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NASA Procedural Requirements

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COMPLIANCE IS MANDATORY

NASA Energy Management Program

Responsible Office: Environmental Management Division

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Preface

P.1 Purpose

a. This NASA Procedural Requirement (NPR):

(1) Implements applicable requirements for the Energy Management (EM) Program under NASA Policy Directive (NPD) 8500.1 NASA Environmental Management to manage the EM Program and activities.

(2) Establishes the requirements and responsibilities by which NASA will reduce energy risk to mission through life-cycle cost-effective compliance with Federal law, Executive Orders, and NASA policy regarding increasing the use of renewable energy sources and energy efficiency and conservation methods.

(3) Promotes NASA Headquarters support of Center and Component Facility comprehensive energy programs.

(4) Enhances energy security and energy resource availability for future mission requirements through the EM Program comprehensive, integrated approach to energy strategy development; energy risk management; master and project planning; and design, implementation, operation, maintenance, and management of energy systems and assets.

(5) Promotes mitigation of energy-related climate change risks and impacts, availability of cleaner energy sources, and improved air quality.

b. NPD 8500.1, NASA Environmental Management, establishes NASA policy to reduce energy risk to mission, maintain compliance with applicable external requirements, and promote energy conservation. Center/Component Facilities are responsible for achieving these external requirements at the local level.

c. Strengthening Federal Environmental, Energy, and Transportation Management, EO 13423, requires embedding energy management in the environmental management system (EMS) at the Agency and Center/Component Facility levels.

d. This NASA Procedural Requirement (NPR) has been substantially restructured to streamline the requirements for energy management and place complementary guidance and contextual information into a companion handbook. The NASA Energy Program Guidance Handbook describes how energy programs and projects are managed in NASA and contains explanatory material to help understand the requirements of this NPR. The handbook can be found on the "Other Policy Documents" menu in the NASA On-Line Directives Information System (NODIS).

P.2 Applicability

a. This NPR is applicable to NASA Headquarters and NASA Centers, including Component Facilities and Technical and Service Support Centers. This language applies to Jet Propulsion Laboratory (JPL), a Federally Funded Research and Development Center (FFRDC), other contractors, grant recipients, or parties to agreements only to the extent specified or referenced in the appropriate contracts, grants, or agreements.

b. In this directive, all mandatory actions (i.e., requirements) are denoted by statements containing

the term "shall." The terms: "may" or "can" denote discretionary privilege or permission, "should" denotes a good practice and is recommended, but not required, "will" denotes expected outcome, and "are/is" denotes descriptive material.

c. The EM Program guidance, including analyses, processes, methods, templates, and practices will describe how the "shall" and "will" statements may be met.

d. In this directive, all document citations are assumed to be the latest version, unless otherwise noted.

P.3 Authority

a. The Budget and Accounting Procedures Act, 31 U.S.C. §3513 (a).

b. The National Energy Conservation Policy Act, 42 U.S.C. § 8251, et seq.

c. Energy Policy Act of 2005, Public Law 109-58.

d. The Energy Independence and Security Act of 2007, Public Law 110-140.

e. Omnibus Appropriations Act of 2009, Public Law 111-8 § 748.

f. Policy on Environmental Quality and Control, 14 C.F.R. § 1216.1.

g. Energy and Water Efficiency and Renewable Energy, 48 C.F.R. Pt. 23, Subpart 23.2.

h. Energy Efficient Standby Power Devices, Executive Order 13221, 66 Federal Register 40571, August 2, 2001.

i. Strengthening Federal Environmental, Energy, and Transportation Management, Executive Order 13423, 72 Federal Register 3919, January 26, 2007.

j. Federal Leadership In Environmental, Energy, and Economic Performance, Executive Order 13514, 74 Federal Register 52117, October 8, 2009.

k. NPD 8500.1, NASA Environmental Management.

P.4 Applicable Documents and Forms

a. Retention of Energy and Water Savings, 42 U.S.C. 8256 (e).

b. The Public Health and Welfare Act, 42 U.S.C. § 8262 c.

c. Federal Energy Management and Planning Programs, 10 Code of Federal Regulations (C.F.R.), Part (Pt.) 436.

d. Acquisition of Utility Services, NASA Federal Acquisition Regulation Supplement (NFS) Part 1841.

e. Federal Leadership in High Performance and Sustainable Buildings Memorandum of Understanding, January 2006

f. NPD 1000.0, NASA Governance and Strategic Management Handbook.

g. NPD 1000.3, The NASA Organization.

h. NPD 7330.1, Approval Authorities for Facility Projects.

- i. NPD 8800.14, Policy for Real Estate Management.
- j. NPD 8820.2, Design and Construction of Facilities.
- k. NPD 8831.1, Maintenance of Institutional and Program Facilities and Related Equipment and Related Equipment.
- l. NPR 8530.1, Affirmative Procurement Program and Plan for Environmentally Preferable Products.
- m. NPR 8800.15, Real Estate Management Program.
- n. NPR 8810.1, Master Planning Procedural Requirements.
- o. NPR 8820.2, Facility Project Requirements.
- p. NPR 8831.2, Facilities Maintenance and Operations Management.
- q. NPR 8553.1, NASA Environmental Management System.

P.5 Measurement/Verification

a. Conformance with this NPR is verified by submission of required documents to NASA officials. NASA Headquarters monitors energy regulatory compliance through Environmental and Energy Functional Reviews. Compliance with energy regulations is also monitored by external agencies. To meet reporting requirements of the Office of Management and Budget and other agencies, NASA developed the NASA Environmental Tracking System (NETS), in which energy performance data is collected and Centers report on established metrics for energy efficiency, energy conservation measures, and increased use of renewable energy.

P.6 Cancellation

NPR 8570.1, Energy Efficiency and Water Conservation, dated March 15, 2001.

Original Signed by

Dr. Woodrow Whitlow, Jr.
Associate Administrator for
Mission Support Directorate

Chapter 1. Energy Management Program Roles and Responsibilities

1.1 Roles and Responsibilities

The roles and responsibilities of senior management are established in NPD 1000.0 Strategic Management and Governance Handbook, NPD 1000.3 The NASA Organization, and NPR 8553.1 NASA Environmental Management Systems. This Chapter describes key roles and responsibilities for establishing, assigning, and maintaining EM Program requirements. Responsibilities specific to a position title may be delegated by the responsible person.

1.2 Headquarters

1.2.1 The Assistant Administrator for Strategic Infrastructure shall:

- a. Approve the Agency energy strategy and advocate for its implementation.
- b. Provide leadership and advocacy for sufficient resources for executing the EM Program, investments and methods to meet Agency energy goals.
- c. Report annually to the NASA Administrator on the adequacy and effectiveness of the EM Program in implementing EO 13514 Federal Leadership in Environmental, Energy, and Economic Performance and other external requirements.
- d. Approve investment recommendations as submitted by the Director Environmental Management Division (EMD) and the Director Facilities Engineering and Real Property Division (FERPD).
- e. Approve the final energy component of the Planning, Programming, Budgeting, and Execution (PPBE) submittal to Office of Chief Financial Officer (OCFO).
- f. Concur on submitted Environment and Energy Functional Reviews (EEFR).
- g. Approve energy performance reports submitted to external entities.
- h. Approve NASA comments for proposed energy legislation.

1.2.2 The Director NASA Management Office (NMO) shall ensure JPL (an FFRDC) contracts and subcontracts include energy requirements specified in Federal laws and regulations, EOs, and NASA NPD's and NPR's.

1.2.3 The Director EMD shall:

- a. Recommend Agency energy strategy alternatives that achieve NASA's energy goals.
- b. Ensure that NASA's EM Program is consistent with Federal legislation and regulations, EOs, and NASA policies and procedures.
- c. Provide policy, guidance, and direction for the EM Program.
- d. Analyze energy objectives and risks and establish management controls for the EM Program.
- e. Review investment recommendations developed by the Agency Energy Program Manager and

submit to the Assistant Administrator for Strategic Infrastructure.

f. Prepare and submit final PPBE submission as approved by Assistant Administrator for Strategic Infrastructure to OCFO.

g. Review and submit to the Assistant Administrator for Strategic Infrastructure, energy performance reports for submittal to external entities.

h. Appoint the Agency Energy Program Manager.

i. Serve as co-sponsor to the NASA Energy Efficiency Panel (EEP)

j. Approve the Center Energy Conservation Performance Plans (ECPP) template.

j. Communicate and coordinate with the Director FERPD to assure EM Program effectiveness.

k. Sign and approve EEFR reports.

1.2.4 The Agency Energy Program Manager shall:

a. Provide Agency energy strategy alternatives to meet the energy goals in the most effective and efficient manner.

b. Provide functional leadership, program advice, and technical assistance to the Agency on energy policy and the strategy to meet energy regulations and external mandates.

c. Perform EEFRs at Center/Component Facilities as required per NPD 8500.1 sec 5.c (8).

d. Provide guidance describing processes and methods by which NASA or external energy requirements may be met.

e. Recommend energy efficiency and conservation goals for the Agency to the Director EMD.

f. Prepare and submit to the Director EMD, external reporting documentation as required by Federal law and regulations.

g. Conduct studies and assessments to identify potential projects and investments that support energy efficiency, conservation, and renewable energy goals and objectives. Evaluate proposals and recommend projects for investment or financing consideration.

h. Review Center/Component Facility ECPP and Emergency Energy Security and Conservation Plans.

i. Monitor Agency energy performance objectives, milestones, metrics, and measures.

j. Maintain the NASA Environmental Tracking System (NETS) Energy Module to collect, organize, search, and report energy data and progress from the established baseline.

k. Assure energy comprehensive audit, project performance data, and benchmarking data are entered into the Department of Energy Compliance Tracking System (CTS).

l. Support the Center co-chairs of the NASA EEP with policy, planning, and program requirements.

m. Communicate and coordinate with the Energy Program Manager for Facility Projects and Utility Services to assure EM Program effectiveness.

1.2.5 The FERPD Director shall:

a. Ensure the implementation of the -approved Agency energy strategy.

- b. Ensure that NASA's energy investment projects are managed consistent with Federal legislation and regulations, EOs, and NASA policies and procedures.
- c. Review investment recommendations developed by the Energy Program Manager for Facility Projects and Utility Services and submit to the Assistant Administrator for Strategic Infrastructure.
- d. Approve Center/Component Facility energy related facility projects and leases per NPD 7330.1, NPD 8800.14, NPR 8800.15, and NPR 8820.2.
- e. Report on sustainable design and construction of facilities to Assistant Administrator for Strategic Infrastructure.
- f. Serve as co-sponsor to the NASA EEP.
- g. Review Center and Component Facility utility service and commodity procurements including system privatization in coordination with the Office of Procurement in accordance with NASA FAR Supplement Part 1841.
- h. Ensure that NASA facilities engineering policy and practices support reducing energy risk to mission and pursuing life-cycle cost-effective compliance with external energy requirements.
- i. Approve utilization of lease net revenue in accordance with NPR 8800.15.k. Appoint the Energy Program Manager for Facility Projects and Utility Services.
- j. Communicate and coordinate with the Director EMD to assure EM Project implementation.

1.2.6 The Energy Program Manager for Facility Projects and Utility Services shall:

- a. Recommend methods and procedures to implement the Agency energy strategy.
- b. Provide functional leadership, program advice, and technical assistance to the Agency on energy investments, managing energy projects, and utility acquisitions.
- c. Monitor Agency energy project performance, milestones, and metrics.
- d. Provide guidance for the implementation of energy services agreements, contracts, and financing, such as Energy Savings Performance Contract (ESPC) and Utility Energy Services Contract (UESC) projects, and the use of Enhanced Use Lease (EUL) authorities for funding energy projects.
- e. Assist Center/Component Facility utility service and commodity procurements including system privatization.
- f. Provide guidance on facilities operations and maintenance processes that support energy efficiency and conservation goals and renewable energy goals.
- g. Recommend incorporation of technology and systems into facilities projects that reduce energy consumption and increase the use of alternate and renewable energy sources.
- h. Prioritize energy project proposals within available resources and recommend alternative financing methods when appropriate.
- i. Provide oversight of Agency energy project implementation and energy-related leases.
- j. Support the Center co-chairs of the NASA EEP with energy program activities. k. Communicate and coordinate with the Agency Energy Program Manager to assure EM Program effectiveness.

1.2.7 The EEP will review and comment on Agency energy policies, strategies, recommended priorities, implementation plans, practices, and address issues.

1.3 Center/Component Facility

1.3.1 The Center Director shall:

- a. Appoint the Center Energy Efficiency Team (EET).
- b. Approve Center/Component Facility energy policy.
- c. Assure adequate management and financial resources are dedicated to meet energy security requirements.
- d. Approve and submit to the EMD Director an ECPP prepared according to the approved template.
- e. Ensure the Center implements purchasing procedures in accordance with NPR 8530.1, Affirmative Procurement Program and Plan for Environmentally Preferable Products.
- f. Ensure contractors, grant recipients, or parties to agreements meet current energy requirements specified in Federal laws and regulations, EOs, and NASA NPRs.
- g. Ensure that personnel involved in the initiation and execution of Energy Savings Performance Contracts (ESPC) or Utility Energy Savings Contracts (UESC) are knowledgeable and trained in the process. Specialized training is offered through the Department of Energy (DOE).
- h. Ensure that projects utilizing ESPC/UESC follow DOE guidance and contract management tools.

1.3.2 The Center Energy Manager shall:

- a. Implement a Center/Component Facility Energy Management Program to meet requirements of this NPR.
- b. Develop energy investment proposals from energy audit results and coordinate implementation through appropriations or alternative financing mechanisms.
- c. Prepare the Center/Component Facility energy budget in accordance with the PPBE process and guidance.
- d. Submit energy performance data in a timely, complete, and accurate manner in response to Agency data calls.
- e. Communicate approved Center/Component Facility energy procedures to employees and contractors.
- f. Lead the EET and represent their Center/Component Facility on the NASA EEP.
- g. Coordinate with Center Master Planners to optimize energy efficiency in accordance with NPR 8810.1, Master Planning Procedural Requirements and ensure that impacts from installed energy conservations measures are taken into consideration.
- h. Obtain and maintain training in accordance with the Federal agency energy management training requirements of 42 U.S.C. § 8262 c.
- i. Coordinate utility service and commodity procurements in collaboration with Center Procurement officials.
- j. Coordinate utilities management involving the local utility suppliers and incorporating utility-provided energy audits, metering, fuel switching, load management, rebate programs, rate

structuring/switching and alternative financing options.

k. Report Center/Component Facility energy efficiency and conservation results into NETS.

l. Review and approve utility bills.

m. Establish and monitor Center level energy performance objectives, milestones, metrics, and measures.

n. Ensure that contracting officer on energy savings performance contracts, utility service contracts, or commodity contracts are notified of changes to facilities, such as the addition or removal of buildings, affecting the contracts.

o. Ensure that contracting officers or contracting officer representatives for energy savings performance contracts, utility services contracts, or commodity contracts are included on invitations to the EEP meetings.

1.3.3 The Office of Procurement shall:

a. Ensure that the specific training e.g. training sponsored by the Department of Energy is completed by Contracting Officer, Contract Specialist, Contracting Officer Representative when administering and/or awarding Energy Savings Performance Contracts or Utility Energy Savings Contracts.

b. Ensure that Contracting Officer, Contract Specialist, and Contracting Officer Representative review Measurement & Verification (M&V) reports as required in ESPC/UESC contracts and take appropriate action as needed.

c. Ensure that Contracting Officer, Contract Specialist, and Contracting Officer Representative modify ESPC/UESC contracts based on changes to facilities, such as the addition or removal of buildings, affecting the contracts per notification from the Center energy manager.

Chapter 2. Agency Energy Management Program Requirements

2.1 Program Requirements

2.1.1 The EM Program provides direction, oversight, analysis, management, and control of energy investments and activities.

2.1.2 EMD establishes, implements, and maintains the EM Program to meet the requirements of this NPR. The EM Program will include:

- a. Supporting development and management review of energy policy, strategy, planning, objectives, and guidance.
- b. Analyzing and recommending strategies and methods to minimize energy consumption and reduce energy intensity without affecting safety or mission operations.
- c. Analyzing and recommending strategies and methods to optimize and reduce energy utility costs through innovative technology, alternate fuels, renewable energy sources, and conservation practices.
- d. Analyzing risk and establishing mitigation actions for energy security and energy resource availability for NASA missions.
- e. Establishing performance milestones, metrics, and measures.
- f. Monitoring and improvement of energy performance.
- g. Participating in domestic interagency partnerships and international collaborative efforts.
- h. Analyzing Center/Component Facility energy program performance milestones and metrics.
- i. Monitoring and reporting on completeness and timeliness of Center/Component Facility responses to EMD data calls.
- j. Analyzing EEFR results to identify opportunities to improve the EM Program.
- k. Evaluating energy investment effectiveness.
- l. Maintaining a template for required minimum content for the Center ECPP.

Chapter 3. Center/Component Facility Energy Management Program Requirements

3.1 Energy Management Requirements

3.1.1 Energy management at the Center/Component Facility shall include:

- a. Integrating energy management within the Center/Component Facility EMS.
- b. Developing and maintaining an Emergency Energy Security and Conservation Plan complying with the requirements of 10 C.F.R. Part 436, Subpart F, §436.105.
- c. Developing and maintaining an ECPP that is approved by the Center Director and functions as a guide to meet energy goals and requirements.
- d. Identifying and tracking of future legal and regulatory requirements that may impact Center/Component Facility energy procedures.
- e. Participating in sustainable design and construction of new facilities complying with existing Federal energy performance standards in accordance with NPD 8820.2, Design and Construction of Facilities and NPR 8820.2 Facility Project Requirements.
- f. Participating in the operations and maintenance of facilities to comply with existing Federal energy performance standards, in accordance with NPD 8831.1 Maintenance of Institutional and Program Facilities and Related Equipment and Related Equipment and NPR 8831.2 Facilities Maintenance and Operations Management.
- g. Reviewing operating and administrative processes and programs to identify and implement energy efficiency and conservation practices.
- h. Implementing an energy awareness program for Center/Component Facility personnel designed to change energy-use and conservation behaviors.
- i. Supporting training programs for technical personnel and occupants regarding design, maintenance, and operation of Leadership in Energy and Environmental Design certified building and other energy-related equipment.
- j. Establishing Center-level energy performance objectives, metrics, measures and milestones and monitoring, collecting, and reporting energy performance data.
- k. Conducting comprehensive energy evaluations of facilities in accordance with The Energy Independence and Security Act of 2007 (EISA), Section 432.
- l. Conducting economic analyses to support energy investment proposals, including life-cycle cost analyses according to methods and procedures in 10 C.F.R. Part 436, Subpart A.
- m. Implementing energy investment projects.
- n. Developing and implementing an Energy Savings Reinvestment Plan supported by 42 U.S.C. 8256 (e).
- o. Ensuring that personnel involved in the initiation and execution of ESPC or UESC performance contracts are knowledgeable and trained through DOE specialized training.

p. Ensuring that projects utilizing ESPC/UESC follow DOE guidance and contract management tools.

q. Reviewing and ensuring M&V reports regarding energy conservation measures financed by an ESPC/UESC generate the guaranteed savings throughout the term of the contract in accordance with Energy Conservation Policy Act, 42 U.S.C. § 8287 requirements.

Appendix A. Definitions

Compliance - Conforming to a legal, policy, or procedural requirement.

Component Facilities - Complexes that are geographically separated from the NASA Center or institution to which they are assigned.

Energy Efficiency Panel (EEP) - An Agency-level forum that supports development of Agency energy efficiency policy and leadership strategy; recommends energy efficiency and conservation initiatives; supports Center Directors in implementing NASA energy efficiency and conservation policies through shared innovations and use of Energy Savings Performance Contracts, Utility Energy Services Contracts, Enhanced Use Leasing, and other alternative financing; develops consensus positions on energy efficiency and conservation priorities, practices, and issues across Agency and Mission Directorate activities; and sponsors or conducts studies and assessments of energy efficiency and conservation issues affecting NASA Programs and activities.

Energy Investment Project - A specific project intended and designed to provide any of the following: energy savings, demand reduction, and efficiency improvements.

Environmental and Energy Functional Review (EEFR) - Analysis of a Center's compliance with environmental laws, regulations, EOs, and NASA policies including management structures and systems in place to ensure that environmental risks are identified and mitigated.

Implementation - The execution of approved plans for the development and operation of programs and projects and the establishment of control systems to ensure performance to plan and alignment with current Agency strategies.

Life-cycle cost - Costs associated with the environmental performance of a product or service over the life of the product or service, beginning at raw materials acquisition and continuing through manufacturing, transportation, installation, use, reuse, and end-of-life waste management.

Planning, Programming, Budgeting and Execution (PPBE) - An Agency-wide methodology for aligning resources in a comprehensive, disciplined, top-down approach that supports the Agency's Vision and mission. There are four phases in PPBE: planning, programming budgeting, and execution phase.

Verification - Proof of compliance with specifications, may be determined by a combination of test, analysis, demonstration, and inspection.

Appendix B. Acronyms

C.F.R.	Code of Federal Regulations
DOE	Department of Energy
ECPP	Energy Conservation Performance Plan
EEFR	Environmental and Energy Functional Review
EEP	Energy Efficiency Panel
EET	Energy Efficiency Team
EISA	The Energy Independence and Security Act of 2007
EM	Energy Management
EMD	Environmental Management Division
EMS	Environmental Management System
EO	Executive Order
ESPC	Energy Savings Performance Contract
EUL	Enhanced Use Lease
FAR	Federal Acquisition Regulation
FERPD	Facilities Engineering and Real Property Division
JPL	Jet Propulsion Laboratory (a Federally Funded Research and Development Center)
M&V	Measurement and Verification
NETS	NASA Environmental Tracking System
NMO	NASA Management Office
NPD	NASA Policy Directive
NPR	NASA Procedural Requirements
OCFO	Office of Chief Financial Officer
OSD	Office of Secretary of Defense
OSI	Office of Strategic Infrastructure
PPBE	Planning, Programming, Budgeting, and Execution
UESC	Utility Energy Services Contracts
U.S.C.	United States Code