunities exist for the Air Force to meet external outside standards and certifications during and following the development of energy and water projects.

**7.2. External standards.** The Air Force will utilize accepted voluntary consensus and industry standards related to energy and water, unless the standard would result in a potential negative mission impact. **(T-1)**.

7.2.1. If there is an identified negative impact as a result of those standards, SAF/IEE, or the delegated organization, should work with OSD and DoD Components to develop the necessary Unified Facilities Criteria (UFCs), in accordance with DAFPD 32-10, *Installations and Facilities*, and Military Standard 3007G *Standard Practice Unified Facilities Criteria, Facilities Criteria And Unified Facilities Guide Specifications*.

7.2.2. UFCs are intended to focus on the technical criteria for planning, design, construction, sustainment, restoration, and modernization, and are not policy statements.

7.2.3. Should the Air Force mission requirements necessitate more stringent technical criteria beyond the UFCs, AFCEC will develop and publish those standards. **(T-1)**.

**7.3. Third Party Certifications.** The Air Force will not pursue voluntary third-party certifications for projects, management systems, installations, or any other efforts related to energy or water. **(T-1)**.

7.3.1. Air Force organizations should incorporate the relevant principles behind those certifications into their own approaches; however, the Air Force will not fund organizations, installations, or facilities to receive such designations. **(T-1)**.

7.3.2. This does not apply to projects funded by a third party where the certification would provide an economic benefit to the Air Force, or where such certifications are required by law or other Air Force policy.

JOHN W. HENDERSON, P.E.  
Assistant Secretary of the Air Force  
(Installations, Environment, and Energy)



**Attachment 1****GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

DAFPD 90-17, *Energy and Water Management*, 21 May 2020

DAFI 33-322, *Records Management and Information Governance Program*, 23 March 2020

DAFI 33-360, *Publications and Forms Management*, 7 August 2020

DoDI 4170.11, *Installation Energy Management*, 11 December 2009

Headquarters Air Force Mission Directive 1-38, *Deputy Chief of Staff of the Air Force for Logistics, Engineering, and Force Protection*, 1 April 2015

AFMAN 32-1061, *Providing Utilities to U.S. Air Force Installations*, 16 July 2019

AFI 32-1015, *Integrated Installation Planning*, 30 July 2019

AFI 24-302, *Vehicle Management*, 21 February 2020

AFI 32-9003, *Granting Temporary Use of Air Force Real Property*, 24 October 2018

AFI 90-1702, *Operational Energy*, 19 February 2019

Office of Management and Budget Circular A-11, *Preparation, Submission and Execution of the Budget*, 10 July 2020

Public Law 115-270, *America's Water Infrastructure Act of 2018*

10 United States Code Section 2662

10 United States Code Section 2911

DAFPD 32-10, *Installations and Facilities*, 20 July 2020

Military Standard 3007G, *Standard Practice Unified Facilities Criteria, Facilities Criteria And Unified Facilities Guide Specifications*, 1 November 2019

***Adopted Forms***

AF Form 847, *Recommendation for Change of Publication*

***Abbreviations and Acronyms***

**AF/A3**—Deputy Chief of Staff of the Air Force for Operations

**AF/A4**—Deputy Chief of Staff of the Air Force for Logistics, Engineering, and Force Protection

**AF/A4C**—Air Force Directorate of Civil Engineers

**AF/A4L**—Air Force Directorate of Logistics

**AF/A4S**—Air Force Directorate of Security Forces

**AFCEC**—Air Force Civil Engineer Center

**AFIMSC**—Air Force Installation and Mission Support Center

**AFMAN**—Air Force Manual

**ANG**—Air National Guard

**CETSC**—Civil Engineering Technical Service Center

**DAF**—Department of the Air Force

**DAFI**—Department of the Air Force Instruction

**DAFPD**—Department of the Air Force Policy Directive

**DoD**—Department of Defense

**ERCIP**—Energy Resilience and Conservation Investment Program

**ESPC**—energy savings performance contract

**EUL**—enhanced use lease

**OSD**—Office of the Secretary of Defense

**O&M**—operations and maintenance

**PPA**—power purchase agreement

**SAF/IE**—Assistant Secretary of the Air Force for Installations, Environment and Energy

**SAF/IEE**—Deputy Assistant Secretary of the Air Force for Environment, Safety, and Infrastructure

**SAF/IEI**—Deputy Assistant Secretary of the Air Force for Installations

**UESC**—utility energy service contract

**UFC**—Unified Facilities Criteria

### *Terms*

**Black Start Exercise**—An exercise in which delivery of energy provided from off an installation is terminated before backup generation assets on the installation are turned on.

**Control System**—A system of digital controllers, communication architecture, and user interfaces that monitor, or monitor and control, infrastructure and equipment.

**Data Center**—A closet, room, floor or building for the storage, management, and dissemination of data and information. Such a repository houses computer systems and associated components, such as database, application, and storage systems and data stores.

**Enabling System**—Tools, infrastructure, or actions to provide the means for delivering a capability into service, keeping it in service or ending its service, and may include those processes or products necessary for developing, producing, testing, deploying and sustaining the system.

**Energy**—Any usable power, including but not limited to electricity and power produced from coal, petroleum products, steam, natural gas, propane, military operational fuels and propellants, alternative fuels, and alternative and renewable energy sources, such as solar, wind, geothermal, and nuclear.

**Energy Resilience**—The ability to anticipate, prepare for, and adapt to changing conditions and withstand, respond to, and recover rapidly from energy disruptions.

**Expeditionary Energy (sometimes referred to as Contingency Energy)**—All energy used at an installation in an expeditionary location.

**Expeditionary Location**—A base of operations where deployed U.S. Air Force organizations (wings, groups, squadrons or subsets of those) are committed to a joint operation.

**Facility Energy**—Energy consumed in any building, structure, or other property (including any applicable fixtures) owned or operated by, or constructed or manufactured and leased to, the federal government where the majority of energy use is devoted to the heating, cooling, lighting, ventilation, or to service the water heating energy load requirements of the facility.

**Installation Energy**—The energy used to power all facilities located on military installations and enduring locations, as well as fuel for the non-tactical fleet vehicles used at those locations and the energy consumed in manufacturing, maintenance, and other processes.

**Maintenance**—The activities undertaken to assure that equipment and energy using systems operate effectively and efficiently and is defined as all action taken to retain materiel in or to restore it to a specified condition; all supply and repair action taken to keep a force in a condition to carry out its mission; the routine recurring work required to keep a building or asset in such condition that it is continuously utilized, at its original or designed capacity and efficiency, for its intended purpose; the function of keeping command, control, communications, and computers items of equipment in, or restoring them to, serviceable condition. Examples include maintenance conducted at air logistics complexes and flight line maintenance.

**Military Operations**—Operations generally involve military action or the accomplishment of a strategic, operational, or tactical, service, training, or administrative military mission. Examples include: stability operations; civil support; foreign humanitarian assistance; recovery; noncombatant evacuation; peace operations; combating weapons of mass destruction; chemical, biological, radiological, and nuclear consequence management; foreign internal defense, counterdrug operations; combating terrorism; counterinsurgency; and homeland defense.

**Mission Assurance**—A process to protect or ensure the continued function and resilience of capabilities and assets – including personnel, equipment, facilities, networks, information and information systems, infrastructure, and supply chains – critical to the performance of DoD mission essential functions in any operating environment or condition.

**Operational Energy**—Energy required for training, moving, and sustaining military forces and weapons platforms for military operations. The term includes energy used by tactical power systems, generators, and weapons platforms.

**Operational Technology**—Programmable systems or devices that interact with the physical environment (or manage devices that interact with the physical environment). These systems/devices detect or cause a direct change through the monitoring and/or control of devices, processes, and events. Examples include industrial control systems, building management systems, fire control systems, and physical access control mechanisms.

**Primary Power Generation System**—The source of electrical power that usually supplies the installation on day-to-day, non-emergency basis. The system may be a Government-owned generating plant or a public utility power system.

**Process Energy**—Energy consumed in support of manufacturing, industrial, or commercial processes, other than conditioning spaces and maintaining comfort and amenities for the occupants of a building.

**Scoring**—The process of estimating the change in Government spending and collections resulting from enacted or proposed legislation, compared to what would happen in the absence of that legislation. These estimates are prepared both to inform policy makers of the budgetary effects of proposed legislation, and to inform congressional and statutory budget enforcement procedures.

**Sustaining (Sustainment)**—The provision of personnel, logistics, and other support required to maintain and prolong operations or combat until successful accomplishment or revision of the mission or of the national objective. The activities of the air logistics complexes are considered non-operational, except when in direct support of military operations or training.

**Tactical Vehicle**—A motor vehicle designed to military specification or a commercial design motor vehicle modified to military specification to meet direct transportation support of combat or tactical operations, or for training of personnel for such operations. The U.S. Air Force uses commercial design vehicles in tactical roles due to the on-pavement environment of their flightlines.

**Task Critical Asset**—An asset that is of such extraordinary importance that its incapacitation or destruction would have a serious, debilitating effect on the ability of one or more DoD or OSD components to execute the capability or mission-essential task it supports. Task critical assets are used to identify defense critical assets.

**Utilities**—Facility support commodities including electrical power, natural gas, water, and wastewater treatment, or infrastructure for generation, supply, distribution, collection, or treatment of these commodities.

**Utility System**—Any system for the generation and supply of electric power, for the treatment or supply of water, for the collection or treatment of wastewater, and for the supply of natural gas. For the purpose of this definition, supply shall include distribution. A utility system includes equipment, fixtures, structures, and other improvements utilized in connection with the systems described above, as well as the easements or rights-of-way associated with those systems.