6. Major Projects

6.1. Gas-fired Combined Cycle Generating Units

In 2016, HK Electric progressed with several key initiatives in support of the Government's fuel mix target, which mandated that the proportion of natural gas in the fuel mix should increase to about 50% in 2020.

The first initiative is the installation of the new L10 gas-fired combined cycle generating unit, which has entered the construction stage. Combined cycle generation technology is one of the cleanest, most popular and efficient ways available in the world today to generate electricity with fossil fuels. With a high efficiency, the new L10 unit can generate more power and reduce fuel costs when compared to the older gas-fired unit at Lamma Power Station ("LPS"). It is scheduled for commissioning in 2020.

In addition, the Government approved in September 2016 the construction of another new gas-fired combined cycle generating unit L11 which will have an installed capacity of 380 MW to replace a retiring gas-fired unit. Piling works have already commenced in end 2016 and construction planning is underway for scheduled commissioning by 2022. Both units will be supplied by Mitsubishi Hitachi following contract signing in Japan in 2016 and 2017.

With the Government's publication of its Climate Action Plan 2030+ which sets out an aggressive target to reduce Hong Kong's carbon intensity by 65-70% in 2030 compared to the 2005 level, HK Electric envisages further replacement of coal-fired generating units by gas-fired units and other supporting infrastructure in future.

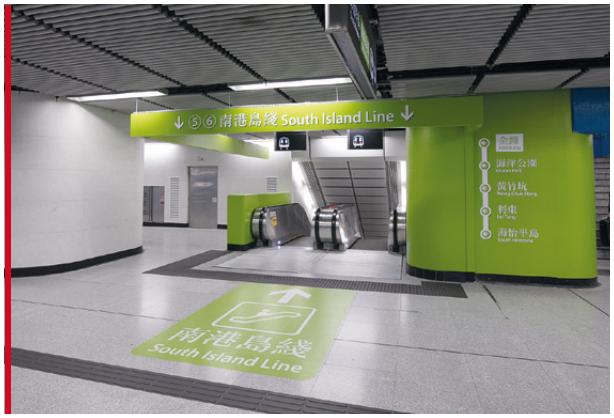
6.2. Offshore Liquefied Natural Gas Terminal

Currently, natural gas is delivered from Shenzhen to LPS via a 92-kilometre submarine pipeline. To enhance supply security and increase gas-firing capacity and bargaining power for gas supplies, HK Electric and CLP Power jointly began an Environmental Impact Assessment ("EIA") in 2016 to study the feasibility of constructing an offshore liquefied natural gas ("LNG") terminal using floating storage and regasification unit technology, to receive LNG from overseas.

The EIA is scheduled to be completed by the end of 2017. The terminal will have a double-berth design, similar to the one used in the photograph above though detailed design will be made after the EIA approval. Subject to timely Government approvals, the terminal will be constructed for scheduled operation in 2020. By then, it will provide HK Electric with direct access to and enhance bargaining power in the international market for gas supplies.

6.3. Other Infrastructural Works

HK Electric provided the requisite power supply infrastructure for the Mass Transit Railway to facilitate the commissioning of its South Island line in December 2016. In addition, we are on schedule with a number of electric infrastructural projects associated with the upcoming Shatin to Central Link (North-South line), with energisation set for 2020. 2016 also saw the completion of staged replacement of two 132/33 kV 40 MVA old oil-immersed transformers at Admiralty Substation with modern 50 MVA gas-insulated transformers. The upgrade increased transformer capacity, bolstered supply reliability and enhanced operational safety.



Proactive maintenance and a calendar of replacement of network equipment is an essential part of our approach to uphold supply standards. During the year, older gas insulated switchgear was replaced with new compact switchgear, along with associated cabling work, at the North Point 132 kV Switching Station. A retiring shunt reactor at Nam Fung Road was replaced with a new 275 kV 100 MVA one in April 2016.

The overlaying of Parker 132kV Substation to North Point 132kV Substation 132 kV cable circuits in Eastern District by phases is substantially completed, with target commissioning by end of 2017. The overlaying of Davis 132kV Substation to Zetland Street Zone Substation 132kV cable circuits in Western District is also underway for commissioning in early 2021.

Meanwhile, a comprehensive system upgrade has been made for two sophisticated real-time computer systems, namely the Energy Management System and Distribution Management System to include the integration of next generation smart grid features. User acceptance testing is underway for the systems to go live later in 2017.