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Speaking Notes - Third High-Level Plenary Meeting of the IEA Electricity Security Advisory Panel (ESAP)

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Ladies and Gentlemen:

Good Morning! It is my pleasure to attend the Third High-Level Plenary Meeting and to share some experiences.

With the development of economy, the total energy exploration and consumption have been increasing dramatically. Massive exploitation and utilization of fossil energy have resulted in a series of prominent problems such as resource constraints, environment pollution and climate change. Low-carbon and green development to change the dominant energy from fossil fuels to clean energy is one of the important measures to address these challenges. Today, I'd like to introduce some of SGCC's practices in promoting low-carbon transformation, ensuring reliable power supply and pushing forward electric power market trade.

My following speech will focus on three aspects.

As for the first part, I will give a brief introduction of our company.

State Grid Corporation of China, known as SGCC, was founded in the end of 2002. It constructs and operates power grids as core business and bears the basic mission of supplying secure, economical, clean, and sustainable power.

SGCC serves 1 billion people and has 300 million customers in 26 provinces, covering 88% of the national territory. In 2015, SGCC's total electricity sales reached 3,400TWh with the revenue of 320 billion US dollars and the profits of 13 billion US dollars. Total assets reached 480 billion dollars, ranking 7th on Fortune Global 500 for five consecutive years. We are now operating 890,000 kilometers of 110kV (and above) transmission lines with a transformation capacity of 3,600GVA.

SGCC is actively promoting two replacements, which are to implement clean replacement in energy development, replacing fossil fuels by clean energy, and to implement electricity replacement in energy consumption, replacing fossil fuels such as coal and oil with electricity. SGCC also attaches importance to the power security management, explores different kinds of market transactions, and makes efforts to promote low-carbon energy transformation. By the end of 2015, in SGCC's business area, the installed capacity of renewable energy has reached 360GW, 30% of the total.

For the second part, I'd like to introduce the main practices that has been applied by SGCC to promote low carbon transition, ensure secure and reliable power supply and push forward electric power market exchange.

First is to support the renewables and stimulate their accommodation.

From 2010 to 2015, China's renewable energy experienced rapid development and the generation of renewable energy grew 11% annually. In 2015, the renewable energy generation reached 900TWh. Wind power has become the second largest power source in 15 provinces.

In recent years, SGCC has attached great importance to renewable energy accommodation with many measures. We accelerated power grid construction to ensure integration and transmission of renewable energy. From 2010 to 2015, SGCC accumulatively invested RMB 85 billion in building 37,000 kilometers lines to integrate and transmit renewable energies. From 2013 to 2015, the proportion of the renewables in cross-regional and cross-provincial transmission by SGCC kept increasing from 33% to 42%, within which wind and solar power increased from 10TWh to 30TWh.

Also, we established a set of management mechanism to prioritize the dispatching of the renewables. When making long-term plans, we gave priority to renewable energy to be included into the annual and monthly balance with enough space. When making day-ahead plans, we predicted the renewable energy power first and reasonably arranged the power grid operation mode to prioritize renewable power generation. In real-time dispatching operation, we developed an Automatic Generation Control (AGC) system to optimize and adjust the renewable energy output timely.

Thirdly, we enhanced the construction and management of pumped storage power stations. At the end of 2015, 22 pumped storage power stations were in operation with a total installed capacity of 17GW. Another 13 stations were under construction with a total installed capacity of 19GW.

What's more, we strengthened our scientific and technological research to ensure the healthy development of renewable energy. Through S&T research and standard specifications, a number of important technical problems have been effectively solved, such as LVRT test, renewable energy cluster control and so on.

Second is to strengthen the management of power auxiliary services.

With the increasing of the proportion of renewable energy, intra-provincial power auxiliary service markets could no longer meet the need to accommodate renewable energies. Therefore, SGCC began to explore on cross-provincial and cross-regional auxiliary service market.

Trans-provincial and inter-regional auxiliary service market has the following characteristics: First, it includes a cross-regional peak-shaving trading mechanism, giving full play to regional large grid and coordinating different provinces' peak-shaving abilities. Second, it introduces the market price mechanism, which uses floating price and allocation mechanism depending on the peak shaving ability of thermal power unit. Finally, it can adopt the wind and nuclear power into the peak-shaving mechanism as important market entities so that wind power and thermal power, nuclear power and thermal power can compliment each other.

Third is to explore market-based exchange to promote the construction and development of electric power market

Above all, a technical support system for the power market has been built to support the bilateral competition from the generation side and the consumption side, offering services like

online registration, transaction & declaration, settling, and information inquiry for market entities. By the end of 2015, more than 25,000 generation companies and 2,000 power customers were registered in the platform.

Second, preliminary established a market-trading mechanism with long-term trade as the core and short-term trade as the supplement. The market entities were encouraged to sign medium or long-term contracts, based on which, flexible trading periods, such as monthly exchange and short-term exchange, were adopted, in order to ensure supply-demand balance and meet different needs.

Third, explored the trans-provincial and inter-regional exchanges. According to the requirements of China's market-oriented reform, in March 2016, SGCC established the Beijing Power Exchange Center, to explore the trans-provincial and inter-regional trading. By the end of May, it has conducted 75TWh of trans-provincial and inter-regional exchange.

Fourth, explored direct transactions between customers and power generation companies. With the market mechanism, companies and customers were given the option in selling and purchasing electricity through bilateral negotiations and centralized competition. In 2015, 200TWh of electricity was directly traded, involving 2,200 power customers and 1,100 generation companies.

Fifth, carried out the generation contract transfer. Under the premise of ensuring the security of power grid, companies are able to trade their generation plans or contracts through the trading platform, which could replace small generating units by highly efficient and low-emission thermal power units or clean energy units. By the end of 2015, 1,000TWh of electricity has been traded in this way, equivalent to saving 80 million tons of standard coal and reducing sulfur dioxide and carbon dioxide emissions by 2 million tons and 200 million tons respectively.

For the last part, I will focus on our future endeavors.

First, promote the construction of electric power market system. Trans-provincial and inter-regional market which can optimize power resource allocation throughout the country and intra-provincial market which can satisfy the internal balance will be constructed and improved into a unified and standardized trading mechanism. Thus energy resources can be allocated optimally across the country.

Second, continue to make efforts to accommodate the renewable energy. More investment will be put into the renewable energy projects. More explorations will be done regarding the market-based exchange mechanism to promote the accommodation of the renewables.

Third, promote the construction of the auxiliary service market. Trans-provincial and inter-regional market will be sped up and the intra-provincial markets will be improved. Price mechanism of generation integration and peak-valley load at consumption side is under research. These measures will be incentives for market entities to participate in auxiliary services, unleash the potential for clean energy accommodation.

All the information above concludes what I would like to share with you. Thank you very much for your attention.