

The Research of Wind Electricity's Present Situation and Development under the Electric Power Reform

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Abstract. The voice of new energy is increasing with environment pollution growing problem. Wind energy regards as a new energy with no pollution and wide-getting, so it gets full attentions from all the world, and, installed capacity is increasing. In 2014, China promulgated "opinions on further deepening the reform of electric power system", opened power-sold side and made higher requirements in electric price management. This article is based on Wind Electricity's Present Situation under the Electric Power Reform, has searched the problem in wind power and put forward measures.

Research Background

To build a beautiful China, this four aspects of the energy revolution in Energy consumption, energy supply, energy technology and energy system mean that Chinese energy stages need fundamental changes and have to take the road of sustainable development. Modern, high-quality, high-effect wind-electric equipment manufacturing industry is a guarantee in sustainable development of wind power industry.

April 18, 2014, Premier Li Keqiang who hosted the meeting of the new National Energy Commission, required to step on current and foresight.

Promise positively to promote energy production and consumption change, going a clean, efficient, safe and sustainable energy development way. Central Committee of the CPC, the State Council thought highly of scientific establishment of energy strategic planning, promoting efficient, safe and sustainable energy development.

In 13th Five-Year the national energy planning meeting, Wu Xinxiong emphasized the sharp increase in the proportion of renewable energy. Insisting on both centralization and distribution, centralizationally place sending with consumptive combining in the rich resource region, Plan the construction of large wind power base and photovoltaic base, in other region, accelerate the exploitation of wind dispersed and distributed photovoltaic power generation. By 2020, wind power and photovoltaic power generation capacity is getting Kw to over 200 million and 100 million. The price of wind power is equipped with Coal's and the photovoltaic power generation's is as the Grid sales price.

Chinese power reform firstly broke the vertical integration mode, into a single buyer mode, then to the wholesale competition mode and finally realized the retail competition mode. In 2002 Chinese power market was going to a new strategy to split, state power company power plant and power grid separated, split, restructuring as the two power grid companies, five national power corporation and four FuYe group company.

Research Significance

Adjust Energy Structure Improve the Environment Quality. China's energy consumption accounts for more than 10% of the world. In the meantime, the primary energy consumption accounts for about 70%, more than 40 percentage points higher than the world average. Sulfur dioxide and soot emissions caused by coal accounted for about 70% of the total emissions - 70%,

acid rain area caused by sulfur dioxide emissions has a third of the total land area. The overall level of environment quality also is getting worse and worse, environmental pollution has brought our country social economy development and people's health. The use of wind energy helps to adjust the energy structure of our country, and to improve environmental quality

Promote Wind Power Development Alleviate Environment Pollution. With the growing of economy, people's demand for electricity is creasing and the contradiction between supply and demand of energy began to emerge. According to the national energy administration, in2014, The whole society power consumption was 5.5233 trillion KWH which was up 3.8% from a year earlier, between January and June, the all of electricity grand total 2.6624 trillion KWH, up 1.3% from a year earlier In order to satisfy the need of the development of industry and living demand, etc.

Status of Wind Power

The Development Status of Wind Power. From long time, our electric power mainly depends on fire power. During the period tenth five-year plan, China Put forward the strategic of adjusting energy structure, which should actively promote clean energy supply such as nuclear power, wind power, change the transition depended on the coal energy. In recent years, our government has supported for new energy development, encouraging measures unceasingly strengthens. Wind power regards as one of the most commercial potential of new energy which is chased after by local government and electricity giant.

In 2008, China's new installed wind power capacity was 6.246 million kilowatts, at the top of the world's second; Wind power total capacity was 12.153 million kilowatts, as the world's fourth largest wind power market China's wind power industry started from scratch, from small to large which only took less than 10 years, in 2010, Surpassed the U.S. to be the largest country in wind power capacity which continues today. Ending June 2015, China's wind power grid capacity has reached 106 million kilowatts, ahead of the 12th five-year plan, whose development is a world-class performance.

In 2014, the capacity of Wind power generation was 137.8 billion kilowatt hours up 10.0% from a year earlier growth of 29.2% less than the same period last year. In the provinces whose wind power capacity was more than 5 million kilowatts, Gansu and Inner Mongolia year-on-year declined 6.3% and 1.7% respectively; Wind power accounted for 2.8% of the whole society power.in 2015, Wind power generating capacity was 186.3 billion KWH, accounting for 3.3% of the total. New wind capacity was 43 million kilowatts, year-on-year increased 7 million kilowatts, the cumulative capacity of 216 million kilowatts, cumulative approved construction capacity of 87.07 million kilowatts.

Prospects for Development. Chinese wind resource is very rich, according to the national weather service our wind power 10m far from the ground , is about 3.226 billion kw of total wind energy resources. The wind power near the sea which can be developed and used is about0.75 billion kw. Taking the International land, and other factors into consideration, Initial estimating in the near future to the actual use of onshore wind energy reserves is about 800 million kilowatts ,near the sea and actual use wind energy resources is 200 million, total 1000 million.

The nation has put forward a series of policy to promote the wind power development including “About wind power requirements of construction management” “Renewable energy power generation the tentative management measures for allocation of prices and costs”. In October 2011, China has issued China's wind power development roadmap to 2050", has put forward China's wind power development strategic target and development prospects. In the 12th five-year plan, the nation also has raised guidelines which Promote the steady and healthy development of wind power industry to realize national economic and social development strategic target, speed up the adjustment of energy structure, Cultivate and develop strategic emerging industries and promoting rational utilization of wind energy resources.

In the category of "much starker choices-and graver consequences-in planning advice" green concept, Involved many energy problems. Some was to build clean, low-carbon, safe, efficient system of modern energy to Promote energy conservation and low carbon power dispatching and orderly open rights which is clearly put forward. Wind power regards as one of new resource which

is easy-getting, clean and pollution-free. During the period of "much starker choices-and graver consequences- in" Wind power is expected to change its substitute energy status, become the main one of the energy supply of our country.

To overall plan development and form a complete set of wind power grid construction, improve the network given wind power capacity, ensure the realization of the national renewable energy development goals, Since September 2014, the national energy administration organization and the related units have used nearly a year to carry out " "13th Five-Years " wind power planning and given ability to advance the scale of Wind power development in three north region, use wind power in mid-east region efficiently and construct off shore wind power, and plan the next "13th Five-Years" national wind power development plan, link up" 13th Five-Years" national renewable energy development plan.

Existing Problems

Wind Power Grid Given. China abandoned wind power starting from 2010 and this phenomenon spread rapidly becoming ill. Especially in 2012, National abandoned wind power up to 20 billion 800 million kw which is almost two times in 2011. After a series of national policy guidance and industry active adjustment, it has eased. In 2013 and 2014, the national average abandoned wind rate was about 10%. In 2015, Abandoned wind power rationing situation intensified, annual abandoned wind power about 33.9 billion kwh, which has increased 213 million kilowatts, the average disposable wind rate of 15%, increased of 7 percentage points, which abandoned wind heavier area is Inner Mongolia, Gansu, Xinjiang, Jilin

Because of wind power project construction planning and power grid construction is different and some areas of wind power projects are too large, But there is no corresponding grid planning, which makes the grid planning not integrated into the wind to send out, the corresponding supporting transmission project is difficult to timely into the power grid planning, leading to the completion of the project, but the delay can not be connected to the grid. At the same time, Wind power cost is usually higher than thermal power generation, while wind energy is rich in provinces such as Xinjiang, Inner Mongolia and other places that coal resources are more abundant, higher proportion of thermal power. The cost of wind power is higher than that of thermal power, which makes people abandon wind power without

The Capacity of Wind Power Technology Development. Most of the whole enterprise in the initial buy drawings production, in the digestion and absorption based on the introduction of technology to achieve real breakthroughs and innovation, which requires a lot of basic research, scientific experiments and long-term experience accumulation.

Some manufacturers one-sided pursuit of unit capacity, the speed of the new model line, eager to batch installation, and the introduction of technology digestion and absorption and re innovation ability ,but the quality of the products do not pay enough attention to the, to the overall design of the wind turbine, load optimization calculation optimization of control strategy, and network performance core technology is not enough to grasp the, lead to some of the wind turbine quality instability, appeared more serious wind turbine quality accident and become a hidden danger for the development of wind power. [8]

Wind Power Equipment Certification Standards and Capabilities. There are two work of wind power equipment certification institutions getting approved by state certification and accreditation administration, evaluation scale certification center and the China classification society quality certification, but overall, wind power equipment certification is still in its infancy, technical means and experience remains to be further improved and awareness is not high in the international counterparts.

China's wind turbine manufacturing industry lacks of self-discipline, without industry competition the norm, low price, the lack of rational, excessive competition. So low, which leads to the product quality problems, and makes the developers default payment for goods, between the machine manufacturers and component suppliers phenomenon occurred, there is still a dangerous precedent for the wind power industry long-term healthy development

Wind Power Generation Efficiency is Low. Wind turbine is mainly composed of blade chasing after the wind system, power system control, inverter system structure, and each system will loss a part of the energy, at the end of the wind power, electricity being about 40% of the previous.

The Improvement Measures

Strengthen the Management of Industry. In project approved management, it is suggested that we will continue to implement the wind approved plan, layout optimization of wind power development, grasp the reasonable rhythm of wind power development. Wind farm that equivalent hours use less than a certain value or electricity proportion is higher than a certain value of provinces and autonomous regions, should strictly for examination and approval of project management, avoiding redundant construction.

In standardize market order, it is suggested that further create a fair and just competition in the market environment to ensure the wind power development enterprises can choose the most suitable for site condition, high ratio of wind power equipment.

By industry associations and other organizations, establish the operation data of the wind farm, testing report supervision, disclosure system.

The Quota System is the System Guarantee to Solve the Problem of Wind Power and Power Consumption. Power grid enterprises is a key link in the development of wind power, consumptive and wind power development is facing one of the main contradiction, so, it is recommended in the quota system in key agreement the duties and obligations of power grid enterprises from the mechanism to enhance the enthusiasm of wind power grid operation enterprises admission.

Should establish a wind power equivalent utilization hours as the main index of wind power assessment system, weakening the assessment of installed capacity, to promote wind power development companies pay attention to improve the quality of wind power development, will develop the focus shifted to the pursuit of wind power and efficiency

Development of Distributed Access Network. In standardize market order, it is suggested that further create a fair and just competition in the market environment, ensure the wind power development enterprises can choose the most suitable for site condition, high ratio of wind power equipment.

Speed up the Related Standard System Construction. Government, society and other departments coordinate and organize wind power industry upstream and downstream units, improve the wind power grid standards and regulations as soon as possible and implement supervision; Wind power equipment was introduced into the warranty, the warranty requirements as soon as possible and the quality assurance of related industry regulations, coordinate to solve as soon as possible has a fan transition and balance payment, solve manufacturing. Fan main wind power equipment supply contract terms, limit the downstream monopoly enterprises, promote the balanced development of the industry; Break wind, large-scale development bottleneck, as soon as possible to promote wind power base grid on the solution of the problem, create an avenue for large-scale development of wind power

Strengthen Technical Reform. Science and technology is the first productivity, improve the ability of domestic wind power equipment manufacturing and quality of technical reform of wind power equipment, improve the utilization rate of wind power and wind power generation efficiency.

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