

Memorandum of Understanding

between

**The Regents of the University of California, as Management and Operating Contractor for
Lawrence Berkeley National Laboratory**

and

Power System Operation Corporation, India

**Concerning Cooperation on Exploration of Future Collaborations relating to Power
System Operation, Electricity Markets and Integration of Renewable Energy Resources**

This Memorandum of Understanding (MOU) is between The Regents of the University of California, manager and operator of the Lawrence Berkeley National Laboratory (LBNL) and the Power System Operation Corporation, India (POSOCO) collectively referred to as "Participants" or separately as "Participant." LBNL is a U.S. Department of Energy National Laboratory managed and operated by The Regents of the University of California pursuant to Contract No. DE-AC02-05CH11231. Power System Operation Corporation Ltd. is a wholly-owned subsidiary of Power Grid Corporation of India Ltd., a Government of India enterprise, having its registered office at B-9, Qutab Institutional Area, New Delhi, India.

1. Purpose

The purpose of this MOU is to provide a framework to explore potential future collaboration between the Participants in the fields of power system operation, electricity markets and integration of renewable energy sources.

2. Proposed Scope of Cooperation

- i. The Participants intend to endeavor to promote information exchanges and to facilitate joint research and dissemination activities in the following areas:
 - A. Electricity Markets;
 - B. Integration of Renewable Energy Sources;
 - C. Demand Response;
 - D. Generation Dispatch;
 - E. Market Design for Ancillary Services particularly in the development of renewable energy sources and demand response; and

- F. Future scenarios – electric vehicles, storage and other key shifts affecting power system operation
- ii. By mutual consent in writing, the Participants may cooperate in additional or other areas.
- iii. The forms of contemplated cooperation include:
 - A. Exchange of publicly available information, mainly data and publications
 - B. Visits and exchanges of researchers and experts
 - C. Joint workshops and seminars on energy issues that are of common interest to both Participants
 - D. Implementation of future collaborative research projects under appropriate written agreements therefor, setting out each Participant's contribution, deliverables, responsibilities, schedule, budgets and any other items necessary for the efficient and effective achievement of such projects.

3. Exchange of Information

The Participants do not expect to exchange any information that is considered business-confidential. If this expectation changes, the Participants plan to enter into a separate written non-disclosure agreement.

4. Designated Representatives

- A. To administer the implementation of this MOU, each Participant designates one principal coordinator in charge of the collaboration, through whom all requests and plans of that Participant are to be made. The designated representative for LBNL is the Environmental Energy Technologies Division Director, or LBNL designated principal coordinator. The designated representative for POSOCO is the Chief Executive Officer or his authorized representative.
- B. The designated representatives may hold meetings when necessary to discuss matters related to cooperation under this MOU.

5. General Considerations

- A. Each Participant should conduct the cooperation under this MOU in accordance with all applicable laws, regulations and other requirements to which it is subject, and

international agreements to which its government is party, including, without limitation, export control laws and environment, health and safety laws and regulations.

- B. This MOU does not create any legally binding obligations.
- C. The conduct of cooperative activities contemplated by this MOU is subject to the availability of funding, personnel, and other resources.
- D. Each Participant is responsible for the costs it incurs in participating in cooperative activities under this MOU.

Signed in duplicate.

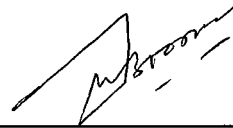
THE REGENTS OF THE UNIVERSITY
OF CALIFORNIA, LAWRENCE
BERKELEY NATIONAL
LABORATORY

THE POWER SYSTEM OPERATION
CORPORATION

By:



By:



Name: Horst D. Simon

Name: Mr. S. K. Soonee

Title: Deputy Laboratory Director

Title: Chief Executive Officer

Date: December 6, 2012

Date: December 13, 2012