

MEMORANDUM OF UNDERSTANDING

between

UT-BATTELLE, LLC

and

CENTRO DE PESQUISAS DE ENERGIA ELÉTRICA

regarding

Industrial Energy Efficiency Assessments and Information

This Memorandum of Understanding (MOU) is between UT-Battelle, LLC (UT-Battelle) and Centro de Pesquisas de Energia Elétrica (Cepel), hereinafter collectively referred to as the "Participants." Oak Ridge National Laboratory (ORNL) is a Department of Energy (DOE) national laboratory, managed and operated by UT-Battelle, a limited liability company, organized and existing under the laws of the State of Tennessee, pursuant to DOE Contract No. DE-AC05-00OR22725.

BACKGROUND/PURPOSE

ORNL has a long history of research, development, demonstration, training and technical assistance and serves as a key implementer of numerous DOE programs to advance energy efficiency in the industrial sector. ORNL has significant experience in the conduct of industrial energy audits and assessments of energy systems, including the use of open-source software tools developed by DOE. ORNL is closely affiliated with DOE's Industrial Assessment Center (IAC) program, which seeks to train the next generation of industrial energy engineers, energy managers, and energy auditors through the conduct of industrial energy assessments. The IAC program manages an extensive database of findings from these audits.

Cepel provides technological support to Procel (National Electric Energy Conservation Program, run by Eletrobras) and to the Ministry of Mines and Energy of Brazil (MME). Particularly, Cepel has a long history of supporting Procel Indústria (Procel's subprogram for promoting energy efficiency in the industrial sector). Additionally, Cepel has provided support to the MME in the conception of the National Energy Efficiency Plan 2030 (PNEf).

The U.S.-Brazil Strategic Energy Dialogue (SED) was announced by President Barack Obama of the United States and President Dilma Rousseff of Brazil in March 2011 to deepen energy cooperation between the two countries.

Under the SED, the DOE and the MME have identified numerous areas of mutual interest, including cooperation to advance industrial energy efficiency. PNEf includes a list of actions and targets in support of Brazil's National Energy Plan 2030 and its goal to reduce energy consumption by 10% by 2030. The two countries share the understanding that cooperation on industrial energy assessment techniques and tools would assist in evaluating the impacts of actions taken under Brazil's PNEf.

ORNL-980 (10/2014)



Further, the development of an industrial energy database that can be used to establish baselines and to estimate the technical potential of energy conservation of various industrial sectors would provide the MME with the means to plan and evaluate the impacts of the actions listed in the scope of PNEf.

Therefore, the Participants intend to cooperate in a mutually beneficial manner to pursue these objectives.

ROLES OF THE PARTICIPANTS

The Participants intend to:

- a. Exchange publically available information on techniques and tools used to improve energy management systems and conduct energy assessments in industrial energy systems and facilities;
- b. Convene a technical training workshop, including classroom and in-plant components, covering the utilization of DOE open-source industrial energy efficiency tools and resources with public and private sector industrial efficiency practitioners; and
- c. Exchange publically available information on the development of a database, for the MME, to maintain and share findings from industrial energy assessments in Brazil.

GENERAL CONSIDERATIONS

1. **POINTS-OF-CONTACT.** The designated Points-of-Contact for implementation of this MOU are:

UT-BATTELLE, LLC

Name: Dr. Thomas E. Mason

Title: Laboratory Director

Phone: 865-576-2900

CENTRO DE PESQUISAS DE ENERGIA ELÉTRICA

Name: Dr. Albert Cordeiro Geber de Melo

Title: Director-General

Phone: 55 (21) 2598-6202



2. **FUNDING, INTELLECTUAL PROPERTY RIGHTS, AND OTHER RESOURCES.**

This MOU does not create any legally binding obligations between the Participants. Any commitment of funds, protection and allocation of intellectual property rights, disclosure of proprietary information, or commitment of other resources is to be made under a separate written agreement.

3. **APPLICABLE LAWS, REGULATIONS AND AGREEMENTS.**

Each Participant should conduct the activities under this MOU in accordance with the laws and regulations to which it is subject, and applicable international agreements to which its Government is party.

4. Cooperation under this MOU may commence upon signature and continue for a period of two (2) years, unless discontinued in accordance with paragraph 5 of this Section. This MOU may be extended or modified by mutual written consent of the Participants.

5. The Participants may discontinue this MOU at any time by mutual consent in writing. Alternatively, a Participant that wishes to discontinue its participation in this MOU should endeavor to provide at least 60 days advance notice in writing to the other Participant.

Signed in duplicate.

FOR UT-BATTELLE, LLC:

By: Thomas Mason

Name: Dr. Thomas E. Mason

Title: Laboratory Director

Date: Nov. 23, 2016

Place: Oak Ridge, TN

FOR CENTRO DE PESQUISAS DE ENERGIA ELÉTRICA:

By: Albert Cordeiro Geber de Melo

Name: Dr. Albert Cordeiro Geber de Melo

Title: Director-General

Date: 05 de dezembro de 2016

Place: Rio de Janeiro - RJ, Brazil