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**OAK RIDGE NATIONAL LABORATORY**  
 MANAGED BY MARTIN MARJETTA ENERGY SYSTEMS, INC.  
 FOR THE U.S. DEPARTMENT OF ENERGY

April 12, 1995

Rafael L. Llompert  
 Director, Administración de Asuntos de Energía  
 Departamento de Recursos Naturales y Ambiente  
 Apartado 5887  
 Puerto de Tierra, Puerto Rico 00906

Dear Mr. Llompert:

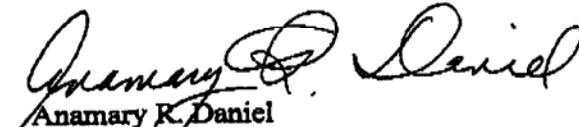
Attached is a draft of a Statement of Work which defines the role of Oak Ridge National Laboratory (ORNL) in the creation of the Institute for Sustainable Development and the Center for Puerto Rican Sustainable Energy to be located at the University of Puerto Rico, Mayaguez. We previously agreed to develop a Memorandum of Understanding (MOU) to define our relationship and responsibilities, but I believe that a Statement of Work (SOW) is more decisive than a MOU, as it clearly defines the working relationship between ORNL, the Puerto Rico Energy Affairs Administration, and the University of Puerto Rico, Mayaguez.

As indicated in Section 5.0, ORNL is requesting minimal funding from the Puerto Rico Energy Affairs Administration to continue our effort in program development. I would appreciate your input on an amount you believe is appropriate to request at this time.

Please review the attached Statement of Work and provide us with your feedback. Please note that we have changed the title of the Center for Renewable Energy to the Center for Puerto Rican Sustainable Energy. I believe renewable energy limits the scope of the Center, excluding energy efficiency and clean technologies which are important components of the *Public Energy Policy of Puerto Rico*, 1993. This document will be an important stepping point in the formalization of our partnership.

I look forward to hearing from you shortly so that we may continue to work toward a sustainable energy future for Puerto Rico.

Sincerely,

  
 Anamary R. Daniel  
 Oak Ridge National Laboratory  
 (615) 574-7576

Mr. Llompert  
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**Attachment: Statement of work - Role of Oak Ridge National Laboratory in the creation of an Institute for Sustainable Development and the Center for Puerto Rican Sustainable Energy at the University of Puerto Rico, Mayagüez**

cc: Stuart Ramos-Biaggi  
C. C. Travis, ORNL  
Richard Vazquez  
Jorge Velez-Arocho

**STATEMENT OF WORK  
ROLE OF OAK RIDGE NATIONAL LABORATORY  
IN THE CREATION  
OF THE INSTITUTE FOR SUSTAINABLE DEVELOPMENT  
AND THE CENTER FOR PUERTO RICAN SUSTAINABLE ENERGY  
AT THE UNIVERSITY OF PUERTO RICO, MAYAGÜEZ**



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**Participants:**

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**1. BACKGROUND**

Puerto Rico is an island possessing abundant renewable energy resources and no proven reserves of oil, gas, or coal. Renewable energy sources such as biomass, wind, solar, and water are currently underdeveloped, comprising only 2% of the total energy production on the island. The result is a high dependency on imported oil, which fuels 98% of Puerto Rico's primary energy supply. The lack of self-sufficient energy limits development and absorbs dollars that could serve better purposes. Progressive renewable energy technologies, which reduce environmental and public health costs and satisfy Puerto Rico's long-term goal of achieving an energy future that is more efficient, less vulnerable, more economical, and environmentally tolerable, must be developed and implemented.

In the past, Puerto Rico has not had an effective and shared institutionalized vision to guide future energy generation and use on the island. However, in December 1993, the Energy Cogeneration and Generation Committee of the Government of Puerto Rico completed the *Public Energy Policy of Puerto Rico*, which outlines the issues, objectives, and approaches for an energy strategy in Puerto Rico. Short-term objectives of the energy policy include promoting energy conservation, improving energy efficiency, and increasing reliance on renewable energy technologies. Longer-term objectives reflect the desire to promote an energy future that is more efficient, less vulnerable, more

economical, and more environmentally sensitive by diversifying fuel sources for power generation and transportation and increasing the emphasis on renewable and alternative sources. The Puerto Rico Energy Affairs Administration has been charged to carry out the objectives of this policy.

The objective of this statement of work is to define the role of the Oak Ridge National Laboratory (ORNL) in supporting the Puerto Rico Energy Affairs Administration mission of providing a sustainable energy future that is less vulnerable to external events. The initial Laboratory focus is to establish the Center for Puerto Rican Sustainable Energy in partnership with the Puerto Rico Energy Affairs Administration and the University of Puerto Rico, Mayagüez. The Center will be housed within the Institute for Sustainable Development and will be the spearhead for the Institute. The Institute will be an interdisciplinary organization with the responsibility of promoting the creation of a consistent Sustainable Development policy for Puerto Rico and, subsequently, other tropical island nations; the policy will draw upon the resources of the government, academia, and the private sector and will foster private sector/government/academia partnerships. Within the umbrella of this Institute, the Center for Puerto Rican Sustainable Energy will spearhead the sustainable development initiative, focusing on the pressing issues of Puerto Rico within a sustainable development context.

The mission of the Center for Puerto Rican Sustainable Energy is to provide the technical information and scientific and educational foundation necessary to achieve efficiency in energy use, diversity in energy sources, a more productive and competitive economy, and improved environmental quality. Areas of focus are of critical energy concern and address energy efficiency, conservation, planning, renewable and clean energy technologies, industrial ecology, and sustainable energy. Oak Ridge National Laboratory, in partnership with the University of Puerto Rico, Mayagüez, has worked to support the government of Puerto Rico by identifying energy technologies and program opportunities available to promote the creation of this Center.

Early in the development of this partnership it was agreed that to effectively address Puerto Rico's long-term energy requirements, a holistic strategy must be developed within the context of sustainable development, integrating economic, environmental, and social issues to ensure a healthy future for Puerto Rico. This strategy will emerge from the Center for Puerto Rican Sustainable Energy and will provide the Puerto Rico Energy Affairs Administration with the foundation to foster technology development and demonstrations of clean, renewable, and efficient energy technologies that are suitable for application in this tropical environment. The Center will provide Puerto Rico Energy Affairs Administration with recommendations for the feasibility of these technologies and their possible uses in Puerto Rico.

Through its partnership with the University, ORNL will provide the technical assistance needed by the Puerto Rico Energy Affairs Administration to establish the Institute for Sustainable Development and the Center for Puerto Rican Sustainable Energy. The University has broad and unique capabilities to perform energy-related research and technology demonstrations. A Memorandum of Understanding between the Department of Energy Oak Ridge Operations Office (DOE-ORO), ORNL, and the University has been established for ORNL to provide technical assistance in the

areas of energy and environmental research.<sup>1</sup>

The DOE-ORO is a highly diversified, multiprogram field office that manages extensive programs relating to energy research and development, including the Strategic Petroleum Reserve, waste cleanup, weapons production, and enriched uranium production. The Laboratory falls under the review of DOE-ORO. Research areas at the Laboratory include energy efficiency; energy planning; renewable energy sources; nuclear fusion; fusion; fossil fuel; and basic physical, biomedical, environmental, and social sciences. Personnel at ORNL work closely with universities in carrying out energy-related missions by subcontracting research and development, making available user facilities and other state-of-the-art resources, sponsoring faculty and student research participation and training, and providing other assistance to university personnel. Laboratory ties to Puerto Rico date back to the establishment of the Puerto Rico Nuclear Center in 1957 and subsequent operation of the former Center for Energy and Environmental Research (CEER) under a contract administered by Oak Ridge through a Puerto Rico area office.

The Laboratory is well-qualified and capable of assisting Puerto Rico in the establishment of the Institute for Sustainable Development and the Center for Puerto Rican Sustainable Energy. Financial mechanisms must be obtained to facilitate this agreement and initiate the institutionalization of the Institute and the Center. Initial funding for the Center should be supplied by the government of Puerto Rico. Once the Center is established and functional, joint funding opportunities for energy technology demonstration projects will be explored. The Laboratory's long-term involvement in the Institute and the Center should be funded through DOE and other suitable financing strategies.

## 2. OBJECTIVE

The objective of this statement of work is to define the short- and long-term partnership among ORNL, the Puerto Rico Energy Affairs Administration, and the University of Puerto Rico, Mayagüez, in support of the Center for Puerto Rican Sustainable Energy.

## 3. SCOPE

This statement of work has been developed to delineate the steps necessary to support and finance the founding of the Institute for Sustainable Development and the initial cost to create the Center for Puerto Rican Sustainable Energy at the University of Puerto Rico, Mayagüez. To address this energy situation and meet the growing energy needs of Puerto Rico, ORNL proposes to formalize the collaborative relationship among ORNL, the Puerto Rico Energy Affairs Administration, and the University of Puerto Rico, Mayagüez, to strengthen the capabilities of the Energy Affairs Administration and foster the Center for Puerto Rican Sustainable Energy which will spearhead the

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<sup>1</sup>U.S. Department of Energy Oak Ridge Operations Office, Martin Marietta Energy Systems, Inc., University of Puerto Rico: Memorandum of Understanding. January 1994.

Institute for Sustainable Development. The Laboratory will assist the Puerto Rico Energy Affairs Administration in adding the U.S. component into its integrative approach for Puerto Rico's energy future.

**Task 1—Provide technical assistance to support the Puerto Rico Energy Affairs Administration**

Oak Ridge National Laboratory will support the Puerto Rico Energy Affairs Administration in the development of an Energy Action Plan and facilitate a healthy energy future for Puerto Rico through the establishment of the Center for Puerto Rican Sustainable Energy; emphasis will be placed on development of renewable and efficient energy technologies and applications.

**Subtask 1.1**

Provide technical assistance in the development of clean, renewable, and efficient energy technologies and applications to meet the requirements of the *Public Energy Policy for Puerto Rico* (1993).

**Subtask 1.2**

Work to incorporate the energy objectives provided by the *Public Energy Policy for Puerto Rico* within the overall framework of sustainable development.

**Subtask 1.3**

Serve as the Puerto Rico Energy Affairs Administration liaison with DOE, other national laboratories, and other applicable government agencies to engage them in activities pertaining to Puerto Rican energy goals and the Center for Puerto Rican Sustainable Energy. The Laboratory will strive to facilitate the successful transfer of energy technologies to Puerto Rico as encouraged by DOE.

**Task 2—Coordinate high-level participation with federal agencies in the United States.**

Oak Ridge National Laboratory will coordinate the involvement and funding strategies of key agencies beneficial to realizing the purpose of this initiative. The Laboratory will coordinate with the University of Puerto Rico, Mayagüez, concerning the DOE Headquarters meeting which will begin the U.S. initiative for the Center for Puerto Rican Sustainable Energy.

**Subtask 2.1**

Coordinate meetings, collaboration, support, and direction of DOE. A DOE focus group will be established to direct future energy opportunities in Puerto Rico.

**Subtask 2.2**

Coordinate collaboration with the President's Council on Sustainable Development.

**Subtask 2.3**

Coordinate national laboratory involvement in sustainable development activities in Puerto Rico.

**Subtask 2.4**

Coordinate participation of other federal agencies, including the U.S. Department of Commerce and the U.S. Environmental Protection Agency.

**Task 3—Provide technical assistance to support the creation of the Institute for Sustainable Development and the Center for Puerto Rican Sustainable Energy at the University of Puerto Rico, Mayagüez**

**Subtask 3.1**

Coordinate with the Puerto Rico Energy Affairs Administration the activities and development of the Center for Puerto Rican Sustainable Energy spearheading the Institute for Sustainable Development.

**Subtask 3.2**

Conduct analysis of potential energy and sustainable development technologies and applications for Puerto Rico.

**Subtask 3.3**

Assist in identifying funding sources and opportunities for the development of a sustainable development initiative that will focus initially on clean, renewable, and efficient energy alternatives.

**Subtask 3.4**

Work in partnership with the Puerto Rico Energy Affairs Administration and the University of Puerto Rico, Mayagüez, to establish partnerships with government, academia, and industry.

**Subtask 3.5**

Strive to facilitate the successful transfer of energy technologies to Puerto Rico as encouraged by DOE.

**Task 4—Stimulate Economic Opportunities for U.S. companies in Puerto Rico**

Assist Puerto Rico in developing opportunities that not only benefit the current energy situation but also encourage economic growth on the island.

**Subtask 4.1**

Contact U.S. companies in the areas of renewable energy and energy efficiency.

**4. MILESTONES**

**Milestone 1**

Arrange a meeting between the Honorable Hazel O'Leary and Rafael Llompart to establish DOE-specific support of the Center for Puerto Rican Sustainable Energy Development Initiative to take place during FY1995.

**Milestone 2**

Arrange meetings between DOE program and project managers with their Puerto Rico counterparts, scientists, or business entrepreneurs in the area of energy to participate in already existing programs that foster partnerships in alignment with DOE missions.

**Milestone 3**

Coordinate DOE and national laboratory involvement, including the establishment of a DOE focus group to direct future energy opportunities in Puerto Rico (April 1995).

**Milestone 4**

Establish the Center for Puerto Rican Sustainable Energy at the University of Puerto Rico, Mayagüez, by the end of 1995. The Laboratory will strive to allocate funding from different sources to be appropriately integrated in the specific projects.

**Milestone 5**

Establish some successful technology demonstration projects (i.e., those with an immediate potential to commercialize) in Puerto Rico by the end of 1995.



## **5. FUNDING**

Oak Ridge National Laboratory requests seed funding from the Puerto Rico Energy Affairs Administration to continue its effort in program development. The Laboratory will work in partnership with the University of Puerto Rico, Mayaguez, to achieve the establishment and development of the Center for Puerto Rican Sustainable Energy and assume the responsibility of transferring funds to the University as needed.