Memorandum of Understanding
On Weather-Dependent and Oceanic Renewable Energy Resources
between the
U.S. Department of Energy Office of Energy Efficiency and Renewable Energy
and the
U.S. Department of Commerce, National Oceanic and Atmospheric Administration

I. Purpose

The intent of this memorandum of understanding (MOU) is to further the collaborative efforts between the U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA), and the U.S. Department of Energy (DOE) Office of Energy Efficiency and Renewable Energy (EERE), (collectively referred to as the "parties") to enhance the accuracy, precision, and completeness of resource information for the effective deployment, the safe, reliable and sustainable operation and maintenance, and the efficient use of weather-dependent and oceanic renewable energy technologies and infrastructure.

Whereas both parties generally promote scientific and technological innovation, environmental stewardship, and growth of the nation's economy and jobs;

Whereas both parties recognize the importance of increasing the nation's safe, reliable and sustainable use of weather-dependent and oceanic renewable energy, including wind (onshore and offshore), solar, biofuels and biopower, hydropower, hydrokinetic (wave, tides, currents), and new innovations that may develop in the future;

Whereas both parties recognize that development of renewable energy offers benefits that include economic growth and creation of jobs, energy security and independence, national security, and reduction of greenhouse gas emissions;

Whereas the weather-dependent and oceanic renewable energy sources that exist or are in development depend on atmospheric and oceanic processes, and increasing the deployment and use of these renewable energy sources depends on improved information about these processes;

Whereas both parties recognize the importance of interconnecting variable renewable energy sources reliably onto the grid, and implementing and operating accurate forecasting and warning systems that enables timely weather, water, and climate prediction when and where needed;

Whereas both parties trust that a formal memorandum provides the structure and basis for implementing and expanding the existing joint research, development, and application activities and operational infrastructure to support safe, reliable, and sustainable growth and optimized operation and maintenance of renewable energy, and therefore enter into this MOU to facilitate cooperation and coordination in order to overcome the meteorological, oceanic, and climatological challenges hindering expansion of renewable energy;

Both parties agree to the following:

II. Authority

DOE enters into this MOU under the authority of section 646 of the Department of Energy Organization Act of 1977 (Pub. L. No. 95-91), as amended (42 U.S.C. § 7256).

NOAA enters into this MOU under the authority of 15 U.S.C. § 313, which provides that the "Secretary of Commerce shall have charge of the forecasting of weather, the issue of storm warnings . . . , the collection and transmission of marine intelligence for the benefit of commerce and navigation, the reporting of temperature and rain-fall conditions . . . , and the taking of such meteorological observations as may be necessary to establish and record the climatic conditions of the United States;" and

33 U.S.C. §883d, which authorizes the Secretary of Commerce to increase engineering and scientific knowledge by conducting developmental work for the improvement of surveying and cartographic methods, instruments, and equipments; and to conduct investigations and research in geophysical sciences (including geodesy, oceanography, seismology, and geomagnetism); and

33 U.S.C. § 883e, which authorizes the Secretary of Commerce to enter into agreements with, and to receive and expend funds made available by, any State or subdivision thereof, any Federal agency, or any public or private organization, or individual, for authorized surveys or investigations, or for performing related surveying and mapping activities, including special-purpose maps, and for the preparation and publication of the results thereof. 33 U.S.C. § 883e also authorizes the Secretary of Commerce to establish the terms of any agreement entered into under this authority, including the amount of funds to be received, and may contribute that portion of the costs incurred by NOAA, including shiptime and personnel expenses, which the Secretary of Commerce determines represents the amount of benefits derived by NOAA from the agreement.

III. Scope

The goals of both parties are to promote advancements in characterizing the resource dynamics of weather-dependent renewable energy systems, including wind (onshore and offshore), solar, biofuels and biopower, hydropower, hydrokinetic (wave, tides, currents), and potential new innovations, across a wide range of time and spatial scales, to allow the most economic and reliable use of renewable energy at scales of significance. To accomplish these goals, improvements in relevant atmospheric and oceanic observations, modeling, numerical weather prediction, and climate research are required.

The parties intend to jointly pursue activities supporting these goals in coordination with other related public and private efforts as appropriate. These activities may include, but are not limited to:

- Identification of attainable advancements needed to support energy resource characterization needs for weather-dependent and oceanic renewables.

- Formation of an Inter-Agency Working Group, in accordance with applicable law, with specific roles focused on coordinating federal interests in, and contributions to, addressing weather-dependent and oceanic renewable energy resource characterization needs.
- Development of a public/private collaboration, in accordance with applicable law, to identify weather-dependent and ocean-based renewable energy resource characterization needs, establish coherent and comprehensive research and development (R&D) objectives, and coordinate and review adequacy of R&D activities.
- Development of framework for a national scale meteorological network addressing energy resource characterization needs including requirements, instrumentation, network backbone, data acquisition, quality control, sharing and archiving, and levels of user participation.
- Assessment of existing and development of new methodologies for weather-dependent and oceanic renewable energy resource forecasting.
- Addressing challenges of renewable energy system design, including improving power production/efficiency, for example, turbulence dynamics for wind, direct normal irradiation for solar, wave energy spectrum modeling, and seasonal rainfall for biomass production, etc.
- Addressing micrositing and array challenges to maximize energy production and enhance reliability.
- Investigation of mesoscale atmospheric processes to support advanced forecasting methods, high spatial and temporal resolution resource modeling, and other needs for accurate resource characterization. An example of such an activity is the upcoming joint field project to improve wind forecasts.
- Assessment of the effect of natural variability and human-caused climate change on future renewable energy resources through quantifying and understanding historic trends, improving predictions on variable resources, and characterizing interactions between resources and local/regional/global climates.

IV. Roles and Responsibilities

Reasonable efforts will be used to develop specific research tasks or initiatives under this MOU. The roles and responsibilities of the parties under a specific task or initiative, including but not limited to schedules, resources, and milestones, will be articulated in separate implementing arrangements (IAs) to be incorporated as part of this overall MOU. The obligation or transfer of funds by the parties under this MOU will be accomplished only through IAs.

It is the intent that the roles and responsibilities under IAs will be flexible, taking advantage of the strengths and capabilities of the parties while avoiding unnecessary duplication and allowing for the inclusion of future partners who can bring new capabilities into the collaboration.

Detailed schedule, resources, and milestones for the specific tasks under this MOU (i.e., tests and projects) shall be jointly determined by the parties in subsequent IAs.

V. Implementation and Review of Activities

Both parties intend that within 120 days of execution of this MOU, the parties will designate members of a task team, consisting of DOE and NOAA staff, responsible for submitting to the signatories or their designees an Action Plan establishing goals and deliverables associated with the activities outlined in Article III, above. The task team may meet by teleconference or in person every 90 days to review progress towards meeting the goals and deliverables set forth in the Action Plan. The Action Plan will be adopted by the parties 120 days after execution of this MOU, and it may be amended only by the mutual written agreement of both parties.

Both parties intend to annually review activities established under this MOU, to evaluate their effectiveness, to discuss ongoing and future cooperation, and to identify promising areas for future collaboration.

VI. Proprietary Information and Intellectual Property

Joint work under this MOU could require sharing of proprietary information; proprietary information is defined here as information that an affected party claims to be confidential, is exempt from mandatory disclosure under applicable federal law, and is not otherwise available to the public. Proprietary information disclosed by one party to the other in writing must be clearly identified as such; proprietary information initially disclosed orally must be clearly memorialized in writing within a reasonable time for the receiving party. To the extent allowed by law, the parties agree to keep proprietary information confidential unless written permission is obtained from the affected party. Proprietary information can only be shared by the parties to the extent permitted by law.

Neither party claims by virtue of this agreement any legal interest in existing or pending intellectual property – patent, copyright, trademark, or trade secret – of the other party or in any intellectual property that might result from the other party's previous activities. Rights to intellectual property arising from education and research programs undertaken in furtherance of the memorandum of understanding will be allocated according to law and the policies of the parties.

Unless otherwise agreed by the parties, custody and administration of inventions made as a consequence of, or in direct relation to, the performance of activities under this agreement will remain with the respective inventing party. In the event an invention is made jointly by employees of the parties or an employee of a party's contractor or subcontractor, the parties will consult and agree as to future actions toward establishment of patent protection for the invention.

Nothing in this MOU is intended to affect each party's ownership, use, or licensing of background intellectual property, including patents, copyrights, trade secrets, or its existing rights to models, productions, processes, prototypes, contrivances, test fixtures, structures, drawings, software, and the like, existing on or before the date of this MOU, or first produced outside this MOU, unless a party specifically agrees otherwise. Specific intellectual property provisions will be developed, when applicable, under appropriate IAs.

VII. Terms and Conditions

A. This MOU is to be construed in a manner consistent with all effective existing laws and regulations. This MOU neither expands nor detracts from those powers and authorities vested in the parties by applicable laws, statutes, or regulations. All agreements herein are subject to, and will be carried out in compliance with, all applicable laws, regulations, and other legal requirements.

B. This Agreement is strictly for internal management purposes for each of the parties. It is not legally enforceable and shall not be construed to create any legal obligation on the part of either party. This MOU shall not be construed to provide a private right or cause of action for or by any person or entity.

C. This MOU is neither a fiscal nor a funds obligation document. Nothing in this MOU authorizes or is intended to obligate the parties to expend, exchange, or reimburse funds, services, or supplies, or transfer or receive anything of value.

D. This MOU may be amended by the mutual written agreement of both parties through issuance of a written supplemental agreement that is signed and dated by both parties.

E. This MOU may be terminated by either party 60 days after one party provides written notice of such termination to the other party.

F. The parties will consult with each other to resolve disputes at staff levels and elevate disputes through the respective organizational levels only if necessary. Notification of potential conflict or a dispute by either party must be in writing, and attempts to resolve the matter at the staff level should occur within 30 days. If the conflict or dispute is not resolved within 30 days, agency staff may elevate the issue to the appropriate officials. Notwithstanding any such referral, NOAA reserves the right to make a final decision on any matter within the NOAA's regulatory authority, and EERE reserves the same right for any matter within its authority.

G. Information exchanged pursuant to this MOU that is responsive to a valid request under the Freedom of Information Act (FOIA), 5 U.S.C. 552, will be returned to the originating Agency for a determination regarding release.

H. For all press releases, published advertisements, or other statements intended for the public that refer to this MOU or activities developed under this MOU, parties will coordinate as necessary to ensure each party concurs.

I. This MOU in no way restricts either party from participating in any activity with other public or private agencies, organizations, or individuals.

J. The parties will comply with the Federal Advisory Committee Act to the extent it applies.

K. Unless terminated under Article VI.E, above, this MOU will expire five (5) years from the date of the last signature to this MOU. The MOU will become effective when signed by the parties. All IAs under this MOU will be limited to an initial period of performance not to exceed five (5) years, although they may be renewed for additional periods of performance not to exceed five (5) years for any renewal period. The parties will review this MOU at least once every three years to determine whether it should be revised, renewed, or canceled.

L. All activities under or pursuant to this MOU are subject to the availability of appropriated funds, and no provision herein shall be interpreted to require obligation or payment of funds in violation of the Anti-Deficiency Act, 31 U.S.C. § 1341.

VIII. Contacts

All significant notices, communications and coordination shall involve, at a minimum, the following individuals, their successors and/or designees as follows:

A. For DOE:

Douglas W. Hollett
Deputy Assistant Secretary for Renewable Power
U.S. Department of Energy
Office of Energy Efficiency and Renewable Energy
1000 Independence Avenue, SW
Washington, DC 20585
(202) 586-5000

Joel Cline
Phone: 202-287-6966
Joel.Cline@ee.doe.gov

B. For NOAA:

Jason Donaldson
Chief Financial Officer
U.S. Department of Commerce
National Oceanic and Atmospheric Administration
Oceanic and Atmospheric Research
1315 East West Highway, Rm 11558
Silver Spring, MD 20910
(301)-734-1123

Melinda Marquis
Phone: 303-497-4487
Melinda.Marquis@noaa.gov

Signed: _____ Date: 9/25/15

Douglas Hollett ON BEHALF
Deputy Assistant Secretary for Renewable Power
U.S. Department of Energy

Signed: _____ Date: 9/15/15

Jason Donaldson
Chief Financial Officer
Oceanic and Atmospheric Research
National Oceanic and Atmospheric Administration
United States Department of Commerce