

MOU Number: \_\_\_\_\_

**MEMORANDUM OF UNDERSTANDING**  
For the Collaboration on Wind Energy Research and Development  
Between  
The Centre for Wind Energy Technology,  
Ministry of New and Renewable Energy  
Republic of India  
and  
The National Renewable Energy Laboratory,  
United States Department of Energy

**SUBJECT** COOPERATION IN THE AREA OF WIND ENERGY

**INTRODUCTION**

The Centre for Wind Energy Technology, an autonomous R&D institution under the Ministry of New and Renewable Energy (MNRE) of the Republic of India, and the National Renewable Energy Laboratory (NREL) a United States Department of Energy national laboratory managed and operated by the Alliance for Sustainable Energy, LLC (hereafter "Participants") have collaborated for several years through informal exchange of researchers to support the development and deployment of wind energy technologies.

NREL's wind energy research staff and facilities at the National Wind Technology Center (NWTC) provide the wind industry with the expertise, technical support, and equipment it needs to develop successful advanced wind energy systems. NREL's wind energy research capabilities include design review and analysis; software development, modeling and analysis, systems and controls analysis, utility integration assessment; and wind resource assessment.

To make wind energy fully cost competitive and increase wind energy development, NREL researchers work in partnership with industry to develop larger, more efficient, utility-scale wind turbines for land-based and offshore installations, as well as more efficient, quieter small wind turbines for distributed applications. NREL staff independently test small wind turbines to help the wind industry provide consumers with more certified small wind turbine systems. Also, NREL collaborates with utility industry partners and provides data, analysis, and techniques to increase utility understanding of integration issues and confidence in the reliability of new wind turbines.

The Centre for Wind Energy Technology (C-WET) was established in 1999 by MNRE, the nodal ministry for matters relating to all new and renewable energy in India. C-WET serves as the MNRE technical focal point for wind power development in India, promoting and accelerating the pace of utilization of wind energy and supporting the growing wind power sector in the country. C-WET offers services and seeks to find total solutions for the major stakeholders across the entire spectrum of the wind energy sector. It supports the wind turbine industry in achieving and sustaining quality such that products of the highest quality and reliability are installed. This C-WET-NREL collaboration intends to support the development and application of wind energy technologies in India.

India has identified exploration of wind power development in regions with low-wind speeds as a priority, and it is the intent of the Participants to collaborate in advancing development of low-wind speed technologies, drawing upon the experiences of DOE's Low-Wind Speed Technology Project. Collaboration should include technical information exchanges to accelerate development of testing facilities and deployment of low-wind speed turbines in India. Indian scientists may also be invited to send delegates for NREL's Wind Energy Applications Training Symposium.

This Memorandum of Understanding (MOU) memorializes the Participants' intent to cooperate to maximize the benefit of their respective institutional interests.

## **Section I: Authority, Organization and Mission**

### **1. Authority**

- a. NREL is a Federally Funded Research and Development Center (FFRDC) managed and operated by the Alliance for Sustainable Energy, LLC for the United States Department of Energy under Contract No. DE-AC36-08GO28308. NREL's participation in the collaborative activities under this MOU is in accordance with the terms of the DOE contract and the DOE FFRDC sponsoring agreement.
- b. C-WET is a specialized centre within MNRE and serves as the technical focal point for wind power development in India.

### **2. Organization and Mission**

- a. NREL's mission is to enhance energy efficiency and the production of renewable energy to bring clean, reliable and affordable energy technologies to the marketplace. NREL has active programs in solar energy, wind energy, ocean energy, biomass, geothermal energy, utility integration, transportation systems, energy efficiency, and energy analysis and applications.
- b. The mission of C-WET is to serve as an effective interface between the Government of India and institutions, industry and user organizations for development, promotion and widespread utilization of wind energy in the country.

## **Section II: Scope of Cooperation and Objectives**

The scope of this MOU is intended to focus on advancing wind energy in India. The objectives of the collaboration are to:

- Support Indian efforts to develop a low-wind speed turbine technology program in order to facilitate deployment of these technologies.
- Facilitate exchange of technical and market experts to advance wind energy in India.
- Explore other areas for future collaboration with potential to promote enhanced deployment of wind energy in India.

Desired outcomes from this collaboration include:

- Guidance on development of Indian low-wind speed turbine test facilities.
- Enhanced capacity among Indian experts on low wind speed test procedures, equipment and protocols.
- Enhanced capacity among Indian wind energy experts and stakeholders on technical, market and related aspects of low wind speed technologies in India.

### **Section III: Collaborative Activities**

Collaborative activities under this MOU may include, but are not limited to, activities in the scientific and technical areas of mutual interest as described in Section II. The initial areas of focus should be to:

- Invite Indian scientists to the United States for workshops and study tours on testing of low-wind speed turbines
- Provide advice and technical information exchanges regarding C-WET plans for development of test facilities for testing low-wind speed turbines and any related plans for support of India's wind industry
- Invite Indian scientists to the U.S. to participate in training of Indian researchers at NREL's Wind Energy Applications Training Symposium

Collaboration may occur through several means, including joint technical projects, workshops, and researcher exchange.

### **Section IV: Source of Funding**

1. The conduct of any collaborative activities mutually determined is subject to the availability of funds and staff available to the Participants. In the event that special funding is available for selected activities, the Participants may develop a separate written understanding for such activities. In such cases, the terms of funding should be mutually determined by both Participants before the commencement of activities and should be described in a separate written understanding pursuant to Section VIII below.
2. Each Participant is responsible for its own expenses for collaborative activities under this MOU, including all administrative costs, overhead expenses, labor costs, insurance costs, travel expenses and similar costs, unless a separate written understanding between the Participants provides otherwise. No exchange of funds is permitted under this MOU.

### **Section V: Reports, Documents and Release of Information**

1. Each Participant intends to collaborate in a manner that facilitates exchanges of non-proprietary information. Subject to applicable laws and regulations, the Participants intend that information, data and reports of collaborative activities carried out under this MOU may be released by either Participant with the written concurrence of the other Participant.
2. Activities that may involve sharing of proprietary information and transfer of rights and interest in intellectual property are excluded from the purview of this MOU. In the event it becomes necessary to share proprietary information, separate written non-disclosure understandings should be put in place.

### **Section VI: Review of Activities**

The Participants intend to review collaborative activities conducted under this MOU as a means to ascertain their effectiveness, document achievements and lessons, recognize technical personnel, and identify and plan areas for future collaboration. This review should take the form of annual, mutually determined meetings of key technical contacts and management from each Participant to discuss ongoing and future cooperation. Specific commitments developed pursuant to this MOU should be reflected in separate written understandings in accordance with Section VIII below.

## **Section VII: Disclaimer**

Information transmitted by one Participant to the other under this MOU should be accurate to the best knowledge and belief of the transmitting Participant. Neither Participant makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, nor usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe upon privately owned rights.

## **Section VIII: Separate Written Understandings**

Select activities derived from the collaborative activities under this MOU, including, as appropriate, details concerning financial arrangements and the allocation and protection of property rights, including intellectual property rights, should be confirmed in a separate written understanding between Participants. Such separate written understanding should include, as appropriate, a work plan, staffing requirements, cost estimates, funding sources, a plan for the adequate and effective protection of intellectual property rights, and other arrangements or conditions that are not within the purview of this MOU.

## **Section IX: Status of the Memorandum of Understanding**

This MOU does not create any legally binding obligations between the Participants. This MOU: (1) is not a contract; (2) may not be used to obligate or commit funds; and (3) may not be used as a basis for the transfer of funds.

## **Section X: Contacts and Changes**

1. All notices, communications and coordination should involve, at a minimum, the following individuals, their successors and/or designees as follows:
  - a) For the Centre for Wind Energy Technology  
Dr. S.Gomathinayagam  
Executive Director, C-WET  
Velachery - Tambaram High Road,  
Pallikaranai, Chennai - 600 100  
Tel: 91-44-22463982
  - b) For the National Renewable Energy Laboratory:  
Dr. Dan Arvizu, Laboratory Director  
Alliance for Sustainable Energy, LLC  
1617 Cole Boulevard  
Golden, CO 80401  
Tel: 1 303 275 3016
2. The Participants recognize that implementation of the MOU may require an ongoing dialogue between the Participants and, accordingly, intend to make future changes to the MOU as technologies, policies and program goals change over time. All such changes are to be made in writing by the Participants' mutual consent.

## **Section XI: Commencement Date, Changes, and Discontinuation**

The Participants intend to commence cooperation under this MOU upon signature. Such cooperation may continue for a period of five (5) years or until it is discontinued in writing by the

Participants' mutual consent. A Participant that wishes to discontinue its participation in this MOU should endeavor to provide at least 90 days advance written notice to the other Participant.

**Section XII: Miscellaneous**

1. This MOU is not intended to restrict either of the Participants from participating in any activity with any other public or private organization.
2. This MOU is neither a fiscal nor a funds obligation document. Nothing in this MOU authorizes or is intended to obligate the Participants to expend, exchange, or reimburse funds, services, or supplies or transfer or receive anything of value.
3. This MOU is strictly for internal management purposes for each of the Participants. It is not legally enforceable and may not be construed to create any legal obligation on the part of either party. This MOU may not be construed to provide a private right or cause of action for or by any person or entity.
4. Each Participant should conduct the activities contemplated by this MOU in accordance with the applicable laws of its respective country, including, without limitation, export control laws.

Signed in duplicate.

**Signatures**

The Parties hereby initiate this MEMORANDUM OF UNDERSTANDING and acknowledge their understanding by the following signatures.

For Centre for Wind Energy Technology



\_\_\_\_\_  
Signature

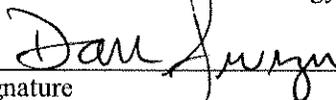
Dr. S. Gomathinayagam

Executive Director

\_\_\_\_\_  
Date:

\_\_\_\_\_  
Place:

For: National Renewable Energy Laboratory:



\_\_\_\_\_  
Signature

Dr. Dan Arvizu

Laboratory Director

\_\_\_\_\_  
Nov. 23, 2009  
Date:

\_\_\_\_\_  
Golden, Colorado USA  
Place