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ENERGY,
INSTALLATIONS
AND ENVIRONMENT

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MEMORANDUM FOR ASSISTANT SECRETARY OF THE ARMY (INSTALLATIONS, ENERGY AND ENVIRONMENT)
ASSISTANT SECRETARY OF THE NAVY (ENERGY, INSTALLATIONS AND ENVIRONMENT)
ASSISTANT SECRETARY OF THE AIR FORCE (INSTALLATIONS, ENVIRONMENT AND ENERGY)
DIRECTORS OF THE DEFENSE AGENCIES
DIRECTORS OF THE DOD FIELD ACTIVITIES

SUBJECT: Installation Energy Plans

The Department of Defense (DoD) continues to make progress toward reaching our energy goals with installation energy efficiency efforts contributing to DoD avoidance of approximately $1 billion in new operating costs since 2009. In today's resource constrained environment, the Department must continue to find creative ways to drive additional efficiencies in energy use and reduce costs. A larger coordinated effort is needed to gain synergy between current energy initiatives and future planned energy projects to maximize energy use and cost reductions. By leveraging improved access to meter and energy data, we can drive a more integrated and systematic approach to energy management through informed energy planning. Effective immediately, it is the Department's policy to require installation-level energy plans for all DoD Components to support this concept.

Currently, DoD Components are updating their installation master plans to meet the requirements of the Under Secretary of Defense (Acquisition, Technology and Logistics) memorandum, *Installation Master Planning*, of May 28, 2013, by October 1, 2018. The Installation Energy Plan (IEP) should be an integral part of this effort. Thus, within one year of the date of this memorandum, each DoD Component will brief my office on their prioritized plan for the implementation of this policy. Within three years of the date of this memorandum, energy plans, signed by the base commander, should be completed for installations that together compose 75 percent of each component's installation energy consumption. Attachments 1 and 2 provide a high-level overview of the suggested IEP development process and a general reference list of DoD energy management and master planning guidance documents.

Additionally, the Deputy Assistant Secretary of Defense (Installation Energy) shall establish metrics to evaluate the implementation of this policy. This policy and developed metrics will be incorporated into Unified Facilities Criteria under Series 2 Master Planning criteria.

I appreciate your support of the installation energy planning process, and your commitment to reducing energy usage and improving our installations for the long term. My point of contact is CDR Walter Ludwig, at 571-372-6859 or walter.s.ludwig.mil@mail.mil, ODASD(IE).

Peter Potochney
Deputy Assistant Secretary of Defense (Basing)
Performing the Duties of the Assistant Secretary of Defense
(Energy, Installations, and Environment)

Attachments:
As stated

Attachment (1) – Installation Energy Plan Overview

Introduction

An installation energy plan (IEP) is an integration of applicable installation- and higher-level strategic guidance, plans and policies into a holistic roadmap that enables the installation to work constructively towards its goals in energy efficiency, renewable energy and energy resilience. These goals should consider installation mission, existing master plans, particular circumstances, priorities, opportunities and constraints, and should include:

1) Meeting projected future energy and water demand to achieve mission assurance on military installations.
2) Achieving goals set by Congress, the White House (see Executive Order 13693), DoD or Components in energy use intensity and other energy efficiency, greenhouse gas (GHG), renewable energy, energy resilience, water efficiency and alternative fuel.
3) Lowering total operating costs.
4) Addressing concerns which are hindering stakeholder cooperation on energy and water management including industrial control systems (ICS) and cybersecurity.

Overall, an IEP should direct a structured and effective approach to selecting, prioritizing, sequencing and implementing energy projects and programs that ultimately result in better long-term installation energy performance. Installations should work with all tenant organizations and mission owners to develop a holistic energy plan with buy-in from all parties. Large tenants or mission owners may develop their own energy plans, signed by their own commander, to address their specific mission. These plans shall be aligned with and referenced or directly incorporated into the IEP.

10 U.S.C. § 2911b (1) and (2) requires the Secretary of Defense and each military department and Defense Agency to develop comprehensive master plans for the achievement of DoD energy performance goals. This has been accomplished through the development of energy strategic plans by each component. IEPs should be a compatible extension of these strategic plans, and incorporate installation, Component or higher-level energy guidance, such as DoDI 4170.11, Installation Energy Management, UFC 2-100-01 *Installation Master Planning*, UFC 1-200-02 *High Performance and Sustainable Building Requirements* and others as shown in enclosure 2.

Many elements of the UFC approach and content will apply to IEPs. An IEP should embody the principles identified in UFC 1-200-02 Chapter 6 Sustainable Installations. Paragraph 6-1 states:

> Projects are not stand alone initiatives but are part of a comprehensive sustainable installation master plan that defines the holistic vision for planning and development of the installation. The value of planning is to look beyond the individual project to create synergies within the larger area, campus, neighborhood and the entire installation. The master plan provides the vision, goals and objectives for sustainable base development. It sets specific planning and site parameters that all projects must follow. It also provides documentation of the collaborative process involving stakeholders [and] functional advocates.

IEPs are living documents, created for the purpose of identifying, tracking, and adjusting the projects and initiatives that will advance the energy vision and goals of the installation. Although

the IEP development process can be complex, it ultimately should produce a relevant and executable document. Installation energy managers (IEMs) should seize the opportunity presented by the development process to think strategically about how these projects and programs are interconnected and organized.

The next section provides an approach to this development process that IEMs and Facility Planners should use as a guide, adapting to the specific conditions and requirements of their installations.

Development Process

IEPs should be developed in coordination with other installation plans. In particular, every effort should be made to integrate the IEP development process with the process for developing master plans under the UFC 2-100-01 requirement. While the IEP must be compatible with the installation-level master plan and energy conservation measures should be integrated into the master planning process, the IEP should be either a stand-alone document or a severable product within the master plan.

In addition, IEPs should identify National Environmental Policy Act (NEPA) requirements so that NEPA processes can run concurrently with other project planning activities. NEPA analyses for IEPs shall include, at a minimum, discussions of energy requirements, conservation potential, mitigation measures and natural or depletable resource requirements for alternatives.

IEPs should be continuously maintained, incorporating projects' lessons learned and synchronizing with the annual energy and water reporting process when a high volume of relevant information is being collected. This allows the confirmation of predicted savings, adjustment of projects' timing, costs and benefits, re-setting of baselines or other changes.

Energy stakeholder involvement is critical to IEP development and ensures that the final product has the endorsement of senior staff and functional groups who will play an important role in its execution and the approval of the installation commander. The IEM should establish a stakeholder group that can be consulted during the plan's development, provide data and other input and assist in outreach. The group should include the installation commander and representatives from internal stakeholders such as senior staff, mission owners, facilities management and engineering, contracting, information technology, environmental, safety and health, and public affairs. The established stakeholder group should seek input from and consult with external groups such as the installation's servicing utilities, Independent System Operators (ISOs), demand response partners, community leaders and other entities who play a critical role in the installation's overall operations. Any external, non-Federal entities should not be included in the established stakeholder group and should not take a direct, active role in the creation of the IEP due to Federal Advisory Committee Act concerns. IEMs should use existing installation stakeholder groups, such as Installation Planning Boards (IPB), when they exist.

IEP development should follow six general phases and take place over a sufficient time period to gather the most important data and input from the group. The IEM should adapt this approach in a way that fits with the installation's priorities and culture. This process is intended to generally align with the planning phases identified in UFC 2-100-01.

Phase 1: Identify the team, tasks, deliverables and goals: In this phase, the IEM identifies and and meets with the stakeholders to draft the energy planning vision and establish energy- and water-related goals that support the installation's mission. Goals should include those items identified in the introduction of this document as well as considerations such as site and source energy goals, peak thermal and electrical loads and installation-specific constraints. Visioning and goal setting sets the framework for the entire IEP. Therefore the IEM and stakeholder team during this process should complete a document review of existing installation plans to obtain a broad understanding of base development, its vision and goals and be able to build an energy plan vision and goals synchronized with overall base development.

The group should identify the requirements and expected outputs of the plan and the development timeline. The stakeholder group should be small enough to be productive while large enough to bring the right balance of perspectives and expertise. IEMs are encouraged to include the largest energy- and water-consuming mission owners and tenants and coordinate the IEP with any energy plans they may already have or projects currently underway. This phase is also an opportunity to obtain top-level support for the plan and educate leadership on its importance to the installation's mission and energy goals.

Phase 2: Establish baseline and future base case: In this phase, the team develops a snapshot of the installation's energy use, missions and tenants. This snapshot should be based on high- to mid-level data on resource consumption, trends, goals and profiles of energy and water use over periods of months and years to reveal trends. The baseline should also include:

- A description of the nature, condition and future state of the installation's key energy infrastructure as well as any major changes anticipated by the installation that would influence energy consumption;
- An evaluation of the existing state of utilities infrastructure, including water distribution;
- A list of all recently completed and on-going energy projects to provide a history of energy investments to date;
- A list of critical mission operations on the installation that require a continuous supply of energy in the event of an energy disruption or emergency (the installation's critical energy requirements.)

The base case is a future "business as usual" scenario that includes existing and planned facilities and excludes facilities planned for demolition. It is important to identify the cost of implementation of the base case as well as changes in site, source energy use, energy cost and GHG compared to the baseline. The base case energy use can be higher or lower than in the baseline due to: new construction, consolidation, demolition, building repurposing, change of mission and changes to utility services or rates. Any currently planned and programmed energy projects should be included in the base case.

At the end of this phase, the team should have a common understanding of the current energy state of the installation that will support a gap analysis and development of major alternatives for the installation's future energy state. Phases 1 and 2 generally align with the "Identification" phase of UFC 2-100-01.

Phase 3: Analyze gaps and alternative scenarios: In this phase, the team compares the current state of energy consumption and management against the installation's base case, vision and

goals and develops possible alternative scenarios for addressing the gaps. The analysis should quantify the energy savings needed to meet goals and produce savings. The analysis will reveal missing data and information gaps as well as the constraints and opportunities inherent in each alternative scenario. The studies or data collection efforts needed to fill identified gaps should be included in the projects plan developed in Phase 4.

A handful of promising alternative scenarios shall be analyzed in depth, with a comparative analysis of alternatives against the baseline and base case, considering parametric cost, savings potential, implementation concerns, timing and possible funding sources. Promising alternatives will incorporate a balance of energy production, distribution infrastructure and demand reduction activities that will meet the installation's energy goals at the lowest life cycle cost. In the case where no proposed scenarios cost effectively achieve goals, the team should revaluate alternatives and goals to make adjustments where appropriate and necessary.

At the end of Phase 3, the IEM and stakeholders should have a strategic view of the gaps that exist and available alternatives. Phase 3 generally aligns with the "Evaluation" Phase of UFC 2-100-01.

Phase 4: Develop and sequence projects and activities:

Based on analysis performed in phase 3, the stakeholders group should recommend a preferred scenario to the installation commander. Upon the installation commander's choice of scenario, the team can then develop an implementation strategy and energy project execution plan. The implementation strategy should include short-, medium- and long-term steps necessary to fully realize the stated goals. The plan should identify specific projects to fill the gaps identified in phase 3 and coordinate how and when the projects should be implemented. Existing audits and the installation's metering data should inform the development of these projects whenever possible. This phase should also include life cycle cost analysis, project documentation development, identification of potential funding sources and development of measurement and verification (M&V) plans. The output of this phase will be a set of projects and studies, organized and sequenced to reflect tenant, mission owner and stakeholder priorities and schedules. When adopted by the installation commander and executed, it will result in significant and cost-effective reductions in energy and water consumption by the installation.

Projects are not necessarily construction and repair projects; they may also include studies, assessments and project enablers such as: management process improvements, audits, water balance assessments, deploying meters and meter data management systems, commissioning and retrocommissioning, behavior change programs, awareness campaigns and training. This phase generally aligns with both the "Evaluation" and "Implementation" phases of UFC 2-100-01.

Phase 5: Assemble, review and finalize document: In this phase, the team collaborates to write the IEP. The narrative should be clear and concise, readable by a range of audiences and include an executive summary. Supporting documentation and detailed technical information should be contained in appendices. The document should establish a feedback process to absorb lessons learned as projects and other activities are executed. The most dynamic and frequently updated section of this document should be the Implementation Plan which identifies the projects that embody the energy plan. The document should also include communications and coordination plans that establish roles, responsibilities and accountability, leveraging the stakeholder group to ensure the smooth implementation of projects. Special care should be taken to coordinate the

information technology aspects of energy and water management systems with the appropriate cybersecurity stakeholders. Part of the finalization process includes the installation commander's review, approval, and signature on the final document. This phase generally aligns with the "Implementation" phase of UFC 2-100-01.

Phase 6: Execution and maintenance of the IEP: After completion of the initial document, the team shall begin using it to drive execution of energy projects and initiatives. During this phase, the IEM will track project execution timelines, ensure that M&V plans are followed and utilize the feedback mechanisms developed in Phase 5 to keep the Implementation Plan up-to-date as projects are completed and new projects and activities are identified. The IEM should continue to regularly meet with the stakeholder group to keep them informed and actively involved. The IEM may also include a separate, more dynamic plan which is continuously updated as projects are developed and executed. This phase generally aligns with both "Implementation" and the "Execution and Monitoring" phases of UFC 2-100-01.

Conclusion

The installation energy planning process is one of continuous improvement. As a living, data-driven document, the IEP should be flexible, open to change, and revisited regularly. At the end of the process outlined above, the IEMs and their team should have a plan that has been approved and signed by the base commander, and buy-in and active support of the stakeholder group. It should be recognized as the primary director of how the installation will meet energy goals, subject to overlapping and sometimes competing priorities of different missions and entities on the installation. The IEP should be treated as a unifying document that coordinates and drives the installation towards its desired future energy state.

Attachment (2) – Energy Management and Master Planning Guidance Documents

Note, this list may not be complete, but it provides a general reference list for current DoD energy management and master planning guidance documents.

Department of Defense

UFC 2-100-01 Installation Master Planning

UFC 1-200-02 High Performance and Sustainable Building Requirements

DoDI 4170.11 Installation Energy Management

DoDD 4180.01 Department of Defense Energy Policy

Guiding Principles for Federal Leadership in High-Performance and Sustainable Buildings

Executive Order (EO) 13693, *Planning for Federal Sustainability in the Next Decade*, March 19, 2015.

National Environmental Policy Act (NEPA) of 1969 (NEPA) (Public Law 91-190, 42 United States Code (U.S.C.) §§4321 through 4347

OUSD (I&E) Memorandum, *Utilities Metering Policy, April 16, 2013.*

Navy and Marine Corps

Department of the Navy's Energy Program for Security and Independence (2010)

Department of the Navy Strategy for Renewable Energy (2012)

OPNAV Instruction 4100.5E Shore Energy Management (2012)

Marine Corps Installations Command Installation Energy and Water Strategy (2013)

Air Force

Air Force Energy Strategic Plan (2013)

Air Force Energy Plan (2010)

Air Force Policy Directive (AFPD) 32-10, Air Force Installations and Facilities (2010)

Air Force Instruction (AFI) 32-7062, Comprehensive Planning (2013)

Air Force Environmental Impact Analysis Process (EIAP) (32 CFR §989)

Army

Army Energy Sustainability and Security Strategy (2015)

Army Energy Strategy for Installations (2005)

Army Regulation (AR) 210-20 Real Property Master Planning for Army Installations (2005)

Defense Health Agency

MHS O&M Guidelines for Energy Management

Defense Logistics Agency

DLA Energy and Water Implementation Plan (2011)