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NGK Insulators, Ltd.  
NEC Corporation  
Hitachi, Ltd.

## **Launch of Smart Grid Demonstration Site in Los Alamos**

- Japan-U.S. Collaborative Smart Grid Project in New Mexico -

**September 18, 2012** – Construction at a demonstration site in Los Alamos for the Japan-U.S. Collaborative Smart Grid Project, which is being carried out jointly by the New Energy and Industrial Technology Development Organization (NEDO), the State of New Mexico government and other participants, has been completed and full-scale operation has started. The project in New Mexico is NEDO's first overseas smart community project, and its demonstration site in Albuquerque is already in operation.

The Los Alamos site is the world's most advanced smart grid demonstration site for supply and demand control. Photovoltaic systems provide a significant portion of the power supply and account for up to 75% of the energy at the Los Alamos site. Because the output of photovoltaic systems vary with weather

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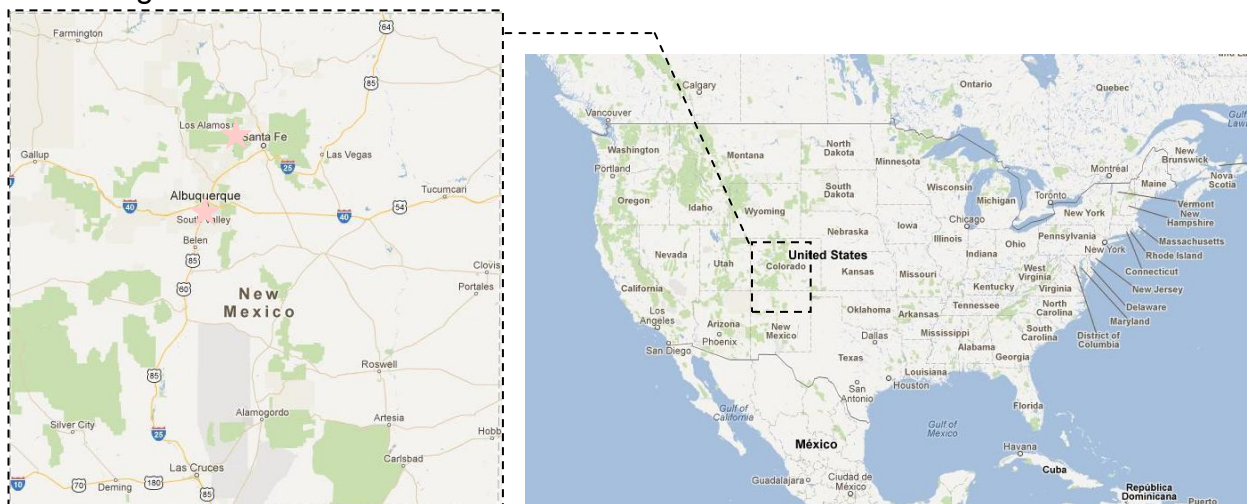
conditions, large-scale stationary batteries and demand response will be used to control the power flow of the distribution system and ensure quality.

Prior to the start of operation, a ribbon-cutting ceremony was held at the demonstration site at 14:00 (local time) on September 17. The ceremony was attended by NEDO Chairman Kazuo Furukawa, Mr. Norio Sasaki, President and CEO of Toshiba Corporation, Mr. Tatsumi Maeda, Executive Vice President of Kyocera Corporation, State of New Mexico Governor Susana Martinez, Dr. Charles F. McMillan, Director of Los Alamos National Laboratory, and key executives from major companies participating in the project.

## 1. Project Overview

### (1) Japan-U.S. Collaborative Smart Grid Project in New Mexico

This joint project is being carried out in collaboration with the State of New Mexico government and Los Alamos National Laboratory and Sandia National Laboratories, which operate under the authority of the US Department of Energy. NEDO, which is responsible for two sites in Los Alamos and Albuquerque out of the project's five sites, has budgeted approximately 4.8 billion yen (about 3.0 billion yen for Los Alamos and 1.8 billion yen for Albuquerque) for the five-year period of FY2009 to FY2013. With the aim of expanding the introduction of new energy and promoting energy conservation efforts, leading-edge technologies based on Japanese know-how, including large-scale stationary batteries for power grids and energy management systems, will be demonstrated. The project also aims to contribute to international standardization activities for smart grid systems, which are steadily progressing on a global scale, and to further promote the dissemination of Japanese smart grid technologies throughout the world.



Los Alamos site and Albuquerque site (New Mexico, USA Quote : Google map)

In order to address potential issues that may occur when renewable energy having a fluctuating output is connected to power grids on a large scale, the following activities will be carried out:

- 1) Demonstration of a smart grid with a high rate of photovoltaic power introduction using storage batteries and demand response
- 2) Demonstration of a smart house that will be a key element of a community using demand response (the world's most advanced system that will operate in conjunction with photovoltaic power generation forecasting and demand response signals from power grids)
- 3) Demonstration of a smart building that will be a key component of a smart grid using demand response (a highly functional building equipped with a low-carbon high quality power supply system that can stabilize the fluctuating output of photovoltaic power generation systems and is capable of stand-alone operation in emergency situations, such as power outages)

In addition to quantitatively assessing the effectiveness of demand response, the capacity of storage batteries necessary to absorb fluctuations in photovoltaic power generation will be identified through the above activities in order to establish the most suitable smart grid for the environment. Furthermore, it is hoped that the data collected through the project will be utilized in the design of optimum systems for other areas, thereby promoting the rapid deployment of smart grids.

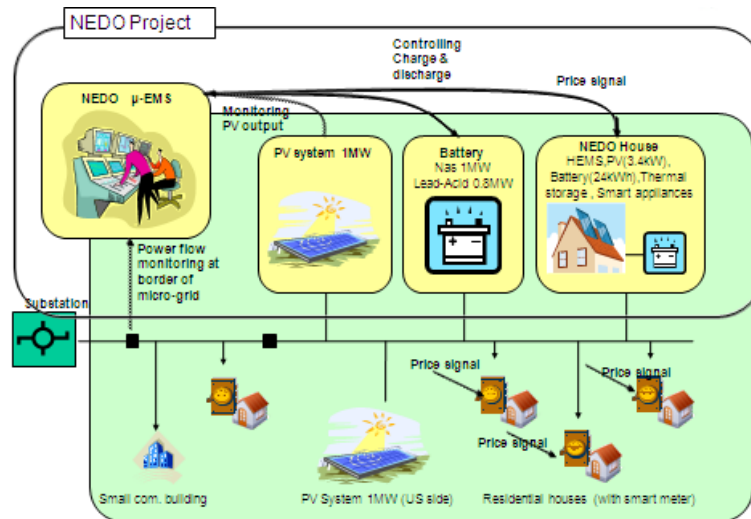
## (2) Demonstration in Los Alamos

Following the launch of the demonstration site in Albuquerque on May 17, 2012, eleven companies\* commissioned by NEDO will carry out smart grid and smart house demonstrations at the Los Alamos site.

Using a newly constructed 1 MW PV system, the smart grid demonstration will establish an environment that makes it possible to change the introduction rate of PV power by switching three distribution lines. By making the best use of the environment, a combined system of a local energy management system (micro EMS) and demand response for residential houses with 1.8 MW of battery storage will be established for smart house use. The system will demonstrate technologies to absorb PV output fluctuations as well as to harmonize and optimally control the power flow of the distribution lines with the existing power system.

In the smart house demonstration, a home energy management system (HEMS) will be established and demonstrated using a smart house

equipped with a 3.4 kW PV power generation system, a 24 kWh lithium ion battery, power storage devices such as a heat pump water heater, and smart home appliances, including air conditioners and LED lighting. The HEMS will be used to optimally control power in conjunction with PV power generation and in-home demand forecasting as well as demand response signals from a micro EMS.



Overall image of Japan-U.S. Collaborative Smart Grid Project in Los Alamos



1 MW photovoltaic system



0.8 MW lead battery system



1 MW NAS battery system



Smart house

\*Companies participating in the demonstrations at the Los Alamos site:

Toshiba Corporation and Toshiba International Corporation (smart grid demonstration site coordination, micro EMS, comprehensive system), KYOCERA Corporation (smart house demonstration site coordination, HEMS, large-scale PV), ITOCHU Techno-Solutions Corporation (PV forecasting), Sharp Corporation (HEMS, smart electrical appliances), NGK Insulators, Ltd. (NAS battery system), NEC Corporation (high-speed PLC, equipment to stabilize supply and demand), Hitachi, Ltd. (lead-acid battery system, large-scale PCS for PV)

Collective research

Accenture, ITOCHU Corporation, NTT FACILITIES, Inc., KYOCERA Corporation, Cyber Defense Institute, Inc., Toshiba Corporation, NEC Corporation, Hitachi, Ltd.

Since its establishment, NEDO has carried out activities to develop and introduce renewable energy. Developing a smart community system that can be utilized around the world will require cooperative relationships with organizations overseas, and NEDO is well positioned to play a leading role in the smart community field by promoting international demonstration projects. While cooperating in four national projects in Japan, NEDO is working toward realization of international standardization for smart grid systems through the activities of the Japan Smart Community Alliance\*.

\* The Japan Smart Community Alliance (JSCA) was established in April 2010 to carry out activities that aim to build a smart community across industry boundaries by addressing issues of mutual interest and identifying social needs. NEDO serves as the Secretariat of JSCA.

## 2. Ceremony Attendees

### (1) Attendees from Japan

NEDO: Mr. Kazuo Furukawa, Chairman

Toshiba Corporation: Mr. Norio Sasaki, President and CEO

KYOCERA Corporation: Mr. Tatsumi Maeda, Executive Vice President

Accenture Japan Ltd.: Mr. Ryoji Miyawaki, Senior Executive

ITOCHU Corporation: Mr. Masahiko Takasaka, Executive Officer

ITOCHU Techno-Solutions Corporation: Mr. Satoshi Kikuchi, President and CEO

NTT FACILITIES, Inc.: Mr. Mitsuhiro Watanabe, Senior Executive Vice President

Cyber Defense Institute, Inc.: Mr. Shingo Kobayashi, CEO

Sharp Corporation: Mr. Yasuhito Nakagawa, Division General Manager

NGK Insulators, Ltd.: Mr. Taku Oshima, Senior Vice President

NEC Corporation: Mr. Takemitsu Kunio, Senior Vice President

Hitachi, Ltd.: Mr. Yoshifumi Kanda, Vice President and Executive Officer

(2) Attendees from the United States

State of New Mexico: Governor Susana Martinez

State of New Mexico: Congressman Ben Ray Lujan

Los Alamos County: Ms. Sharon Stover, Council Chair

Los Alamos National Laboratory: Dr. Charles F. McMillan, Director

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## **ABOUT HITACHI**

Hitachi, Ltd. (TSE: 6501), headquartered in Tokyo, Japan, is a leading global electronics company with approximately 320,000 employees worldwide. Fiscal 2011 (ended March 31, 2012) consolidated revenues totalled 9,665 billion yen (\$117.8 billion). Hitachi is focusing more than ever on the Social Innovation Business, which includes information and telecommunication systems, power systems, industrial, transportation and urban development systems, as well as the sophisticated materials and key devices that support them. For more information on Hitachi, please visit the company's website at <http://www.hitachi.com>.

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Information contained in this news release is current as of the date of the press announcement, but may be subject to change without prior notice.

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