U.S. and Japan Companies Collaborate on Smart Grid Project in Hawaii
– Hitachi to Serve as Project Leader –

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Hitachi, Ltd.
Cyber Defense Institute, Inc.
JFE Engineering Corporation
Sharp Corporation
Hewlett-Packard Japan, Ltd.
Mizuho Corporate, Ltd. Bank

Tokyo, May 17, 2011 – Hitachi, Ltd. (NYSE: HIT / TSE: 6501, "Hitachi"), Cyber Defense Institute, Inc. ("Cyber Defense Institute"), JFE Engineering Corporation ("JFE Engineering"), Sharp Corporation (TSE: 6753, "Sharp"), Hewlett-Packard Japan, Ltd. ("HP Japan"), and Mizuho Corporate Bank, Ltd. ("Mizuho Corporate Bank") today announced that U.S. and Japan companies have been selected as contractors for joint "Project" collaboration supporting a world-leading Smart Grid project on Maui, a Hawaiian island that will serve as the Project site. The Project will be spearheaded by the New Energy and Industrial Technology Development Organization ("NEDO"). Hitachi will take a leading role and coordinate the entire project, serving as the project leader.

Hitachi, along with the other five participating companies, will conduct a feasibility study expected to be completed by the middle of September 2011. Based on the results of the feasibility study, the Project is expected to be implemented by the end of March 2015.

The Project, a joint undertaking by the U.S. and Japan, will be aimed at demonstrating a world-leading smart grid on Maui, a Hawaiian island. The Project is supported by NEDO, in cooperate with the U.S. State of Hawaii, Hawaiian Electric Company, Inc., the University of Hawaii, and Pacific Northwest National Laboratory, whose involvement is based on the Japan-U.S. Clean Energy Technologies Action Plan, which was agreed to following the Japan-U.S. heads of state summit held in November 2009.

On the island of Maui, 15% of the electricity supply is already generated by renewable energy, and there are plans to increase this percentage going forward. The goal of the Project is to verify cutting-edge technologies in a smart grid under the use of large volumes of renewable energy already in place, contribute to smart grid standards, and implement a low-carbon social infrastructure system that efficiently uses renewable energy on a remote island where electricity costs are relatively high.

The six participating companies will build and test a system that applies the latest technologies that will be utilized include: power distribution control, demand side load control, control-ICT platform, electric vehicles (EVs) operation and charging control, multiple type of rapid chargers, and information and telecommunications technologies. The part of the demonstration plan includes utilization of the EVs as the stability function for the grid. These technologies will be implemented to eliminate the factors in causing power voltage impacts in the distribution grids and fluctuations in power frequency when large volumes of renewable energy with weather-dependent tendency are added to a power grid.
Specific details of the Project and the roles of participating companies are as follows:

1. EV-based Remote Island Smart Grid Model on Maui (Hitachi, Sharp, and JFE Engineering)

With the goal of eliminating the impact of output fluctuations from renewable energy on power frequencies, the participating companies will establish an EV Energy Control Center to create a smart grid on an island without alternative energy source from other grids that is based on the a close coming society with EVs large penetration. They will facilitate comprehensive energy management for the EVs by linking a Distribution Management System ("DMS") to be established in the Kihei district of the island, and an Energy Management System ("EMS"), which will control the demand-supply balance in the power grid of Maui Electric Company, Ltd. The companies will demonstrate the stimulation and inducement of demand for charging EVs that use car navigation systems, PCs, smartphones, and so forth, as well as charging status monitoring, automatic adjustment of charging starting times, and absorption of surplus efficient renewable energy. In addition, various types of rapid chargers will be installed, including flexible power supply type, photovoltaic DC to DC power supply type and DC power supply type with battery power at EV

charging stations, and demonstrate their effectiveness at controlling EV chargers so they do not overload distribution facilities. Moreover, they will conduct simulated evaluating the impact that a large volume of EVs have on distribution networks by installing fixed storage batteries and charging and discharging them.

2. Smart Grid Model at a Substation with One Distribution Grid Level in Kihei (Hitachi)

Hitachi will demonstrate power grid operational stability to address issues such as power voltage, surplus electricity and frequency fluctuations from renewable energy using and cooperative-controlling EMS, DMS and μ (micro) DMS that control the balance of supply and demand in a power grid. The goal of this demonstration is to solve various issues, including voltage issues related to reverse power flow that stem from photovoltaic solar power generation linked with distribution system terminals and excess load on low-voltage transformers when multiple EVs are charged at the same time.

3. Smart Grid Project for Low-voltage Transformer Level Systems (Hitachi)

Hitachi will demonstrate the control to reduce the possibility of the problems which arise by connecting μ DMS, smart power conditioners and DMS demand response functions that address issues related to voltage at the low-voltage transformer level. Typically, it is possible that these problems arise due to an increase in photovoltaic solar power generation in homes and disruption of outdoor powerline to houses resulting from excess load that is caused by a large increase in power demand from EV rechargers and electric water heaters. The goal of this demonstration is to solve various issues, including voltage issues related to reverse power flow stemming from photovoltaic solar power generation that is linked with terminals on the distribution grids, and excess load on low-voltage transformers when multiple EVs are charged at the same time under EV large penetration.

4. Comprehensive Research

The participating companies will analyze the results of the Project.
(1) Analysis and evaluation of results from smart grid demonstration (6 companies)
In order to promote the establishment of an optimal smart grid model for islands without alternative energy source from other grids, the participating

companies will create a U.S.-Japan Joint Evaluation Committee, which will work together, creating maximum synergy by utilizing best practices developed from the Project along with other demonstration projects being conducted by U.S. companies in the Wailea distinct of Maui. The committee will also discuss international standards.

(2) Evaluation of cyber security (Hitachi, HP Japan, and Cyber Defense Institute)

The three companies concerned will evaluate whether the Project meets cyber security standards in the U.S.

(3) Evaluation of the economic viability of the system (Mizuho Corporate Bank)

Mizuho Corporate Bank will use experts to evaluate the economic viability of the system that is created.

(4) Creation and verification of a cutting-edge low-carbon social infrastructure system business model on a remote island (Hitachi, Mizuho Corporate Bank)

In order to develop businesses in other regions, Hitachi and Mizuho Corporate Bank will create and evaluate a highly feasible and practical business model based on the results of the Project.

As cooperative companies, the following expertise will support the Project.As cooperative companies, the following expertise will support the Project.

- The Okinawa Electric Power Company, Incorporated : Advisor for Power Grid Technology on remote island
- Advanced Energy Company: Advisor for EV charger Business
- Nissan Motor Co.,Ltd. : Adviser for EV telematics adaptation to the Project and EV charging and discharging technology
- Verizon: Advisor on communications solutions and Network technology and services

About Hitachi, Ltd.

Hitachi, Ltd., (NYSE: HIT / TSE: 6501), headquartered in Tokyo, Japan, is a leading global electronics company with approximately 360,000 employees worldwide. Fiscal 2010 (ended March 31, 2011) consolidated revenues totaled

9,315 billion yen ($112.2 billion). Hitachi will focus more than ever on the Social Innovation Business, which includes information and telecommunication systems, power systems, environmental, industrial and transportation systems, and social and urban 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.

About Cyber Defense Institute, Inc.

Cyber Defense Institute, Inc., (CDI), in Tokyo, Japan, is a cyber security assessment and audit company with approximately 30 employees. CDI is a group of experienced cyber security professionals providing penetration testing from the "hacker's view", hands-on training (network/web application hacking, exploit writing, network/web application penetration testing, incident response, forensics, and malware analysis), forensics services, and information analysis/intelligence services. CDI also provides security assessments for new areas such as smart phone security, smart grid and industrial (SCADA) system security. For more information on CDI, please visit the company's website at http://www.cyberdefense.jp/en/

About JFE Engineering Corporation

JFE Engineering Corporation is a leading international engineering company with approximately 7,500 employees. Fiscal 2009 (ended March 31, 2010) consolidated revenues totaled 294 billion yen ($31.6 billion). JFE contributes building the sustainable society, focusing on energy infrastructure, urban environment, recycling, steel infrastructure and industrial machinery. We are committed to research and development of advanced technologies, with the aim of being a total engineering company that leads the world in each field. For more information on JFE, please visit the company's website at http://www.jfe-eng.co.jp/en/index.html

About Sharp Corporation

Since its founding in 1912, Sharp has developed numerous world-first and Japan-first products, including the first Japan-made radios, TVs, and the world's first all-transistor/diode desktop calculator. Sharp has contributed to society by commercializing these unique products.
Today, in addition to its core LCD TV business, Sharp is also focusing on its solar cell business. It has been more than 50 years since Sharp first started

researching solar cells. Over this long period of time, solar cells made by Sharp have been used not only in residential and industrial applications, but also on lighthouses and satellites, thus proving their long-term reliability. Sharp constructed one of the world's largest solar cell production facilities for thin-film solar cells at Sakai City in Osaka Prefecture, which started mass production in March 2010.
Sharp Corporation employs 64,200 people worldwide (as of February 28, 2011), and recorded consolidated annual sales of 3,021,973 million yen for the fiscal year ended March 31, 2011.
For more information, please visit Sharp's Web site at
http://sharp-world.com/index.html

About HP

HP creates new possibilities for technology to have a meaningful impact on people, businesses, governments and society. The world's largest technology company, HP brings together a portfolio that spans printing, personal computing, software, services and IT infrastructure at the convergence of the cloud and connectivity, creating seamless, secure, context-aware experiences for a connected world. More information about HP (NYSE: HPQ) is available at http://www.hp.com

About Mizuho

Mizuho Corporate Bank, Ltd. provides financial and strategic solutions for the increasingly diverse and sophisticated needs of clients, focusing its efforts on serving major corporations, financial institutions, and public sector entities. A relationship management approach to serving clients enables Mizuho Corporate Bank, Ltd., together with affiliates such as Mizuho Securities Co. Ltd., to develop customized solutions in areas such as corporate, structured and project finance, investment banking, transaction banking and risk management. With offices in more than 30 countries, Mizuho Corporate Bank, Ltd. offers clients both localized service and the extensive reach of a global business network. Mizuho Corporate Bank, Ltd. is a subsidiary of the Japan-based Mizuho Financial Group, Inc. (NYSE: MFG / TSE:8411), one of the largest financial services companies in the world, with total assets of over $1.8 trillion as of September 30, 2010.

For more information on Mizuho , please visit the company's website at http://www.mizuhocbk.com/index.html

For further information, please contact:

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