News Release

Singapore's Intelligent Energy System Pilot Project: First Step Towards a Smarter Grid

Singapore, 19 November 2009 – The Energy Market Authority (EMA) has launched a pilot project for an "Intelligent Energy System" (IES). The project will test a range of smart grid technologies to enhance the capabilities of Singapore's power grid infrastructure.

Across the world, governments and companies are looking at ways to modernize their electricity transmission and distribution networks with new information, communication and sensor technologies. Singapore already has a high-quality power system, which is amongst the most reliable in the world[1]. Nevertheless, there is scope to leverage on new technologies to further improve the capabilities of our power grid. This pilot represents a first step in the move to develop a smarter grid for Singapore.

Announcing the launch of the IES pilot project during the Smart Grids 2009 Summit, as part of the Singapore International Energy Week, Mr Lawrence Wong, Chief Executive of EMA, said, "With this pilot, we will lay the foundations for an even more intelligent energy system in Singapore. We will bring the capabilities of our power grid to the next level and ensure that our electricity infrastructure is ready for the future".

The EMA will be working on this project with various government agencies, including the Economic Development Board (EDB), the Agency for Science, Technology and Research (A*Star), the Housing & Development Board (HDB), the Infocomm Development Authority of Singapore (IDA) and the National Environment Agency (NEA).

Specifically, the IES pilot project seeks to develop and test the following components of a smart grid (a diagram illustrating the interaction between these components and the current power system in Singapore is at Annex):

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[1] The System Average Interruption Duration Index (SAIDI) and System Average Interruption Frequency Index (SAIFI) are two commonly used indicators measuring the reliability of the power utilities. The SAIDI represents the average outage duration in minutes for each customer served and the SAIFI represents average number of interruptions a customer experiences in a year. In 2008, Singapore's SAIDI was 0.53minutes and its SAIFI was 0.012.

- **Advanced Metering and Communications Infrastructure:** Advanced electrical meters (known as "smart meters") are a key technology for the smart grid. The smart meters will be connected through an appropriate communications network, be it fibre-optic cables, Wi-Fi or radio frequency. They provide both energy providers and consumers with detailed information on how much electricity is being used and fed into the grid. This 2-way flow of information will enable both providers and consumers to make more informed decisions about electricity use.

- **Demand Response Management Systems:** Demand management systems can be connected to appliances, homes or office buildings. They enable users to monitor and manage their electricity consumption according to changes in the electricity price. Consumers will be able to optimize their electricity usage, while providers will benefit from better grid load planning and lower costs.

- **Management Systems for Distributed Energy Sources:** These control systems enable the grid to integrate the increasing number of small and variable sources of power, for example, from solar photovoltaic (PV) systems[2] and mini co-generation plants[3]. They also cater to the future possibility of large numbers of electric vehicles connecting to the grid, both to draw electricity from the grid and also to supply electricity to the grid during periods of peak demand.

The IES pilot project will be implemented on multiple sites. The focal point of the project will be at the Nanyang Technological University (NTU), which has the research and technological capabilities to facilitate the testing of the various smart grid applications and solutions. Beyond the NTU site, the pilot will also be deployed in other locations, including the neighbouring CleanTech Park at Jalan Bahar, as well as selected residential, commercial and industrial buildings. This will facilitate a

[2] Clean and renewable energy sources are often intermittent in nature. For instance, solar PV modules cannot generate electricity at night or when it is cloudy. Should such sources of energy be implemented on a large scale throughout Singapore, their intermittent nature can potentially disrupt the stability of the grid.

[3] Miniature co-generation plants are small –scale power stations that can produce both electricity and heat that can be used in industrial processes.

comprehensive evaluation of various applications and communication methods for different building configurations[4].

Industry players interested in the IES pilot project are invited to participate in a pre-qualification exercise. The Pre-Qualification documents are available online on GeBIZ (www.gebiz.gov.sg) and the closing date for the submissions is 18 December 2009. Through this process, EMA will be selecting industry partner(s) to work together with the grid owner/operator, Singapore Power, to implement the project.

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About the Singapore International Energy Week

The annual Singapore International Energy Week (SIEW) is a leading energy conference that provides a platform for policymakers, business leaders and academics to exchange ideas, strategies and best practices that will help shape global and industry energy agendas. Jointly organized by the Energy Market Authority (EMA) and the Energy Studies Institute (ESI) from 16 to 20 November 2009, SIEW features a comprehensive schedule of clean energy-focused conferences, exhibitions and networking sessions from a diverse cross-section of energy industry leaders. More information about SIEW is available at http://singapore.iew.com.sg/

About the Energy Market Authority

The Energy Market Authority (EMA) is a statutory board under the Ministry of Trade and Industry. The EMA's main goals are to promote effective competition in the energy market, ensure a reliable and secure energy supply, and develop a dynamic energy sector in Singapore. Through its work, the EMA seeks to forge a progressive energy landscape for sustained growth.

For more information on the EMA, please visit www.ema.gov.sg

[4] For example multi-dwelling buildings (e.g. HDB housing) with many users in close proximity may need a different communications solution than landed housing, where the users are more spread out.

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Annex

Key Components of an Intelligent Energy System

By putting information and communication technology into electricity generation, delivery and consumption, we can make our power system more reliable and efficient.