DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT SECRETARY OF THE ARMY
INSTALLATIONS, ENERGY AND ENVIROMENT
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WASHINGTON. DC 20310-0110

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MEMORANDUM FOR: SEE DISTRIBUTION

SUBJECT: Sustainable Design and Development Policy Update (Environmental and Energy Performance)

1. References.

a. Memorandum, DASA (I&H), 8 Jul 10, subject: Sustainable Design and Development Policy Update (Environmental and Energy Performance)

b. Memorandum, Office of the Under Secretary of Defense, DoD Implementation of Storm Water Requirements under Section 438 of the Energy Independence and Security Act (EISA), 19 Jan 10.

c. EPA 841-B-09-001, Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act, Dec 09.

d. ANSI/ASHRAE/USGBC/IES Standard 189.1-2009, Standard for the Design of High-Performance Green Buildings (Except Low-Rise Residential Buildings), American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) and U.S. Green Building Council, Dec 09.

e. DoDI 4170.11, Installation Energy Management, 11 Dec 09.

f. Executive Order 13514, Leadership in Environmental, Energy, and Economic Performance, 05 Oct 09 (EO 13514).

g. DA PAM 420-1-2 Army Military Construction and Nonappropriated Funded Construction Program Development and Execution, 2 APR 09.

h. AR 420-1, Army Facilities Management, 28 Mar 09.

i. AR 210-20, Real Property Master Planning for Army Installations, 16 May 05.

j. Memorandum, DASA (I&H), 27 Apr 07, subject: Sustainable Design and Development Policy Update – Life-Cycle Costs.

k. Executive Order 13423, Strengthening Federal Environmental, Energy, and Transportation Management, 26 Jan 07 (EO 13423).

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l. Energy Independence and Security Act (EISA) of 2007, 19 Dec 07 (EISA07).

m. Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings, Memorandum of Understanding (MOU), 06 Mar 06.

n. Energy Policy Act of 2005, 08 Aug 05 (EPAct 05).

o. Presidential Memorandum, Environmentally and Economically Beneficial Practices on Federal Landscaped Grounds, April 26, 1994..

2. Purpose. The purpose of this memorandum is to update the sustainable design and development (SDD) policy for Army Facilities; this supersedes the previous policy dated July 8, 2010. (reference 1.a).

3. Applicability.

a. This policy applies to all facility construction activities in the United States, its territories, and overseas on permanent Active Army installations, Army Reserve Centers, Army National Guard Facilities, and Armed Forces Reserve Centers, regardless of funds source. This policy will apply to OCONUS construction activities to the extent practical considering mission objectives and Host Nation agreements.

b. For purposes of this policy "facility" means any building, installation, structure, or other property (including any applicable fixtures) owned, operated by, or constructed or manufactured and leased to the Department of the Army.

c. The DASAI&H may approve exceptions to this policy, beyond those included herein when the Garrison Commander believes compliance with the policy would adversely affect mission performance, security or Antiterrorism/Force Protection (AT/FP) requirements, health, safety, or welfare. Any exception shall only apply to the specific policy requirements in conflict. Any exceptions to this policy shall be documented with reference to the specific requirements in conflict and included in the project documentation.

4. Objectives. EPAct05, EISA07, EO 13423, and EO 13514 are changing the way we approach efficient design of Army facilities. The Army will apply these statutes and orders by incorporating the high performance building requirements of EO 13514, while considering the environmental, economic, and community factors that influence Army activities. Planning and engineering studies in accordance with AR 420-1 shall incorporate SDD principles to minimize water consumption and optimize energy efficiencies and performance. The feasibility to include renewable energy shall be investigated and documented for each project, starting with installation master planning and project planning and development activities. New buildings, structures, and major

renovations shall be planned, programmed, budgeted, designed and built to conform to the five guiding principles in the Federal Leadership in High Performance and Sustainable Buildings Memorandum of Understanding (available at http://www.fedcenter.gov), by following guidance as detailed in ASHRAE Standard 189.1, and by achieving a minimum Silver level through the U.S. Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED) green building rating system (or equivalent overseas third-party green building rating system). To accomplish these objectives the following policy will begin to be incorporated starting with FY13 military construction program and FY13 Sustainment, Restoration, and Modernization (SRM) program.

5. Policy. All facility construction projects subject to this policy shall achieve the following requirements.

a. Siting. Project planners and Master Plan development teams shall review and evaluate ASHRAE Standard 189.1 Sec 5 "Mandatory Provisions" as a part of all project site selection activities. Proposed project sites that meet the criteria for "Allowable Sites" shall be given preference over non-qualifying sites. Sites meeting the criteria for "Prohibited Development Activity" shall be avoided unless an exception is approved. Site selection shall be documented with respect to compliance with this policy and included as a part of the project documentation. Exceptions: Site preference is excepted for facilities typically sited in remote locations due to their function, such as field training facilities, waterway or flood control facilities, observation points, etc.

b. Energy Efficiency. All new construction projects will be planned, programmed, budgeted, designed, and built to achieve reduced energy consumption at or below the levels specified in ASHRAE Standard 189.1 Sec 7. Exceptions: The Renewable Energy components of ASHRAE Standard 189.1 Sec 7 may not be practical on all installations or on all projects. Compliance shall be to the extent project funds and technology allows. On-site renewable energy requirements in ASHRAE Standard 189.1 Sec 7 may be aggregated and met on an installation-wide or program-wide basis. These renewable energy requirements will be planned for implementation beginning with the FY15 new construction program. The Renewable Energy feasibility and compliance strategy shall be included as a part of the project design analysis documentation. This policy does not apply when the purchase of renewable energy is not feasible. The purchase of Renewable Energy Certificates (RECs) will not be used to implement guidance contained in this policy.

c. Cool Roofs. Cool Roof design strategies will be selected and incorporated into new construction and roof replacements considering the climatic region and the thermal loads of the building following guidance as detailed in ASHRAE Standard 189.1 Sec 5. Because inappropriate use of cool roofs in colder regions may have a negative

effect on energy performance, an engineering analysis on the suitability of cool roofs will be performed on a case-by-case basis.

d. Metering. In accordance with AR 420-1, para 22-15a (5), and following guidance as detailed in ASHRAE Standard 189.1 Sec 7, advanced utility monitoring shall be installed on all MILCON projects and renovation and energy projects with programmed project costs of $200,000 or more. The monitoring devices will collect energy consumption data for each energy supply source to the facility, including gas, electricity, and district energy. The measurement devices shall have the capability to automatically communicate the energy consumption data to a data acquisition system. At a minimum, measurement devices shall provide daily data and shall record hourly energy profiles. Such hourly energy profiles shall be capable of being used to assess building performance at least monthly. The data acquisition system shall be capable of electronically storing the data from the measurement devices and other sensing devices, for a minimum of 36 months, and creating user reports showing hourly, daily, monthly, and annual consumption. This will allow the Army to more effectively monitor, manage and maintain energy systems at their optimal performance levels, collect renewable energy generation and performance data, and compare performance across facilities and installations. Buildings not meeting the criteria for required metering will incorporate lower-cost energy monitors when cost effective over the life cycle of the building following the monitoring guidance as detailed in ASHRAE Standard 189.1 Sec 7.

e. Solar Hot Water Heating. All new construction projects with an average daily non-industrial hot water requirement of 50 gallons or more, and located in an area shown on the NREL solar radiation maps (http://www.nrel.gov/gis/solar.html) as receiving an annual average of 4kWh/m2/day or more will be designed to provide a minimum of 30 percent of the facility's hot water demand by solar water heating. Waste heat harvesting, integrated co-generation systems, or a combination thereof may be used in lieu of solar water heating where they achieve equivalent energy savings, as documented in the project's design analysis and commissioning analysis.

f. Storm Water Management. Facility construction projects will comply with EISA07 Section 438 (42 U.S.C. §17094), when applicable, using DoD Policy on Implementation of EISA07 Section 438 (reference 1.b), and consistent with the U.S. Environmental Protection Agency's *Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under EISA Section 438* (December 2009) (http://www.epa.gov/owow/nps/lid/section438/) (reference 1.c.). All master planning, project development and project site planning should follow guidance as detailed in ASHRAE Standard 189.1 Sec 5, and incorporate low impact development (LID) criteria, maximize use of the existing topography including slope, hydrology, flora and soils, and minimize site clearing and soil grubbing activities to the greatest extent possible.

g. Indoor Water Consumption. Facility construction projects shall employ strategies that in aggregate use a minimum of 30 percent less potable water than the indoor water use baseline calculated for the building. The indoor water use baseline shall be calculated based on the use of fixtures meeting the manufacturing performance requirements in the Energy Policy Act of 1992. Project development and budgeting along with design and fixture selection should follow guidance as detailed in ASHRAE Standard 189.1 Sec 6, and focus on using the most current, available technologies that minimize consumption, with the following exception: Public lavatory faucets shall deliver a minimum flow rate of 0.5 gallon per minute (gpm) when tested in accordance with ASME A112.18.1/CSA B125.1.

h. Outdoor Water Consumption. Facility construction projects shall use water efficient landscape and irrigation strategies, including xeriscaping, rainwater retention, water reuse, and recycling, to reduce outdoor potable water consumption by a minimum of 50 percent over that consumed by conventional means (plant species and plant densities) following guidance as detailed in ASHRAE Standard 189.1 Sec 6, and in the 1994 Presidential Memorandum "Environmentally and Economically Beneficial Practices on Federal Landscaped Grounds" (reference 1.o). The outdoor water consumption levels for conventional means and for water efficient strategies shall be determined and documented during the project scoping and project design phases.

i. Commissioning, Measurement and Verification. Facility construction projects will use total building commissioning practices, tailored to the size and complexity of the building and its system components in order to ensure that design requirements / specifications are met during construction. Performance of building components and systems will be verified a minimum of one year after beneficial occupancy. Enhanced commissioning process activities must be planned, budgeted, and specified to be completed for the building envelope, storm water management systems, water treatment systems, and information technology systems.

j. LEED Certification

(1) New Construction. Starting with the FY 13 military construction program, all vertical construction projects meeting the Minimum Program Requirements (MPRs), or having minimum characteristics set by the USGBC, except Family Housing will incorporate sustainable design principles into site selection, design and construction. All such construction will be certified at the LEED-NC/MR SILVER level or higher from the Green Building Certification Institute (GBCI) and will be built following guidance as detailed in ASHRAE Standard 189.1. The definitions and guidance on the MPRs are provided in a document, titled Supplemental Guidance, available on the USGBC website (http://www.usgbc.org/DisplayPage.aspx?CMSPageID=2138). Vertical construction not meeting MPR thresholds and horizontal construction (e.g., ranges,

roads, and airfields) will be designed and built to incorporate the maximum LEED or equivalent sustainable design features available at the site but will not require GBCI certification.

(2) Family Housing. Starting with the FY13 military construction program, all Army Family Housing new construction residential housing will be certified at the LEED for Homes SILVER level or higher from the GBCI or Energy Star Qualified New Homes, or will be designed to achieve energy consumption levels 45% below the baseline set by IECC 2009.

(3) Existing Buildings. Starting with FY13 funded projects, all comprehensive building renovations will achieve GBCI certification at the LEED-NC/MR Silver level or higher and follow guidance detailed in ASHRAE Standard 189.1. For purposes of this policy, comprehensive building renovations are defined as changes to a building's envelope, infrastructure, equipment, and systems that provide significant opportunities for substantial improvement in the sustainable design elements of the building, including energy efficiency. For all other building renovation projects this policy only applies to the portions of the building or building systems that are being renovated. These renovations shall incorporate LEED Silver level features but are not required to produce full documentation or receive certification.

k. Life-Cycle Cost Analysis (LCCA). The designer of record shall perform LCCA on major building systems, structural, mechanical, electrical, and energy efficiency measures. This analysis will conform to 10 CFR Part 436, Subpart A Methodology and Procedures for Life Cycle Cost Analyses and will be documented as part of the basis of design. Any of the four methods referenced in the regulation may be chosen to develop the project's scope and budget .

l. Contracting. All projects using the design/build procurement method will include the following in the Request for Proposal (RFP) requirements: LEED assessment, documentation, submission, and GBCI certification at a minimum level of LEED Silver, in conformance with guidance detailed in ASHRAE Standard 189.1 and this policy as described herein. Selection boards will give special consideration to a proposal's ability to comply with this policy when making a selection based on best value. For design-bid-build (D-B-B) contracts, both design-phase contracts and construction-phase contracts shall include requirements to ensure all buildings are designed and built to achieve full GBCI certification at a minimum level of LEED Silver, including all required documentation, submission, and coordination required, and be designed following guidance detailed in ASHRAE Standard 189.1 and this policy as described herein.

m. Programming. The DD Form 1391 development process shall be updated to include the full estimated costs associated with achieving this policy and EPAct 05,

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EISA07, EO13423 and EO13514 compliance. If the full cost of compliance for a particular project is undetermined, it will initially be programmed at a minimum of 2 percent of primary facility cost. Any funds programmed specifically for compliance with these statutes as a DD Form 1391 line item shall not be used for purposes other than sustainability and/or energy efficiency.

6. The Army's commitment to sustainable design and development extends beyond construction or renovation. Building performance monitoring and analysis should be conducted throughout the life-cycle of the facility to ensure that performance problems are identified and corrected in a timely manner. Operation and maintenance procedures, to include janitorial services, should be adjusted as necessary to meet the DoD and Army sustainability policies and objectives.

7. Conclusion. High-performance buildings are critical to cost effective life cycle management of our infrastructure and national energy security. The Army must continue to develop and implement sustainability objectives for our facilities, installations, and infrastructure to meet energy security and independence goals. I appreciate your support in the implementation of this policy.

Katherine Hammack
Assistant Secretary of the Army
(Installations, Energy and Environment)

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