



NREL

National Renewable Energy Laboratory

NREL FY03 One - Year Plan



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NREL FY03 One-Year Plan



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I. INTRODUCTION

NREL is a federally funded research and development center (FFRDC), operated under the stewardship of DOE's Office of Energy Efficiency and Renewable Energy (EERE), by Midwest Research Institute (MRI) in partnership with Battelle Memorial Institute and Bechtel National, Inc., through a Management and Operating Contract (M&O). DOE's Golden Field Office (GO) is responsible for oversight of the NREL M&O contract with MRI.

Federal Acquisition Regulation (FAR) defines the role of FFRDCs. FAR 35.017 describes an FFRDC as: 1) meeting some special long-term research or development need which cannot be met as effectively by existing in-house or contractor resources, and 2) enabling agencies to use private sector resources to accomplish tasks that are integral to the mission and operation of the sponsoring agency. In this capacity an FFRDC, in order to discharge its responsibilities to the sponsoring agency, has access beyond that which is common to the normal contractual relationship, to government and supplier data, including sensitive and proprietary data, and to employees and facilities. FFRDCs are required to conduct business in a manner befitting this special relationship with the government, to operate in the public interest with objectivity and independence, to be free from organizational conflicts of interest, and to have full disclosure of its affairs to the sponsoring agency. Long-term relationships between the government and FFRDCs are encouraged in order to provide the continuity that will attract high-quality personnel to the FFRDC. This relationship is one designed to encourage the FFRDC to maintain currency in its field(s) of expertise, maintain its objectivity and independence, preserve its familiarity with the needs of its sponsor(s), and provide a quick response capability.

As an FFRDC, NREL is a partner with, and strategic advisor to, DOE. In this capacity NREL is assisting DOE with a full range of energy related activities from analysis and planning to research and development through technology demonstration to facilitating transfer and deployment of these technologies into U.S. and global markets. Commensurate with its FFRDC

responsibilities, NREL provides leadership by integrating the science and technology expertise and viewpoints of industry, academia, and DOE through collaborative activities such as technology roadmapping, scenario planning, technology forums, and strategic planning, as well through a variety of peer, industry, and stakeholder reviews. NREL also uses a broad range of partnership mechanisms to deliver on EERE's mission, including competitive contracting, Cooperative Research and Development Agreements (CRADAs), as well as other cost sharing partnerships.

In partnership with EERE, NREL is developing and transferring the scientific knowledge and technology that enables a sustainable energy future. NREL's efforts cover nearly 50 areas of scientific and technical investigation advancing the goals of the eleven EERE programs, exploring related fundamental research through the Office of Science, and advancing the use of clean energy technologies internally, within the federal government, and by state and local agencies.

In FY 2003 NREL will continue to enhance the value it delivers to DOE and the nation in its role as an FFRDC, and in the quality and impact of the results it delivers through collaboration and partnership with industry, academia, and other national laboratories.

NREL Mission

NREL develops renewable energy and energy efficiency technologies and practices, advances related science and engineering, and transfers knowledge and innovations to address the nation's energy and environmental goals.

II. PLANNING, BUDGETING, and ASSESSMENT CONTEXT

NREL's planning, budgeting, and assessment process promotes integration across programs and organizations; assures strong alignment of NREL strategy, plans, and investments with those of DOE; enables the assimilation and consideration of market and stakeholder input; and provides the performance data needed to efficiently and effectively manage

the Laboratory. NREL's strategic foundation is articulated in its Institutional Plan, developed in close consultation with DOE and other stakeholders. Strategy is then translated into specific annual actions and documented in NREL's One-Year Plan, which reflects the identification of key actions to be undertaken, and establishes the basis for managing performance and monitoring progress. The One-Year Plan represents an integrated, institutional view of detailed program, center/office, and initiative annual operating plans.

NREL's One-Year Plan is structured around Lab-level performance measures (i.e. Critical Outcomes, Performance Objectives and Performance Indicators) such that work accomplished at all levels of the organization supports accomplishment of DOE and NREL priorities. The responsibility of the M&O contractor in this context is to establish an environment at NREL that enables outstanding performance in all dimensions of business at NREL. The structure and focus of the FY03 performance measures for NREL reflect this responsibility, and make clear that MRI is responsible for ensuring that critical outcomes are realized; and that NREL delivers on the commitments in its annual operating plans, produces quality science and technology outcomes, and provides business and operating support that enables the efficient and effective conduct of research.

In FY03, NREL will be executing programs and budgets formulated within the context of the President's National Energy Policy (NEP) and the President's Management Agenda and reflected in the EERE FY03 Budget Request. Many of NREL's current efforts were validated through the NEP and the recent strategic review of EERE programs, which identifies areas for new program activity as well as areas requiring continued attention. In FY03 there is very strong alignment between this One-Year Plan, the EERE FY03 Budget Request, the NEP, and the Management Agenda. This alignment is reflected through the investments NREL is making, which are presented below, as well as in the Critical Outcomes, Performance Objectives, and Key Tasks that follow.

III. KEY LAB-LEVEL INVESTMENTS

In order to support the current Administration and carry out the missions of DOE and NREL, investments are focused in key areas that are most likely to drive the important outcomes that result in achieving longer-term NEP goals. Investments are used as one tool to build, sustain, and/or strengthen such activities and are focused in three key areas:

- Opportunity Development - Investments that enable the identification of R&D gaps and strategies, and lead to opportunities to explore related areas or provide the basis for new program development, consistent with DOE needs.
- Capability Development - Investments to build or enhance staff expertise and/or infrastructure (e.g., buildings, equipment) required to meet known and anticipated program needs.
- Management and Operational Improvement - Investments designed to develop enabling processes and tools that assist NREL in effectively executing its mission.

In many cases, investments transcend all three investment categories. NREL investments support DOE's strategic objectives, enable the Lab to continually improve its management and operational processes, and deliver results that support U.S. and international energy security, economic stability, and environmental quality.

IV. OPPORTUNITY DEVELOPMENT

In FY03, NREL will conduct assessments and support planning efforts that will expand its understanding of the science and technology challenges in key areas and the potential pathways to address those challenges. This information will be used by NREL as it fulfills its FFRDC role as a strategic advisor and partner to EERE on strategic program directions and new opportunities. In addition, the Laboratory will continue to support efforts to create new partnerships that leverage EERE resources and that advance EERE program objectives.

Hydrogen

Hydrogen, the most plentiful element in the universe, is an ideal energy carrier. It can be derived from fossil fuels, biomass, or water using energy sources such as fossil fuels, nuclear power, or renewable energy. Many scientists see it as the basis for a sustainable, clean energy economy in the future. EERE's Hydrogen, Fuel Cells, and Infrastructure Technologies Program includes research and validation projects for the development of safe, cost-effective hydrogen technologies that support and foster the transition to a hydrogen energy economy. The Strategic Program Review of EERE Programs cited the value of hydrogen "as an energy carrier that can provide pollution-free, carbon-free power and fuels for buildings, industry, and transport" making it a "potentially critical player in our energy future."

NREL serves as a lead laboratory in a number of areas of hydrogen research and development, including producing hydrogen by processes and technologies using renewable energy, storing hydrogen on carbon nanotubes, analyzing hydrogen systems, and integrating production, delivery, storage, and use of hydrogen. These efforts will offer mid-term and longer-term solutions to reaching the destination of a sustainable hydrogen economy. NREL's continuing objective is to work with DOE and others to refine the national hydrogen strategy, and conduct technology R&D and analyses to realize a hydrogen energy economy. In FY02, NREL completed initial work to identify the science and technology requirements and the gaps and opportunities in the current DOE R&D portfolio. This information was shared by NREL participants in the EERE hydrogen visioning and roadmapping efforts. In addition, NREL developed initial concepts for a national hydrogen infrastructure and fuel cell demonstration program that has been proposed to DOE. In FY03, NREL will refine its understanding of the R&D gaps, work across the national laboratory system to identify foundational science required to address the gaps, and initiate internal R&D projects to conduct proof-of-principle experiments on promising new concepts. In addition, NREL will take steps to develop a systems approach to hydrogen analysis and enhance its capabilities to do systems research related to hydrogen production, storage, delivery, and use. NREL will collaborate with industry to develop and validate concepts, strategies, and relationships that advance the national effort to achieve a hydrogen energy economy.

International Partnership Development

NREL is developing collaborative projects that advance energy efficiency and renewable energy technologies as major elements in the energy portfolios of developing and industrialized nations around the world. In FY02, NREL expanded partnerships with organizations such as UNEP and USAID, and secured support for projects involving international EERE market development, global energy security, and domestic and international air pollution and climate change. In many of these projects, NREL brought its considerable expertise in resource assessment and its distributed generation modeling tools to bear in identifying opportunities for renewable energy development. In FY03 NREL will continue to build new relationships with environmental organizations, with international agencies, and with foreign governments to reduce barriers to the use of renewable and energy efficiency technologies. This will include enhancing collaboration with USAID, the State Department, EXIM, EPA, UNEP,

UNDP, and the World Bank. Collaborations with these organizations bring considerable leverage to the DOE international program.

Nanoscience and Nanotechnology

Nanotechnology involves controlling matter at the atomic or molecular level—building things the way nature does, atom-by-atom and molecule-by-molecule. Nanotechnology is being touted as nothing short of the next Industrial Revolution, and a key to future innovations in the economy. A vast flood of results in nanotechnology have served to convince scientists and government planners that the right tools, understanding, and mindset need to come together to realize this potential. As a result, a major government initiative continues to be supported by all agencies that provide funding for science and technology, including DOE, National Science Foundation, Department of Defense, National Institutes of Health, National Aeronautics and Space Administration, and National Institute of Standards and Technology.

NREL has recognized the importance of nanoscience for many years and its potential impact on advancing renewable energy technologies. NREL researchers were among the very first scientists to conduct basic research on nanosized semiconductor quantum dots; the Laboratory published one of the first papers on this subject in 1984. Subsequently, NREL researchers have published more than 175 peer-reviewed publications in theoretical and experimental nanoscience. NREL conducts research in several areas of nanoscience and technology for the Office of Science and EERE. These include such areas as: dye-sensitized nanocrystalline solar cells, quantum dots and quantum dot arrays for photovoltaic and photochemical conversion, the theory of quantum dots, nanoparticle precursors for materials applications, and carbon nanotubes and inorganic fullerenes for hydrogen storage. In FY03, NREL will continue to support efforts to participate in the DOE SC Nanoscience and Nanotechnology Initiative through continued interaction with SC, participation in national nanoscience and technology forums, and development of nanoscience proposals in areas that advance EERE technologies.

Solid-State Lighting

A revolution is in the making for replacing conventional illumination technologies with solid-state semiconductor-based products. This will not only mean a major improvement in lighting environments, but also a major energy cost savings with a projected cumulative estimate of \$98 billion in savings over the next 20 years. NREL's III-V photovoltaic research

activities in multijunction devices are complementary to this technology, indicating that NREL can play a major role in the development of this technology. NREL is a recognized world leader in the fabrication of multijunction devices for PV and can make profound contributions in basic and applied research to develop solid-state lighting technology. The recent Strategic Review of EERE cited advances in areas such as this as offering “huge new opportunities” for the Building Equipment R&D Program. This program was cited as yielding the largest returns, in terms of EERE benefits. In FY03, NREL will work with Sandia and Lawrence Berkeley National Laboratories and with the lighting industry to develop an understanding of how NREL capabilities can be brought to bear in this important initiative. Additionally, NREL will develop an R&D plan to address two key areas: 1) development of solid-state lighting technology using LEDs consisting of III-V nitrides and phosphides; and 2) development of highly efficient phosphors and wavelength converters.

Integration of Fuel Cells in Buildings

The promise of fuel cell technology for both building and transportation applications is evident from the recent attention the technology has received from DOE and private companies. Despite the fact that the fuel cell was invented in 1839 and was further developed and utilized by NASA in its space projects, a great deal remains to be accomplished if this technology is to be transferred to the market on a large scale. Developing inexpensive components for fuel cells, lowering the manufacturing cost, and evaluating optimum systems are a few examples of the areas demanding progress and breakthroughs. Drawing on NREL’s expertise in thermal conversion technology and its significant experience in analyzing integrated energy systems, NREL will develop a proposed R&D plan to investigate the optimum integration of fuel cell technology in buildings. The R&D plan will focus on outcomes such as: 1) identifying system configurations and devising guidelines to improve the overall IES efficiency for different building types, 2) mapping the benefits of fuel cell integration for all climatological conditions across the country, and 3) assisting national building code authorities and organizations to enhance the existing codes.

Air Quality

Federal and state air quality regulatory agencies and program planners are interested in exploring the use of renewable energy and energy efficiency to improve air quality. This interest occurs within at least four different

functional areas of the agencies: 1) Air Quality Regulation, 2) Environmental Enforcement, 3) Voluntary Air Pollution Mitigation Programs, and 4) Integrated Planning and Assessment. Environmental benefits are cited as justification for public spending on energy efficiency and renewable energy technologies. However, decision-makers at the state and local level need specific estimates of the comprehensive effects of EERE technologies in order to evaluate their potential to contribute to particular needs. These decision-makers are interested in the environmental, economic, and energy diversity/security effects within their jurisdictions. DOE expressed interest in supporting greater integration between air quality planning and energy planning at the state level. Air quality legislation is under development in Congress because of ongoing challenges in achieving air quality goals. The NREL-convened Energy Analysis Forum on Renewable Energy and Air Quality, held in May 2002, pointed to a lack of consistent, credible information upon which federal and state agencies can base program and policy decision. NREL can play an important role in providing information that enables improving estimates of effects of the technologies, implementation of EERE projects for enforcement settlements, and supports implementation of policies that are effective at promoting EERE technologies while improving air quality.

In FY03, NREL will focus on developing and improving methods and data that can be applied to a host of policy questions and geographic areas, with emphasis on the full range of benefits of EERE technologies for air quality improvement. In addition, NREL will develop collaborations with organizations, such as the EPA that publicly invited NREL and DOE collaboration in this important area at the Analysis Forum.

Energy Infrastructure Assurance

A key facet of the EERE strategic plan is focused on improving the reliability and security of the nation’s energy infrastructure. As cited in the recent Strategic Review of EERE, research, development, demonstration, and deployment (RD³) in this area contributes to the reliability and diversity of an energy infrastructure that can reduce and/or minimize national security risks. The United States’ critical energy infrastructure is vulnerable to major disruption, either from natural or human cause. The capabilities at NREL foster the development and promote the application of options that reduce such vulnerability, thus minimizing potential risks, and dealing with the threat of disruptions. A sampling of technologies already available for use includes: solar-electric and wind power for stationary and mobile back-up power applications; small modular and biopower systems; distributed

generation technologies; and high performance buildings. In FY02, NREL made significant contributions to the DOE Energy Assurance Task Force advising the Deputy Secretary of Energy on technologies that can be used to protect the U.S. energy infrastructure within the next six months to one year. In a briefing delivered to the Deputy Secretary in early February 2002, a large number of technologies were identified as being commercially available today. These included PV-powered detectors, anti-intrusion devices, and emergency power (UPS) systems. In FY03, NREL will continue to focus on furthering the understanding of the potential contribution that these important technologies can make in maintaining and improving energy infrastructure assurance.

V. CAPABILITY DEVELOPMENT

Computational Science

Computational science is an important third leg of science that complements theory and experimentation. Continuing advances in information technology are enabling increasingly complex problems to be addressed through advanced modeling, simulation, and visualization techniques.

The NREL Computational Science Initiative, launched in FY00, resulted in a strategic plan to build on NREL's existing scientific computing capabilities and bring computational science at NREL to a level appropriate to NREL's mission and commensurate with theoretical and experimental sciences conducted. The plan called for hardware and software investments as well as investments in strategic hires needed to fully implement a computational science culture at the Laboratory. In FY00 and FY01, the first phases of the plan were accomplished by: 1) purchasing engineering and modeling software, 2) procuring several scientific workstations, and 3) subscribing to ESNet to enhance NREL's connectivity to computing capabilities at other laboratories. The FY02 investment supported three new hires – the computational science director, a computer scientist, and a systems administrator. The investment also supported procurement of a computing cluster that supports mid-range problems and enables setting up experiments to run on larger machines at other locations.

FY03 investments will be focused toward those activities that enable transitioning this capability from an initiative to full integration with Laboratory research operations. Emphasis will be placed on building a solid computational science foundation at NREL through on-going infrastructure

development, strengthening the role of computational science in existing programs at NREL, and by developing focused collaborations through the Office of Science that leverage EERE programs.

Enhanced Analysis

NREL is pursuing a strategy to strengthen its analysis capabilities to enable the Laboratory to provide credible and consistent data and information that informs DOE and stakeholder decisions. NREL's overall goal is to develop an energy analysis center of excellence that serves as a source for data, tools, and knowledge that advance the understanding of the economic, environmental, and social implications of renewable energy and energy efficiency technologies, systems, markets, and policies. There are three primary components of this strategy: 1) Enhance NREL's analysis capability through strategic hiring and by expanding relationships with institutions recognized for their superior analysis capabilities. Several senior hires were made in FY02. The process of establishing collaborations was initiated in FY01. 2) Enhance the execution and communication of energy analyses using the best available databases, tools, and transparent methodologies. NREL launched an Energy Analysis Web site for effectively sharing analysis results from across the Laboratory with internal and external stakeholders. NREL also is developing an Internet platform that was integrated with Web-based EERE program database development at NREL. In addition, increasing emphasis has been placed on publishing the results of analytic efforts in peer-reviewed publications. 3) Demonstrate leadership in key analysis forums. NREL established a Renewable Energy Analysis Forum that pulls together leading analysts from government, universities, and industry to discuss energy analysis topics, tools, and methods. The first such forum was held in FY01 with a second one conducted in FY02. The plan is to continue this as an annual forum focused on clean energy analysis, drawing on lessons learned to make the series more valuable to DOE and the nation over time. NREL initiated an Energy Analysis Seminar series in FY01 that continues to provide monthly presentations on energy analysis topics of current interest. NREL established the core of an "over-the-horizon" analysis capability through strategic hiring and by networking with analysts in other organizations. This capability will enable longer-term analyses of emerging issues of importance to renewable energy and energy efficiency. In FY02, NREL developed and proposed an analytic framework for EERE consistent with the new organization and its underlying principles. Through ongoing

discussions with EERE, NREL expects to continue to contribute to EERE's formulation and implementation of its analytic strategy and agenda.

Director's Discretionary Research and Development

Scientific discovery and technical innovation are critical to the overall success of NREL and DOE programs. An important avenue for encouraging innovation at NREL is the Director's Discretionary Research and Development (DDRDR) program.

In FY02, NREL placed emphasis on advancing new concepts in bioenergy, distributed and hybrid energy systems, advanced materials for renewable energy technologies, and advanced measurement and characterization techniques focusing in nanoscience.

In FY03, NREL will increase emphasis on computational science, hydrogen, and solid-state lighting. Additionally, the Lab will continue efforts in other areas of strategic importance such as bioenergy, advanced materials for renewable energy technologies, and advanced measurement and characterization techniques.

In FY03, NREL will review the internal process to: 1) ensure it is leading to the exploration of "leapfrog" science and technology areas, 2) significantly streamline the review and selection process while maintaining a strong focus on peer review, and 3) implement program enhancements that are identified as a result of the review of laboratory-directed R&D programs at other laboratories. The DDRDR program portfolio will continue to be visible through staff seminars, poster sessions, the DDRDR intranet site, and articles in NREL publications. NREL continues to work with DOE to identify mechanisms to effectively communicate DDRDR projects and results to EERE stakeholders. NREL will hold the annual review of the DDRDR Program with DOE and produce the FY03 DDRDR Annual Report by October 31, 2003.

VI. MANAGEMENT AND OPERATIONAL IMPROVEMENT

NREL Web Site Redesign

Internal and external use of NREL Web sites has increased dramatically over the past five years. As Internet use continues to expand, Web sites increasingly become our face to the world. Publishing information on the Web is the most cost-effective, and far-reaching method of providing information about NREL's research and its significance. This initiative

supports the Laboratory's desire to manage NREL's "Web presence" in a planned, strategic manner. This initiative also focuses on the reorganization of information on the site to realign with the significant reorganization at EERE.

Electronic Processing

Systematically moving to electronic processing of routine administrative functions and tasks may represent one of the most important improvement initiatives the Laboratory undertakes in the foreseeable future. The ultimate goal is to provide more timely access to important financial and operational information to support project, program and organizational management, and decision-making. In FY02, NREL launched a significant multi-year effort to streamline its administrative processes in an effort to provide online access, real-time processing, and approval of documents that are currently processed manually. Through this investment, the Lab expects to streamline and reduce the cycle time for various processes, provide timely access to common data to serve multiple purposes, enhance process integrity, and minimize the use of paper. FY02 efforts were focused on researching technical options and challenges, benchmarking and upgrading software, and documenting signature and other authorities necessary to enable electronic approval and processing.

In FY03, the initiative will begin implementation of select business process enhancements, with an initial focus on the definition and programming of the electronic workflow for routing and approval of transactions online.

Sustainable NREL

Sustainability is a concept that is both appreciated and practiced at NREL. In fact, many of NREL's facilities already exceed national standards for energy efficiency. However, the Laboratory recognizes the need to continue to make strides in "walking the talk." In this context, NREL will continue its emphasis on improving the sustainability of its facilities and operations through the Sustainable NREL (SN) Initiative. This initiative brings together, for management evaluation and planning purposes, all NREL activities and investments related to energy, the environment, and public responsibility. The goal of this broad-reaching initiative continues to be to use energy, water, land, and material resources efficiently, while decreasing the impact of the Laboratory on the environment, in balance with financial and public responsibility goals. In FY02 the Sustainable NREL Master Plan was developed and adopted. The Master Plan objectives are based on the pre-existing (prior to SN) Laboratory sustainability activities/goals, federal

directives (compliance with all applicable DOE Orders, Executive Orders and other agreements), and “above and beyond” SN goals so important to a Laboratory such as NREL.

In FY03 NREL will continue to implement the Master Plan objectives. These objectives are organized around a comprehensive Sustainability Management Framework. Specific implementation strategies were developed for each of the objectives. The core activities of SN in FY03 will be continued energy use reduction (including peak load management), sustainable master site planning, support of energy efficient new construction, materials recycling, and water use reduction.

Leadership and Management Development

NREL will continue its efforts to recruit and hire in areas important to enhance and advance capabilities. At the same time, the Laboratory will enhance our succession planning program, expand leadership development activities, and continue to focus on strategic hiring. NREL will identify the core competencies needed for successful leaders and managers and develop a core management-training program based on those competencies. These core competencies will also be used to help identify the next generation of leaders and managers for succession planning. Finally, NREL management will continue to identify strategic hires, and HR will assign top priority to such positions during the hiring process.

Master Site Planning

Site planning represents the integration of three key elements over a desired time horizon: 1) Projected mission directions over time for the organization overall and as they relate to individual sites, 2) Optimal physical development of each site, and 3) Developments and interactions with the surrounding community.

A Master Site Plan is a document, arrived at by means of a thorough and inclusive planning process, which communicates the agreement of key stakeholders on how an organization intends to meet its need for physical facilities and develop those physical facilities under various future scenarios, integrating these three key elements.

A Master Site Plan, and the attendant process of developing it, should accomplish the following objectives:

- Convey the vision and leadership of the organization to all stakeholders.
- Ensure a firm linkage between the intended future mission and goals of the organization, and the availability and suitability of the physical infrastructure.
- Provide a common understanding to all stakeholders of the organizational values and organizational image as reflected in the buildings and site development.
- Provide a common understanding of the intended usage of each site, options, and preferences for ultimate build out of each site, including infrastructure requirements and preferable physical layout of activities.
- Provide a context for management decisions on the placement and nature of individual capital projects and support future environmental assessments.
- Support and strengthen justifications for capital budget requests.
- Enhance staff productivity and help attract top research candidates.
- Establish and meet energy efficiency and overall sustainability goals.
- Establish the balance between sometimes-conflicting values.

Efforts into FY03 will be directed toward completing the Master Site Plan for NREL that was initiated in FY02. The planning process will include: laying the groundwork by involving staff from throughout the Lab in the process as well as key external stakeholders; collecting internal data related to future missions, projections for growth, etc., and using this data as input to characterize where the Laboratory wants to be in 25 years; and then hiring a subcontractor and developing the plan.

The investments presented above, coupled with the Critical Outcomes, Performance Objectives, and Key Tasks that follow, represent how NREL will continue to make progress toward its long-term strategy in FY03 and are the foundation for how performance will be measured in concert with DOE.

VII. FY03 CRITICAL OUTCOMES, PERFORMANCE OBJECTIVES AND INDICATORS, KEY TASKS, AND PERFORMANCE MEASUREMENT QUESTIONS

This section of the One-Year Plan lays out NREL's plan in terms of Critical Outcomes (COs), Performance Objectives (POs), and specific activities that will be undertaken in FY03 (i.e. Key Tasks) to achieve the Laboratory's goals. In addition, the plan identifies the means by which NREL will measure progress against the key objectives articulated in the plan. NREL's COs, POs, and PIs are part of the Lab's Performance Evaluation Plan, and represent the framework for its mid-year and year-end self-assessments as well as DOE's evaluation of performance. Key Tasks are documented in program, initiative, and organizational Annual Operating Plans (AOPs). Specific performance milestones, targets, and metrics are defined within each key task as part of these AOPs. Performance assessment begins with a critical examination of progress against each key task - the results being indicators of performance against the Laboratory's POs. Performance against the POs is then integrated and evaluated in terms of degree of progress made under each of NREL's COs. The "Measuring Performance" section for each PO puts forward sample queries that should be addressed when assessing and evaluation performance for that PO.

Definitions

Critical Outcome:	A long-term, strategic aspiration stated in terms of the desired end-state that is expected to be reached in an area important to achieving NREL's vision.
Performance Objective:	A goal that, when achieved, leads toward realizing a critical outcome in at least one of its dimensions.
Key Task:	A near-term activity undertaken to accomplish a significant building block in achieving a performance objective. The results of completing or working toward the completion of the key task produce the indicators of performance against a specific performance objective.
Performance Indicator:	The evidence of accomplishment, or progress toward achieving a performance objective.

CO 1.0 Science and Technology

MRI will deliver high quality scientific and technological outcomes that advance DOE priorities and Program objectives.

PO 1.1 Demonstrate the quality of scientific and technological outcomes.

Measuring Performance:

- Are NREL science, technology, and analytical accomplishments and products peer reviewed during period? If so, how do the results of internal and external peer and program reviews validate the quality and impact of NREL accomplishments and products?
- How are the results of peer and other reviews used to assess and guide future program and technical directions?
- How has the quality of NREL's science, technology, and analytical work been recognized by relevant external scientific and technical communities? How does this compare with benchmark data from other laboratories?

PI 1.1.1 Results of external and peer reviews validate the quality and impact of programmatic, technical, and/or analytical outcomes.

PI 1.1.2 External recognition focused on NREL's technical and/or analytical work and outcomes: a) external awards and recognition; b) peer reviewed publications, and c) number of patents awarded.

Key Tasks:

1. Publish R&D and analysis results in peer-reviewed forums, journals, and conferences.
2. Identify candidates for external awards of distinction such as R&D 100 awards, Discover Awards, etc., and provide the necessary support to compile the nomination packages for submission.
3. Provide support for and conduct advisory boards, other peer reviews, or internal reviews of the major research areas at NREL such that they complement DOE-directed peer reviews.

PO 1.2 Demonstrate excellence in program planning and management.

Measuring Performance:

- Were sound and thoughtful AOPs developed for NREL-managed work?
- Were key milestones and spending commitments as negotiated and represented in the AOP for each area accomplished?
- Were competitive subcontracting goals met?
- Did NREL effectively maintain program communications with EERE PMs?
- Were ideas and input that advance EERE program objectives put fourth?

PI 1.2.1 Project management performance as measured against key milestones, budgets, subcontracting goals, and other commitments as negotiated and represented in approved AOPs.

PI 1.2.2 Program planning activities result in sound technical plans and well developed longer-term program directions.

PI 1.2.3 Effective partnering and communication occurs between NREL and DOE Program Managers.

Key Tasks:

1. Support EERE in developing and implementing program management principles and best practices.
2. Establish clear program interfaces and support structures that facilitate NREL internal integration and communication with EERE program managers.
3. Develop program AOPs that clarify scope, schedule, and budget for NREL-managed work and deliver programmatic milestones within budget and on schedule.
4. Manage subcontracting activities to obtain the best available capabilities and meet or exceed targets for competition.
5. Develop and bring forward ideas for new efforts within programs that will advance EERE program objectives.

PO 1.3 Produce S&T accomplishments that advance DOE and program objectives.

Measuring Performance:

- What is the significance and impact of the NREL accomplishments during this period relative to key DOE goals? What key outcomes and results were accomplished that support these assertions?

PI 1.3.1 Programs and projects produce significant research and development accomplishments that positively impact the advancement of DOE missions and program goals.

Key Tasks:

1. Perform in-house research and development as identified in program annual operating plans and project plans.
2. Oversee and integrate the work of NREL subcontractors with in-house research and development to accomplish technical objectives.
3. Document S&T and analysis accomplishments and their impact and report accomplishments to DOE and stakeholders, and report status to NREL management at monthly reviews and as required by EERE's Strategic Management System.
4. Assign appropriate personnel, equipment, and facility resources in support of research outlined in program AOPs.

PO 1.4 Effectively communicate and transfer NREL-developed knowledge and technology.

Measuring Performance:

- How has the proper stewardship of intellectual assets and NREL-owned or originated technology been demonstrated?
- What market impacts have been created/generated as a result of technology transfer and deployment activities?
- How have communication products contributed to the transfer of NREL-originated knowledge and technology?

PI 1.4.1 Private sector partnerships have been developed for commercialization of NREL Technologies.

PI 1.4.2 Meet or exceed established technology transfer metrics.

PI 1.4.3 Quality communications products are developed and recognized as supporting the advancement of Program goals.

Key Tasks:

1. Catalyze the market success of clean energy companies and add value to NREL programs through enterprise development activities.
2. Form and implement partnerships to transfer NREL-originated technology.
3. Improve effectiveness of technology transfer through business system redesign and new processes.
4. Provide stewardship for intellectual property from record of invention through licensing.
5. Establish and report on agreed upon performance metrics for technology transfer processes.
6. Develop communication products that effectively support transfer of NREL-originated knowledge and technology.
7. Provide legal support to the NREL Technology Transfer Office and the technology partnerships group within Contracts and Business Services, by advising on intellectual property business and licensing strategies and tactics; supporting improvements in technology transfer at NREL; participating in teams engaged in the negotiation, review and conclusion of successful licenses of NREL developed intellectual properties; and reviewing for legal sufficiency all CRADAs, Work for Others, memorandum of understanding and other technology partnership legal instruments.
8. Facilitate the identification of inventions and copyrightable works resulting from NREL research; file and prosecute the works and inventions in the patent and copyright offices to acquire enforceable, world-wide, recognized rights in patent and copyrights; and promote recognition of NREL scientific and technological achievements through the successful management of inventor cash and plaque awards and annual patent award luncheon activities.

CO 2.0 Leadership

MRI will lead NREL as an FFRDC to create opportunities that significantly advance the EERE mission while enhancing NREL's role as a recognized national and international asset.

PO 2.1 Provide technical leadership and input to the development of new opportunities.**Measuring Performance:**

- What opportunities were created and/or capitalized on through leadership activities that further NREL and DOE missions?
- What ideas, analysis, or concepts have been developed and effectively put forth to impact/influence the strategic direction of DOE program or business strategies?

PI 2.1.1 Ideas, analysis, and other input from NREL impacts/influences the strategic direction of DOE program or business strategies.

PI 2.1.2 Participation in technical and other forums influences national priorities, policy, or program directions.

Key Tasks:

1. Refine NREL's perspective on how the Lab can serve the nation in moving to a sustainable hydrogen energy economy, identify required capabilities and resources, and develop a strategic plan for NREL's leadership in hydrogen and fuel cells that is proposed to DOE.
 2. Further the utilization of renewable energy and efficiency technologies in homeland security by continued participation DOE's Energy Infrastructure Assurance efforts.
 3. Develop and benchmark an analytic framework for use by state and local decision makers in evaluating the full range of benefits of EE and RE technologies in their air quality programs. Initiate collaboration with states on evaluating EE and RE projects and policies.
 4. Produce an NREL strategy for developing and deploying a renewable energy electric decision model that will help decision makers evaluate options available to them for meeting electricity needs at specific locations, including renewables, DER, the grid, hybrids and combinations of these methods.
 5. Hold the next Renewable Energy Policy Forum.
 6. Hold the next Energy Analysis Forum.
 7. Develop strategies that identify R&D needs, the proposed NREL role, capabilities needed, and opportunities for leveraging DOE resources in several selected technologies of strategic importance, including solid state lighting and fuel cell integration with buildings.
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PO 2.2 Demonstrate leadership in building strategic partnerships that leverage resources and advance DOE priorities.**Measuring Performance:**

- What strategic partnerships and/or non-EERE projects have been established that advance the missions of NREL and DOE?
- PI 2.2.1 WFO projects are established, conducted, or expanded; providing opportunities to advance EERE technologies.
- PI 2.2.2 Long-term strategic partnerships/relationships are established that create new opportunities for NREL and DOE.

Key Tasks:

1. Develop and implement strategic, collaborative projects with key state organizations such as ASERTTI, NASEO, ECOS, state Energy offices, and other state agencies.
2. Develop proposals to the Office of Science in nanotechnology and computational science that advance areas of fundamental knowledge relevant to NREL applied programs.
3. Develop and implement programs with NGOs and other federal agencies that expand international markets and deployment of EERE technologies.
4. Develop and implement commercial WFO and funds-in CRADA opportunities that leverage accomplishment of DOE program goals.
5. Develop and implement WFO projects with other federal agencies that advance the use of EE and RE technologies and sustainable practices.
6. Develop and implement innovative opportunities through the Federal Energy Management Program to work with Federal agencies for the advancement of EERE technology transfer and the achievement of the Administration's energy efficiency goals.

PO 2.3 Develop NREL's institutional leadership competency.**Measuring Performance:**

- What steps have been taken to assess and enhance the overall leadership competency at NREL?
- Has a succession planning process been developed and implemented at NREL? Have succession plans been established for senior management positions at NREL?

PI 2.3.1 Leadership skills and abilities are developed and utilized.

PI 2.3.2 Succession plans for key Laboratory roles are developed and implemented.

Key Tasks:

1. Conduct negotiating skills training tailored to the program manager and line manager functions.
2. Survey and improve the effectiveness of S&T management in pursuing multi-disciplinary, multi-center opportunities.
3. Continue to assess vulnerability of critical positions in the Laboratory and identify core competencies associated with the positions to support enhanced succession planning.

CO 3.0 Technical and Scientific Viability

MRI will ensure the long-term viability of the Laboratory by building and enhancing NREL's technical capabilities.

PO 3.1 Build, enhance, and sustain NREL's scientific, engineering, and analytic capabilities.**Measuring Performance:**

- What investments have been made and what outcomes have been produced in building NREL's scientific and technical competencies (staff, facilities, and equipment)? How do/will these capabilities contribute to the mission?
- What progress has been made in defining an enhanced analysis capability at NREL to serve EERE?
- Has NREL produced site and facility planning documents on schedule and in a manner that appropriately involves relevant stakeholders? If so, how do NREL plans reflect the needs and strategic directions of the Lab and relevant stakeholders (i.e. NREL-users in terms of program needs, Lab-system relative to complimentary facilities and capabilities, the local community) to advance the missions of DOE.

PI 3.1.1 NREL technical capabilities are enhanced to effectively provide for long-term program needs and the Laboratory's sustainability and environmental goals. (e.g. staff, facilities, and equipment that enable science and technology work at NREL):

- Staff expertise – strategic hires, DDRD projects, key staff additions and staff development assignments, training, and experiences
- Facility capabilities – enhancements to existing facilities and/or completed milestones in constructing/operating new facilities that represent added capability
- Equipment – enhancement and/or addition of scientific equipment; new concepts/areas of expertise – DDRD investments and outcomes

Key Tasks:

1. Plan and execute the Director's Discretionary Research and Development Program to explore new concepts and enhance capabilities.
2. Identify and implement opportunities to enhance the effectiveness and strategic focus of the DDRD program.
3. Complete the NREL Site Master Plan.
4. Work with EERE to develop an analytic framework and clarify NREL roles and capabilities required to support program and crosscutting analysis.
5. Identify requirements and add/replace equipment to enhance NREL scientific and technical support to programs. Pursue the development of new facilities, equipment, and software needed to accomplish NREL's mission.
6. Hire the best-qualified personnel to fill key strategic positions.
7. Complete the survey and analysis of opportunities for formal User Facility designations for NREL, and implement any recommendations.
8. Implement the NBC Advisory board; develop effective mechanisms to work with other DOE laboratories, USDA, and other research organizations; and develop a strategic approach to expanding and improving NREL's facilities supporting biomass R&D.
9. Develop Computational Science Strategic Plan, complete hiring of technical staff; and identify opportunities to secure programmatic sources of funding for computational science R&D.

CO 4.0 Mission Support

MRI will manage and enhance NREL business and management systems, work processes, and capabilities to provide an effective and efficient work environment that enables the execution of NREL's mission.

PO 4.1 Deliver efficient, effective, and responsive business and operational support.

Measuring Performance:

- Have each of the support functions achieved their performance goals? If so, what are the collective outcomes (planned or unplanned) across these functions that demonstrate NREL's effective and efficient business and operational support management? If not, was the situation communicated to relevant parties and was timely and appropriate action taken?
- Have milestones on priority FY03 actions been met? If yes, how has their achievement supported the execution of the Lab's mission? If no, the situation communicated to relevant parties and was timely and appropriate action taken?

PI 4.1.1 Performance of Lab-level processes, functions, and businesses management (e.g., Lab fiscal management, staff turnover rates, space utilization rates, etc.).

PI 4.1.2 Performance on functional-level key task priorities and process metrics as documented in AOPs and NREL/GO performance agreements for the following functions: financial systems and management, site and facilities management, procurement and subcontracting, information services, human resource management, legal support, quality management, and performance assessment.

PI 4.1.3 Demonstration of effective management of facility enhancement and construction projects and enhancement and/or additions of

enabling equipment.

PI 4.1.4 Progress against the goals and objectives stated in the GO/NREL "Performance Agreement for Energy Management."

Key Tasks:

1. Implement the FY03 Sustainable NREL Master Plan.
2. Implement the Performance Agreement for Energy Management.
3. Perform two Make or Buy studies in FY03.
4. Meet agreed upon balanced scorecard procurement goals.
5. Effectively manage NREL's HR functions to meet performance goals/targets and track agreed upon metrics to determine trends and appropriate actions.
6. Deliver and sustain effective, responsive, and preventive IP-litigation support to the Laboratory by directing a strong defense against unsubstantiated claims of patent and copyright infringement, misuse of proprietary information, and adverse ownership, including patent office interferences.
7. Provide public recognition of NREL scientific and technological achievements by facilitating the identification of inventions and copyrightable works resulting from NREL research; and filing and prosecuting the works and inventions in the patent and copyright offices to acquire enforceable, world-wide, recognized rights in patent and copyrights.
8. Provide review and counsel services for NREL mission-related subcontracting activities, especially in negotiating and concluding unique business transactions; establishing flexible and adaptable subcontract terms, conditions and agreements that conform to best legal practices, commercial custom and usage, and plain English principles; advocating alternative dispute resolution and other best commercial practices, and implementing other necessary legal requirements such as export control reviews.
9. Provide a reliable and stable IT infrastructure - track and report monthly the availability of the following infrastructure services: NT, UNIX, Oracle, e-mail, telecommunications, networks, and Internet. Availability statistics will be based on defined operational hours. Target is 99.7% availability.
10. Provide a secure cyber infrastructure. Track and report monthly statistics for: CIAC advisories, virus infections, reported cyber security incidents, and percentage of infrastructure downtime due to cyber incidents. Track and report annually – percentage of Lab current on cyber security training.
11. Provide quality customer service for information technology services. The Client Services group provides centralized support for any Information Technology-related service. These include, but are not limited to research-related computer applications, e-mail, hardware and software ordering, hardware and software troubleshooting, network infrastructure, Oracle databases and applications, remote access, telecommunications, Internet, intranet, desktop standards. Track and report quarterly statistics for: work order survey results (target is 3.7 on a scale of 1 to 4, with 4 being very satisfied), and Quarterly survey of top 100 users of the help desk (target is 3.5 on a scale of 1 to 4, with 4 being very satisfied).
12. Manage NREL's scientific and technical information process. Track and report quarterly: number of publications added to the NREL Publications Database, including number journal articles and percent of journal articles that are "peer-reviewed"; number of scientific and technical publications (STI) submitted to OSTI; Percent of publications in compliance with NREL policy. Report "DOE Printing and Publishing Activity Report" annually.
13. Provide monthly banking statistics for DOE GO requirements, and manage the Bayh-Dole account.
14. Develop and maintain program and indirect budgets, perform analysis and recommendations for management to meet budgets and projections.
15. Maintain current information on Finance Web site related to travel, Brio, rates, and staff hours by month, add forms lists and accounting information.
16. Perform analysis of indirect rates and make recommendations to senior management to maintain NREL negotiated indirect rates.
17. Continue to provide timely support and guidance for financial closeout of WFO and capital projects to meet DOE GO and DOE HQ requirements.
18. Implement a more effectively integrated planning process at NREL that results in: 1) development and articulation of overall Laboratory strategy that is published in the NREL Institutional Plan; 2) facilitates decision making and resource allocation for developing and implementing organizational AOPs and initiative plans; 3) produces lab-level performance measures and assessments enabling laboratory performance management.
19. Complete and implement redesigned integrated Policy/Procedure/Forms process.
20. Manage NREL's Prime Contract and complete electronic posting.
21. Conduct FMC/Directives/Prime Contract Impact Analysis.
22. Evaluate, prepare, and submit NREL's integrated DOE CFO Field Budget Call for FY05 as per DOE guidance.
23. Allocate and manage Laboratory GPP resources in aggregate to meet planned milestones and produce intended outcomes/deliverables, dependent on authorized funding.

24. Allocate and manage Laboratory GPE resources in aggregate to meet planned milestones and produce intended outcomes/deliverables, dependent on authorized funding.
25. Benchmark NREL's IT cost performance with industry and government.
26. Performance on functional-level key tasks priorities, and process metrics as documented in AOPs and NREL/GO performance agreements for site and facilities management.
27. Update FIMS to maintain an accurate database consistent with DOE-HQ requirements and based on updated facility condition assessments.
28. Revise, develop, and implement appropriate Security measures in accordance with DOE direction resulting from the events of September 11, 2001.
29. Maximize the usage of alternative fuel vehicles to the extent practicable dependent on GSA fleet availability.
30. Conduct annual security awareness refresher training.
31. Conduct emergency exercises, identify lessons learned, and implement corrective actions and improvements.
32. In collaboration with GO: update, implement, and meet the Property Management Balanced scorecard goals appropriate for NREL, consistent with the DOE-HQ model.
33. Update the NREL Site Development Plan.
34. Complete S&TF Preliminary Design within budget and schedule objectives.
35. Conduct a Benefits Value Study and make recommendations for enhancements, if appropriate.
36. Complete the SITL Preliminary Design and Final Design within budget and schedule objectives.
37. Manage litigation and claim activities and the retention and oversight of outside counsel according to the DOE approved "NREL Legal Management Program" and provide DOE with appropriate information for the payment of outside counsel costs. Encourage and invoke appropriate use of alternative dispute resolution processes as well as provide proactive employment law advice and counsel, participate substantively in employee relations activities, insurance policy administration, and claims assessment.
38. Provide necessary legal support and advice regarding: 1) risk management; 2) workers' compensation, 3) NEPA and other environmental management processes; and 4) security related matters.

PO 4.2 Build and enhance NREL's business and operational support capabilities.

Measuring Performance:

- What processes, practices, and/or tools have been enhanced or implemented to improve organizational efficiency and effectiveness?
- In what ways has the NREL work environment been enhanced?

PI 4.2.1 NREL infrastructure, work processes, systems, and tools are developed, implemented, and improved.

PI 4.2.2 NREL support capabilities are strengthened through key staff additions, staff development assignments, training, and broadening experiences.

PI 4.2.3 Outcomes of audits and external reviews are utilized to plan or implement improvement.

Key Tasks:

1. Complete an organizational redesign that integrates NREL's planning, assessment, and quality functions and provides the leadership and strategy required to drive these functions for the Lab.
2. Training and Development - identify and develop core management program components based on leadership competencies.
3. Upon approval by DOE, implement a Post Retirement Medical Program.
4. Conduct a Diversity Assessment by benchmarking with other Labs and best practices and develop a comprehensive program to be implemented in FY04.
5. Implement a telecommuting program if approved by executive management.
6. Enhance NREL business capabilities by promoting NREL's Standards of Conduct, the early recognition and avoidance of personal conflicts of interest, and the maintenance of Organizational Conflict of Interest activities in order to mitigate and abate any apparent issues suggesting personal or organizational conflicts of interest, procurement integrity issues, and technology transfer conflicts of interest.
7. Provide legal issues instruction for NREL senior managers and staff regarding best practices pertaining to employee relations, intellectual property,

- business transactions and subcontracting, ethics, and the avoidance of conflicts of interest, etc.
8. Promote development of strengthened and broadened in-house legal capabilities through appropriate NREL training, intra-office cross-assignments, and necessary outside continuing legal and paralegal education.
 - ~~9. Gather and analyze Lab requirements for potential increase in coverage hours for IT services and support. (deleted June 5, 2003)~~
 10. Develop measurement system and metrics for library services.
 11. Develop Information Services Office measurement systems and metrics for the Integrated Business Systems (IBS) function.
 12. Develop metrics and measurement system for NREL's Record Management Program.
 13. Expand functionality and automate internal financial reports related to financial information system administration and reporting.
 14. Develop additional automated reports for monthly management and DOE GO reports.
 15. Develop and implement a basic financial management-training module for NREL.
 16. Revise processes based on customer input to provide timely and effective cost-price support for Contracts and Business Services.
 17. Improve efficiency of reporting information to Contracts and Business Services by assisting with the transition of the closeout request process to Contracts and Business Services.
 18. Implement accelerated audit closeout expansion with Contracts and Business Services support to streamline and improve timeliness of cost-type audit closeouts.
 19. Implement training program for Contracts and Business Services staff education on pertinent topics (Indirect Rates, Adequate Accounting systems) to enhance understanding of Cost Accounting and Audit topics.
 20. In support of the NREL Electronic Processing Initiative, NREL's Laboratory Operations directorate will streamline business processes as defined and prioritized by the Electronic Processing Steering Committee and NREL executive management.
 21. Conduct analysis on the need for, and design of, an integrated assessment process at NREL; provide recommendations to Executive Management.
 22. Complete analysis of FY02 Staff Survey data, and recommend appropriate lab-level actions for improvement.
 23. Develop and deliver training for staff conducting QA assessments.
 24. Deliver an updated QA Program that incorporates Software QA.
 25. Conduct and evaluate customer satisfaction program for NREL's maintenance function.
 26. Develop and implement an integrated management system based on NREL's security policies and procedures and consistent with current and subsequent DOE directives on Integrated Safeguards and Security Management.
 27. Develop appropriate metrics and benchmarks for Security and Emergency Management.
 28. Develop appropriate metrics in the following functional areas: alternative fuel vehicles, lab and office utilization, corrective and preventive maintenance.
 29. Conduct management assessment of Work-for-Others process.

CO 5.0 Environment, Safety, and Health

MRI will protect the safety and health of the NREL workforce, the community, and the environment.

PO 5.1 Sustain excellence in safety, health, and environmental protection.

Measuring Performance:

- Has NREL's ES&H performance achieved agreed upon goals? If so, what are the outcomes and achievements that demonstrate effective ES&H management for the Lab?

PI 5.1.1 Proactive identification and correction of issues and problems (e.g. self-assessments, surveillances, etc.).

PI 5.1.2 NREL's ES&H performance relative to agreed upon performance goals.

PI 5.1.3 Outcomes and achievements that demonstrate effective ES&H management for the Lab.

Key Tasks:

1. Participate in the GO Surveillance Program.
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2. Complete self-assessments of selected environment, safety, health, security, and emergency management programs.
3. Develop and implement corrective action plans in response to areas for improvement identified via surveillances and self-assessments.
4. Maintain Lab ES&H performance against DOE, industry, and best-management baselines.
5. Identify ES&H trends and develop and implement necessary and appropriate corrective actions via established management mechanisms (e.g., Safety Council, Safety Subcommittees).
6. Complete the South Table Mountain site-wide Environmental Assessment (EA).
7. Coordinate implementation of *Sustainable NREL* with the Laboratory Environmental Management System (EMS).

PO 5.2 Identify and implement enhanced ES&H processes, practices, systems, and tools that enable the Laboratory to better meet its ES&H goals.

Measuring Performance:

- What processes, practices, and/or tools have been enhanced or implemented to enhance NREL's ES&H management system and performance?

PI 5.2.1 Opportunities for enhancing NREL's ES&H management systems (e.g., ISM or sub-elements such as risk management, NEPA and other environmental management processes) are identified and an action plan is established.

Key Tasks:

1. Continue the third-party assessment of high-level ES&H programs initiated in FY02.
2. Pursue an environmental management system review by EPA or other recognized external organization.
3. Implement improvements identified through assessments and reviews.

CO 6.0 Outreach and Stakeholder Relations

MRI will build strong and productive relationships and alliances with stakeholders, advance awareness and support of the DOE renewable energy and energy efficiency mission, and advance math, science, and technology education.

PO 6.1 Promote awareness of DOE/EERE and NREL missions and technologies, and build relationships that support the strategic directions of the Laboratory.

Measuring Performance:

- What strategic opportunities have been sought to enhance the Laboratory's national and local reputation? What new approaches to the enhancement of NREL's reputation have been developed, tested, and/or implemented?
- How innovative and effective are the institutional communication products been in terms of message delivery, customer requirements, and external recognition?

PI 6.1.1 Stakeholder relationships and networks are established, maintained, and enhanced in support of the DOE/NREL mission.

PI 6.1.2 Opportunities for enhancing institutional visibility and reputation are created and implemented.

PI 6.1.3 Quality communications products are developed and recognized as supporting the advancement of the DOE/NREL mission.

Key Tasks:

1. Implement media relations strategies to gain national visibility for the DOE, NREL, and energy efficiency and renewable energy technologies.
2. Provide leadership and support for the FY03 American Solar Challenge Race in July
3. Implement stakeholder networking strategies that build critical relationships and enhance Laboratory visibility.
4. Develop quality communications products that are recognized as supporting the advancement of NREL and DOE's programs and technologies.

PO 6.2 Demonstrate value as a corporate citizen within the community.

Measuring Performance:

- What have been the outcomes of community relations activities in terms of community involvement and the perception of NREL as a valued, integrated, involved member of the community?

PI 6.2.1 Opportunities for positive local community involvement and demonstration of good corporate citizenship are created and implemented.

PI 6.2.2 The Visitor Center is strengthened as a local community and DOE/NREL asset.

Key Tasks:

1. MRI, Battelle, and Bechtel will continue to support local/regional activities aimed at enhancing NREL's standing as a local community asset and valued corporate citizen.
2. Enhance the use of the Visitors Center as an outreach tool for increasing student and public awareness of DOE and NREL.
3. Pursue opportunities with industry, civic organizations, and local governments to enhance NREL's and DOE's visibility, create mutually beneficial partnerships, and promote the use of EERE technologies.

PO 6.3 Implement programs that advance high quality science, mathematics, and technology education.

Measuring Performance:

- Are resources effectively used to conduct and evaluate education programs in support of DOE's science, mathematics, and technology education mission?

PI 6.3.1 Available resources are effectively utilized for conducting DOE's science, mathematics, and technology education programs, and for positioning NREL as an education leader.

PI 6.3.2 Results of education evaluation tools and protocols indicate that NREL education programs are effectively conducted and meet or exceed DOE National Laboratory education program standards.

Key Tasks:

1. Pursue opportunities for new and enriched partnerships with the education and business community to ensure that NREL is positioned as an education leader.
 2. Develop and conduct educational programs/activities that enhance NREL's visibility in the education community.
 3. Expand and conduct intern research programs that support DOE's education mission, promote renewable energy and energy efficiency career development, and provide educational enrichment opportunities.
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