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Evaluation Index System of Power Grid Operation Efficiency and Investment Benefit

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Abstract: *With the deepening of reform and opening up, and the continuous development of social economy, the operating efficiency and investment benefits of traditional power grids have gradually fallen behind the changes of the times, and further reforms are urgently needed. In response to this situation, a series of detailed and sufficient investigations and studies have been carried out, and a comprehensive and detailed investigation and analysis of the current grid efficiency and benefit evaluation index system have been conducted, and then the current grid efficiency and efficiency individual indicators have been carried out in accordance with the actual situation. It also conducted a comprehensive evaluation of the efficiency and benefit of the power grid.*

Keywords: *Power grid; operating efficiency; investment benefit; individual indicators*

1. Introduction

The economic and social development has reached the point where it is today, and the evaluation indicators of power grid operation efficiency and investment benefits have been relatively complete. In order to make the evaluation indicators of grid operation efficiency and investment benefits to a higher level and facilitate the work of relevant staff, it is necessary to systemize and scientificize the evaluation indicators of grid operation efficiency and investment benefits, so that relevant staff can have a better understanding of grid operation efficiency And the evaluation of investment benefits can be more scientific, reasonable and faster, and the evaluation indicators of different provinces and cities can be unified, which is conducive to the operation efficiency of power grids between different provinces and cities[1-2].

Comparing the efficiency and investment benefits, which is conducive to the competition between various provinces and cities, and improve their own grid operation efficiency and investment benefits. Not only that, if the evaluation index system for grid operation efficiency and investment benefits can be successfully established, investment constraints can also be formed, so as to provide a solid foundation for people to effectively reject invalid investment; thus, the country’ s power grid business will flourish and the power grid will The efficiency and effectiveness of the company have been tangibly improved. When constructing a comprehensive index system reasonably, it is necessary to make the comprehensive index system meet the needs of people with different priorities, so that the comprehensive evaluation system can be more reasonable and effective. For example, when people are evaluating different projects[3-5], if people pay more attention to the impact of the power grid on the natural environment, it is of course necessary to increase low-carbon environmental protection indicators when building a comprehensive indicator system. All in all, for people in actual there must be a corresponding indicator system for different focuses in the work. Of course, the evaluation methods and calculation methods between different index systems are different and cannot be the same. This article adopts a more scientific and reasonable method of comprehensive evaluation of multiple indicators to conduct a comprehensive and effective comprehensive evaluation of the power grid operating efficiency and investment benefits in different regions of a certain province or city in China; after the evaluation, the corresponding indicator data is comprehensively evaluated. And in-depth analysis; after the analysis, the relevant staff have a comprehensive understanding of the power grid operation efficiency and investment benefits in various regions. After careful consideration by relevant personnel, some problems hindering the development of power grids in these places have been discovered, which has made these local power grid units more vigilant and made the power grids more vigilant.The development of the company can keep up with the pace of the times.

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2. Evaluation Index System of Power Grid Efficiency and Benefit

2.1. Multi-index comprehensive evaluation analysis method

Everything is multi-faceted. Analyzing one thing from one aspect alone often fails to get an effective evaluation. Therefore, if you want a thorough understanding of a thing, you must investigate and analyze it from multiple aspects. Only in this way can we have a comprehensive understanding of a thing, thereby grasping the main contradiction of this thing and ignoring the secondary contradiction. Design some key evaluation indicators for the main contradiction of this matter, so that the comprehensive evaluation index system can deeply and effectively reflect the essential content of the research object, and even the collected data will be scientifically combined[6].

The method is used to carry out effective processing, so that the processing results can truly and effectively reflect the real situation of the research object, which is conducive to the adjustment of people's later work. Through this effective evaluation method, the real situation of the overall efficiency and benefits of the power grids in various places can be faithfully reflected in front of people, which will help people to comprehensively and effectively solve the problems existing in the overall efficiency and benefits of the power grids in various regions. The efficiency and benefit of local power grids can be effectively improved.

2.2. Construction of indicator system

To conduct a comprehensive and effective analysis of the efficiency and benefit indicators of the power grid, it cannot be done efficiently and quickly by manpower alone. The rapid development of modern Internet technology provides a strong support for people to analyze the efficiency and benefit indicators of the power grid. Relevant staff can use SPSS software to conduct a comprehensive and effective analysis of the index data collected by people in the experiment; after analyzing the data, make a detailed summary of the analysis results and draw corresponding conclusions[4]. Related personnel believe that the operating efficiency of the power grid can be reflected by the annual maximum load rate of the main transformer, the maximum load rate of the line, etc.; and the investment benefit indicators can be reflected by the operating efficiency and investment benefits created by the enterprise. It may be considered that the operational efficiency and investment benefits created by the enterprise are the first-level indicators for the direction of project construction to promote the development of the power grid, while the maximum load rate of the main transformer and the maximum load rate of the line are second-level indicators.

2.3. Collection and processing of basic data

Special personnel should be arranged in different places to make statistics on the efficiency of grid operation and the efficiency of investment. By summarizing these statistics, we can get the original calculation data of each indicator. When collecting the raw data of the operating efficiency of the power grid, it is necessary to use the annual cycle. Count once a year, and count four times.

3. Evaluation of Single Index of Power Grid Efficiency and Benefit

First, the basic data should be used to calculate the secondary indicators, and the obtained calculation results should be fully and fully analyzed.

3.1. 220KV main transformer efficiency index

1) Capacity to load ratio. After comparing and analyzing the capacity ratios of different regions, it is found that the overall 220KV capacity ratios of various regions are relatively high, and very few regions exceed a certain limit in individual years. However, in these few years, the capacity utilization efficiency of these small areas is relatively low.

2) The annual maximum load rate of the main transformer. After calculating the basic data and analyzing it, it is found that the debt ratio of main transformers in some areas is better, and the maximum load ratio of main transformers in some areas is in a downward trend year by year. Then in recent years, those areas where the maximum load rate of the main transformer is relatively low, the maximum load rate of the main transformer has a certain degree of temperature recovery, and the maximum load rate of

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the main transformer in some areas is relatively stable, and it has not happened too much. The change.

3) The equivalent average debt ratio in the main transformer year. After research and analysis, it is found that the annual equivalent average load rate of the main transformer in some areas has been in a relatively high range, and the annual equivalent average load of the main transformer in some areas has been decreasing year by year. In some areas, the annual equivalent average load rate of the main transformer has been at a stable level, and sometimes there will be small fluctuations, but these small fluctuations basically do not have much impact. The relevant recorders in these areas can intuitively It was found that while the main transformer was newly added, the power of the main transformer also increased slightly. In some areas, this indicator has always been at a very low level and needs to be further improved. Based on the changes in the above three indicators, it is not difficult to find that when the three indicators in certain areas are relatively high, it is necessary to increase 220KV transmission and transformation based on the local economic growth without affecting the production and life of local residents. Capital investment in electrical engineering. For those areas where the three indicators are all in a downward trend year by year, it does not make much sense to invest too much in 220KV transmission and transformation in the short term. For those areas where the three indicators are relatively stable, 220 transmission and transformation projects can be appropriately invested.

3.2. 220KV route efficiency index

3.2.1. The maximum load rate of the line.

After effective comparison, it is found that the maximum load rate of 220KV lines has generally decreased in various regions of a certain province. In some areas, with the increase of lines and the increase of economic transmission power, the maximum load rate of the lines has also appeared, not only does not increase, but also decreases year by year. In some areas, the decline was relatively small.

3.2.2. The annual equivalent average load rate of the line.

After calculating the basic data, relevant personnel found that the annual equivalent average load rate of 220KV lines in a certain province and various regions showed a downward trend. Moreover, the indicator data of the province in the next two years is significantly lower than the indicator data of the region in the first two years. The difference is that in some areas the downward trend is relatively slow, while in some areas the downward trend is more rapid. After comprehensive comparison of various indicators of 220KV line efficiency.At present, there is still a lot of room for improvement in line utilization efficiency in some areas. These areas should give full play to their advantages and make good use of the remaining stock of the power grid, so as to achieve the highest and best line utilization efficiency. In some areas, the transmission capacity of 220KV lines has increased greatly, but the corresponding load power has increased slowly, and even has a downward trend. This is obviously a mistake in the development of the power grid. Relevant units should find the problem as soon as possible and make a reasonable solution, so that the corresponding load power can keep up with the growth of the transmission capacity of the line, so that the power grid can develop healthy and stable. In some areas, the indicators are relatively stable, and there is not much change. Therefore, there is still a lot of room for improvement of the corresponding power grid. The construction of 220KV line projects should be carefully considered, and some unnecessary projects should be suspended.

3.2.3. Comprehensive evaluation of power grid efficiency

The calculation methods of each index are not the same, so the dimensions of the data obtained are also different and have their own characteristics. Some indicators are more important, so when the comprehensive evaluation of the indicators is carried out, different weights should be given to different indicators, so as to make the results of the comprehensive evaluation more in line with the actual project. The comprehensive evaluation results obtained in this way can make a positive contribution to the efficiency and benefit construction of the power grid, making the efficiency and benefit of the power grid higher and higher, enabling the development of the domestic power grid to keep up with the changes of the times, and becoming an important pillar of the domestic economic take-off .

4. Conclusion

Through the comprehensive analysis of multiple indicators, after careful consideration and careful calculation, the evaluation indicators that are of special significance for improving the efficiency and benefit of the power grid have been screened out, and an evaluation index that can truly and effectively

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reflect the efficiency and benefit of the power grid has been constructed. A true and effective evaluation system, and use numbers to reflect the efficiency and benefits of the power grids in various regions, while discovering potential problems in the power grids in various regions. Through the analysis, it is found that the power grids in various regions have different problems, and the solutions adopted are also different. Relevant units should aim to improve the efficiency and benefit of the power grid, and use the evaluation mechanism as the basis for various institutional measures, so as to eliminate all kinds of unnecessary investments and spend money on the blade.

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