



DEPARTMENT OF DEFENSE GUIDING PRINCIPLES COMPLIANCE FOR **NEW CONSTRUCTION & COMPREHENSIVE REPLACEMENT** TECHNICAL REFERENCE MANUAL

GUIDING PRINCIPLES COMPLIANCE VERIFICATION PER UNIFIED FACILITIES CRITERIA 1-200-02

VERSION 1.5

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Guiding Principles Compliance Department of Defense Overview

Introduction

Green Building Initiative's (GBI) Department of Defense Guiding Principles Compliance for New Construction & Comprehensive Replacement (DOD GPC NC) is a program designed specifically for DOD construction and comprehensive replacement projects requiring Third-Party Certification (TPC) for the federal Guiding Principles.

Developed with and for the Department of Defense, the DOD GPC NC program validates compliance with *Unified Facilities Criteria (UFC) 1-200-02 High Performance and Sustainable Building Requirements*¹. When a building meets the requirements of UFC 1-200-02, it is considered compliant with the *Guiding Principles for Sustainable Federal Buildings*² (HPSB Guiding Principles) as required by Executive Order (EO) 14057³.

DOD GPC NC Program Materials

The Green Building Initiative's (GBI) DOD GPC NC program includes the following materials:

1. **DOD GPC NC Scoping Checklist:** An initial document used in the planning process for determining scope and funding for projects, in advance of official registration with GBI's Guiding Principles Compliance assessment program.
2. **DOD GPC NC Survey:** The primary document used by design and construction project teams and the assigned third-party assessor, to track and determine compliance throughout the construction or comprehensive replacement project undergoing GPC NC DoD assessment.
3. **DOD GPC NC Technical Reference Manual:** A reference supplemental to the survey, the Technical Reference Manual includes guidance for criteria, references, and links to pertinent websites.

DOD GPC NC Program Applicability

GBI's DOD GPC NC program applies to new construction and comprehensive replacement that require addition of Third-Party Certification (as described in UFC 1-200-02, Table 1-1 Building Compliance Requirements and Thresholds) per one of the following:

- ☐ New building or stand-alone addition ≥10,000 GSF, with construction cost >\$3M.
- OR
- ☐ Comprehensive replacement* in an existing building that is:
 - ☐ ≥10,000 GSF,
 - ☐ with total cost >\$3M, and
 - ☐ 50% or more enhanced replacement cost (ERC).

Note that all three thresholds must be met to require TPC for a comprehensive replacement project.

¹ U.S. Department of Defense (DOD). *UFC 1-200-02 High Performance and Sustainable Buildings Requirements*. Latest version available from: <http://www.wbdg.org/ffc/dod/unified-facilities-criteria-ufc/ufc-1-200-02>

² U.S. Council on Environmental Quality (CEQ). *Guiding Principles for Sustainable Federal Buildings and Associated Instructions*. March 2, 2016. Available from: <https://energy.gov/eere/femp/guiding-principles-sustainable-federal-buildings>

³ The White House. *Executive Order 14057 Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability*. December 8, 2021. Available from: <https://www.govinfo.gov/content/pkg/FR-2018-05-22/pdf/2018-11101.pdf>

*Comprehensive replacement to a building includes significant opportunities for improvement in: energy and water efficiency (such as HVAC, lighting, building envelope, and other building components); indoor air quality, other requirements in UFC 1-200-02; and additions that are part of the comprehensive replacement.

Total cost for comprehensive replacement includes addition, operations and maintenance, sustainment, restoration, and modernization associated with an existing building comprehensive replacement.

To inquire about an existing building project, please contact GBI at (503) 274-0448 or info@thegbi.org to determine eligibility.

Environmental Topic Areas

There is a total of six (6) environmental topic areas within the Guiding Principles:

- I. Employ Integrated Design Principles
- II. Optimize Energy Performance
- III. Protect and Conserve Water
- IV. Enhance Indoor Environmental Quality
- V. Reduce Environmental Impact of Materials
- VI. Assess Climate Change Risk

UFC Applicability

UFC 1-200-02, *High Performance and Sustainable Building Requirements* is effective for all DOD projects. See Paragraph 1-4 Applicability and Table 1-1 Building Compliance Requirements and Thresholds for details on methods of project delivery, levels of construction, and when Third-Party Certification (TPC) is required.

To obtain the latest version of UFC 1-200-02, visit the Whole Building Design Guide's web page and click on "PDF" next to "View/Download":

<http://www.wbdg.org/ffc/dod/unified-facilities-criteria-ufc/ufc-1-200-02>

If there are any questions about which version of UFC 1-200-02 is applicable to the project, contact your GBI project manager.

Per UFC 1-200-01 DoD Building Code, "Projects that have a delay, either planned or unintentional, of more than 18 months between design completion and the solicitation of offers for construction **must be re-evaluated** to determine if any design revision is necessary due to changes in criteria (including codes and standards) or site infrastructure (e.g. water supply for fire department vehicle access)."⁴

For Air Force projects only: Review of applicable UFC requirements relevant to scope of the project is accomplished at each design submittal by emailing the AF Sustainability Requirements Scoresheet and the Design Analysis to AFCEC.CF.Sustainable.Rpt@us.af.mil.

Compliance Validation

A third-party assessment conducted by a GBI-trained Guiding Principles Compliance Assessor (GPCA) is required to validate compliance with the Guiding Principles as part of the DOD GPC NC assessment program. An assessor has expertise in sustainable building design, engineering, and construction. The assessor interfaces with project teams, vested funding entities, and building end users during the assessment process. The assessor reviews and evaluates documentation during design, either by

⁴ U.S. Department of Defense (DOD). *UFC 1-200-01 DOD Building Code: Implementation, Administration, and Enforcement*, https://www.wbdg.org/FFC/DOD/UFC/ufc_1_200_01_2019_c1.pdf

conducting a second document review when construction is complete/nearly complete or conducting an onsite assessment and writing a comprehensive assessment report for each building assessed.

For the purposes of compliance validation, the “HPSB Guiding Principles” are met when the requirements of UFC 1-200-02 are met, as applicable, during the third-party assessor’s final review.

DOD GPC NC Survey and Process

The DOD GPC NC assessment includes a third-party review of the completed DOD GPC NC Survey and supporting documentation as part of the Design Submittal phase as well as one of two final assessment options; 1) an Onsite Assessment or 2) a Post-Construction Document Review. Supplementary reviews may be purchased for an additional fee if the team prefers more than one design review. The survey and assessments aid the Integrated Design Process (IDP) team throughout the design process per the unique goals and needs of each project.

DOD GPC NC Scoping Checklist

The DOD GPC NC Scoping Checklist is provided free of charge to assist the project team as early as possible with creating the scope for funding DoD building projects prior to enactment of Form DD1391. The Scoping Checklist guides teams in identifying non-applicable criteria (if any) for their project so that all remaining items become part of the overall scope for the project as requirements for GP compliance. It is used in advance of official registration with GBI’s Guiding Principles Compliance assessment program.

DOD GPC NC Survey

Registering a project with GBI allows access to the DOD GPC NC Survey. Upon receipt of project registration payment, GBI provides the survey to the Point of Contact (POC) who, with the help of the project IDP team, will complete it by providing response options, narratives, and listing supporting documentation. The DOD GPC NC Survey identifies all requirements from UFC 1-200-02, which are the basis for determining compliance with the HBSP Guiding Principles.

Survey - Compliance Criteria, Specific Requirements, Life Cycle Cost Analysis (LCCA), and Tracking

Requirements are located below each Guiding Principle within the survey, as well as Life-Cycle Cost Analysis and Tracking fields (if applicable). Many requirements refer to International Green Construction Code (IgCC), while others require the submission of specific documents or adherence to certain criteria. Additional instructions (where applicable) are provided under each Guiding Principle. Unless otherwise specified, instructions and requirements in the DOD GPC NC Survey apply to all DOD agencies.

Within the DOD GPC NC Survey select the pink cell and pick from the drop-down list that appears for each requirement as applicable. For Life-Cycle Cost Analysis and Tracking enter the desired data in the open field blue cells. Specify answers according to the current construction phase. For example, during design select answers according to the goals, scope, and current progress (if any) towards meeting the requirement.

How to Answer Requirements

The goal for every building is to complete compliance with all GPC requirements. However, due to many unique DoD building situations, full compliance may not be attainable. Carefully consider such conditions and pursue partial compliance or not applicable only when absolutely necessary. Ensure a complete and pertinent LCCA is performed and submitted for every building, which also serves as the basis for many partially compliant and not applicable requirements.

Next to every requirement is a drop-down list with three available answers: “Yes,” “Partially,” and “Not Applicable.” These are defined as follows:

1. **“Yes”** means an element is fully achieved, or highest resource efficiency is achieved with LCCA supporting documentation (when applicable).”

2. Per UFC 1-200-02, “**Partially Compliant**” means:

“the requirement is compliant to the greatest degree possible, based on LCCE (e.g., SDHW serves only 20% of water use, per LCCE); mission restriction (e.g., 24/7 operation); location/regional restriction (e.g., availability of high-efficiency equipment service); or locale restriction (e.g., proximity of existing buildings restricts daylighting), or safety (example: building orientation restriction for anti-terrorism due to existing infrastructure), and is marked ‘Yes’ with justification.”

3. “**Not Applicable**” (“N/A”) is to be used only when:

- Mission** precludes the element (e.g. facility mission prohibits the use of windows);
- Location of installation** restricts or precludes achievement of element (e.g. there is no local recycling);
- Safety** (e.g. building orientation restriction for anti-terrorism due to existing infrastructure); or
- LCCA does not support** any compliance with this requirement.

How to Answer Life-Cycle Cost Analysis (LCCA)

Life-Cycle Cost Analysis documentation **is required for every building**, and is relevant for several energy, water, and renewable Guiding Principles, as well as for any other requirements where first cost is higher, but life cycle cost effectiveness is applicable to design decision. Enter in all applicable details within the open text fields (in blue) supplied for Life-Cycle Cost Analysis within the survey.

Justification must be entered in the Survey’s “Required Documentation & Comments” field for each element marked “N/A”, including any LCCA supporting partial compliance (based on a percentage) or no compliance to a requirement. The project’s achievement will not be negatively impacted because of indicating “N/A,” or where LCCA supports partial compliance (with percentages) or no compliance to a requirement. The intent is for the project team to determine if any of the Guiding Principles are not applicable, and that the remaining requirements must be fully met including partial compliance with LCCA allowance.

NOTE: “N/A” must only be specified for requirements that exist for the project. The DOD GPC NC Survey includes several requirements specific to building type, project type (e.g. “NC project” vs. “existing system,” “unoccupied existing buildings” vs. “occupied existing buildings”), or whether or not there is a centralized system. Answer the requirements appropriately within the Survey (e.g. for “Navy only” projects, if the project is not Navy select “Not a Navy project”), and **wherever these requirements are not present for a project those requirements will not be included in the subsequent third-party assessor reports.**

Example 1: For 2.a.1 (Energy Efficiency), only complete the Path in the Survey as relates to the project’s building type and include those requirements within this report. The other two Paths will not be included in the assessment reports.

Example 2: For 3.b.1 (Landscaping), only include the requirements in this report based on whether this is a new construction (NC) project or an existing system/building. The other requirements will not be included in the assessment reports.

Example 3: For medical treatment facility requirements, those requirements will not be included in the assessment reports if this project is not a medical treatment facility.

The goal is to clarify whenever a requirement is not applicable (N/A), and for each report to conform to the specifics of the project.

Required Documentation & Comments

After selecting an answer, provide supporting documentation and comments in the yellow box to the right of the answer selection within the survey. These comments (and supplied supporting documentation) are required for the third-party assessment of the project.

All data and documentation indicated in ToolTips within the DOD GPC NC Survey must be supplied (pending the construction phase) unless otherwise specified.

Design Submittal Review

The third-party assessment of the project's contract documents⁵ occurs during design submittals. This review is required as part of the assessment process. It can take place at any point during the process as contract documents become available. The Project Execution Phases as specified within the DOD GPC NC Survey are:

- 1 – 30% Design Submittals
- 31 – 60% Design Submittals
- 61 – 90% Design Submittals
- 91 – 100% Design Submittals
- 100% Construction

If the project team desires, the review may happen prior to the 100% contract documents set is complete. When the DOD GPC NC Survey and supporting documentation are ready for assessor review, the project manager submits the completed survey to GBI, who assigns a third-party assessor to perform the Design Review. The project team works with the assigned assessor to deliver all needed documentation. The assessor reviews the survey and submitted documentation to verify progress towards compliance.

When the review is complete, the assessor writes a Design Review Report containing their findings. The report includes all requirements completed, requirements in progress, actions required for compliance, justifications for any partial or non-applicable criteria, projected compliance, and recommendations for the project. GBI reviews the report and, when approved, issues it to the project manager. The project team will review the report and may communicate with their assessor regarding any questions. The Design Review is a non-binding assessment, meaning the results are preliminary not final. To be validated as Compliant, a project must complete one of the two final assessment options and address all UFC requirements as “Yes” – completely compliant, partially compliant, or not applicable.

Final Assessment Options

There are two options for the final assessment: Onsite Assessment or Post-Construction Document Review. The project must undergo one of these options as part of the assessment process.

Final Assessment Option 1: Onsite Assessment

The Onsite Assessment is a third-party assessment of the project's completed construction. A completed Design Review is required prior to an Onsite Assessment. Final validation of compliance is based upon the assessor's site visit, including review of additional supporting documentation as necessary. If there are any changes made to construction since the completion of the Design Review Report, the project team must update the DOD GPC NC Survey and provide any additional verification documentation as needed.

When construction is essentially complete (through the punch list) and the team is ready to schedule the site visit, the project manager submits the updated DOD GPC NC Survey and contacts GBI to discuss the preferred timing of the site visit. GBI schedules a third-party assessor to perform the Onsite Assessment and issues a formal scheduling letter to the project manager and assessor. The letter includes the contact information for both parties to facilitate direct contact. Whenever possible, GBI assigns the same assessor for both the Design Review(s) and Onsite Assessment. Please note that the site visit typically requires

⁵ **contract documents:** all of the written and graphic documents (including BIM, CAD, and other electronic files) prepared or assembled by the architect/engineer for communicating the design, requirements, and administration of the project. The term “Contract documents” also includes the Project Manual that contains the bidding forms and instructions, contract forms and conditions, and specifications, as well as documentation of all modifications made after the construction agreements are signed.

30 days of advance notice. In the weeks leading up to the site visit, the assigned assessor contacts the project manager to discuss the itinerary and specific details of the assessment.

Typically, the Onsite Assessment begins with an introductory meeting in which the assessor interviews the key project players (Architect, MEP Engineers, Project Manager, General Contractor, etc.). Afterwards, one or two people can guide the assessor through the building. If any follow-up documentation is requested during the site visit, it must be sent to the assessor within two weeks.

After the visit, the assessor will create a report of their findings along with verification of compliance, including partial compliance (with percentages) and non-applicable requirements. GBI will review the report and, when approved, issue it to the project manager. After reviewing the report, the project manager may order recognition items (if not pre-ordered) to help promote the achievement.

The duration of the site visit varies considerably based on the scope and size of the completed new construction project. Please allow approximately up to three to five hours for the assessor to review new documentation onsite, conduct a thorough walk-through of the interior space, and interview personnel.

Final Assessment Option 2: Post-Construction Document Review

The Post-Construction Document Review is a third-party assessment of the project's completed construction. A completed Design Review is required prior to a Post-Construction Document Review. Final validation of compliance is based upon the assessor's review of additional supporting documentation such as submittals, cut sheets, commissioning reports and inspection reports. If there are any changes made to construction since the completion of the Design Review Report, the project team must update the DOD GPC NC Survey and provide any additional verification documentation as needed.

When construction is essentially complete (through the punch list) and the team has the post construction documentation available for review, the project manager submits the updated DOD GPC NC Survey and contacts GBI to schedule the review. GBI schedules a third-party assessor to perform the final review and issues a formal scheduling letter to the project manager and assessor. The letter includes the contact information for both parties to facilitate direct contact. Whenever possible, GBI assigns the same assessor for both the Design Review(s) and Post-Construction Document Review.

The assessor will create a report of their findings along with verification of compliance, including partial compliance (with percentages) and non-applicable requirements. GBI will review the report and, when approved, issue it to the project manager. After reviewing the report, the project manager may order recognition items (if not pre-ordered) to help promote the achievement.

i. LIFE-CYCLE COST ANALYSIS (LCCA)

i.a LCCA Format

i.a.1 UFC 1-200-02: Life-Cycle Cost Analysis (LCCA):

“The purpose of the LCCA methodology as detailed in 10 CFR Part 436 Subpart A is to identify and compare life-cycle cost-effective (LCCE) building energy and water systems that will in total achieve the energy and water requirements stated in this document. LCCA and energy optimization (paragraph titled “Energy Compliance Analysis (ECA)”) work together to determine the resulting savings, and provide the information for the required narrative (paragraph titled “ECA Narrative Requirements”). An LCCA is required for the following:

- 1. Systems contributing to the energy footprint of the building including, but not limited to, HVAC, domestic hot water, and the building envelope*
- 2. Renewable energy generating systems (e.g.: photovoltaic panels)*
- 3. When LCCE is selected as the reason any requirement of this document is “Partially compliant” or “Not Applicable” (reference UFC 1-200-02: Compliance with Federal Requirements).*

The LCCA methodology may also be used to evaluate multiple options, such as selecting the building construction type and comparing compliant materials; and is at the discretion of the project team. For process to develop LCCA, refer to UFC 1-200-02, Appendix A: Energy Optimization and LCCA Process Integration.”

Requirements:

i.a.1.1: Prepare the LCCA in accordance with CFR Title 10 Part 436, Subpart A and NIST Handbook 135 *“Life-Cycle Costing Manual for the Federal Energy Management Program.”*

i.a.1.2: Prepare the LCCA using the Building Life-Cycle Costing (BLCC) program from NIST. Use the implied long-term inflation rate and discount rates identified in the Annual supplement to NIST Handbook 135. The selected design alternative must also comply with mandatory requirements of ASHRAE 90.1 and achieve 30% energy efficiency below the ASHRAE 90.1 baseline (using the Performance Rating Method found in Appendix G) when LCCE.

i.a.1.3: LCCAs comparing individual component or system alternatives comply with UFC 1-200-02: LCCA Individual Component or System Alternatives Analysis.

Assessment Guidance:

At a minimum an LCCA is required for the following:

1. Systems contributing to the energy footprint of the building including, but not limited to, HVAC, lighting controls, and the building envelope;
2. Renewable energy generating systems (example: photovoltaic panels);
3. When life-cycle cost effectiveness (LCCE) is selected as the reason any requirement of this document is “Partially compliant” or “Not Applicable.”

Follow the process flowchart “Energy Optimization and LCCA Process” in UFC 1-200-02: Appendix A when preparing LCCA for the energy optimization process.

Design Build (DB) Projects: The LCCA might be prepared during Request for Proposal (RFP) or solicitation package and resulting system and feature selections incorporated as requirements in the Design Build RFP. Any deviation from the Design Build RFP must be supported by an energy optimization and LCCA, and any deviations that decrease energy efficiency will not be accepted.

LCCA documentation for Design Build RFP projects must specify what criteria were evaluated and what decision(s) were based on as part of the RFP. Contact the appropriate contracting company or government engineering staff (e.g. NAVFAC engineering client, Army Corps engineer, etc.) for the required information.

Required Documentation:

- LCCA report from Building Life Cycle Costing (BLCC) program.
- Narrative describing estimated building life (UFC 1-200-02: LCCA Individual Component or System Alternatives Analysis).
- LCCA reports comparing a minimum of three individual component or system alternatives.
- **Design Build where LCCA was included in RFP:** Documentation and/or communication from appropriate contracting company or government engineering staff on what criteria were evaluated and what the decision(s) were based upon (e.g. “Due to very low humidity requirements to store materials, a specific HVAC system was necessary.”).

Reference Material:

- UFC 1-200-02 (1 December 2020):
 - Life Cycle Cost Analysis (LCCA)
 - Appendix A Energy Optimization and LCCA Process Integration
- NIST Handbook 135, “*Life-Cycle Costing Manual for the Federal Energy Management Program*”
- UFC 3-410-01 Heating, Ventilating, and Air Conditioning Systems (when needed for requirements to obtain weather data)
- 10 CFR Part 436, Subpart A

External Hyperlinks:

- NIST Handbook 135 Life-Cycle Costing Manual For The Federal Energy Management Program, <https://www.wbdg.org/ffc/nist/criteria/nist-handbook-135>
- NIST Building Life Cycle Cost Programs, <https://www.nist.gov/services-resources/software/building-life-cycle-cost-programs>
- Federal Energy Management Program (FEMP) Building Life Cycle Cost Programs, <http://energy.gov/eere/femp/building-life-cycle-cost-programs>

- Electronic Code of Federal Regulations (e-CFR) Title 10: Energy, Part 436 – Federal Energy Management and Planning Programs, <https://www.ecfr.gov/cgi-bin/text-idx?SID=1772217352e2b3956b37b48739ebd676&mc=true&node=pt10.3.436&rgn=div5>
- Whole Building Design Guide (WBDG) UFC 3-410-01 Heating, Ventilating, And Air Conditioning Systems, <https://www.wbdg.org/ffc/dod/unified-facilities-criteria-ufc/ufc-3-410-01>

1. EMPLOY INTEGRATED DESIGN PRINCIPLES

1.a Integrated Design

1.a.1 UFC 1-200-02: Integrated Design

“Incorporate the following planning and evaluation into the integrated design, as described in IgCC F101.1.1 (F1.1.1) Charrette Process.

Exception: *subparagraph b. does not apply.”*

Requirements:

1.a.1.1: Follow the steps for planning and evaluation as described in IgCC F101.1.1 (F1.1.1) Charrette Process.

Required Documentation:

- List of key project stakeholders and personnel including description of their major tasks.

Reference Material:

- *IgCC F101.1.1 (F1.1.1) Charrette Process*

1.a.2 UFC 1-200-02: Integrated Planning

“Use a collaborative, integrated planning and design team, composed of user, government support staff, and appropriate professionals, to identify requirements and to establish performance goals for siting, energy, water, materials, indoor environmental quality, and other comprehensive design goals. Ensure incorporation of these goals throughout design and construction.”

Requirements:

1.a.2.1: Submit meeting notes, project goals, and design charrette matrix and decisions showing established goals for siting, energy, water, materials, indoor environmental quality, and other comprehensive design goals.

Required Documentation:

- Project meeting minutes and agendas detailing which project members were in attendance;
- Project goals and outcomes of meetings.

Reference Material:

- *IgCC Informative Appendix F: Integrated Design, Section F101 (F1)*

Take into account site attributes, including climate and local and regional context, which impact the design of the building.”

Requirements:

1.a.3.1: Evaluate site and building components for determination on passive &/or natural design strategies.

Required Documentation:

- Energy analysis with evaluation of natural and passive ventilation.

Reference Material:

- UFC 1-200-02: Evaluation for Design Strategies

Assessment Guidance:

Passive and natural design strategies and features are subject to Life Cycle Cost Effectiveness (LCCE), and must be determined for inclusion prior to design of active and mechanical systems. Incorporate features where applicable.

1.a.4 UFC 1-200-02: Evaluation of the Site

"During the site selection process, comply with the requirements of UFC 2-100-01."

Requirements:

1.a.4.1: Meet requirements of UFC 2-100-01 *Installation Master Planning*.

Required Documentation:

- Copy of Master Plan sections that identify relevant site;
- Copy of Design Charrette minutes that identify evaluation of building's site in accordance with the Master Plan.

Assessment Guidance:

See UFC 2-100-01 Appendix B “Planning Principles” for desirable site characteristics.

External Hyperlinks:

- *UFC 2-100-01 Installation Master Planning:* <http://www.wbdg.org/ffc/dod/unified-facilities-criteria-ufc/ufc-2-100-01>

1.a.5 UFC 1-200-02: Site Integration and Design of the Building

“Use the following site development considerations and passive strategies: Meet the requirements of UFC 3-201-02.

- *Site design elements that ensure safe and convenient pedestrian access.*
- *Incorporate results of site analysis in order to design the building, focusing on orientation, configuration, and massing.*
- *Orient building to maximize energy efficiency, passive solar, and daylighting potential.*
- *Select, design, and integrate into the overall building, high performance and sustainable systems (examples: HVAC, plumbing, water heating systems, lighting systems, control systems, elevators, building envelope, and fire protection systems).*
- *Consider opportunities for occupants to voluntarily increase physical activity early in the design process. Refer to UFC 1-200-02 Appendix B Best Practice for examples.”*

Requirements:

1.a.5.1: Meet the requirements of UFC 3-201-02 Landscape Architecture.

Assessment Guidance:

If there is no landscaping, mark “No landscaping.”

Required Documentation:

- Copy of Design Charrette meeting minutes identifying meeting UFC 3-201-02.

Reference Material:

- UFC 3-201-02 Landscape Architecture

1.a.5.2: Site design elements ensure safe and convenient pedestrian access.

Required Documentation:

- Copy of Design Charrette meeting minutes identifying site design elements for safe and convenient pedestrian access.

1.a.5.3: Incorporate results of site analysis in order to design the building, focusing on orientation, configuration, and massing.

Required Documentation:

- Copy of Design Charrette meeting minutes incorporating results of site analysis into design

1.a.5.4: Orient building to maximize energy efficiency, passive solar, and daylighting potential.

Required Documentation:

- Copy of Design Charrette meeting minutes that identify each of the required elements.

1.a.5.5: Incorporate high performance and sustainable systems into design.

Required Documentation:

- Copy of Design Charrette meeting minutes that identify each of the required elements.

Assessment Guidance:

Examples include HVAC, plumbing, water heating systems, lighting systems, control systems, elevators, building envelope, and fire protection systems.

1.a.5.6: Design promotes opportunities for occupants to voluntarily increase physical activity.

Required Documentation:

- Meeting minutes from the design Charrette that indicate how the occupant health and wellness criteria were included in design.

Assessment Guidance:

Efforts include, but are not limited to, designing and locating stairwells that encourage occupant use, providing convenient access to healthy dining options, potable water, daylight, plants, and exterior views.

UFC 1-200-02, Appendix B: Promoting Voluntary Physical Activity:

“Include discussion and decisions in project charrettes related to how buildings address voluntary physical activity. No two projects will result in the same decisions. These efforts should be evaluated and documented during the Integrated Design Process.

Always consider less mobile occupants during the decision process. The following examples are suggestions and do not comprise a complete list of possible solutions:

- Location of common use zones
- Use of under-utilized spaces as common gathering areas
- Visibility of stair locations
- Corridor locations and lengths
- Proximity and configuration of exterior walkways and bicycle commuter facilities, as promoted by UFC 2-100-01 and UFC 3-201-02.”

Reference Material:

- UFC 1-200-02 High Performance and Sustainable Building Requirements, Appendix B: Best Practices

External Hyperlinks:

- UFC 3-201-02 Landscape Architecture, With Change 1:
<http://www.wbdg.org/ffc/dod/unified-facilities-criteria-ufc/ufc-3-201-02>

1.b Commissioning

1.b.1 UFC 1-200-02: Commissioning

“In order to verify design and performance, and ensure that the Government requirements are met, employ commissioning practices appropriate to the size and complexity of the building and its system components. This must include an experienced commissioning provider, who should be independent of the project design and construction team, and from the operations team. The choice of either contracted services or Government personnel to serve as the commissioning provider will be determined at project level.

To the extent practicable, based on LCCA and DoD policy⁶, meet the following:

For all projects with design starts before 7 April 2023, meet the requirements of IgCC 1001.3.1.2 (10.3.1.2) (Building Project Commissioning), with the following modifications:

- *For buildings and systems that are less complex, commissioning may be tailored as determined by the DOD Service AHJ. For Army projects, refer to Army policy for determination of systems to commission. For Air Force and Navy projects, the Project Delivery Team must determine the level of commissioning activities required.*
- *“Schematic design” is the design charrette or similar conceptual design activity prior to completion of 35% design.*
- *Documentation as described in ASHRAE 55 Section 6.2 is not required.*

For commercial and multi-family high-rise buildings with design starts on or after 7 April 2023, meet the requirements of ASHRAE 90.1-2019. For low-rise residential buildings with design starts on or after 5 April 2023, meet the requirements of 2021 IECC.”

Exception: For military treatment facilities, refer to UFC 4-510-01 Military Medical Facilities for commissioning requirements.

Army/USACE executed projects: Refer to UFGS 01 91 00.15 10 TOTAL BUILDING COMMISSIONING for determination of systems to commission, <https://www.wbdg.org/FFC/DOD/UFGS/UFGS%2001%2091%2000.15%2010.pdf>. This describes all submittals required for Army projects and takes precedence over other references. The Project Delivery team must determine the level of commissioning activities required.

Navy/NAVFAC executed projects: Refer to UFGS 01 91 00.15 20 TOTAL BUILDING COMMISSIONING, which supersedes UFGS 01 91 00.15 20, <https://www.wbdg.org/ffc/dod/unified-facilities-guide-specifications->

⁶ Includes any DoD policies that relate to commissioning.

[ufgs/ufgs-01-91-00-15-20](#). This describes all submittals required for Navy projects and takes precedence over other references. The Project Delivery team must determine the level of commissioning activities required.

Air Force projects: Refer to UFGS per the agent executing the project: UFGS 01 91 00.15 20 for NAVFAC executed projects, and UFGS 01 91 00.15 10 for USACE executed projects. If the Air Force is executing the project either UFGS may be used.

Requirements:

1.b.1.1: Identify which systems and associated protocols are to be commissioned.

Required Documentation:

- List of systems and associated protocols to be commissioned.

Reference Material:

- **Navy executed projects:** UFGS 01 91 00.15 20 TOTAL BUILDING COMMISSIONING: SYSTEMS TO BE COMMISSIONED, <https://www.wbdg.org/ffc/dod/unified-facilities-guide-specifications-ufgs/ufgs-01-91-00-15-20>
- **Army executed projects:** UFGS 01 91 00.15 10 TOTAL BUILDING COMMISSIONING: SYSTEMS TO BE COMMISSIONED, <https://www.wbdg.org/FFC/DOD/UFGS/UFGS%2001%2091%2000.15%2010.pdf>

1.b.1.2: Submit the design documentation requirements for each review phase.

Required Documentation:

- Designated Commissioning Provider
- **Army executed projects:** Owner's Project Requirements (OPR): The OPR is initially developed in predesign by the owner with support from the design team and stakeholders, which establishes the building's intended operation and function along with the owner's goals.
- **Navy executed projects:** Navy does not require a separate OPR. However, the following documents are required, in order to determine the project requirements:
 - Design-Build:
 - MILCON and Specials: DD1391
 - Request for Proposal (RFP)
 - Design-Bid-Build:
 - MILCON and Specials: DD1391 (Basis of Design can be submitted with the DD1391, but not instead of).
 - Sustainment, Restoration, and Modernization (SRM): Scope of Work
- Design team's Basis of Design (BOD)
- Project specifications including construction phase commissioning requirements
- Other contract documents including construction phase commissioning requirements
- Commissioning plan

Reference Material:

- **Navy executed projects:** UFGS 01 91 00.15 20 TOTAL BUILDING COMMISSIONING
- **Army executed projects:** UFGS 01 91 00.15 10 TOTAL BUILDING COMMISSIONING

1.b.1.3: Submit the contract documentation requirements as part of activities prior to building occupancy.

Required Documentation:

- Construction checklist and verification
- Preliminary commissioning report
- Review of system manual submittals, including O&M documentation
- Review of Final Commissioning Report and Final Construction Phase Commissioning Plan

Reference Material:

- Systems manual submittals: UFGS 01 78 23 Operation And Maintenance Data
- **Navy executed projects:** UFGS 01 91 00.15 20 TOTAL BUILDING COMMISSIONING: SUBMITTALS
- **Army executed projects:** UFGS 01 91 00.15 10 TOTAL BUILDING COMMISSIONING: SUBMITTALS

Assessment Guidance:

- Systems manual is a requirement of UFGS 01 78 23 Operation And Maintenance Data. The Commissioning Provider will review the systems manual submittals for commissioned systems' requirements. The Commissioning Provider does not create the manuals.

1.b.1.4: Submit the contract documentation requirements for postoccupancy Cx activities.

Required Documentation:

- All record documents
- Final Commissioning Report

Reference Material:

- Systems manual submittals: UFGS 01 78 23 Operation And Maintenance Data

Assessment Guidance:

- Systems manual is a requirement of UFGS 01 78 23 Operation And Maintenance Data. The Commissioning Provider will review the systems manual submittals for commissioned systems' requirements. The Commissioning Provider does not create the manuals.

1.b.1.5: Review the O&M Manual.

Required Documentation:

- Review of O&M Manual.

Assessment Guidance:

- An "O&M Manual" is an Operations and Maintenance (O&M) Manual that encompass all operating aspects of the building that have an impact on its surrounding environment and occupants. The Commissioning Provider will review the O&M Manual submittals for commissioned systems' requirements. The Commissioning Provider does not create the manuals. A hard copy of the manual is optional.

Assessment Guidance:

During the design phase, the Commissioning Provider must review the OPR*, design documents and any Basis of Design (BOD) documents assembled by the design team. The design document reviews focus on the "big picture", including operability, accessibility, maintainability, efficiency, coordination between systems and controls. Approximately one-third of commissioning field problems can be traced back to design, so this process is key. The Commissioning Provider must also help prepare commissioning related specifications for the design team, develop pre-functional checklists and functional performance tests for all equipment to be commissioned, and finalize the Commissioning Plan. Specification sections related to commissioning are typically included in the Division 01 sections (listing checklists, prerequisites to testing, testing requirements and reports) and also in individual sections in Divisions 02 through 48 (stating which systems are to be commissioned and requirements for contractors to complete checklists and performance tests). The Commissioning Provider will also develop training and systems manual requirements. Note that the Commissioning Provider will review the systems manual submittals for commissioned systems' requirements but does not create the manual.

The construction phase is where the largest amount of commissioning work takes place. The Commissioning Provider's activities will include:

- Reviewing submittals against the Commissioning Plan, OPR*, and BOD
- Revise the OPR*, Commissioning Plan and schedule, if necessary
- Document construction observations on site and compile these into a commissioning issues log and photo log
- Review pre-functional test checklists completed by contractors
- Conduct Functional Performance Testing of equipment and systems
- Review requirements in the project's systems manual, including operations and maintenance manuals for commissioned equipment. Note that the Commissioning Provider is only responsible for reviewing the systems manuals, not creating them.

To the extent practicable, based on LCCA and DoD policy:

- **For commercial and multi-family high-rise buildings with design starting on or after April 7, 2023, meet the requirements of ASHRAE 90.1-2019.**

- **For low-rise residential buildings with design starting on or after April 5, 2023**, meet the requirements of 2021 IECC.

***Army/USACE executed projects only:** Owner's Project Requirements (OPR): The OPR is initially developed in predesign by the owner with support from the design team and stakeholders, which establishes the building's intended operation and function along with the owner's goals.

Navy/NAVFAC executed projects only: The following in congregate constitute an OPR:

- Design-Build:
 - MILCON and Specials: DD1391
 - Request for Proposal (RFP)
- Design-Bid-Build:
 - MILCON and Specials: DD1391 (Basis of Design can be submitted with the DD1391, but not instead of.)
- Sustainment, Restoration, and Modernization (SRM): Scope of Work

During this time, the Commissioning Provider might also meet with the designers and contractors to review complex systems such as the BAS and sequence of operations. Once all the above activities are complete, the Commissioning Provider will develop and distribute the Commissioning Report.

Navy/NAVFAC executed projects: The Commissioning Provider is responsible for reviewing the Operations & Maintenance (O&M) Manual for the appropriate systems operations (UFGS 01 91 00.15 20 and UFGS 23 08 00.00 20). Check appropriate agency references:

Army/USACE executed projects:

Commissioning Systems Manual: UFGS 01 91 00.15 10 paragraph 3.2.8 (Systems Manual).

Maintenance and Service Life Manual: UFGS 01 91 00.15 10 paragraph 3.2.9 (Maintenance and Service Life Plans).

Coordinate with UFGS 01 78 23 Operation and Maintenance Data and the following as applicable:

- A. ARMY/USACE executed projects:** UFGS 01 45 00.00 10 QUALITY CONTROL
- B. Navy/NAVFAC executed projects:** UFGS 01 45 00.00 20 QUALITY CONTROL
- C. Navy/NAVFAC executed projects (Design Build only):** UFGS 01 45 00.05 20 DESIGN AND CONSTRUCTION QUALITY CONTROL

All management plans and policies should include who the responsible parties are, including any outside vendors, what actions will be taken as part of the plan, why the actions are environmentally preferable versus standard operating procedures and any tracking or verifying documentation that will be required. The Assessor will look for submission of the contributions to and review of an electronic Operations and Maintenance Manual (hard copy optional) that clearly notes each of the site management items it addresses. The Assessor will also be checking to ensure each management plan or policy is complete.

Reference Material:

- **Army:**
 - UFGS 01 91 00.15 10 TOTAL BUILDING COMMISSIONING
 - UFGS 01 45 00.00 10 QUALITY CONTROL
- **Navy:**
 - UFGS 01 91 00.15 20 TOTAL BUILDING COMMISSIONING
 - UFGS 01 45 00.00 20 QUALITY CONTROL
- **Navy (Design Build only):** UFGS 01 45 00.05 20 DESIGN AND CONSTRUCTION QUALITY CONTROL
- UFGS 01 78 23 Operation and Maintenance Data
- UFGS 23 08 00.00 20 Commissioning of Mechanical [And Plumbing] Systems,
<https://www.wbdg.org/ffc/dod/unified-facilities-guide-specifications-ufgs/ufgs-23-08-00-00-20>

2. OPTIMIZE ENERGY PERFORMANCE

“Base energy efficiency design decisions on LCCA as indicated in Chapter 1 of (UFC 1-200-02). The LCCA includes a minimum of three energy efficient alternatives to the baseline standard (ASHRAE 90.1, IECC, etc.). For details, refer to UFC 1-200-02 Appendix A Energy Optimization and LCCA Process Integration.”

2.a Energy Efficiency

Select the requirements that apply to your project based on building type:

- **Commercial and Multi-Family High-Rise Residential Buildings**
- **Low-Rise Residential Buildings**
- **Comprehensive Replacement and SRM**

Follow the process flowchart, “Energy Optimization and LCCA process” UFC 1-200-02, Appendix A.

2.a.1.A UFC 1-200-02: Commercial and Multi-Family High-Rise Residential Buildings

“To the extent practicable, based on LCCA and DoD policy⁷, meet the following:

- *Meet the requirements of ASHRAE 90.1⁸. Use ASHRAE 90.1-2013 for all projects with design starts before 7 April 2023. Use ASHRAE 90.1-2019 thereafter.*
- *Design the building to achieve at least 30% energy consumption reduction from ASHRAE 90.1 baseline.*
- *If a 30% reduction is not LCCE, modify the design of the proposed building to achieve an energy consumption level at the highest level of energy efficiency that is LCCE.*
- *When using ASHRAE 90.1-2013, determine energy consumption levels for both the ASHRAE Baseline Building and proposed building alternatives by using the Performance Rating Method found in appendix G of ASHRAE 90.1, except the formula for calculating the Performance Rating. Replace the formula in G1.2 with the following:*

Percentage improvement = $100 \times ((\text{Baseline building consumption} - \text{Receptacle and process loads}) - (\text{Proposed building consumption} - \text{Receptacle and process loads})) / (\text{Baseline building consumption} - \text{Receptacle and process loads})$ ⁹

⁷ Includes any DoD policies that relate to energy.

⁸ ASHRAE 90.1 compliance pathways as detailed for each section of the standard govern.

⁹ Energy consumption for the purposes of calculating the 30 percent savings requirements in CFR Title 10 Part 433, §433.100 shall include the building envelope and energy consuming systems normally specified as part of the building design by ASHRAE 90.1 such as space heating, space cooling, ventilation, service water heating, and lighting, but shall not include receptacle and process loads not within the scope of ASHRAE 90.1 such as specialized medical or research equipment and equipment used in manufacturing processes.

- When using ASHRAE 90.1-2019, determine energy consumption levels for both the ASHRAE Baseline Building 2019 and proposed building alternatives by using the Performance Rating Method found in Appendix G of ASHRAE 90.1-2019¹⁰. The formula for determining the percentage improvement is:

$$\text{Percentage improvement} = 100 \times (1 - \text{PCI} / \text{PCIt})$$

Where

PCI – Performance Cost Index calculated in accordance with section G1.2 of ASHRAE 90.1-2019

PCIt – Performance Cost Index Target calculated by formula in section 4.2.1.1 of ASHRAE 90.1-2019¹⁰

Requirements:

2.a.1.A.1: Meet the requirements of ASHRAE 90.1 Energy Standard for Buildings Except Low-Rise Residential Buildings.

Required Documentation:

- Summary of the proposed energy model's inputs and outputs
- Modeling report

Reference Material:

- 10 C.F.R. § 433: Energy Efficiency Standards For The Design And Construction Of New Federal Commercial And Multi-Family High-Rise Residential Buildings
- **[For all Commercial and Multi-Family High-Rise Residential projects with design starts before 7 April 2023]** ASHRAE 90.1-2013 Energy Standard for Buildings Except Low-Rise Residential Buildings, including:
 - Section G1.2
- **[For all Commercial and Multi-Family High-Rise Residential projects with design starts on or after 7 April 2023]** ASHRAE 90.1-2019 Energy Standard for Buildings Except Low-Rise Residential Buildings, including:
 - Section G1.2
 - Section 4.2.1.1

2.a.1.A.2: Submit energy model showing the proposed building model to achieve at least 30% - less if LCCE - energy consumption reduction from ASHRAE 90.1 baseline.

¹⁰ Energy consumption for the purposes of calculating the 30 percent savings requirements in 10 CFR Part 433, §433.100 shall include the building envelope and energy consuming systems normally specified as part of the building design by ASHRAE 90.1-2019 such as space heating, space cooling, ventilation, service-water heating, and lighting, and all process and receptacle loads, except for energy-intensive process loads that are driven by mission and operational requirements, not necessarily buildings, and not influenced by conventional building energy conservation measures.

Required Documentation:

- Summary of the proposed energy model's inputs and outputs
- Modeling report

Assessment Guidance:

- If a 30% reduction is not Life Cycle Cost Effective (LCCE), modify the design of the proposed building to achieve an energy consumption level at the highest level of energy efficiency that is LCCE.

2.a.1.A.3: Determine energy consumption levels for ASHRAE Baseline Building and proposed building alternatives.

Required Documentation:

- Energy consumption levels for Baseline Building and proposed building alternatives
- Calculation for percentage improvement

Assessment Guidance:

- Determine energy consumption levels for both baseline and proposed building by using the Performance Rating Method found in appendix G of ASHRAE 90.1, except for the formula for calculating Performance Rating.
- **[For all Commercial and Multi-Family High-Rise Residential projects with design starts before 7 April 2023]** Replace the G1.2 formula with the following:
 - $\text{Percentage improvement} = 100 \times ((\text{Baseline building consumption} - \text{Receptacle and process loads}) - (\text{Proposed building consumption} - \text{Receptacle and process loads})) / (\text{Baseline building consumption} - \text{Receptacle and process loads})$
- **[For all Commercial and Multi-Family High-Rise Residential projects with design starts on or after 7 April 2023]** Replace the G1.2 formula with the following:

$$\text{Percentage improvement} = 100 \times (1 - \text{PCI} / \text{PCIt})$$

Where

PCI – Performance Cost Index calculated in accordance with section G1.2 of ASHRAE 90.1-2019

PCIt – Performance Cost Index Target calculated by formula in section 4.2.1.1 of ASHRAE 90.1-2019

2.a.1.B UFC 1-200-02: Low-Rise Residential Buildings

"To the extent practicable, based on LCCA and DoD policy¹¹, meet the following:

¹¹ Includes any DoD policies that relate to energy.

- *“Meet the requirements of International Energy Conservation Code (IECC). Use 2015 IECC for all projects with design starts before 5 April 2023. Use 2021 IECC thereafter.*
- *Design the building to achieve at least 30% energy consumption reduction from the IECC baseline using the Simulated Performance Alternative found in Section 405 of the IECC.*
- *If a 30% reduction is not LCCE, modify the design of the proposed building alternatives to achieve an energy consumption level at the highest level of energy efficiency that is LCCE.”*

Requirements:

2.a.1.B.1: Meet the requirements of International Energy Conservation Code (IECC).

Required Documentation:

- Summary of the proposed energy model's inputs and outputs
- Modeling report

Reference Material:

- **[For all Low-Rise Residential projects with design starts before 5 April 2023]** *International Energy Conservation Code (IECC), 2015*
- **[For all Low-Rise Residential projects with design starts on or after 5 April 2023]** *International Energy Conservation Code (IECC), 2021*

2.a.1.B.2: Submit energy model showing the proposed building alternatives to achieve at least 30% - less if LCCE - energy consumption reduction from IECC baseline (Section 405, Simulated Performance Alternative).

Required Documentation:

- Energy consumption levels for Baseline Building and proposed building alternatives
- Calculation for percentage improvement

Assessment Guidance:

Design the building to achieve at least 30% energy consumption reduction from the IECC baseline using the Simulated Performance Alternative found in Section 405 of the IECC.

If a 30% reduction is not Life Cycle Cost Effective (LCCE), modify the design of the proposed building to achieve an energy consumption level at the highest level of energy efficiency that is LCCE.

2.a.1.C UFC 1-200-02: Comprehensive Replacement and SRM

To the extent practicable, based on LCCA and DoD policy¹², meet the following:

¹² Includes any DoD policies that relate to energy.

- *“Projects that replace everything above the foundation (comprehensive replacement) must either apply Commercial and Multi-Family High-Rise Residential Buildings” or “Low-Rise Residential Buildings” as applicable.*
- *SRM projects choose one of the following options:*
 1. *Reduce measured building energy use by at least 30%, below FY 2003 energy use baseline¹³.*
 2. *Reduce measured building energy use by at least 20% below FY 2015 energy use baseline.*
 3. *Reduce modeled energy use (from all sources including renewable energy) by 30% compared to the ASHRAE 90.1 baseline building design for Commercial or Multi-Family High-Rise Residential Buildings, or the IECC baseline (using the Simulated Performance Alternative found in Section 405 of the IECC) for Low-Rise Residential buildings. (Refer to paragraph “Commercial and Multi-Family High-Rise Residential Buildings” for calculation of energy consumption reduction.)*
- *If none of the reduction choices is life-cycle cost effective, modify the design of the proposed building system(s) to achieve an energy consumption level at the highest level of energy efficiency that is life-cycle cost effective.”*

If replacing everything above the foundation (comprehensive replacement):

Complete either 2.a.1.A (Commercial and Multi-Family High-Rise Residential Buildings) or 2.a.1.B (Low-Rise Residential Buildings) as most applicable to the project.

“SRM” is defined by UFC 1-200-02 as the following:

Sustainment, Restoration, and Modernization (SRM): Per the Office of the Assistant Secretary of Defense for Sustainment, Construction:

- Sustainment activities include scheduled and unscheduled inspection, maintenance and repair to ensure facilities remain in good working order throughout their service lives.
- Restoration activities include repair and replacement efforts to renovate facilities damaged by inadequate sustainment, excessive age, natural disaster, fire, accident, or other causes.
- Modernization activities include implementation of new or higher standards; accommodating new functions; or replacing building components that typically last more than 50 years.

2.a.1.C.1: SRM projects, choose from one of the following four (4) options:

2.a.1.C.1.i (Option 1): Reduce building energy use by at least 30%, below FY 2003 energy use baseline.

¹³ Consult with Installation Energy Manager to determine if building metered data is available. If it isn't, this option cannot be pursued.

Required Documentation:

- One of the following is required for establishing the baseline:
 - Meter data; or
 - Summary of the proposed energy model's inputs and outputs, and
 - Modeling report
- LCCA report

Reference Material:

- UFC 1-200-02: Renovations

2.a.1.C.1.ii (Option 2): Reduce building energy use by at least 20% below FY 2015 energy use baseline.

Required Documentation:

- One of the following is required for establishing the baseline:
 - Meter data; or
 - Summary of the proposed energy model's inputs and outputs, and
 - Modeling report
- LCCA report

Reference Material:

- UFC 1-200-02: Renovations

2.a.1.C.1.iii (Option 3): Reduce modeled energy use (from all sources including renewable energy) by 30% compared to the ASHRAE 90.1 baseline building design for Commercial or Multifamily High-Rise Residential Buildings or the IECC baseline for Low-Rise Residential Buildings.

Required Documentation:

- Summary of the proposed energy model's inputs and outputs
- Modeling report
- LCCA report (if applicable)

Reference Material:

- ASHRAE 90.1 Energy Standard for Buildings Except Low-Rise Residential Buildings
- International Energy Conservation Code (IECC)

Assessment Guidance:

For Low-Rise Residential buildings, use the Simulated Performance Alternative found in Section 405 of the International Energy Conservation Code (IECC). Refer to paragraph, "Commercial and Multi-Family High-Rise Residential Buildings" for calculation of energy consumption reduction.)

2.a.1.C.1.iv (Option 4): If none of the above reductions for SRM projects are LCCE, design to achieve an energy consumption level at the highest level of energy efficiency that is LCCE.

Required Documentation:

- Summary of the proposed energy model's inputs and outputs
- Modeling report
- LCCA report

Enter LCCA and tracking data for 2.a.1 (Energy Efficiency), regardless of OPTION selected above.

LCCA: What was the finding of the Life-Cycle Cost Analysis (LCCA)?

Tracking 1: What is the current energy consumption reduction percentage?

Tracking 2: Provide Energy Use Intensity (EUI) (kBtu/Sq. Ft./Year per building)

2.a.2 UFC 1-200-02: Energy Efficient Products

“Per EISA 2007 Section 525, acquire products that are ENERGY STAR®-qualified or meet FEMP-designated efficiency requirements in all covered product categories. Select products based on life cycle cost, not initial cost. Link to EPA sites: <http://www.energystar.gov/> or <https://energy.gov/eere/femp/federal-energy-management-program>.”

Requirements:

2.a.2.1: Select energy consuming products and equipment that are ENERGY STAR®-qualified or FEMP-designated Energy-Efficient Products requirements in all covered product categories.

Required Documentation:

- ENERGY STAR & FEMP labeling for plug-in equipment and fixed building equipment.

External Hyperlinks:

- ENERGY STAR® Qualified Product Lists: <http://www.energystar.gov>
- Federal Energy Management Program (FEMP) – Energy and Water Efficient Products: <http://www1.eere.energy.gov/femp>

2.a.3 UFC 1-200-02: Standby Powered Devices

“Per EISA 2007 Section 524, provide commercially available, off-the-shelf products that use no more than 1 watt in their standby mode.”

Requirements:

2.a.3.1: Provide commercially available, off-the-shelf products that use no more than 1 watt in standby mode where applicable.

Required Documentation:

- List of equipment that operates in a standby mode that includes the standby wattage;
- Cut sheets for applicable equipment that provides the standby wattage.

Reference Material:

- *Energy Independence and Security Act of 2007 (EISA 2007)*, Section 524

Assessment Guidance

Per EISA 2007, Section 524. Products must be life-cycle cost effective, practicable, and not compromise performance

External Hyperlinks:

- H.R.6 – Energy Independence and Security Act of 2007: <https://www.congress.gov/bill/110th-congress/house-bill/6>

2.b Onsite Renewable Energy

2.b.1 UFC 1-200-02: On-Site Renewable Energy

“Provide on-site renewable energy systems in accordance with IgCC 701.4.1.1 (7.4.1.1) On-Site Renewable Energy Systems and UFC 3-440-01 where LCCE, considering climate, infrastructure condition, mission compatibility, and effects on base-wide electrical system (grid) power quality. When available, utilize Installation-specific studies to determine LCCE renewable energy systems. Studies must be dated within five years of project design start.

- *For Army projects, if not LCCE, utilize IgCC 701.3.2 (7.3.2) On-Site Renewable Energy Systems for future installation of on-site renewable energy systems.*
- *Services may choose LCCE centralized or Installation-wide renewable energy development, in lieu of building-by-building application. Meet the requirements of UFC 3-540-08.*

Exception: Do not use purchase of renewable energy certificates (RECs) as a substitute for IgCC 701.4.1.1 (7.4.1.1) new building requirement.”

Requirements:

2.b.1.1: Submit Life Cycle Cost Analysis for onsite renewable energy in accordance with IgCC On-Site Renewable Energy Systems and UFC 3-440-01.

Required Documentation:

- Onsite renewable energy feasibility studies or Life-Cycle Cost Analysis (LCCA).
- Renewable energy design documents, plans and specifications, and sub-contract, if applicable.

Reference Material:

- IgCC 701.4.1.1 (7.4.1.1) On-Site Renewable Energy Systems
- [For Army projects] IgCC 701.3.2 (7.3.2) On-Site Renewable Energy Systems, if IgCC 701.4.1.1 (7.4.1.1) is not LCCE
- UFC 3-440-01 Facility-Scale Renewable Energy Systems

2.b.1.2: Submit documentation for onsite renewable energy system(s).

Required Documentation:

- Onsite renewable energy feasibility studies or Life-Cycle Cost Analysis (LCCA).
- Renewable energy design documents, plans and specifications, and sub-contract, if applicable.

Reference Material:

- IgCC 701.4.1.1 (7.4.1.1) On-Site Renewable Energy Systems
- [For Army projects] IgCC 701.3.2 (7.3.2) On-Site Renewable Energy Systems, if IgCC 701.4.1.1 (7.4.1.1) is not LCCE
- UFC 3-440-01 Facility-Scale Renewable Energy Systems.

LCCA: What was the finding of the Life-Cycle Cost Analysis (LCCA)?

Tracking 1: What percentage of energy will come from the renewable energy system(s)?

Tracking 2: What is the system's total capacity for renewable electric energy?

Tracking 3: What is the system's total capacity for renewable thermal energy?

Tracking 4: List renewable energy technology.

2.b.2 UFC 1-200-02: Solar Domestic Hot Water (SDHW)

"Per EISA 2007 Section 523, meet at least 30% of the annual domestic hot water requirement through the installation of solar water heating unless SDHW is not LCCE."

Requirements:

2.b.2.1: Purchase and install solar domestic hot water system where life cycle cost effective (LCCE).

LCCA: What was the finding of the Life-Cycle Cost Analysis (LCCA)?

Tracking 1: What percentage of the hot water demand is being met through the installation of solar hot water heaters?

Tracking 2: What is the system's total capacity for renewable thermal energy?

Required Documentation:

- NIST BLCC that compares the use of SDHW to conventional water heating;
- Calculations that demonstrate the percent of hot water that is supplied by SDHW.

Reference Material:

- *Energy Independence and Security Act of 2007 (EISA 2007), Section 523*

2.c Metering

2.c.1 UFC 1-200-02: Metering

“Provide meters as required by DoDI 4170.11, and as amended by DoD Utilities Meter Policy, in the standard units of measure. Where base-wide energy and utility monitoring and control systems exist, meters must be connected using the installation’s advanced metering protocols. Meter configuration must comply with the requirements of UFC 4-010-06, and as required by individual Service’s meter implementation policy.”

Requirements 2.c.1.1 – 2.c.1.3: Answer for each utility available at the project site.

Requirements 2.c.1.4 – 2.c.1.5: Select “No centralized system” if there is no centralized system.

Requirements:

2.c.1.1: Is electricity metered at the building level?

2.c.1.2: Is natural gas metered at the building level?

Assessment Guidance:

If there is no natural gas, select “No natural gas.”

2.c.1.3: Is steam metered at the building level?

Assessment Guidance:

If there is no steam, select “No steam.”

2.c.1.4: Submit documentation for all electric meters installed. Include details on connection to the base-wide monitoring system.

2.c.1.5: Submit documentation for all utility meters installed for other sources. Include details on connection to the base-wide monitoring system.

Required Documentation:

- Mechanical and electrical plans showing what utilities will be metered.

Reference Material:

- Department of Defense Utilities Meter Policy
- UFC 4-010-06 Cybersecurity of Facility-Related Control Systems

External Hyperlinks:

- Installation Energy Policy and Program Guidance. Office of the Assistant Secretary of Defense for Energy, Installations, and Environment:
[http://www.acq.osd.mil/eie/IE/FEP Policy Program Guidance.html](http://www.acq.osd.mil/eie/IE/FEP_Policy_Program_Guidance.html)

Assessment Guidance:

When the base does not yet have a centralized system, mark “No centralized system” for 2.c.1.4 and 2.c.1.5.

3. PROTECT AND CONSERVE WATER

Base water efficiency design decisions on life-cycle cost as indicated in UFC 1-200-02 Paragraph Life Cycle Cost Analysis (LCCA).¹⁴

3.a Indoor Water Use

3.a.1 UFC 1-200-02: Indoor Water

- *Meet the requirements of IgCC 601.3.2 (6.3.2) Building Water Use Reduction, which incorporates EPA WaterSense labeled products. Water closet replacements may have a flush value of up to 1.6 GPF (6.1 LPF) to accommodate existing plumbing infrastructure. Fixtures used for sanitizing potential biohazards are exempt from low-flow and WaterSense labeling requirements.*
- *Meet the requirements of IgCC 601.3.3 (6.4.3) Special Water Features.*

Requirements:

3.a.1.1: Submit documentation of compliance with IgCC 601.3.2 (6.3.2) Building Water Use Reduction, which incorporates EPA WaterSense-labeled products.

Exception: Fixtures used for sanitizing potential biohazards are exempt from low-flow and WaterSense labeling requirements.

Exception: IgCC 601.3.2.1.j is encouraged but not mandatory.

Required Documentation:

- Product cut sheets demonstrating compliance with IgCC 601.3.2 (6.3.2) Building Water Use Reduction

Reference Material:

- IgCC 601.3.2 (6.3.2) Building Water Use Reduction
- ASME A112.19.2/CSA B45.1 Ceramic Plumbing Fixtures
- ASME A112.19.14 Six-Liter Water Closets Equipped With a Dual Flushing Device
- ASME A112.19.19 Vitreous China Nonwater Urinals
- ASME A112.18.1/CSA B125.1 Plumbing Supply Fittings
- IAPMO Z124.9 Plastic Urinal Fixtures
- U.S. EPA WaterSense Tank-Type High-Efficiency Toilet Specification

3.a.1.2: Submit documentation of compliance with IgCC 601.3.3 (6.4.3) Special Water Features.

Required Documentation:

- Documentation demonstrating special water features (if any) comply with IgCC 601.3.3 (6.4.3) Special Water Features;

¹⁴ U.S. DEPARTMENT OF DEFENSE. *UFC 1-200-02 High Performance and Sustainable Buildings Requirements*. Available from: <http://www.wbdg.org/ffc/dod/unified-facilities-criteria-ufc/ufc-1-200-02>

Reference Material:

- IgCC 601.3.3 (6.4.3) Special Water Features

Assessment Guidance:

Base water efficiency design decisions on life-cycle cost as indicated in UFC 1-200-02 Paragraph 1-6 Life Cycle Cost Analysis (LCCA).

Tracking 1 – NAVY & AIR FORCE ONLY: Water Use Intensity (Enter data as GAL/Sq. Ft./Year per building. Only for new construction and complete system replacement).

3.a.2 UFC 1-200-02: Indoor Water Metering

- *“Provide meters to monitor building indoor water consumption, as required by DoDI 4170.11, and as amended by DoD Utilities Meter Policy, in the standard units of measure. Where base-wide energy and utility monitoring and control systems exist, meters must be connected using the installation’s advanced metering protocols. Meter configuration must comply with the requirements of UFC 4-010-06, and as required by individual Service’s meter implementation policy.”*

Requirements:

3.a.2.1: Submit documentation for all water meters installed. Include details on connection to the base-wide monitoring system.

Required Documentation:

- Copy of base wide monitoring plan that includes the installation of the building specific meters;
- Cut sheets for installed water meters that demonstrate connection to base wide monitoring system. Not applicable where the base does not yet have the centralized system.

Reference Material:

- *DoD Utilities Meter Policy (16 April 2013)*
- UFC 4-010-06 Cybersecurity of Facility-Related Control Systems:
<https://www.wbdg.org/ffc/dod/unified-facilities-criteria-ufc/ufc-4-010-06>.

Assessment Guidance:

When the base does not yet have a centralized system, include “No centralized system” in the comments.

3.b Outdoor Water Use

3.b.1 UFC 1-200-02: Landscaping

- *“In accordance with DOD Memo “Water Use for Landscape Architecture on Department of Defense Installations/Sites”, potable water use is prohibited for irrigating new landscaping, other than for plant establishment.*

- *For existing systems, if a building has a single water meter, reduce combined indoor and outdoor potable water use combined by at least 20% compared to building water use in 2007. Compare results to a baseline building, using the EPA WaterSense landscape water budget tool version 1.01 or later, or a Service approved tool.*
- *Show preference for irrigation contractors who are certified through a WaterSense labeled program, or other industry-recognized credentialing programs.*
- *Refer to UFC 3-201-02 for additional requirements."*

New construction (NC) projects: complete 3.b.1.1 and 3.b.1.2. Mark "No existing irrigation system" for 3.b.1.3, 3.b.1.4, and 3.b.2.1.

Existing systems/buildings: complete 3.b.1.2, 3.b.1.3, 3.b.1.4, and 3.b.2.1. Mark "Not an NC project" for 3.b.1.1.

Requirements:

3.b.1.1: Submit documentation showing no potable water is used for new landscaping.

Required Documentation:

- Irrigation system design and short narrative describing that no potable water is used for irrigating new landscaping (other than for plant establishment).

Assessment Guidance:

Refer to UFC 3-201-02 Landscape Architecture for additional requirements, and to Appendix B - Best Practices for additional information.

For existing systems/buildings, mark "Not an NC project."

3.b.1.2: Submit documentation showing compliance with UFC 3-201-02 Landscape Architecture.

Assessment Guidance:

UFC 3-201-02 Landscape Architecture establishes minimum landscape architectural requirements and best practices for DoD facilities worldwide. Where other criteria, statutory or regulatory requirements are referenced, comply with the more stringent requirement. Examples include requirements for native or drought tolerant plants, low maintenance landscapes, water efficient landscape, etc.

Reference UFC 3-201-02 Appendix A Best Practices for additional guidance.

3.b.1.3 For existing systems, if a building has a single water meter: Submit documentation of (at least) 20% indoor and outdoor potable water use reduction. Calculate water savings results to baseline building using EPA's WaterSense landscape water budget tool version 1.01 or later, or a Service approved tool.

Required Documentation:

- If using WaterSense Water Budget Tool (version 1.01 or later), include the following completed worksheets:
 - Part 1 - Baseline & LWA
 - Part 2 - LWR
 - Part 3 - Results

Assessment Guidance:

For new construction projects, mark "No existing irrigation system."

Reference Material:

- EPA's WaterSense Water Budget Tool: www.epa.gov/watersense/water_budget

3.b.1.4: Show preference for irrigation contractors (if any) who are certified through a WaterSense labeled program, or by another industry-recognized credentialing program.

Assessment Guidance:

For new construction projects, mark "No existing irrigation system."

3.b.2 UFC 1-200-02: Outdoor Water Metering

"Where LCCE, provide meters to monitor existing irrigation systems serving more than 25,000 square feet of landscape, as required by DoDI 4170.11, and as amended by DoD Utilities Meter Policy, in the standard units of measure. Where base-wide energy and utility monitoring and control systems exist, meters must be connected using the installation's advanced metering protocols. Meter configuration must comply with the requirements of UFC 4-010-06, and as required by individual Service's meter implementation policy."

Requirements:

For existing irrigation systems using potable water and serving more than 25,000 sq. ft. of landscape.

3.b.2.1: Submit documentation for separate water meters for outdoor water use. Include details on connection to the base-wide monitoring system.

Required Documentation:

- Contract documents: plans and specifications.
- Submittals
- Cut sheets for installed water meters that demonstrate connection to base wide monitoring system. Not required where the base does not yet have the centralized system.

Assessment Guidance:

For new construction projects, mark "No existing irrigation system."

For existing irrigation systems and when the base does not yet have a centralized system, include “No centralized system” in the comments.

Reference Material:

- UFC 4-010-06 Cybersecurity of Facility-Related Control Systems:
<https://www.wbdg.org/ffc/dod/unified-facilities-criteria-ufc/ufc-4-010-06>.

3.c Alternative Water

3.c.1 UFC 1-200-02: Alternative Water

“Where life-cycle cost-effective and permitted by state and local laws and regulations, use alternative water sources for non-potable applications. Where LCCE, provide meters to monitor alternative water consumption, as required by DoDI 4170.11, and as amended by DoD Utilities Meter Policy, in the standard units of measure. Where base-wide energy and utility monitoring and control systems exist, meters must be connected using the installation’s advanced metering protocols. Meter configuration must comply with the requirements of UFC 4-010-06, and as required by individual Service’s meter implementation policy.”

Requirements:

3.c.1.1: Submit documentation of any alternative water sources employed by the project.

Required Documentation:

- NIST BLCC calculations that compare the use of alternate water sources to the use of potable water for irrigation;
 - Drawing and specifications that demonstrate the use of alternate water sources;
- OR
- A copy of local regulations that demonstrate that the use of alternate water sources is prohibited.

Assessment Guidance:

Base water efficiency design decisions on life-cycle cost as indicated in UFC 1-200-02 Paragraph 1-6 Life Cycle Cost Analysis (LCCA). Where not life-cycle cost-effective (LCCE), mark “Not Applicable.”

If LCCE, provide meters to monitor alternative water consumption. Include details on connection to the base-wide monitoring system. If the base does not yet have a centralized system, include “No centralized system” in the comments.

Alternative water sources include, but are not limited to, the following:

- Captured condensate
- Harvested stormwater
- Harvested rainwater from roofs
- Graywater
- Reclaimed wastewater

Reference Material:

- UFC 4-010-06 Cybersecurity of Facility-Related Control Systems:
<https://www.wbdg.org/ffc/dod/unified-facilities-criteria-ufc/ufc-4-010-06>.

3.d Stormwater Management

3.d.1 UFC 1-200-02: Stormwater Management

“Meet the requirements of UFC 3-210-10.”

Requirements:

3.d.1.1: Are the requirements of UFC 3-210-10 Low Impact Development applicable to this project?

Reference Material:

- FC 1-300-09N NAVY AND MARINE CORPS DESIGN PROCEDURES: Low Impact Development (LID)
- UFC 3-210-10 Low Impact Development

Assessment Guidance:

Compliance with UFC 3-210-10 Low Impact Development is required for all projects that construct or expand one or more buildings as part of its primary scope and includes footprint greater than 5,000 gross square feet of new, impervious surfaces associated with the building(s). This includes both building area and pavement area of associated supporting facilities.

3.d.1.2: Submit documentation (see Required Documentation below) to validate the as-built LID-integrated management practices meet the design requirements, per UFC 3-210-10 Low Impact Development.

Required Documentation:

- Pre-development condition;
- EISA Section 438 estimated implementation costs for design and construction;
- Calculation for run-off volumes and rates in 95th percentile rainfall;
- Technical constraints;
- Stormwater features and their location(s);
- Construction cost;
- Validation documentation of constructed features.

Reference Material:

- FC 1-300-09N NAVY AND MARINE CORPS DESIGN PROCEDURES: Low Impact Development (LID)
- UFC 3-210-10 Low Impact Development, Technical Requirements Documents

Assessment Guidance:

Documentation requirements are listed in UFC 3-210-10 Low Impact Development, Technical Requirements chapter.

3.d.1.3 – NAVY ONLY: Does the project meet NAVY LID policy?

Reference Material:

- FC 1-300-09N NAVY AND MARINE CORPS DESIGN PROCEDURES: Low Impact Development (LID)

Assessment Guidance:

For Navy projects only. Comprehensive replacement projects with construction cost of greater than \$5M and with a stormwater element must comply with the requirements of FC 1-300-09N NAVY AND MARINE CORPS DESIGN PROCEDURES: Low Impact Development (LID).

For Air Force or Army projects, mark “Not a Navy project.”

4. ENHANCE INDOOR ENVIRONMENTAL QUALITY

4.a Ventilation and Thermal Comfort

4.a.1 UFC 1-200-02: Ventilation and Thermal Comfort

“Comply with UFC 3-410-01 for ventilation and thermal comfort criteria. Consider the use of passive (non-mechanical) thermal comfort methods as described in paragraph entitled, “Integrated Design” in (UFC 1-200-02).

Exception: For Medical Treatment Facilities, refer to UFC 4-510-01 Medical Military Facilities for ventilation and thermal comfort criteria.”

Requirements:

4.a.1.1: Meet the requirements of UFC 3-410-01 Heating, Ventilating, and Air Conditioning Systems.

Required Documentation:

- ASHRAE 62.1 calculations (as applicable)
- Operating and maintenance manual
- HVAC controls information, including diagrams and schematics
- Air balance report
- Construction drawings of record, control drawings, and final design drawings
- Design criteria and assumptions

Reference Material:

- *UFC 3-410-01 Heating, Ventilating, and Air Conditioning Systems:*
<https://www.wbdg.org/ffc/dod/unified-facilities-criteria-ufc/ufc-3-410-01>

4.a.1.2 – If Medical Treatment Facility: Meet the requirements of UFC 4-510-01 Medical Military Facilities.

Required Documentation:

- Mechanical drawings

Reference Material:

- *UFC 4-510-01 Medical Military Facilities:* <https://www.wbdg.org/ffc/dod/unified-facilities-criteria-ufc/ufc-4-510-01>

Assessment Guidance:

For Medical Treatment Facilities, refer to UFC 4-510-01 Medical Military Facilities for ventilation and thermal comfort criteria. If not a medical treatment facility, mark “Not a Medical Treatment Facility.”

4.a.1.3: Show proof that passive ventilation and thermal comfort methods are allowed and encouraged.

Assessment Guidance:

May not be applicable depending on mission, site location, and/or other considerations. See Instructions tab for allowed usage of “Not Applicable.”

4.b Daylighting and Lighting Controls

4.b.1 UFC 1-200-02: Daylighting and Lighting Controls

“Locate all employee work areas, such as classrooms and offices, on exterior walls or other locations where it is feasible to maximize daylighting. Maximize daylighting in break rooms and other gathering areas where feasible. For those spaces on the exterior of the building where it is feasible to maximize daylighting, meet the requirements of IgCC 801.4.1.2 (8.4.1.2) Minimum Sidelighting Effective Aperture for Office Spaces and Classrooms. Provide automated lighting, including daylighting, controls in accordance with UFC 3-530-01. For Medical Treatment Facilities, refer to UFC 4-510-01 Medical Military Facilities for additional daylighting criteria.

Exceptions: Under IgCC 801.4.1.2, Exceptions: Number 2, “for more than four daytime hours per day” does not apply.”

Requirements:

4.b.1.1: All employee work areas (e.g. classrooms and offices) are located on exterior walls or other locations where it is feasible to maximize daylighting.

Required Documentation:

- Daylight calculations per IgCC 801.4.1.2 (8.4.1.2)

Reference Material:

- *IgCC 801.4.1.2 (8.4.1.2) Minimum Sidelighting Effective Aperture for Office Spaces and Classrooms*

4.b.1.2: Meet the requirements of IgCC 801.4.1.2 (8.4.1.2) Minimum Sidelighting Effective Aperture for Office Spaces and Classrooms

Required Documentation:

- Minimum sidelighting effective aperture for all north-, south-, and east-facing facades
- Combined width of the primary sidelighted areas against length of the facade wall
- Opaque interior surfaces' visible light reflectance percentages in daylight areas for:
 - Ceilings
 - Partitions higher than 60 in. (1.8 m)
- Narrative describing any exceptions to IgCC 801.4.1.2 (8.4.1.2)

Reference Material:

- *IgCC 801.4.1.2 (8.4.1.2) Minimum Sidelighting Effective Aperture for Office Spaces and Classrooms*

4.b.1.3: Provide automated lighting controls in accordance with UFC 3-530-01 Interior and Exterior Lighting Systems and Controls: Lighting Controls (Interior) and Lighting Controls (Exterior) Sections.

Required Documentation:

- Construction drawings, specifications, and product cut sheets that demonstrate the use of automated lighting controls.

Reference Material:

- *UFC 3-530-01 Interior and Exterior Lighting Systems and Controls:*
<http://www.wbdg.org/ffc/dod/unified-facilities-criteria-ufc/ufc-3-530-01>
 - Lighting Controls (Interior)
 - Lighting Controls (Exterior)

4.b.1.4 If Medical Treatment Facility: Meet the requirements of UFC 4-510-01 Medical Military Facilities.

Required Documentation:

- Construction drawings, specifications, and product cut sheets that demonstrate the use of automated lighting controls.

Reference Material:

- *UFC 4-510-01 Medical Military Facilities:* <http://www.wbdg.org/ffc/dod/unified-facilities-criteria-ufc/ufc-4-510-01>

Assessment Guidance:

If not a medical treatment facility, mark “Not a Medical Treatment Facility.”

4.c Indoor Air Quality

4.c.1 UFC 1-200-02: Moisture Control

“Establish and implement a moisture control strategy for controlling moisture flows and condensation to prevent building damage, minimize mold contamination, and reduce health risks related to moisture. Meet the requirements of IgCC 1001.3.1.6 (10.3.1.5) Moisture Control by including and implementing these requirements in the IAQ construction management plan; UFC 3-410-01, Chapter 3, Ventilation Air, and UFC 3-101-01 Chapter 3 Building Envelope Requirements. Refer to Appendix B Protect Indoor Air Quality.”

Requirements:

4.c.1.1: A moisture control strategy for controlling moisture flows and condensation to prevent building damage, minimize mold contamination, and reduce health risks related to moisture has been established and implemented.

Required Documentation:

- Sustainability Action Plan, per UFGS 01 33 29

Reference Material:

- UFGS 01 33 29 Sustainability Requirements and Reporting: Sustainability Action Plan
- IgCC 1001.3.1.6 (10.3.1.5) Moisture Control
- UFC 1-200-02, Appendix B Best Practices: Protect Indoor Air Quality (IAQ)

4.c.1.2: Meet the requirements of UFC 3-410-01, Chapter 3, Ventilation Air.

Required Documentation:

- Narrative demonstrating compliance with UFC 3-410-01

Reference Material:

- UFC 3-410-01 Heating, Ventilating, and Air Conditioning Systems
- **Navy projects:** Navy Interim Technical Guide FY03-04 NAVFAC Mold Response Manual

4.c.1.3: Meet the requirements of UFC 3-101-01 Architecture, Chapter 3, Building Envelope Requirements. Submit design details complying with moisture control requirements.

Required Documentation:

- Design details complying with moisture control requirements per UFC 3-101-01: Moisture Barrier, including details per the following sub-sections:
 - Water-Resistive Barriers (WRB)
 - Vapor Retarders
 - Waterproofing
 - Mold Mitigation and Prevention

Reference Material:

- UFC 3-101-01 Architecture, Chapter 3, Building Envelope Requirements
- Navy projects: Navy Interim Technical Guide FY03-04 NAVFAC Mold Response Manual

4.c.2 UFC 1-200-02: Reduce Volatile Organic Compounds (VOC) (Low-Emitting Materials)

“Specify materials and products with low or no pollutant emissions, including composite wood products, adhesives, sealants, interior paints and finishes, carpet systems, and furnishings. Meet the requirements of IgCC 801.4.2 (8.4.2) Materials.

Exception: Exclude compliance with 8.4.2, first sentence.”

Requirements:

4.c.2.1: Specify materials and products with low or no pollutant emissions.

Required Documentation:

- Sustainability eNotebook including reported emissions or VOC contents for each of the below per UFGS 01 33 29, Table 3-1 Volatile Organic Compounds (VOC) (Low Emitting Materials) Requirements:
 - Adhesives and Sealants

- Paints and Coatings
- Floor Covering Materials
- Insulation
- Composite Wood, Wood Structural Panel and Agrifiber Products
- Office Furniture Systems and Seating (installed prior to occupancy)
- Ceiling and Wall Assemblies and Systems
- Construction submittal documentation must include certifications or labels demonstrating compliance with the requirements cited per the list above, based on UFGS 01 33 29, Table 3-1.

Reference Material:

- UFGS 01 33 29 Sustainability Requirements and Reporting: Reduce Volatile Organic Compounds, <https://www.wbdg.org/ffc/dod/unified-facilities-guide-specifications-ufgs/ufgs-01-33-29>
 - See Table 3-1 Volatile Organic Compounds (VOC) (Low Emitting Materials) Requirements
- UFGS 01 33 29 Sustainability Requirements and Reporting: Sustainability eNotebook

Assessment Guidance:

Review UFGS 01 33 29 Sustainability Requirements and Reporting: Reduce Volatile Organic Compounds (VOC) (Low Emitting Materials) for construction submittal documentation, referencing Table 3-1. These should be incorporated into a Sustainability eNotebook, which lists all applicable interior materials, minimum requirements for each, and percentage of the material that is compliant. If a product is available that wasn't used, provide justification for that decision.

UFGS 01 33 29 Sustainability Requirements and Reporting: Sustainability eNotebook provides details on developing a Sustainability eNotebook, including content, format, and submittal schedule.

4.c.3 UFC 1-200-02: Protect Indoor Air Quality during Construction

"For new construction and for work in an existing building that will be unoccupied during construction, develop and implement an IAQ construction management plan that complies with IgCC 1001.3.1.5 (10.3.1.4) Indoor Air Quality (IAQ) Construction Management, with maximum outdoor air consistent with achieving relative humidity no greater than 60%.

For work in an existing building that will be occupied during construction, comply with ANSI/SMACNA 008-2008, 2nd Edition, SMACNA IAQ Guidelines for Occupied Buildings Under Construction. Refer to Appendix B "Protect Indoor Air Quality" for best practices."

Requirements:

4.c.3.1: For new construction and for renovation of unoccupied existing buildings, develop and implement an IAQ construction management plan that complies with IgCC 1001.3.1.5 (10.3.1.4) Indoor Air Quality (IAQ) Construction Management.

Required Documentation:

- IAQ construction procedures in an Indoor Air Quality/Indoor Environmental Quality Plan or Division 01 specifications;
- General Contractors' Environmental Management System;
- IAQ Management Plan.

Reference Material:

- IgCC 1001.3.1.5 (10.3.1.4) Indoor Air Quality (IAQ) Construction Management

Assessment Guidance:

Maximum outdoor air must be consistent with achieving relative humidity no greater than 60%.

For renovations of occupied existing buildings, mark "This is an occupied existing building."

4.c.3.2: For renovation of occupied existing buildings, meet the requirements of SMACNA IAQ Guidelines for Occupied Buildings Under Construction, 2nd edition ANSI/SMACNA 008-2008.

Required Documentation:

- IAQ construction procedures in an Indoor Air Quality/Indoor Environmental Quality Plan or Division 01 specifications;
- General Contractors' Environmental Management System;
- IAQ Management Plan.

Reference Material:

- SMACNA IAQ Guidelines for Occupied Buildings Under Construction, 2nd edition ANSI/SMACNA 008-2008, including Appendix B "Protect Indoor Air Quality" for best practices
- UFC 1-200-02, Appendix B Best Practices, Protect Indoor Air Quality (IAQ)

Assessment Guidance:

For new construction and for renovation of unoccupied existing buildings, mark "Not an occupied building."

4.c.4 UFC 1-200-02: Environmental Tobacco Smoke Control

"Prohibit smoking within the building and within a minimum of 50 feet (15.24 meters) of all building entrances, operable windows, and building ventilation intakes. Verify if more stringent facility criteria or Installation policy applies."

Requirements:

4.c.4.1: Prohibit smoking within the building and within a minimum 50 feet (15.24 meters) of all building entrances, operable windows, and building ventilation intakes.

Reference Material:

- **Army:** Army Regulation 600-63, Army Health Promotion (PDF), https://www.army.mil/e2/downloads/rv7/r2/policydocs/r600_63.pdf
- **Navy:** SECNAV Instruction 5100.13E Navy and Marine Corps Tobacco Policy (PDF), <https://www.secnav.navy.mil/doni/Directives/05000%20General%20Management%20Security>

[%20and%20Safety%20Services/05-](#)

[100%20Safety%20and%20Occupational%20Health%20Services/5100.13E.pdf](#)

- **Air Force:** Air Force Instruction 40-102, Tobacco Use in the Air Force (PDF), https://static.e-publishing.af.mil/production/1/501csw/publication/afi40-102_501cswsup_i/afi40-102_501cswsup_i.pdf

Assessment Guidance:

See Service-specific reference above as applicable. Verify if more stringent facility criteria or Installation policy applies. This is automatically compliant as smoking is prohibited by policy.

UFC 1-200-02: Occupant Health and Wellness

“Promote opportunities for occupants to voluntarily increase physical activity, as part of the Integrated Design Process. Refer to UFC 1-200-02, Appendix B Best Practices for examples”

Requirements:

See 1.a.5.6 (Site Integration and Design of the Building) for requirement, required documentation, and assessment guidance.

5. REDUCE ENVIRONMENTAL IMPACT OF MATERIALS

“The following paragraphs require procurement of construction materials and building supplies that have a lesser or reduced effect on human health and the environment over their lifecycle, when compared with competing products or services that serve the same purpose.”

5.a Material Content and Performance

5.a.1 UFC 1-200-02: Recycled Content

“Use RCRA Section 6002 compliant products that meet or exceed EPA's recycled content recommendations, available on EPA's Comprehensive Procurement Guideline web site at <https://www.epa.gov/smm/comprehensive-procurement-guideline-cpq-program>.”

Requirements:

5.a.1.1: Specify products consistent with the USEPA Comprehensive Procurement Guideline (CPG).

Required Documentation:

- Sustainability eNotebook including recycled content products complying with 40 CFR 241, and as described in UFGS 01 33 29, Recycled Content:
 - Manufacturer's documents stating recycled content by material, or written justification for claiming an allowed exception per EPA's Comprehensive Procurement Guideline Program (see link below).
 - Any proposed substitutions of alternative products or systems that provide equivalent performance and appearance and have greater contribution to project recycled content requirements. All proposed substitutions must be submitted within the Sustainability Action Plan along with product data.
 - Certification as described in UFGS 01 78 00, Certification of EPA Designated Items.
 - Specify if any of the following exemptions apply:
 - a. Product does not meet appropriate performance standards;
 - b. Product is not available within a reasonable time frame;
 - c. Product is not available competitively (from two or more sources);
 - d. Product is only available at an unreasonable price, compared with a comparable non-recycled content product.

Reference Material:

- UFGS 01 33 29 Sustainability Requirements and Reporting: Recycled Content, <https://www.wbdg.org/ffc/dod/unified-facilities-guide-specifications-ufgs/ufgs-01-33-29>
- UFGS 01 33 29 Sustainability Requirements and Reporting: Sustainability eNotebook
- UFGS 01 78 00 Closeout Submittals, Certification of EPA Designated Items, <https://www.wbdg.org/ffc/dod/unified-facilities-guide-specifications-ufgs/ufgs-01-78-00>

- EPA's Comprehensive Procurement Guideline (CPG) Program: <https://www.epa.gov/smm/comprehensive-procurement-guideline-cpg-program>
- EPA Website, Recommendations of Specifications, Standards, and Ecolabels for Federal Purchasing: <https://www.epa.gov/greenerproducts/recommendations-specifications-standards-and-ecolabels-federal-purchasing>
- SF Tool, Green Procurement Compilation: <https://sftool.gov/greenprocurement>

Assessment Guidance:

Procuring CPG products complies with RCRA Section 6002, for which 40 CFR 247 assists procuring agencies with compliance. Refer to EPA's Comprehensive Procurement Guideline (CPG) Program to identify products cited in 40 CFR 247.

Record each product used in the project that has a requirement or option of containing recycled content within a Sustainability eNotebook, noting total price, total value of post-industrial recycled content, total value of post-consumer recycled content, exemptions, and comments. Recycled content values may be determined by weight or volume percent but must be consistent.

Refer to UFGS 01 78 00 Certification of EPA Designated Items for details on the certification document identified in Required Documentation.

UFGS 01 33 29 Sustainability Requirements and Reporting: Sustainability eNotebook provides details on developing a Sustainability eNotebook, including content, format, and submittal schedule.

5.a.2 UFC 1-200-02: Biologically-Based Products

"Per Section 9002 of the Farm Security and Rural Investment Act, specify products composed of the highest percentage of biobased content consistent with the USDA BioPreferred Program, if products meet performance requirements and are available at a reasonable cost. Document deviation from using biobased product procurement. Include a preference for purchasing products with the highest biobased content per USDA recommendations for designated product categories in all applicable solicitations. USDA's biobased product designations and biobased content (which includes certified sustainably-harvested and rapidly renewable resources) recommendations are available on USDA's BioPreferred web site at <http://www.biopreferred.gov/>."

Requirements:

5.a.2.1: Specify products composed of the highest percentage of biobased content consistent with the USDA BioPreferred Program.

Required Documentation:

- Sustainability eNotebook including a list of products and materials composed of the highest percentage of biobased materials consistent with USDA BioPreferred Program, and as described in UFGS 01 33 29, Bio-Based Products:
 - USDA BioPreferred label for each product;

- For biobased products used but not listed with BioPreferred, provide biobased content and percentage;
- Certification as described in UFGS 01 78 00 Certification of USDA Designated Items.
- Specify if any of the following exemptions apply:
 - a. Product does not meet appropriate performance standards;
 - b. Product is not available within a reasonable time frame;
 - c. Product is not available competitively (from two or more sources);
 - d. Product is only available at an unreasonable price, compared with a comparable biobased content product.

Reference Material:

- UFGS 01 33 29 Sustainability Requirements and Reporting: Bio-Based Products, <https://www.wbdg.org/ffc/dod/unified-facilities-guide-specifications-ufgs/ufgs-01-33-29>
- UFGS 01 33 29 Sustainability Requirements and Reporting: Sustainability eNotebook
- UFGS 01 78 00 Closeout Submittals, Certification of USDA Designated Items, <https://www.wbdg.org/ffc/dod/unified-facilities-guide-specifications-ufgs/ufgs-01-78-00>
- USDA BioPreferred® Program: www.biopreferred.gov/
- Farm Security and Rural Investment Act of 2002, Section 9002, <https://www.congress.gov/bill/107th-congress/house-bill/2646>

Assessment Guidance:

Procuring biobased products complies with FSRIA 9002 USDA BioPreferred Program. Refer to the BioPreferred Catalog, www.biopreferred.gov, for the product categories. Selected products must comply with non-proprietary requirements of the Federal Acquisition Regulation and must meet performance requirements.

Record each product used in the project that has a requirement or option of containing biobased content within a Sustainability eNotebook, noting total price, total value of post-industrial recycled content, total value of post-consumer recycled content, total value of biobased content, exemptions, and comments. Biobased content values may be determined by weight or volume percent but must be consistent.

Refer to UFGS 01 78 00 Certification of USDA Designated Items for details on the certification document identified in Required Documentation.

UFGS 01 33 29 Sustainability Requirements and Reporting: Sustainability eNotebook provides details on developing a Sustainability eNotebook, including content, format, and submittal schedule.

5.a.3 UFC 1-200-02: Ozone Depleting Substances

“Do not use ozone depleting substances and high global warming potential (GWP) chemicals where EPAs Significant New Alternatives Policy (SNAP) Program has identified acceptable substitutes or where other environmentally preferable products are available for use in construction, repair or end-of-life replacements: www.epa.gov/snap.”

Exceptions: Refer to UFC 3-600-01 for fire protection system requirements.”

Requirements:

5.a.3.1: Provide written narrative detailing research, analysis, and final determination of exclusion or inclusion of considered environmentally preferable products in project.

Required Documentation:

- Submittals (manufacturer’s product data and specifications) indicate no CFCs

Reference Material:

- EPA Significant New Alternatives Policy (SNAP) Program, www.epa.gov/snap

5.a.3.2 Air Force Only: Comply with “Sundown Policy for Foam Fire Suppression Systems Memorandum” (16 Nov 2021).

Required Documentation:

- Submittals (manufacturer’s product data and specifications) indicate no CFCs

Reference Material:

- Sundown Policy for Foam Fire Suppression Systems Memorandum (16 Nov 2021)

Assessment Guidance:

For Army and Navy projects, mark “Not an Air Force project.”

5.b Waste and Materials Management

5.b.1 UFC 1-200-02: Storage and Collection of Recyclables

“Meet the requirements of IgCC 901.3.4.1 (9.3.4.1) Recyclables, where markets or onsite recycling exist.”

Requirements:

5.b.1.1: Meet the requirements of IgCC 901.3.4.1 (9.3.4.1) Recyclables: Provide areas serving the entire building that are dedicated to the collection and storage of materials for recycling.

Assessment Guidance:

Collection and storage of materials for recycling include paper, corrugated cardboard, glass, plastics, and metals. Where there are no markets and no existing onsite recycling, mark N/A due to location conditions.

Required Documentation:

- Drawings and plans for specific area(s) designated collection and storage of materials for recycling

Reference Material:

- IgCC 901.3.4.1 (9.3.4.1) Recyclables

5.b.2 UFC 1-200-02: Waste Diversion

“Divert minimum 60% of nonhazardous construction and demolition waste material from landfills.”

Requirements:

5.b.2.1: Divert a minimum of 60% (DoD requirement) of non-hazardous construction and demolition waste from landfills.

Required Documentation:

- Calculations by either weight or volume (must be consistent throughout)
- Construction Waste Management Plan in accordance with UFGS 01 74 19 CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

Reference Material:

- UFGS 01 74 19 CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

6. ADDRESS CLIMATE CHANGE RISK

6.a Building Resilience

6.a.1 UFC 1-200-02: Address Climate Change Risk

“Provide building design solutions responsive to any Government-provided projections of climate change and determination of acceptable risk, typically evaluated and documented in the planning process.”

See UFC 2-100-01 and UFC 3-201-01 for potential climate risk considerations and requirements for work on existing buildings.”

Requirements:

6.a.1.1: Does the DD1391 or program planning document include climate change projection and/or determination of acceptable risk for this project?

Required Documentation if scoped in the Enacted DD1391 or program planning document:

- Documentation of long-term mission criticality.
- Excerpt of Charrette discussion of climate change impact evaluation (including wildfire), based on mission criticality and cost, when part of project.
- Documentation identifying implementation of actions to increase climate resilience, including building design solutions, Government-provided climate change projections, and determination of acceptable risk.

Reference Material:

- UFC 2-100-01 Installation Master Planning
- UFC 3-201-01 Civil Engineering

Assessment Guidance:

Only applicable if already cited, scoped, and funded in the project's DD1391 or program planning document. **If there is no climate change projection or determination of acceptable risk present in the DD1391 or program planning document, this requirement is automatically compliant.**

6.a.1.2 If located in a floodplain of concern: Provide design solutions which mitigate floodplain impact and impact on building function and occupants.

Required Documentation if scoped in the Enacted DD1391 or program planning document:

- For buildings located in a floodplain of concern:
 - Design strategies to mitigate impact on floodplain.
 - Designed flood event, including its impact on building function and occupants, consistent with mission criticality.

Assessment Guidance:

Only applicable if already cited, scoped, and funded in the project's DD1391, program planning document, or as otherwise part of existing criteria requirements (e.g., civil engineering requirements for free board height, stormwater management, etc.). **If not cited, scoped, and funded in the project's DD1391, this requirement is an automatically compliant.**

Contact Us

www.theGBI.org

The Green Building Initiative

7805 S.W. 40th
#80010,
Portland, OR 97219

Phone: 503.274.0448

Email: info@thegbi.org