Reliability - Based Distributed Generation Optimization in Demand Response Planning

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Abstract. Energy is an important material basis for social development. People should pursue the optimal distribution of distributed power generation in the transmission system, establish a new power algorithm, and form the optimal power distribution scheme. The economy and safety of power operation can be guaranteed, and the distribution mode of distribution network becomes more reasonable. On this basis, it is hoped that the study of this paper can provide some constructive suggestions for the power generation of the transmission system, and various demand can be satisfied.

1. Introduction
Along with the continuous social development, society appeared much new energy. This energy is not only a clean and pollution-free, but also can generate power, which is of great significance to the development of human society. It can make the stable operation of the social model, the gradual national economic growth and good social order. The optimal allocation of distributed generation based on reliability of the transmission system called by demand is of vital importance. The country should attach great importance to this problem and formulate corresponding solutions so as to gradually promote people's happiness and reduce social instability factors.

2. The Current Situation of Distributed Power Generation Optimization of Transmission System
For the wind power generation system, under the joint action of a variety of power generation equipment, a huge amount of electric energy will be generated, which will be widely used by industry, etc. At the same time, under the circumstance of gradually increasing power demand of various industries in China, the power resource presents a state of rapid development [1]. In addition, in the process of wind power generation, its clean characteristics lead to the utilization in the power generation industry, it has been widely concerned by more people. In the case of wind power generation, China will have a positive development situation, and wind power generation will be widely concerned by the general grid, because the wind resource is a renewable energy, which does not cause a corresponding degree of pollution to the environment, in this case, wind power generation is widely approved by the industry. However, in the process of the gradual development of wind power generation, human beings do not have a reasonable control over the wind power generation system. With the imperfect technological development in China, a large number of wind resources will be lost, and some wind resources are not stored reasonably. However, for wind power generation system, it has a positive impact on China in the process of gradual operation, and will have greater development advantages in the future.
3. Problems in the Optimal Distribution of Distributed Generation in the Transmission System

3.1. Imperfect configuration
As a late starter, new wind energy resources development in China presents an imperfect situation in the gradual development. Therefore, it should be the country’s extensive concern and formulate corresponding measures. At the same time, for the electric power enterprises, when electric power system is unstable or electricity are blocked as power system operates, there will be a contradictory phenomenon. For the power generation system of the client side, the client side cannot detect this problem in time. Therefore, this problem gradually expands in a bad development trend. If we do not pay attention to this problem, it will make economic benefits of our country gradually decrease.

3.2. A Lack of Reliability
In the gradual distribution system development, there will be a lack of reliability. Although the grid-connected system has been vigorously developed by the state, and the state has implemented certain policy support, there will be great uncertainty in its gradual application in real life. Power will be influenced by natural factors, such as change of weather conditions. In bad weather, power generating system can be influenced, power system failed in corresponding degree of power generation and power system of power gradually reduce [2]. In addition, for the optical fiber power generation system, the optical fiber power generation system will be unstable when the illumination is unstable and the season transitions, hence the social life will be affected. In addition, some irresistible factors lead to many non-human problems in the power generation system. For example, when the power system is suddenly cut off and the grid-connected system fails to operate normally, there will be many problems in power supply enterprises.

3.3. Grid-Connected Benefit Problem
If the grid-connected system does not make reasonable use of all the power resources, the problems of grid-connected benefits will gradually increase. In addition, for transformers in the power system, the power equipment will operate in an unstable loading mode and easy to be light-loaded. In this case, problems in enterprises will increase as the problem of grid-connected benefits grows. Some distribution equipment will be in an unstable state.

As a result, for some distribution equipment, it will become some idle equipment. On the basis of the neglect of this issue by the relevant personnel, the operating costs of enterprises are gradually reduced. As a result, the capital investment of electric power enterprises is gradually increasing, which is in a negative trend of development, and there are many problems in the process of enterprise development.

4. Reliability-based Distributed Generation Optimal Allocation Strategy for Transmission Systems under Demand Response Planning

4.1. Construction of verification environment
The research and verification environment of power generation system can be constructed, and a complete control model can be established, so that it can be in a stable operation state. In the process of solving this problem, the power supply situation in the system should be checked comprehensively, and the corresponding data should be calculated continuously. On the basis of continuous calculation, it will pave the way for the follow-up work to a certain extent, so that when engaged in the corresponding electric power work, we can formulate reasonable solutions. If the model environment and verification environment are established, the grid-connected system will be in a reasonable mode of operation. Nowadays, in the process of transmission system operation, there will be corresponding problems. Under the analysis of these problems, corresponding solutions should be formulated, such as simulation experiments. Environment [3]. In the case of continuous analysis of this problem, the corresponding cases should be continuously analyzed, so that the power system can be accurately understood, and the
development of the power system can be comprehensively understood, so that it is in a good development trend.

4.2. Deeply study the mechanism of power grid interaction
When the grid-connected system is becoming more and more problematic, power enterprises should deeply study the mechanism of the interaction between power generation system and power grid, and on this basis, promote the continuous operation of power system. At the same time, on the basis of using micro-grid system, the power system will be connected to a corresponding degree. In the process of continuous connection, the power system will be connected to each other. On the basis of continuous analysis and understanding, it is found that the operation of the two systems has a complex degree of connection. In the process of gradual development, the power grid system will be in a bad development trend. When this situation is constantly emerging, this problem should be highly valued by the corresponding personnel, so that the power grid system is in a good state of operation. At the same time, in the case of this problem, we should make a more reasonable analysis of the causes of the problem and have a profound understanding of the relationship between the two. In this case, in the case of studying the mechanism of the operation and development of power grid enterprises, the operation and development of power grid enterprises can also be understood to a certain extent, so as to promote the continuous development of power enterprises.

4.3. Ways to Study New Distribution Systems
At present, in the process of continuous research on new distribution mode, it is necessary to optimize its allocation and make a reasonable choice of the address of the power grid system. If the address is in a reasonable position, the enterprise will have a deep understanding of the control direction of the power system. Under the condition that the electric power enterprise has a profound analysis of the corresponding problems, it will make the electric power enterprise in a reasonable operation mode. In addition, in the process of continuous optimization of configuration, the enterprise managers have a reasonable understanding of the basic situation such as voltage fluctuation, and in the process of gradual planning of this scheme, it is necessary to have a reasonable understanding of the power grid system. The actual situation in operation is analyzed in depth, and the objective actual situation is constantly considered. In this process, it is necessary to analyze some natural factors that may appear in the development process to a certain extent, and to consider the various situations that may occur. With full consideration of various factors, the power grid system will be placed in an efficient mode of operation and development, thus making it environmentally friendly.

5. Conclusion
In a word, with the continuous development of society, all industries in our country are in a state of rapid development. In this case, the demand for power resources is gradually increasing, and the society needs to output more electricity. Therefore, China should gradually get rid of the situation of utilizing traditional energy sources. On this basis, new energy sources should be used to generate electricity, so as to promote the reliability-based optimal allocation of distributed generation in transmission system under demand response planning to present scientific characteristics.

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