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Construction and Environmental Protection Analysis of New Energy Power Generation Projects

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Abstract: With the rapid development of society and the increasing number of infrastructure projects, new huge demand for energy emerges, and, in the meantime, enormous resources are being consumed. Overusing coal, oil, and natural gas consumes resources and increases the greenhouse effect, releasing more toxic substances into the ecological environment. Therefore, in the past development process, the pollution problems caused by projects that relied on fossil fuels as power generation was relatively serious. The traditional energy supply model has yet to meet the requirements of current social development. Along with the emergence of green sustainable development, transformation and upgrading of the power generation industry have become urgent issues to deal with. To effectively solve the problem of environmental pollution and achieve green growth, the current society is actively developing clean and renewable new energy to help the power generation industry develop an energy-saving and environmentally friendly sustainable development model. Among power generation projects, new energy power generation projects play an important role. However, new energy is still developing, so the project investment cost is relatively high. Therefore, it is necessary to improve the construction quality of new energy power generation projects through scientific and effective means to achieve the goal of environmental protection during development.

Keywords: New energy power generation; Construction of engineering facilities; Environmental protection; Control strategy; Construction principles.

1. Introduction

Since the reform and opening up, China's economic development has continued to improve. And along with social growth, the electricity demand has increased yearly. Therefore, many natural resources have been consumed to meet the electricity demand, leading to a series of environmental pollution problems. In the social development of the new era, to implement the concept of sustainable development and reduce the consumption of resources, it is necessary to actively seek a new development model through controlling energy use effectively, reducing the greenhouse effect, reducing the emission of toxic gases, and better practicing the concept of green environmental protection. With the continuous development of science and technology, the speed of development and utilization of new energy in China has been accelerated, and the rapid development of new energy power generation projects in China has been realized. Since the construction of new energy power generation projects requires a large amount of investment, more attention should be paid to the quality and safety management of power generation project construction and other related construction work in these projects. By strengthening the emphasis on project management, construction enterprises can improve the project management level and enhance the effectiveness of power generation projects.

2. Construction Characteristics of New Energy Power Generation Projects

New energy is recyclable, such as solar energy, wind energy, ocean energy, nuclear fusion, etc. With the gradual maturity of new-energy-related technology, new energy becomes common in daily life, of which solar energy is the most common energy. The traditional social developing model has caused destruction and pollution of the ecological environment by deepening energy development and utilization. With the uncontrolled consumption of traditional energy, the energy that social development demands cannot be satisfied. Therefore, the development of new energy is in line with the current social development trend and is more conducive to the realization of sustainable development of society. People heavily depend on electricity in daily life and work. So, when urban development lacks power resources, the city will be paralyzed and unable to operate. Therefore, to ensure the stable development of society and protect people's daily life and work, developing new energy is of great significance to realize the country’s sustainable development and strengthen the construction of the living environment. Traditional power generation mainly relies on coal, but coal emits a large amount of poisonous gas into the air during combustion, causing great harm to people's health and the earth's ecological environment. Implementing new energy power generation projects not only meets the needs of social development for electricity but also optimizes the current ecological environment, genuinely realizing the coordinated development of social development and the ecological environment.

3. The Importance of New Energy Power Generation Project Construction

Traditional power generation mainly uses coal as the source. Coal resources, as non-renewable resources, will gradually dry up due to the continuous consumption of energy to meet the requirements generated by the development of society, bringing serious environmental pollution. New energy is different from traditional fossil fuels such as coal and oil, and it includes many types, such as water energy, wind energy, solar energy, nuclear fusion, and geothermal energy. In the new era of social development, developing new

energy power generation projects can effectively meet the social development's demand for more electricity and, at the same time, reduce the society's consumption of non-renewable resources to maintain the stability of the ecological environment and reduce the toxic gas emission from burning coal. The concept of green environmental protection put forward under the current new situation is more conducive to realizing sustainable social construction. Promoting the transformation and upgrading of the power generation industry can ensure that it can better adapt to the current social development situation. With the advantages of renewable and clean new energy, problems that exist in the construction process of traditional power generation projects can be solved, and the green and environmental protection development model of the power generation industry can be realized.

4. Construction Principles of New Energy Power Generation Projects

4.1. Principles of Cost Control

As an emerging industry, new energy power generation projects have a large scale of construction and multiple construction links and require many funds. Suppose problems occur during the construction of the project. In that case, it will easily cause additional costs, which will affect the economic benefits of the new energy power generation project and is not conducive to promoting the sustainable development of construction enterprises. Therefore, in the construction process of new energy power generation projects, construction enterprises must strictly implement the principle of cost control. They should strengthen the efficiency of construction cost control and the supervision of all construction links and integrate the cost control concept into project design, material procurement, and construction management. At the same time, they should actively apply advanced cost control concepts and cost control models to effectively improve the cost control efficiency of power generation project construction.

4.2. Principles of Dynamic Management and Control of Engineering Construction

Due to the large-scale construction of new energy power generation projects, the construction period is relatively long. At the same time, because of the complexity of the construction environment, influencing factors are likely to appear during the process, affecting the project quality and construction efficiency. To ensure the orderly implementation of power generation project construction, it is necessary to adopt the working principle of dynamic control during project construction, strengthen the quality supervision of each construction link, and improve the supervision work by dividing the construction goals of new energy power generation projects into segments. In addition, during the construction of new energy power generation projects, it is necessary to strictly follow the concept of quality control, improve the safety production awareness and quality control awareness of construction personnel, ensuring high-quality work concepts can be conveyed in all aspects of project construction. The principle of dynamic management and control can ensure that project managers can grasp the project construction situation promptly, discover problems in the construction process on time, and make dynamic adjustments in a timely manner to avoid construction safety hazards that prolong the construction period and increase project construction costs.

4.3. Principle of Combining Responsibilities and Powers

There are many construction links in the construction of new energy power generation projects. To ensure the orderly implementation of various construction processes, it is necessary to be clear about the responsibilities and rights of project construction management and production to improve the efficiency of project management. Further clarification of work tasks can also strengthen managers' sense of job responsibility, avoid confusion about liabilities when problems are found in project construction, and ensure a clear division of responsibilities and rights for project construction. To improve the management efficiency of the construction, the project construction goals can be divided according to different links. When a problem is found, managers can trace which link went wrong, adjust construction goal in time, and further optimize the construction plan.

5. Improving the Construction Quality of New Energy Power Generation Projects

5.1. Excluding Factors Affecting Project Quality

To improve the quality of new energy power generation projects and the development of environmental protection, it is necessary to implement effective control over construction. To improve the efficiency of quality control, it is necessary to analyze the factors that may affect the construction quality of new energy power generation projects and to control and manage the existing influencing factors in advance to avoid affecting the quality of power generation projects. At the same time, strict project supervision must be implemented during the power generation projects' construction. When quality problems occur, conducting an in-depth analysis of their causes is necessary to avoid further impacts on power generation projects.

5.2. Strengthening the Safety Supervision of Power Generation Projects

To reduce the probability of hidden safety hazards in new energy power generation projects, it is necessary to implement strict project construction supervision in daily management through regular project inspections and analyze the construction of engineering projects to find potential safety hazards. In inspecting power generation projects, managers need to formulate a sound quality supervision system in advance and ensure it can be implemented in practice to improve the efficiency of supervision. At the same time, it is also necessary to maintain communication and cooperation between various departments so that they can jointly participate in the project's quality management. The quality improvement of new energy power generation projects is not only the job responsibility of managers but requires all departments to form quality improvement awareness jointly. Only in this way can it help improve the quality of new energy power generation projects and build a management system for the whole construction process and all departments.

5.3. Strengthening the Construction of Professional Talent Team

The quality of construction directly determines the quality of new energy power generation projects and affects the development of power generation companies. Therefore, the quality management of new energy projects is critical to the project construction process. Before carrying out the quality inspection of project construction, it is necessary to formulate an inspection plan which clarifies the inspection items and avoids omitting construction links, to check the construction projects thoroughly. Due to the higher quality requirements for the construction of new energy power generation projects, correspondingly higher professional and technical requirements for the staff are also put forward. Staff with higher professional skills can improve the efficiency of daily work, in the meantime, discover the problems existing in project construction more promptly, and improve the efficiency of inspection work.

6. Environmental Protection Analysis of New Energy Power Generation Projects

6.1. Guaranteeing China's Energy Security and Realizing Social and Economic Transformation and Development

New energy power generation is more in line with China's current green and sustainable development concept and guarantees modern economic development. It is of great significance to improve the global economic benefits and realize the sustainable development of humanity. With the support of the " carbon peak and carbon neutrality" task, the development speed of new energy has continued to increase in recent years. The development and progress of society need to rely on sufficient energy as a support, and the energy industry's development level also symbolizes the country's comprehensive strength. The data shows that the energy consumption of new energy in China is still lower than that of coal mines. Since relying solely on traditional energy cannot meet the requirements of social development, continuous and active exploration of new energy to further optimize China's energy structure system should be implemented to meet the social development requirements. By developing and utilizing new energy and accelerating the development of China's power industry, China's new energy power generation business will be better enhanced. And the transformation and upgrading of China's social and economic system will be promoted by strengthening the comprehensive development of new energy.

6.2. Strengthening the Construction of Ecological Environment Protection

In the past social development, the exploitation of traditional energy has seriously impacted China's ecological environment. At the same time, in energy combustion and power generation, many toxic gases such as carbon dioxide and sulfur dioxide will be produced, seriously polluting the environment. Therefore, traditional energy is not in line with the current green and environmentally friendly development concept, and traditional energy resources are far from meeting the current social development requirements. With the continuous development of new energy power generation projects, China's traditional energy power generation mode has been changed, the utilization efficiency of new energy has been improved, and the exploitation and utilization of non-renewable energy have been greatly reduced, making the carbon emissions in the power generation process gradually reduce and effectively alleviate environmental pollution problems.

7. Accelerating the Construction of New Energy Power Generation Projects and Implementing Environmental Protection Strategies

7.1. Strengthening Innovation and Reform of New Energy Power Generation Technology

New energy power generation has huge development potential. The support of local governments and resource development will promote the rapid development of new energy power generation technology and promote the transformation of society towards green and low-carbon development. At present, new energy power generation projects in China have widely encountered problems in technological innovation, research, and development. Therefore, to further strengthen the construction of new energy power generation projects, power companies need to improve their awareness of independent innovation and apply advanced technologies to promote the transformation of the new energy power generation industry. At the same time, they should promote the reform and optimization of internal new energy power generation technology, continuously introduce advanced management concepts and experience, and realize the high-quality construction and development of new energy power generation projects. Accelerating the realization of enterprises' breakthroughs in energy power generation equipment and key technical fields and continuing to explore new technological materials and related components will help realize the innovative development of new energy power generation. In internal management, electric power companies need to strengthen communication among various departments and give full play to the resource advantages of new energy. Their stable development will promote the continuous progress of the new energy power generation industry.

7.2. Developing a New Model of New Energy Power Generation

The innovation of new energy technology needs to strengthen the effective integration of new energy and science and technology, establishing a new model for developing new energy power generation technology. By combining modern information technology, innovative materials, manufacturing technology, and new energy power generation projects, an intelligent new energy power generation model can be formed to promote the innovative construction of new energy, continuously exploring the more significant potential of new energy power generation. In this way, the coordinated development of new energy power generation and other industries is realized. A new development model for energy power generation and other sectors in innovative practice is formed.

7.3. Accelerating the Modernization of New Energy Power Generation Projects

With the rapid development of information technology, the current society has entered the digital and intelligent development era. The skilled application of information technology in various industries has positively promoted the development of multiple fields. To further improve the quality of new energy power generation projects, it is necessary to strengthen power generation technology and enhance the digital industry construction of power generation technology. With the help of the advantages of information technology, an intelligent grid system platform and an intelligent new energy power plant are established, improving power generation projects' intelligent and digital service quality. In addition, the application of information technology realizes information sharing in the power generation industry, improving the utilization efficiency of information resources. Digital management of power companies and comprehensive supervision and management of the construction history of engineering projects can ensure the stable operation of new energy power generation projects.

8. Conclusion

Traditional energy is a non-renewable energy. The continuous increase in energy consumption causes a severe reduction in their total amount. To better meet social development needs, new energy is currently being valued by more and more countries. Therefore, developing and utilizing new energy have become China’s critical national development project. Through the construction of new energy power generation projects, the environmental pollution and greenhouse effect of traditional energy power generation can be effectively solved, which is of great significance to improve the development of the global ecological environment. To further promote new energy power generation projects, it is necessary to improve the management efficiency of power generation projects. During the construction of engineering projects, companies should strengthen cost control, construction control of implementation, comprehensive construction supervision, etc., improving engineering quality and construction efficiency. The popularization and utilization of new energy promote the rapid development of society, maintain the stability of the ecological environment, and give full play to the significance of new energy power generation projects for social development.

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