



**US Army Corps
of Engineers®**

ENGINEERING AND CONSTRUCTION BULLETIN

No. 2016-31

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SUBJECT: Verification of Building Performance

CATEGORY: Directive and Policy

1. References:

- a. Memorandum, ASA (IE&E), [Sustainable Design and Development Policy Update](#), 16 Dec 13
- b. Department of Army Pamphlet 420-11, [Facilities Engineering Project Definition Work Classification](#), 18 Mar 2010

2. **Purpose.** The purpose of this Engineering and Construction Bulletin (ECB) is to provide direction and guidance for verification of building performance regarding energy savings expected as compared with energy savings being achieved. Verification is to be performed concurrent with post occupancy phase inspections. This ECB is a re-issuance of ECB 2014-23 with the same subject to extend its expiration. This ECB is mandatory on all military-funded projects Program Year 2015 and beyond; and to the extent practical for projects in progress.

3. **Background.** The U.S. Army Corps of Engineers (USACE) is a technical leader in engineering solutions worldwide; committed to advancing the quality of our built environment while maximizing opportunities for our customers. To further the Corps' effectiveness in delivering sustainable and energy efficient solutions defined by reference a., we must acquire knowledge of how our built facilities are performing. USACE designs to achieve a prescribed level of energy savings and traditionally have not verified if that expectation is achieved. The processes embedded within this ECB are meant to establish the minimum standards of verification having full knowledge of the limited and competing uses of project resources. Our intent through verification is to understand the level of building performance and to provide this information back to the user, designer or builder to make corrections as appropriate. Our ultimate goal in establishing this feedback loop is to learn and potentially identify project deficiencies and to use this information to make the next project better.

4. **Policy.** Verification of energy savings will be achieved by analysis of the building meter(s) trend log data or manual meter readings, as required to collect energy (electric, gas, etc.) data for the building, during the post occupancy phase inspection process. The Construction Project Engineer must make prior arrangements with the Department of Public Works (DPW) staff to have the metered data sent to him/her. Collection and analysis of monthly energy meter data will be considered part of warranty inspection and will occur at four and nine months after building turnover. The first four months of meter data will be provided at the initial warranty inspection and the next five months of meter data, following the initial inspection, will be provided at the final warranty inspection. The monthly energy data will be provided whether the building is occupied or not, since the information gathered is valuable in either case. The project engineer

will send the meter data to the district engineering office at the four and nine month inspections. The engineering office will review the data to determine the extent of deviation from model output taking one of two follow on actions:

- a. Note the meter data provided and defer any follow-on action as the data is either as expected or additional readings are required to determine if a problem exist or not; or
- b. The meter data suggest a potential problem and further investigation is required to determine the reason or cause.

The Engineering office will prepare a memo to the project engineer at completion of each analysis that briefly describes what was learned from the review noting any recommendation for continuing action as appropriate. The project engineer will then inform the User that the meter data was collected and what was learned. Upon completion of analyses, the engineering office will prepare a memo to the project file closing out the meter data reporting. This memo will be sent to the project engineer and shared with the User.

The engineering office will use the energy consumption data derived from the building energy model developed during the design phase of the project. The engineering office has the responsibility to ensure that each project includes energy model output showing energy consumption by month for twelve consecutive months. The Army Energy & Sustainability Record Card is being updated to capture the design consumption by month and to record actual meter readings.

5. Sustainment, Restoration and Modernization (SRM). Verification as described within is not required for Sustainment projects. Sustainment projects are defined as projects involving maintenance and repair activities necessary to keep facilities in good working order per Department of Army Pamphlet 420-11 (reference b). Restoration and Modernization (R&M) projects involving a significant reconfiguration of interior spaces, change of Facility Category Code, significant changes to heating and cooling equipment, or modifications to insulation or building envelope (except window, door, and/or lighting only replacement projects) shall include verification as if the project were new construction. Where adequate water and energy meters do not exist and there is no requirement to install a meter as part of the SRM project then verification is not required.

- a. 'Significant' is defined as any building greater than 5,000 square feet and receiving a project contracted value of work of 25% or more of its replacement value.
- b. Buildings less than 5,000 square feet shall be metered and may include verification to the extent practicable.
- c. If an energy model is not provided as part of the design then verification is not required.

6. Facilities other than buildings. Unoccupied facilities, energy generation or thermal projects shall include verification to the level of service and complexity as determined by the Project Delivery Team (PDT).

7. **Funding.** The process of transferring and reviewing metered data for the purpose of verification of building performance will be funded through project supervision and administration (S&A) funding. Follow-on investigation and any initial corrective actions will also be funded through S&A funding for an amount not to exceed 20 hours of effort. Any additional effort by USACE will require consultation with installation representatives prior to further action and USACE effort must be charged to Project or Operation and Maintenance (O&M) funding, as appropriate.

8. **Exception.** A request for an exemption to HQ USACE (CECW-CE) may be made for any specific requirement included herein or by reference that the PDT determines would adversely affect mission performance, security requirements, health, safety, or welfare. The exemption shall only apply to the specific requirements in conflict. Any approved exemptions to this policy shall be documented with reference to the specific requirement in conflict and included in the project documentation.

9. **Update.** All new requirements herein will be incorporated into the appropriate permanent policy or standards documents.

10. **Point of Contact.** HQUSACE point of contact for this ECB is Scott Wick, CECW-CE, at 202-761-7419 or Scott.C.Wick@usace.army.mil.

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