

**Forest Service Handbook
National Headquarters - Washington Office
Washington, DC**

**Forest Service Handbook 7309.11 – Buildings and Related Facilities Handbook
Chapter 70 - Sustainable Buildings**

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Digest: Following is an explanation of the changes throughout the directive by section.

70: Revises and updates chapter in its entirety.

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Guidance documents lack the force and effect of law, unless expressly authorized by statute or incorporated into a contract. USDA may not cite, use, or rely on any guidance that is not available through their guidance portal, except to establish historical facts.

70.1 - Authority

1. [Energy Independence and Security Act of 2007 \(EISA\)](#) (Public Law 110-140). An omnibus energy policy law that mainly addresses increased energy efficiency and availability of renewable energy. The Act includes provisions that address Federal fleet standards, biomass utilization, Federal building energy efficiency, and carbon capture and sequestration.
2. [Energy Policy Act of 2005](#) (EPAct 2005) (Public Law 109-58). Extends prior Congressional direction with greater goals of energy efficiency improvements in existing and new facilities and operations. Among the provisions are increased use of renewable energy sources, advanced utility metering, and procurement of energy efficient equipment and building systems. The law establishes direction and standards for energy efficiency for Federal agencies as they deliver their respective missions and includes provisions that address fleet management, facility management, and water conservation.
3. [Executive Order 13423 Strengthening Federal Environmental, Energy, and Transportation Management](#). Establishes that it is the policy of the United States that Federal agencies conduct their environmental, transportation, and energy-related activities under the law in support of their respective missions in an environmentally, economically, and fiscally sound, integrated, continuously improving, efficient, and sustainable manner. The Executive Order consolidates and strengthens five executive orders and two memorandums of understanding and establishes new and updated goals, practices, and reporting requirements for environmental, energy, and transportation performance and accountability. It directs agency heads to implement sustainable practices within the agency.
4. [Executive Order 13514, Federal Leadership in Environmental, Energy, and Economic Performance](#). Executive Order 13514 enhances [Executive Order 13423](#) and introduces new greenhouse gas (GHG) emissions management requirements, expands water reduction requirements for Federal agencies, and addresses waste diversion, local planning, sustainable buildings, environmental management, and electronics stewardship.
5. [Executive Order 13653--Preparing the United States for the Impacts of Climate Change](#) This authority is placed in order to prepare the Nation for the impacts of climate change by undertaking actions to enhance climate preparedness and resilience.
6. [Farm Security and Rural Investment Act of 2002](#) (FSRIA) (Public Law 107-17) provides a mechanism to increase Federal government purchasing of designated biobased products. Section 9002 directs USDA to designate biobased items. Federal agencies are required to purchase USDA designated biobased items.
7. [Federal Leadership in High Performance and Sustainable Buildings Memorandum of Understanding \(MOU\)](#). This MOU commits USDA and other signatory agencies to

design, construction, and operation of High-Performance and Sustainable Buildings. This MOU establishes the five Guiding Principles for the design of Federal buildings.

8. [The Resource Conservation and Recovery Act \(RCRA\)](#) (42 USC §6962). This Act requires the purchase of recycled content products designated by the Environmental Protection Agency (EPA). These products are also known as Comprehensive Procurement Guideline or CPG items, which is EPA's list of designated products. Examples of recycled content products are recycled content copier paper and other paper products, notebook binders, and remanufactured toner cartridges. Refer to <http://www.epa.gov/cpg/> for the list of products, EPA's recommendations, and suppliers.
9. [Montreal Protocol and Title VI of the Clean Air Act Amendments of 1990](#). Eliminates the use of ozone depleting compounds during and after construction where alternative environmentally preferable products are available.
10. [Presidential Memorandum: Federal Leadership on Energy Management](#) of December 5, 2013. Establishes new goals for renewable energy as well as new energy-management practices.
11. [U. S. Department of Agriculture \(USDA\) Departmental Regulation 5500-001, Facilities Energy and Water Conservation and Utilities Management](#). Establishes the USDA policy for energy and water conservation and utilities management in USDA facilities in accordance with the requirements of legislation and Executive Orders, and assigns responsibilities for implementation of this policy.
12. [USDA Strategic Sustainability Performance Plan](#). This plan sets forth USDA's commitment to operate in a sustainable manner and to better understand and address climate change adaptation.
13. [USDA Environmental Management Department Regulation \(DR\) 5600-005, of September 2012](#). The purpose of this DR is to define responsibilities and requirements with respect to USDA efforts towards sustainable operations, decreasing energy intensity, restoring natural resources affected by hazardous substances, pollutants or contaminants, minimizing and responding to the release or threatened release of hazardous substances which could endanger public health or the environment, minimizing environmental liabilities by ensuring compliance with property disposal statutes, and identifying potential environmental liabilities prior to property acquisition.

70.2 - Policy

Forest Service-owned and -leased facilities shall be designed, constructed, leased, renovated, managed, and operated in the most sustainable manner possible. Specifically, the Forest Service shall:

1. Reduce Greenhouse Gas (GHG) emissions from Agency facilities;

2. Improve energy and water efficiency, conserve resources, and utilize renewable energy; and
3. Reduce life-cycle cost of buildings' environmental and energy attributes.

The Agency shall evaluate and monitor sustainability and efficiency throughout the life of the facilities in accordance with this direction.

70.4 - Responsibilities

70.41 - Washington Office, Director of Engineering

The Washington Office, Director of Engineering is responsible for overall development and oversight of the Sustainable Buildings program including policy, direction, and reporting. In order to provide successful oversight, Washington Office Engineering shall:

1. Maintain the official Forest Service National High Performance Sustainable Building (HPSB) eligible building list, ensuring that the latest information is readily available for use. All buildings on the Forest Service National HPSB list must be identified as such in the Natural Resource Manager (INFRA) Database. Only Washington Office Engineering has the authority to add or remove a building from the Forest Service National list.
2. Maintain the official USDA/Forest Service Existing Building Sustainability Ranking System assessment tool, which measures compliance of HPSB-eligible buildings with the Guiding Principles.
3. Update the INFRA database with the latest assessment results using the USDA/Forest Service Existing Building Sustainability Ranking System. These assessment results will become the official response to the Sustainability Element in the Federal Real Property Profile (FRPP) database.
4. Report U.S. Department of Agriculture (USDA) required data elements for HPSB and Covered Facilities to USDA. Washington Office Engineering shall maintain the master lists.
5. Report on portions of the Annual Greenhouse Gas (GHG) Emissions and Energy Report to USDA.
6. Report on portions of the Sustainable Operations element of the Performance Accountability System (PAS).
7. Maintain the official list of buildings required to be metered and advanced metered. Manage the advanced meter program.
8. Designate a National Energy Manager with duties described in section 70.45.

70.42 - Regional Foresters, Station Directors, and Area Director (R/S/A Leadership)

The Regional Foresters, Station Directors, and Area Director (R/S/A) are responsible for the overall implementation of the Sustainable Buildings program including planning, design, and oversight of Field Office activities. Additionally, the Regional Foresters, Station Directors, and the Area Director are responsible for tracking accomplishments and progress for upward reporting as required by the Washington Office. The Regions, Stations, and the Area shall:

1. Design and construct new building and major renovations in accordance with this chapter (see ex. 01) and in accordance with [New Construction and Major Renovation Sustainability Assessment and Compliance Checklist on Facility Toolbox](#).
2. Validate the Forest Service National HPSB list to ensure accuracy. Any changes and updates must be coordinated with the Director of Engineering.
3. Ensure that assessments and reassessments of buildings on the Forest Service National HPSB list are completed using the USDA/Forest Service Existing Building Sustainability Ranking System. Assessment results should be consolidated and forwarded to the Director of Engineering prior to the end of each fiscal year.
4. Consolidate and analyze USDA required data elements for Covered Facilities gathered from Forest Service Units and report to the Washington Office.
5. Consolidate and analyze data elements for Annual GHG Emissions and Energy Report from Forest Service Units and report to the Washington Office.
6. Designate Regional Energy Managers with duties described in section 70.45.
7. Maintain current records of all advanced meter life cycle cost analyses.

70.43 - Forest Supervisors, Area Directors, and Research Directors

Forest Supervisors, Area Directors, and Research Directors shall:

1. Collect data for and populate USDA required data elements for Covered Facilities and HPSB-eligible buildings and report to R/S/As;
2. Provide data for the Annual GHG Emissions and Energy Report to R/S/As;
3. Incorporate the requirements of this chapter into the programs, projects, and efforts implemented at locations under their jurisdiction;
4. Ensure Forest Service-owned and -leased facilities will be designed, constructed, leased, renovated, managed, and operated in the most sustainable manner possible;

5. Designate Unit Energy Coordinator with duties described in section 70.44;
6. Ensure designated energy coordinators complete duties as described in section 70.44;
7. Provide resources for implementing tasks described in section 70.44;
8. Promote renewable energy sources;
9. Implement green building practices.

70.44 - Unit Energy Coordinator

“Energy Coordinator” is a Forest Service term created so that the Unit Energy Coordinators are not required to complete the same training as R/S/A Energy Managers.

Unit Energy Coordinator duties include:

1. Performing life cycle cost analyses for all buildings where an advanced meter is deemed appropriate. Keeping records of results on file.
2. Assisting with energy and water evaluations as requested by the R/S/A Energy Manager;
3. Implementing energy and water conservation measures at Unit facilities;
4. Providing training on energy and water conservation measures to Unit employees;
5. Reporting energy and water consumption as requested by the R/S/A Energy Manager;
6. Providing energy- and water- related information to the R/S/A Energy Manager as requested;
7. Obtaining training suggested by the R/S/A Energy Manager;
8. Providing consumption information, such as that obtained from advanced meters and utility bill, to Unit employees to promote energy and water reduction;
9. Promoting renewable energy sources;
10. Implementing green building practices; and Acquiring certifications as required.

70.45 - Energy Managers

Energy Managers are designated at the National and R/S/A levels and are typically not located at the Unit level.

70.45a - National Energy Manager

The National Energy Manager reports to the USDA Sustainability Program Managers, as required. Responsibilities include:

1. Ensuring R/S/A Energy Managers receive proper training and information on the newest technologies;
2. Coordinate the advanced metering program;
3. Coordinating with Sustainable Operations to reduce energy and water consumption and promote renewable energy use across the Agency; and
4. Coordinating with the National Facilities Engineer and Sustainable Operations to promote green building practices and certifications as required.

70.45b - R/S/A Energy Managers

R/S/A Energy Managers duties, as defined by EISA, include:

1. Completing comprehensive energy and water evaluations of 25 percent of covered facilities each year, so that an evaluation of each facility is completed at least once every 4 years;
2. Following up on implemented measures, including fully commissioning equipment;
3. Putting operation and maintenance (O&M) plans in place, and measuring and verifying energy and water savings in covered facilities using a Department of Energy Web application to certify and track compliance for energy and water evaluations, project implementation and follow up measures, and estimated cost and savings in covered facilities;
4. Entering energy use data for each Covered Facility into a benchmarking system, such as the ENERGY STAR[®] Portfolio Manager.

Additionally, the R/S/A Energy Managers shall:

1. Work with the National Energy Manager to manage the sustainability program;
2. Obtain training identified by the National Energy Manager;
3. Provide training and information to Forest Energy Coordinators;
4. Maintain communication between Forest Energy Coordinators and the National Energy Manager;

5. Promote energy and water consumption awareness and reduction;
6. Coordinate with the Unit Energy Coordinator to ensure consumption information from sources such as advanced meters and utility bills is reviewed to promote energy and water reduction;
7. Ensure green building practices are implemented and certifications are attained where necessary;
8. Ensure renewable energy is used as possible; and
9. Ensure energy and water audits are conducted as required and results are utilized.

70.5 - Definitions

Advanced meter. A meter which has the capability to measure and record interval data, such as energy consumption, at least hourly, and communicate the data to a remote location in a format that can be easily integrated into an advanced metering system.

Advanced metering system. A system that collects time differentiated data from advanced meters and other sensors via a network system on either an on-request or defined schedule basis. The system must provide energy use data on a daily basis and support desired features and functionality related to energy use management, procurement, and operations.

Biobased materials. A commercial or industrial product, other than food or feed that utilizes biological products or renewable domestic agricultural (plant, animal, and marine) or forestry materials.

Building Commissioning. A systematic process of assuring, through verification and documentation, from the design phase to a minimum of one year after final acceptance, that all facility systems perform interactively in accordance with the design documentation and intent, which includes preparation of operational personnel.

Covered Facility. Forest Service facilities listed on the USDA Covered Facility list in reference to EISA section 432.

Energy or water metering. Energy or water consumption recording for the purposes of billing by a utility company or energy or water management at an installation, campus, or building level, which conforms with established accuracy standards and uses utility-grade meters.

Sub-metering. The application of metering technology to capture data at the level necessary to facilitate energy or water management at different buildings in a multi-building campus, different floors of the same building, different tenants in a multi-tenant

office facility, individual building systems (for example, heating and cooling, lighting, plug loads), electrical circuits, or specific devices.

ENERGY STAR® rating. The rating a building earns using the ENERGY STAR® Building system to compare energy performance in similar buildings in similar climates. A score of 50 represents average building performance.

Green Building Certification System. A third-party evaluation system used by the Federal Government and the private sector for measuring the sustainability performance of new and existing buildings such as, but not limited to, Green Globes® and Leadership in Energy and Environmental Design® (LEED®).

Green Globes®. A third-party green building certification system that is both a guide for integrating green design principles and an assessment protocol.

Gross Building Area. The sum of all areas on all floors within the building envelope. This includes all areas within the outside faces of exterior walls, including all vertical penetration areas, and circulation and shaft areas that connect one floor to another. Gross area of a floor must include any areas with a clear standing headroom of 6.5 feet or more, such as: roofed porches, loading platforms, shipping platforms, attics, garages, penthouses, lobbies, corridors, and mechanical equipment floors.

Gross Square Footage (GSF). The net usable area plus the structural space (see ANSI/BOMA for details).

Guiding Principles. Those principles set forth in the Federal Leadership in High Performance and Sustainable Buildings MOU (see section 71.2).

High Performance Sustainable Building (HPSB). A HPSB building is a HPSB-eligible building that meets the Guiding Principles as defined by USDA criteria. A HPSB-eligible building is a building owned or leased by the Forest Service, is a fully enclosed structure with at least 5,000 GSF, and provides occupied space (of no minimum SF) such as office or work space, that is conditioned to provide for personal comfort. (See sec. 70.1 and sec. 73.1 for more information)

Leadership in Energy and Environmental Design (LEED)®. A third-party evaluation system developed by the U.S. Green Building Council (USGBC) for sustainable building design, operation, and maintenance of buildings.

Life-cycle cost-effective. The term “life cycle cost-effective”, with respect to a measure, means a measure, the estimated savings of which exceed the estimated costs over the lifespan of the measure.

Major renovations. Any renovation whose total cost exceeds 25 percent of the current replacement value of the building would be considered a major renovation. For major

renovations, the sustainable design requirements would only apply to the portion of the building being renovated.

Re-commissioning. A process of commissioning a facility or system beyond the project development and warranty phases. Provides additional opportunities to improve facility efficiency and address issues that may have arisen since the original commissioning.

Renewable energy. Energy produced by solar, wind, biomass, landfill gas, ocean (including tidal, wave, current, and thermal), geothermal, municipal solid waste, hydroelectric, or other renewable sources.

Retro-commissioning. A process of commissioning a facility or system that was not commissioned at the time of construction.

Sustainability and Sustainable. To create and maintain conditions, under which humans and nature can exist in productive harmony, that permit fulfilling the social, economic, and other requirements of present and future generations.

71 - Sustainable Buildings and the Guiding Principles (gp)

Lists of and guidance for current regulations pertaining to sustainability for Federal facilities are maintained by the U.S. Department of Energy Federal Energy Management Program (FEMP) and can be found on their website at: <http://www1.eere.energy.gov/femp/index.html>. Also, the Department of Veterans Affairs provides a comprehensive Sustainable Design Manual at <http://www.cfm.va.gov/til/sustain.asp>. Information specific to Forest Service buildings is available in the Sustainability section of the Facilities Toolbox at <http://www.fs.fed.us/eng/toolbox/sus/index.htm>.

71.1 - Sustainability Concepts

The Forest Service is committed to designing, locating, constructing, maintaining, and operating its facilities in an environmentally responsible, resource efficient and sustainable manner consistent with the Agency's mission. In order to meet this commitment, consider methods and materials that perform the following:

1. Reduce the environmental footprint of the facilities, including the activities of the building occupants related to energy and water consumption, and waste production;
2. Minimize the sources of greenhouse gas production and negative environmental impacts;

3. Maximize the use of passive solar energy, ground heating and cooling, natural setting and vegetation such as trees for shade, and on-site or available renewable energy production;
4. Convert waste streams into building materials, and utilize local, renewable building materials such as wood;
5. Perform building maintenance and operation to preserve the sustainable design elements;
6. Provide long-lasting, functioning facilities while minimizing the amount of highly-technical equipment and maintenance required;
7. Provide healthy and pleasant workspaces and living spaces that make use of natural lighting, minimize volatile organic compounds (VOCs), and maximize indoor environmental quality; and
8. Provide facilities that interact in a positive manner, to the greatest extent possible, with the local natural environment.

In accordance with E.O. 13514, every new Federal-owned building for which planning is initiated in 2020 or later must be designed to achieve zero-net energy by 2030. E.O. 13514 defines a zero-net energy building as “a building that is designed, constructed, and operated to require a greatly reduced quantity of energy to operate, meet the balance of energy needs from sources of energy that do not produce greenhouse gases, and therefore result in no net emissions of greenhouse gases while being economically viable.”

71.2 - Guiding Principles and Monitoring

Wherever the *Guiding Principles* are referred to throughout this directive, the meaning captures all current technical guidance, laws and regulations issued subsequent to the original multi-agency *Federal Leadership in High Performance and Sustainable Buildings MOU*. The Forest Service will strive to incorporate and adopt, as appropriate and practical, the Guiding Principles with the purpose of:

1. Promoting sustainable environmental stewardship;
2. Providing safe, healthy, and productive built environments;
3. Improving energy efficiency, and water and resource conservation; and,
4. Reducing the total ownership cost of Forest Service-owned facilities.

Consistent with and in addition to Federal policy, statutes, Executive Orders and agency policies and guidance, the MOU established the following *Guiding Principles* for Federal building design:

1. Employ Integrated Design Principles,
2. Optimize Energy Performance,
3. Protect and Conserve Water,
4. Enhance Indoor Environmental Quality, and
5. Reduce Environmental Impact of Materials.

Additional information can be found at the following links:

Whole Building Design Guide (<http://www.wbdg.org/references/fhpsb.php>), FedCenter (<https://www.fedcenter.gov/programs/greenbuildings/>), and Federal Leadership in High Performance and Sustainable Buildings Memorandum of Understanding (http://www.wbdg.org/pdfs/sustainable_mou.pdf).

The Forest Service shall monitor, through the use of meters, utility bills, or other means, energy and water consumption to show progress in meeting the Guiding Principles, and to evaluate effectiveness of energy and water conservation measures. (See sec. 74.5 for metering requirements. Also see Measurement and Verification Sections in the “[USDA/Forest Service Existing Building Sustainability Ranking](#)” workbook and the “[New Construction and Major Renovation Sustainability Assessment and Compliance Checklist](#)”).

The Forest Service is required to make annual progress toward 100 percent conformance with Guiding Principles in all HPSB-eligible buildings.

71.21 - Assessments to Meet Guiding Principles (Team and Intervals)

In order to meet the integrated design intent of the Guiding Principles, a project team will be assembled to assess buildings, both planned and existing, for conformance with the Guiding Principles.

The integrated design team, under the direction of the Regional Engineer or their designee, should include at least one or more of the following:

1. An Engineer or Architect.
2. An ANSI-certified Green Building Professional

3. An Energy Service Company (ESCO) or other third party contractor experienced in conducting sustainability assessments.
4. An occupant of the building being assessed (if existing).

A building that meets the Guiding Principles for New Construction and Major Renovations may be counted as compliant for up to 5 years after substantial completion. The building must then be reassessed on a 5-year cycle for compliance with the Guiding Principles for Existing Buildings.

Existing building assessments may be performed at any time. Once an existing building has been verified to comply with the Guiding Principles, it may be assumed to be in compliance for up to 5 years for reporting purposes. Many of the Guiding Principles have ongoing operational requirements such as following the building management plan to carry out sustainable operating decisions, energy benchmarking, and environmentally preferable purchasing. Buildings should be re-evaluated for compliance with Guiding Principles during the mandatory Facility Condition Assessment, which is done every 5 years. Changes to a building's operations or major systems can be triggers for reassessing a building's progress before the 5-year assessment.

72 - New Buildings and Major Renovations

Executive Orders 13423 and 13514 require Federal agencies to design, construct, and operate Federal buildings in accordance with the Guiding Principles. This section outlines how the Forest Service shall ensure that planning, design, and construction of new buildings, and major renovations of existing buildings, will meet the Guiding Principles and statutory requirements.

A new building is defined as a building that is constructed, purchased, or otherwise acquired.

72.1 - Building Planning

The Forest Service shall ensure that any acquired building and renovations of Forest Service buildings comply with the Guiding Principles (see sec. 71.2).

When planning a new building, first consider how to best meet the Sustainability Concepts (sec. 71.1).

When planning new buildings, R/S/As shall conduct preliminary analyses to identify opportunities to consolidate and dispose of existing assets, and optimize the performance of the Agency's real-property portfolio. Before altering existing buildings, evaluate options for and employ, where feasible, alternative space management and workplace arrangements; reduce the need for construction by increasing utilization and occupancy rates in existing buildings, and/or by providing off-site workplace options.

For additional information on Planning, see FSH 7309.11, chapter 20.

72.2 - High Performance and Sustainable Building (HPSB) Design

When designing buildings 5000 GSF in size or larger, use a collaborative, integrated planning and design process as described in the High Performance and Sustainable Buildings Guidance, found at:

https://www.fedcenter.gov/_kd/Items/actions.cfm?action=Show&item_id=11130&destination=ShowItem. (See sec. 71.21)

New buildings and major renovation projects will meet or exceed the minimum applicable requirements established in the Forest Service “[New Construction and Major Renovation Sustainability Assessment and Compliance Checklist](#)”, provided in the Facilities Toolbox. The completed checklist must be maintained in the project file and will serve as the official record for certifying compliance with the Guiding Principles. It is strongly encouraged, but not required, that new construction and major renovation projects smaller than 5000 GSF complete the checklist as well.

It is recommended to use Value Analysis design reviews to assess and verify sustainability features. For more information on Value Analysis, see FSM 1300, chapter 1340.

72.3 - Building Design and Certification

New buildings, as well as buildings that have undergone major renovation, that are 10,000 GSF or larger, are environmentally conditioned, and are offices, research laboratories, or visitors centers, must be registered and certified using either the U.S. Green Building Council’s Leadership in Energy and Environmental Design (LEED)[®] rating system (minimum Silver certification), Green Globes[®] (minimum Two Green Globes certification), or other ANSI-accredited third-party certification system at a level comparable to either LEED Silver or Two Green Globes, and certification must be maintained.

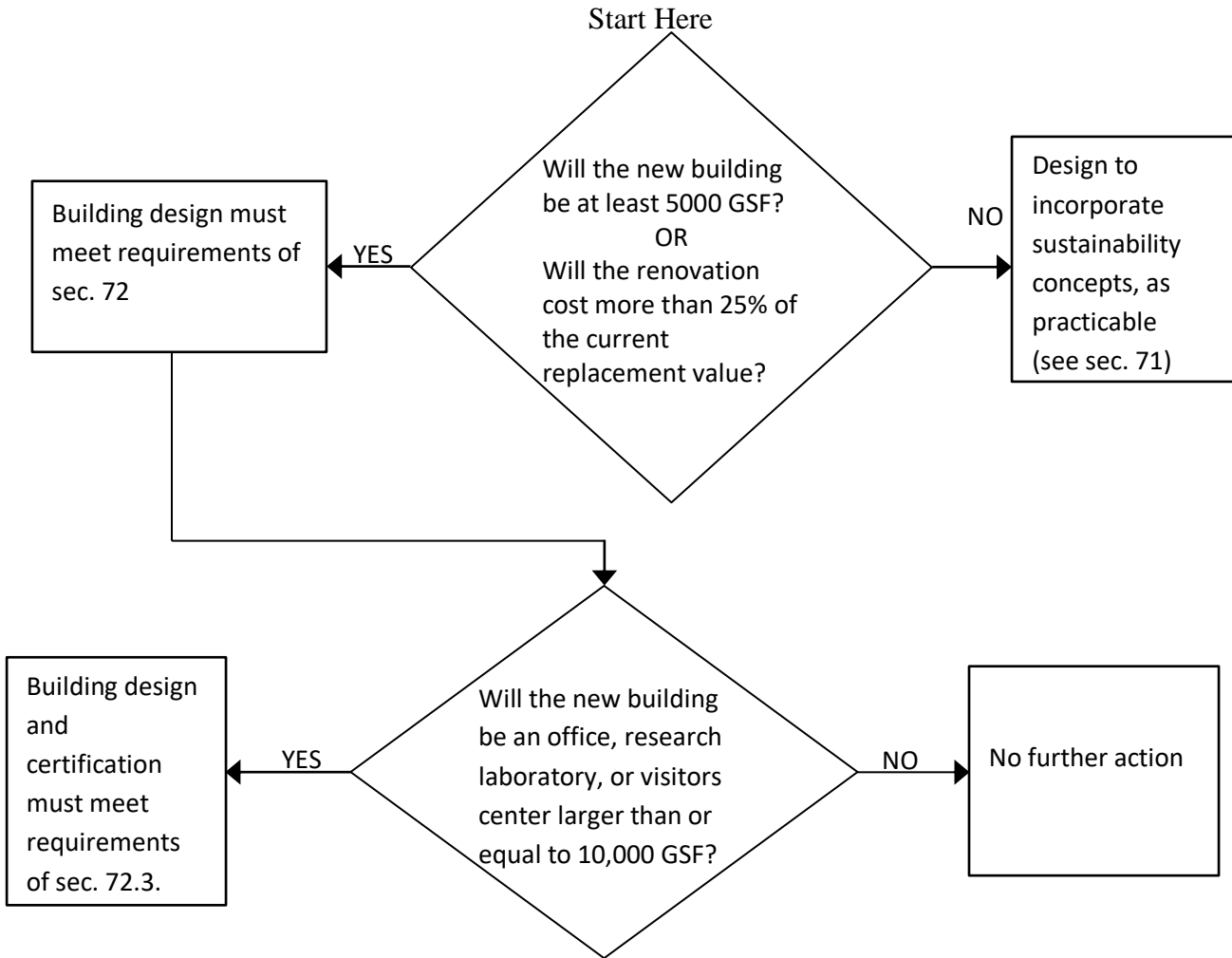
All other buildings, whether new or major renovations, must be designed to incorporate sustainability concepts into the systems and components appropriate to the building type and project scope. (See sec. 71.1).

Forest Service construction projects are encouraged to design and construct with domestically harvested wood products, ideally locally sourced and from National Forest System lands, wherever practicable and feasible.

Exhibit 01 illustrates the above threshold requirements.

72 - Exhibit 01

Sustainability Requirements for New Buildings and Major Renovations



73 - Existing Buildings

Exhibit 02 shows the sustainability requirements for existing owned or leased buildings.

73.1 - High Performance Sustainable Building (HPSB)

The Forest Service National HPSB eligible list is posted on the Facilities Toolbox site. A building is considered eligible if it is:

1. Is owned or leased (FSM 6409.12) by the Forest Service, **AND**
2. Is a fully enclosed structure with at least 5000 GSF, **AND**
3. Provides occupied space (of no minimum SF) such as office or work space that is conditioned to provide for personal comfort.

A building should be excluded from the National HPSB eligible list if one or more of the following conditions apply:

1. The building is reported by another agency (that is, GSA-owned building or Job Corps building that is not staff housing),
2. The building does not yet exist (listed as PLANNED, or NEW CONSTRUCTION in the Infra database),
3. The building is a Recreation/Special Use facility (with the exception of Major Visitor Centers),
4. The building is listed as EXCESS in the Infra database, or
5. The building is shut down pending disposition status, as long as disposition is planned within 5 years.

If a building meets the HPSB eligibility criteria, the building must be ranked using [The USDA/Forest Service Existing Building Sustainability Ranking System](#) provided in the Facilities Toolbox.

In accordance with the Energy Policy Act of 2005 (EPAAct 2005), an agency may exclude a building from the energy performance requirement if the agency finds that compliance with those requirements would be impracticable based on energy intensiveness of activities carried out in the building. Excluded buildings must be justified by the R/S/A Energy Manager and approved by the National Energy Manager.

73.2 - Covered Facilities

Covered Facilities are the portion of Forest Service facilities included in the USDA list of facilities accounting for 75 percent of the USDA’s facility energy consumption. The [Covered Facilities list](#) is a subset of the HPSB List, and is maintained by the USDA. Covered Facilities have special auditing and reporting requirements meant to help focus attention on reducing energy and water in the largest consumers. (See sec. 74.6 – Auditing Requirements). Covered Facility information must be updated annually as directed by USDA.

73.3 - Historic Buildings

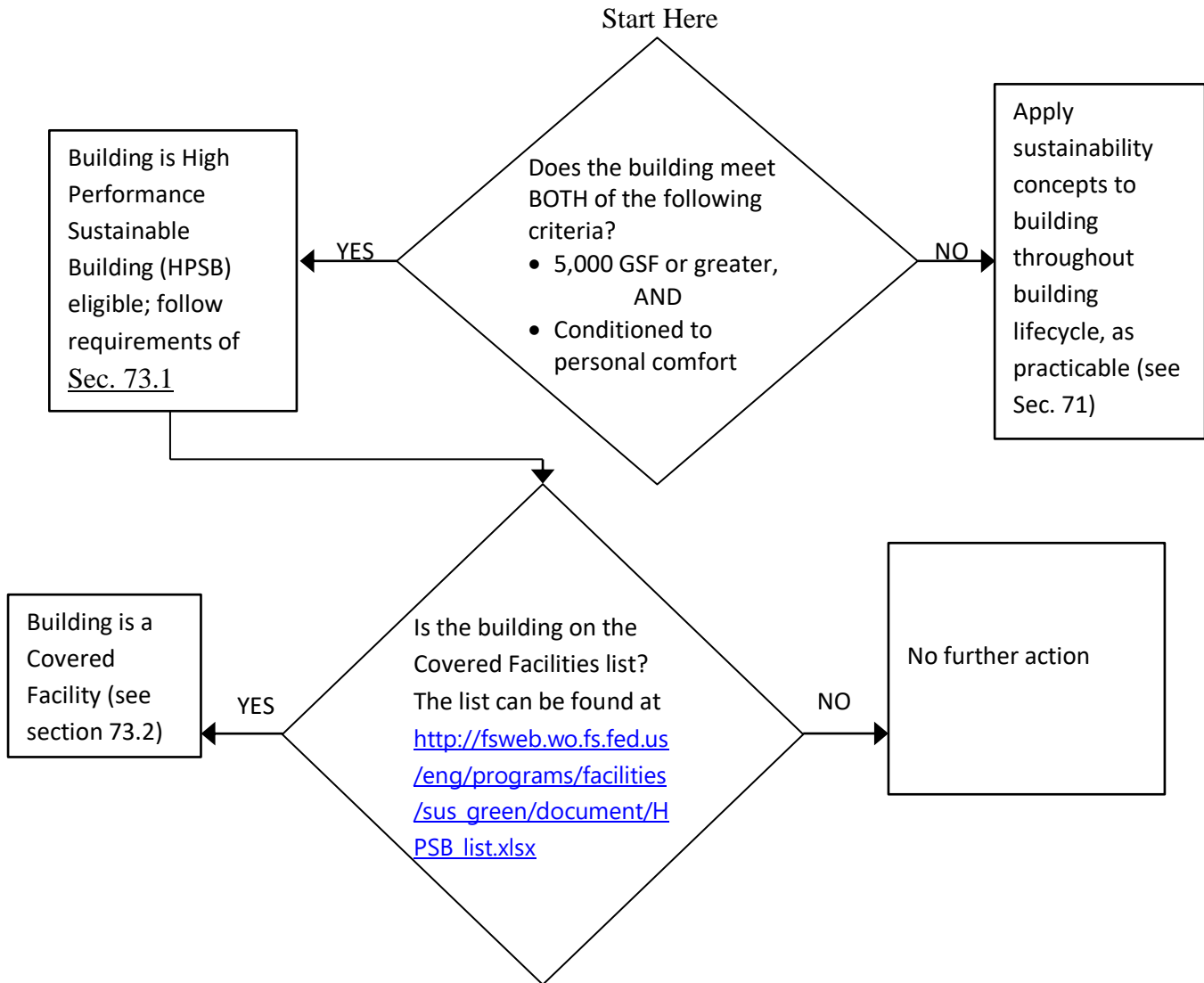
Units that manage buildings listed in or eligible for listing in the National Register of Historic Places should work toward compliance with the Guiding Principles for those historic buildings without creating adverse effects on significant features of the property. In the event that complying with a particular Guiding Principle would create an adverse effect that cannot be avoided, provide an explanation in the Project’s Checklist for Sustainable New Construction and Major Renovations. See Advisory Council on Historic Preservation, “Sustainability and Historic Federal Buildings” at <http://www.achp.gov/docs/SustainabilityAndHP.pdf>.

73.4 - Leased Buildings

For leased facilities, refer to FSH 6409.12, chapter 30.

73 - Exhibit 02

Sustainability Requirements for Existing owned or leased Buildings



74 - Management, Operations and Maintenance

All buildings should be operated and maintained, to the greatest extent possible, to comply with sustainability concepts (sec. 71.1).

74.1 - Certifications

For those buildings that require certifications in accordance with section 72.3, certification must be maintained at an equivalent or higher level.

74.2 - Commissioning of HPSBs

Buildings on the National HPSB eligible list should be commissioned in a manner tailored to the size and complexity of the building and its systems and assemblies.

All existing buildings over 50,000 GSF and buildings that house energy intensive operations with an energy usage exceeding \$40,000 annually will be assessed by the R/S/A Energy Managers to determine if re-commissioning or retro-commissioning measures are needed.

Implement a re-commissioning or retro-commissioning plan and commission building, coinciding with energy audits, on a 4-year cycle per EISA 2007 section 432 (3). Establish Operation and Maintenance strategies, for example, for HVAC and electrical systems, to assure preventative maintenance and optimal equipment operation.

For buildings that exceed 5000 GSF, commissioning must be performed in accordance with ASHRAE 189.1-10.3.1.2 using generally accepted engineering standards and handbooks acceptable to the Authorities Having Jurisdiction (AHJ). Buildings undergoing the commissioning process will be deemed to comply with the requirements of section 10.3.11.1 “Building Acceptance Testing.”

A commissioning process must be incorporated into the predesign, design, construction, and first year occupancy of the building project that verifies that the delivered building and its components, assemblies, and systems comply with the documented operating procedures. Procedures, documentation, tools, and training must be provided to the building operating staff to sustain features of the building assemblies and systems for the service life of the building. This material must be assembled and organized into a systems manual that provides necessary information to the building operating staff to operate and maintain all commissioned systems identified within the building project.

Commissioning process can be found at the FEMP O&M Best Practices Guide:
http://www1.eere.energy.gov/femp/pdfs/OM_7.pdf.

74.3 - Operations and Maintenance

For all buildings on the HPSB-eligible list, use an integrated team to implement policy regarding sustainable operations and maintenance, as discussed in the *High Performance and Sustainable Buildings Guidance*, found at:

https://www.fedcenter.gov/_kd/Items/actions.cfm?action=Show&item_id=11130&destination=ShowItem.

74.4 - Database Management

Information about sustainability will be managed and maintained once the module has been updated to the Forest Service INFRA database.

74.5 - Monitoring and Metering Requirements

1. Individual Standard Utility Metering and Monitoring. Appropriate Federal buildings are to be metered or monitored for electricity, water, natural gas, steam, propane, fuel oil, and any renewables, to the maximum extent practicable. Progress towards these requirements is included in the Annual GHG Emissions and Energy Report to USDA.

An existing building is considered appropriate for individual metering or monitoring of all its utilities, including, but not limited to: electricity, water, natural gas, steam, propane, fuel oil, and any renewables, if:

- a. The building is on the Forest Service National HPSB-eligible List, and either
 - (i) the Forest Service owns the building, OR
 - (ii) The building is a leased building and the utility cost(s) are paid directly by the Forest Service. (That is, the utility costs are not included in the rent.)

An exception to this building-specific metering/monitoring requirement is if the site on which the building is located is metered/monitored and the total gross footage of all the buildings on the site is not more than double the square footage of the HPSB-eligible building. The meter/monitor for the site then qualifies as the individual building meter. Buildings that are not thermally conditioned or do not use significant energy should not be included in the total GSF of the site (for example, pole barns, sheds, or vault toilets).

Any new building over 5000 GSF, in which the Forest Service directly pays the utilities, must be constructed with an individual utility meter or monitoring system for each utility.

Units are encouraged to meter or monitor utilities on all individual buildings to assist facility managers in detecting leaks and waste.

2. Advanced Meters: Advanced meters will be installed in accordance with the following requirements:

a. Advanced Energy Meters:

(i) New Buildings: Primary advanced energy meters and submeters must be installed on all new buildings, in which the Forest Service directly pays the utilities, to monitor each energy source that meets or exceeds the thresholds listed in the “Energy Use Measurement and Verification” Section of the “[New Construction and Major Renovation Sustainability Assessment and Compliance Checklist](#)” on the Facilities toolbox.

(ii) Existing Buildings: Primary advanced energy meters and submeters must be installed on existing buildings 10,000 GSF and larger, in which the Forest Service directly pays the utilities, unless the R/S/A energy manager can demonstrate, through life cycle cost analysis, that it is not cost effective to do so. The life cycle cost analysis will be based on a 10-year simple payback and assume a 2 percent composite annual energy savings. Composite means that all energy related utilities at the building are included in the analysis. This includes electricity, natural gas, steam, fuel oil, propane, and any renewables.

The R/S/A Energy Manager and the local Facility Manager shall each retain a copy of the life cycle cost analysis, the decision, and justification for the decision in the corporate files. The justification should document the assumptions used in the analysis and have a calculation(s) showing the desired rate of return cannot be met.

b. Advanced Water Meters: Primary advanced water meters and submeters will be installed on all new and existing buildings that meet both the following requirements:

(i) The building qualifies for an advanced energy meter under either 2a(i) or 2a(ii) above, and:

(ii) The building’s actual or estimated water consumption meets or exceeds the measurement thresholds listed under the “Protect and Conserve Water” of the “[New Construction and Major Renovation Sustainability Assessment and Compliance Checklist](#)” on the Facilities Toolbox.

Units are encouraged to monitor water consumption with advanced meter technology even if they do not meet the thresholds listed in the “[New Construction and Major Renovation Sustainability Assessment and Compliance Checklist](#)” on the Facilities Toolbox.

- c. All advanced energy meter system designs, purchases, and installations should be coordinated with the National Energy Manager and Missoula Technology and Development Center to ensure compatibility with online systems.

Additional useful information on metering can be found on the Federal Energy Management Programs (FEMP) website on [Best Practices Guide](#) and the [Forest Service Advanced Metering SharePoint Site](#).

74.6 - Auditing Requirements

Covered Facilities must have comprehensive energy and water audits at least every 4 years.

HPSB buildings must be reassessed for meeting the Guiding Principles at least every 5 years.

For all facilities, sustainability opportunities, including energy and water conservation measure as well as changes in operation and maintenance, should be identified during condition assessments.