

PART I

SECTION C

**DESCRIPTION/SPECIFICATION/
STATEMENT OF WORK**

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Part I

Section C

Description/Specification/Statement of Work

C.1 Introduction

In his *Introduction to the U.S. Department of Energy's (DOE) 2006 Strategic Plan* the Secretary of Energy describes the scope and urgency of our national energy challenge and DOE's role in addressing this challenge. The Secretary states:

“Reliable and affordable energy is central to our economic and national security. Indeed, energy helps drive the U.S. and global economy and has a significant impact on our quality of life and the health of our people. Rapid economic growth, especially in the developing world, is expected to increase world energy consumption by over 50 percent by 2025. The Department is focused on diversifying America's energy supply, improving our energy efficiency, addressing environmental and climate changes, and modernizing our energy infrastructure in order to meet the challenges we face.”

DOE's Strategic Plan is organized around five Strategic Themes. The importance of the national energy challenge is embodied in two of these themes:

- *Strategic Theme 1: Energy Security - Promoting America's energy security through reliable, clean, and affordable energy; and*
- *Strategic Theme 3: Scientific Discovery and Innovation – Strengthening U.S. scientific discovery, economic competitiveness, and improving quality of life through innovations in science and technology.*

DOE's acceptance of and approach to this challenge is embodied in the following statement:

“...DOE stands at the forefront of helping the Nation meet our energy, scientific, environmental, and national security goals. These include developing and deploying new energy technologies, reducing our dependence on foreign energy sources, protecting our nuclear weapons stockpile, and ensuring that America remains competitive in the global marketplace.”

DOE and its national laboratories have been significant contributors to this nation’s global technological and economic leadership since the 1940s. As the nation’s only federal institution dedicated to the research, development, demonstration, and deployment (RDD&D) of renewable energy and energy efficiency science and technology, the National Renewable Energy Laboratory (NREL) must continue this tradition, and must do so with renewed urgency.

The Office of Energy Efficiency and Renewable Energy (EERE), NREL’s sponsor and primary client, is a leader in DOE’s effort to address our national energy challenge. EERE’s mission is to:

“...strengthen America’s energy security, environmental quality, and economic vitality in public-private partnerships that enhance energy efficiency and productivity, bring clean, reliable and affordable energy technologies to the marketplace; and make a difference in the everyday lives of Americans by enhancing their energy choices and their quality of life.”

Improving the nation’s energy security, economic competitiveness, and environmental quality requires a coordinated and sustained national effort. NREL, as a national resource, must be a leader in this effort. EERE intends that the federal investment in NREL be used to conduct RDD&D that deepens the nation’s understanding of the interaction between the energy technology, policy, and market forces that govern the widespread adoption of safe, clean, sustainable, and secure energy technologies. EERE also intends that this investment be leveraged with public- and private- sector resources and entrepreneurial knowledge to accelerate the commercialization and market penetration of these technologies, technologies that will enable the nation to meet our current and future energy challenges head-on.

C.2 Purpose

The purpose of this contract is to manage and operate NREL to enable and sustain the development of the transformational science and technology, national technical and management talent, and the collaborative environment necessary to increase the market penetration and widespread adoption of renewable energy and energy efficiency technologies. In so doing, the Contractor must:

- (1) Establish NREL as a national leader in the energy technology, policy, and market arenas; and

- (2) Develop and sustain NREL's scientific, technological, management, and support capabilities and strategic relationships necessary to address our national energy, economic, and environmental challenges and to ensure long-term vitality and national value.

C.3 Background

EERE is NREL's sponsor and primary client and is responsible for NREL's long-term direction.

NREL currently employs approximately 1200 scientific, technological, management, and support personnel at two primary locations near Golden, Colorado. NREL conducts a wide range of non-nuclear RDD&D across the spectrum of energy efficiency and renewable energy technologies; designs, builds, and operates complex scientific equipment in support of its RDD&D mission; analyzes technology, policy, and market interactions to enable informed decisions on national energy policy and investments; and advises DOE and EERE on the scope, structure, and direction of energy-related policies and programs. NREL's RDD&D is unclassified but requires the management and protection of proprietary and business sensitive information. NREL works closely with DOE and EERE's Project Management Center (PMC) to identify and capture opportunities for synergy within the DOE and EERE RDD&D portfolio.

NREL is a Federally Funded Research and Development Center (FFRDC) and operates under Federal Acquisition Regulation (FAR) Part 35 in support of DOE's long-term RDD&D mission. As an FFRDC NREL has access to DOE, including access to governmental and non-governmental sensitive and proprietary information, well beyond that encountered in a normal contractual relationship, to assist DOE in planning, executing, assessing, and redirecting the policies, programs, and projects necessary to achieve national goals. Accordingly, the Contractor must ensure that the public's interest is always placed above its corporate interest, and potential or actual organizational conflicts of interest are promptly identified and mitigated. The Contractor must ensure NREL's objectivity and independence in all technology, policy, and market matters.

This Contract is a performance-based, cost reimbursable Management and Operating (M&O) contract.¹ The Contractor is provided the freedom to exercise innovation and creativity to achieve the world-class mission and operational results expected of a DOE national laboratory in exchange for full accountability for NREL's performance. Accordingly, DOE will define work as outcomes (performance goals) and will use objective metrics (performance objectives, measures, and targets) to evaluate contractor performance and to determine fee award to the maximum extent possible.

C.4 Statement of Work

- (a) *Mission* -- The fundamental mission of DOE's national laboratories is to ensure the fullest use of the national investment to achieve the nation's strategic goals. It is

¹ See DOE Acquisition Guide Chapter 17.6 for more information on the history and purpose of M&O contracts at http://www.management.energy.gov/policy_guidance/Acquisition_Guide.htm

NREL's mission to conduct, manage, and integrate long-term, high-risk research and development; technology, policy, and market analyses; and commercialization activities that enable widespread adoption of renewable energy and energy efficiency technologies. It is the Contractor's responsibility to develop, direct, coordinate, and sustain NREL's scientific, technical, management, analytic, financial, commercialization, and support resources to enable the development and deployment of the disruptive technologies, policies, and market innovations necessary to achieve NREL's mission. To successfully perform its mission the Contractor must ensure NREL's:

- Expertise in global energy technology, policy, and market matters;
- Effectiveness in coordinating, applying, and leveraging federal resources with other public- and private-sector resources to create a collaborative and innovative environment to accelerate achievement of our national goals;
- Ability to balance short-term commercialization opportunity and long-term high-risk, high-value research and development to optimize its national contribution over time;
- Leadership in high-risk, complex, and high-value exploratory, translational, and applied research and development across the spectrum of renewable energy and energy efficiency and related disciplines;
- Contribution of timely and definitive analyses on technology, policy, and market issues that govern commercialization and widespread adoption of renewable energy and energy efficiency technologies at the national, state, regional, and local levels;
- Leadership in technical, management, and entrepreneurial disciplines;
- Availability to national technology, policy, and market stakeholders;
- Ability to rapidly identify, mature, and transfer knowledge and innovations to support business and economic development and accelerated commercialization of clean energy technologies; and
- Effective, efficient, and safe operations and community acceptance.
- For the contract extension period from the date of extension award through September 30, 2023 the Contractor is required to 1) increase deep foundational science capabilities to underpin science and technology approaches and yield greater innovation in clean energy development programs; 2) recruit and retain world-class renowned scientists and engineers in all NREL core and emerging capabilities as designated by DOE; 3) develop and maintain more active partnerships with universities that have a strong science and

technology track record; and 4) maximize the impact of the Energy Systems Integration Facility and place greater emphasis on projects and partnerships that solve more integrated systems challenges associated with DOE's Grid Modernization Initiative. The Contractor shall address its plans and metrics for the above requirements in its Annual Laboratory Plan submittal each year starting in FY18 for approval by DOE. Specific performance objectives, success indicators and notable outcomes will be incorporated into the FY18 Performance Evaluation Measurement Plan (PEMP), as described in Section C.5, Performance Goals and Attributes of Performance, and annually thereafter.

- (b) *Operations* -- The Contractor is accountable for the planning, execution, completion, assessment, and delivery of all work products. The Contractor shall furnish the corporate leadership, all scientific, management, analytic, technical, and support personnel with the requisite expertise and experience to conduct all NREL RDD&D activities and operations with distinction. The contractor shall furnish all facilities, equipment, materials, supplies, and services (except those provided by the Government) necessary to perform all tasks necessary to manage and operate NREL commensurate with the public trust placed in a national institution and to successfully achieve all Performance Goals and DOE expectations. The Contractor shall:
- (1) Perform all work assigned or approved by the Contracting Officer. Work authorized by the Contracting Officer may be supplemented by technical direction pursuant to Clause I.103, Technical Direction;
 - (2) Ensure that all activities are conducted to the high standard expected of an FFRDC, that NREL's integrity as a public institution is protected and maintained;
 - (3) Manage all activities to avoid potential or actual organizational conflicts of interests, and immediately notify the Contracting Officer of any potential or actual conflict of interest including proposed mitigations;
 - (4) Regularly and openly assess and measure its mission and operational performance, share assessment results with stakeholders (including staff and DOE) and demonstrably use this information to improve NREL performance;
 - (5) Provide DOE regular disclosure and assurance of the performance of its operational systems;
 - (6) Establish an independent audit capability to evaluate NREL mission and operational activities, capabilities, performance, and management and control systems to assure NREL's institutional integrity, to coordinate evaluations with DOE to avoid duplication, and to closely coordinate evaluations and their results, including mitigations, with DOE;
 - (7) Ensure that the NREL Director is a leader in science, engineering, and business, possesses the national and international stature to effectively achieve NREL's mission, and is experienced in managing a multidisciplinary research, development, demonstration, and deployment organization;

- (8) Ensure that the NREL executive management team are leaders in their respective areas of responsibility and possess the relevant skills necessary to achieve NREL's mission;
- (9) Perform all work in a manner that protects human health and welfare, including employees, on-site temporary personnel (including subcontractors), visitors, and the general public, and the environment in accordance with the NREL Integrated Safety Management System, applicable environmental, safety, and health laws and standards, and industry best practices;
- (10) Provide DOE definitive and objective counsel on program planning, budget development, and program execution matters;
- (11) Stop work immediately when directed by an authorized Contracting Officer's Representative pursuant to Clause H.6, *Environment, Safety, and Health Stop Work Order*;
- (12) Manage and operate all NREL installations, including South Table Mountain main campus, the Denver West leased space and the National Wind Technology Center, and all other supporting installations effectively and efficiently, to ensure the long-term availability and protection of these installations and the federal investment, and in compliance with applicable laws, regulations, and directives;
- (13) Maintain a robust mechanism for establishing, disseminating, implementing, controlling, maintaining, and documenting standards or procedures used to control performance risk;
- (14) Recommend alternative standards to replace DOE Directives where the external standard is superior from a cost, implementation, or technical perspective based on assessed risks of the work at hand;
- (15) Ensure that all personnel are sufficiently trained and proficient in their areas of responsibility;
- (16) Rely on persons qualified by knowledge, experience, or training to assess and categorize risk or to establish risk-based performance standards;
- (17) Protect personal, proprietary, or business sensitive information commensurate with the risk of information loss;
- (18) Collaborate with DOE and EERE's PMC to identify opportunities to advance EERE's mission and to work with the PMC to pursue these opportunities;

- (19) Implement all requirements of Executive Order 13423 as represented in DOE Acquisition Letter 2007-12 to reduce the energy intensity and environmental footprint of NREL's operations (see clause H.14); and
 - (20) Provide all other facilities, personnel, support, and services necessary to achieve success across all NREL mission and operations performance goals or as required by the Contracting Officer.
- (c) The Contractor shall perform all tasks necessary to complete contract transition (See H.24, *Activities During Contract Transition*).

C.5 Performance Goals and Attributes of Performance

C.5 Performance Goals and Attributes of Performance

This section sets forth DOE's expectations for NREL as outcome-oriented Performance Goals and associated performance attributes. These Performance Goals are the foundation of the Performance Evaluation and Measurement Plan (PEMP) and will be used over the entire base contract period of performance. Specific performance metrics (objectives, measures, and targets) will be established for each PEMP Performance Goal, and will be reviewed and validated annually.

(a) Mission and Operational Performance Goals

Performance goals 1 through 4 and 5 through 8 define the Mission and Operational Performance Goals, respectively, for this contract.

- (1) *Energy Leadership and Creating Lasting National Value* – Provides the expert leadership required to shape the energy dialogue and attract, coordinate, integrate, and leverage national energy RDD&D investments to accelerate the achievement of national goals. Coordinates and manages EERE's energy efficiency and renewable energy RDD&D interests; creates the intellectual and entrepreneurial environment to produce the disruptive approaches required to accelerate achievement of national goals; attracts and retains scientific, technological, management, and support talent to continuously deliver sustained superior value to the nation; manages Laboratory Director's Research and Development (LDRD) program for strategic contribution; and enhances NREL's global image and core capabilities to serve future generations with distinction.
- (2) *Advancing Science and Technology* – Delivers the world-class, peer reviewed, and definitive research, development, demonstration, and deployment products that advance scientific knowledge and the application of this knowledge to accelerate achievement of national goals.
- (3) *Science and Technology Management, Analysis, and Integration* – Manages scientific, technology, and related endeavors to create the disruptive

technologies and strategies necessary to accelerate achievement of our national goals; provides expert analysis and understanding of energy technology, policy, and market factors and the interaction of these factors to inform decision-makers; and identifies opportunities to coordinate and leverage national investments.

- (4) *Accelerating Commercialization* – Creates a linkage between scientific discovery and product development to accelerate the commercialization and market penetration of renewable energy and energy efficiency technologies. Creates the scientific and entrepreneurial environment that develops, captures, matures, and rapidly transfers knowledge and technologies to the public- and private-sectors; facilitates the development of successful renewable energy and energy efficiency businesses; identifies and mitigates potential and actual conflicts of interest; and develops the tools, strategies, and relationships necessary to support achievement of state, national, and international energy goals.
- (5) *Environment, Safety, and Health Management* – Creates a safe and healthful work place and institution based on identified and assessed risks; creates and manages programs to avoid or mitigate these risks; and protects all persons impacted by NREL operations as well as the regional environment, and effectively responds to actual incidents.
- (6) *Business Operations* – Manages business operations to support the RDD&D mission at the lowest cost commensurate with operational risk, and service, safety, quality, and accountability standards.
- (7) *Infrastructure Development and Site Operations* – Maintains the availability and enhances the value of NREL’s science and support infrastructure; acquires compelling science and support infrastructure assets that enhance NREL’s national image and enable NREL’s RDD&D mission; and reduces NREL’s energy intensity and environmental footprint.
- (8) *Security and Emergency Management* – Creates a secure work environment based on identified and assessed security vulnerabilities and threats; creates and manages programs to avoid or mitigate these risks; protects computer information networks and proprietary business sensitive and personal information; mitigates potential site emergencies through assessment and planning; and effectively responds to actual emergencies.

(b) Attributes of Performance

The following Performance Attributes are indicative of having achieved DOE’s Performance Goals for this contract:

- (1) *Energy Leadership and Creating Lasting National Value* – NREL is widely recognized as a leader in the global energy technology, policy, and market arenas. NREL’s credentials are beyond reproach and NREL is viewed as a definitive resource on energy technology, policy, and market matters. NREL’s energy technology, policy, and market analysis is world-class and underpins its strategic direction and counsel, and management decisions. NREL encourages

and supports a creative environment in which RDD&D innovation will occur and entrepreneurial endeavors flourish. NREL possesses the capability and capacity to undertake new strategic opportunities while maintaining existing commitments to clients, and delivers superior overall value. LDRD program contributes to NREL's scientific and technologic viability, anticipates DOE's future programmatic needs, and encourages science, business, and management staff to envision and create the high-risk, high-value products necessary to impact national goals. NREL mission and operational performance is routinely assessed and this information is used to improve performance. NREL communication products inform a wide spectrum of stakeholders. NREL contributes to the advancement of science, management, and deployment education. Corporate parent(s) of NREL's management team contribute the leadership and resources necessary to fully implement its strategy and achieve its vision, and contributes to accomplishment of DOE's overall mission. Governance activities provide necessary corporate oversight and assurances. Assures the integrity of operational systems and systems performance through regular assessment and disclosure of assessment results to DOE. NREL is a state, regional, and local economic resource.

- (2) *Advancing Science and Technology* – Scientific work products are peer-reviewed and acknowledged as cutting edge by the national and international science community. NREL produces world-class exploratory, translational, and applied research that advances the nation's understanding of the underlying science critical to the understanding and full use of these technologies. NREL coordinates and leverages EERE investments with public- and private-sector RDD&D initiatives to accelerate and increase market impact. NREL conducts development, demonstration, and deployment engineering activities to scale these technologies to accelerate and increase market impact.
- (3) *Science and Technology Management, Analysis, and Integration* – Science and technology RDD&D is planned, managed, assessed, and coordinated to ensure these efforts deliver the promised products within scope, cost, and schedule. NREL assesses the energy technology, policy, and market arenas for market signals and opportunities to inform, coordinate, and manage the national RDD&D investment, private- and public-sector decision makers, and NREL planning to achieve highest national value. RDD&D efforts are systematically reviewed for quality, synergies, and long-term national relevance and NREL advises DOE on RDD&D program and portfolio direction. The breadth and complexity of the overall RDD&D effort, as well as the interaction of program elements, is integrated to reduce risk and maximize the potential for technology readiness. Systems Integration ensures all requirements are being addressed; tracks and measures the progress of projects; conducts independent analysis to aid the multiple programmatic decisions that need to be made over the course of the program; and identifies and quantifies programmatic and technical risks to ensure the program is proactive in response to issues and challenges. NREL discretionary RDD&D investments advance the fundamental understanding of energy technology, policy, and market factors and increases NREL's strategic value to the nation.
- (4) *Accelerating Commercialization* – Commercialization is an integral component of NREL's mission. Market conditions and signals inform strategic planning and commercialization activities. Commercialization strategies are well developed, are reflected in strategic planning and decision making, and create a linkage between scientific discovery and product development. Strategies

recognize the impact of market dynamics and the conditions for successful product development. Commercialization activities are closely coordinated with EERE to ensure full use of all EERE-sponsored intellectual property. NREL identifies inventions and innovations, matures promising technologies, and rapidly transfers these technologies to the public- and private-sectors. NREL provides timely, insightful, accurate, and objective analysis of energy technology, policy, and market issues; system and component testing, validation, and optimization; and performance information necessary to reduce risk for public- and private-sector decision-makers to achieve state and national energy goals. NREL anticipates and defines potential and actual conflicts of interests, identifies these matters promptly to DOE, and mitigates these matters to ensure that NREL's FFRDC integrity and brand are protected.

- (5) *Environment, Safety, and Health Management* – NREL creates and maintains a safe workplace for all persons impacted by NREL operations and protects the environment consistent with Integrated Safety Management System principles, applicable environmental, safety, and health laws and standards; and industry best practices. NREL work is planned, risks identified and mitigated, and work execution monitored to ensure superior operational awareness and to reduce the potential for serious safety, health, or environmental incidents. NREL ensures all work is managed in accordance with the National Environmental Policy Act (NEPA), anticipates and prepares NEPA documents to support the timely accomplishment of all activities, and coordinates all NEPA activities across all NREL operations and with DOE. NREL ensures all on-site subcontractors perform work in accordance with all ES&H requirements. NREL maintains safety, health, and environmental emergency response capabilities commensurate with risk, responds to actual incidents promptly, and reporting incidents consistent with applicable requirements. NREL provides leadership on ES&H matters in relevant public- and private-sector forums.
- (6) *Business Operations* – Develops, operates, and maintains risk-based business capabilities and systems that support effective accomplishment of the mission and maintain service, safety, quality, and accountability standards. Business operations support DOE's socioeconomic efforts, and Small and Small Disadvantaged Businesses are actively engaged at NREL. Management and accountability systems meet widely accepted corporate performance expectations.
- (7) *Infrastructure Development and Site Operations* – NREL manages its physical and scientific infrastructure to industry and DOE standards and maintains infrastructure viability through proactive and defensible reinvestment planning and budget requests. NREL reduces energy intensity and environmental footprint to the lowest reasonably achievable levels. NREL identifies opportunities for using private-sector expertise and capital to satisfy site energy management and infrastructure investment. NREL anticipates and develops strategic, supporting, and sustaining infrastructure investments linked to EERE's strategic need, and prepares complete and compelling mission and financial justifications. NREL project designs are compelling and advance DOE's strategic goals and NREL's image. NREL employs internal and external reviews, uses tools such as Earned Value Management, and maintains superior operational awareness to ensure project baselines are achieved.
- (8) *Security and Emergency Management* – NREL creates and maintains a secure workplace for all individuals impacted by NREL operations. NREL maintains

superior operational security awareness. Physical, operational, and cyber security programs reflect assessed risks and threats and are compliant with applicable DOE Directives. NREL maintains the security and emergency management capabilities and external relationships necessary to effectively respond to site emergencies.

(c) Deliverables

The Contractor will provide the following deliverables electronically to the Contracting Officer:

- (1) Annual Operational Planning/Execution Documents (30 days prior to the start of each fiscal year):
 - (i) Annual Operating Plans
 - (ii) Indirect Cost Proposal
 - (iii) Ten-Year Site Plan
 - (iv) Five-Year Strategic Plan
- (2) Performance Self-Assessment (30 days following closure of each performance period).
- (3) Any additional reports, analysis, services, etc., as required by the Contracting Officer.