

Research on the Evaluation System of the Construction of the All Powerful Township Power Supply Station

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Abstract. At present, there is no adaptive and systematic evaluation system of building effectiveness of power supply in all-round towns. In order to evaluate the effectiveness of construction effectively, adjust the resource allocation rationally and improve the capability of power supply sustainable development, this paper puts forward a set of evaluation system, using input-output method to evaluate the construction effect of power supply, and puts forward the method of differential evaluation. The research of the evaluation system can play an important role in the construction of the power supply service system with "customer-centric" in the State Grid company.

Introduction

The central authorities put forward the strategy of rural revitalization, insisting on the priority development of agriculture and rural areas and the integration of urban and rural areas. Give priority to development and require resource allocation. Integrated development puts more emphasis on the equality of rural and urban status in development. The key to the implementation of the rural revitalization strategy is to gradually narrow and even eliminate the differences in production and living standards between rural areas and urban areas, and substantially increase the level of equalization of urban and rural public services. The state grid corporation should fulfill its social responsibility, realize the equalization of urban and rural power supply services, accelerate the construction of a modern rural power supply service system integrating urban and rural areas, improve the ability and efficiency of rural power supply service, and provide a strong power supply service guarantee for a well-off society in an all-round way.

Over the years, the state grid company attaches great importance to the villages and towns construction and management of power substation, has carried out the rural power substation management standardization, standardization construction and management of engineering work, such as the basis of rural power substation management ability, professional management, power supply service quality and level has a big progress in such aspects as overall quality. At the beginning of 2017, state grid proposed to improve production conditions and create a 'all-purpose' township power supply station with coordinated business operation, multi-purpose personnel and complete service at one time. In 2017, all units of the state grid corporation of China have promoted the integration of business and distribution according to local conditions according to the requirements of the construction of "omnipotent" township power stations, and built the front end of grid and sectionalized services. The construction of "omnipotent" township power stations has achieved full coverage.

Domestic and foreign scholars also have this research on the performance evaluation of the power supply company or the power supply. such as beam-column construction of power supply enterprise performance management system design and implementation of the process, a set of county-level power supply enterprises to achieve the implementation of the performance management system design and implementation plan [1]. Sun Yanjie constructs the organization performance appraisal

system of the city power supply Enterprise [2]. Li Shijing selected the combination of qualitative and quantitative weighting method and comprehensive evaluation method to establish a comprehensive evaluation model of power supply standardization construction [3]. Ling using analytic hierarchy process to establish a comprehensive evaluation model of service capacity of base stations [4]. Wu Mei System studies the issue of benchmarking management in Chaozhou Power supply Department [5]. But so far, there is an effective evaluation system for the effectiveness of all-round power supply.

Construction of Evaluation Indicator System

Present Situation of Construction

In the construction of a new universal township power substation is the essence of strengthening customer-focused service concept, to the villages and towns power substation building basic become firmer, more management and cooperation more smoothly, service more efficient new front end, rural power supply service to the villages and towns power substation main force of the staff to promote rural electrification, rural revitalization and development of "agriculture, rural areas and farmers" service, improve the level of agricultural production, farmers life electrification, that rural residents family unlimited green smart new life, increasing the farmers' feeling, sense of happiness.

The all-energy power supply station optimizes the traditional work and management mode of the power supply station, deepens the integration of business end of business distribution, improves work efficiency, shortens business cycle, and improves the service quality and work efficiency of the all-energy power supply station.

(a) Establish a "business collaboration and service in place" mode of work

The power supply station integrates the marketing and inspection teams into a team, and actively promotes the platform area management system and grid service mode. Under the command of power supply service command center, using mobile operation terminal and integrated monitoring platform to achieve battalion coordination and information sharing, and support each other to serve customers, thus achieving business process coordination. As the owner of the equipment, the district manager implements the system of first inquiry and responsibility, quick response, first arrival responsibility, on-site management, problem reporting and equipment inspection. The district manager receives the dispatch order from the power supply service command center, and receives the information feedback from the comprehensive teller to carry out the corresponding work. When the task is bigger and harder, the nearby district manager will support it.

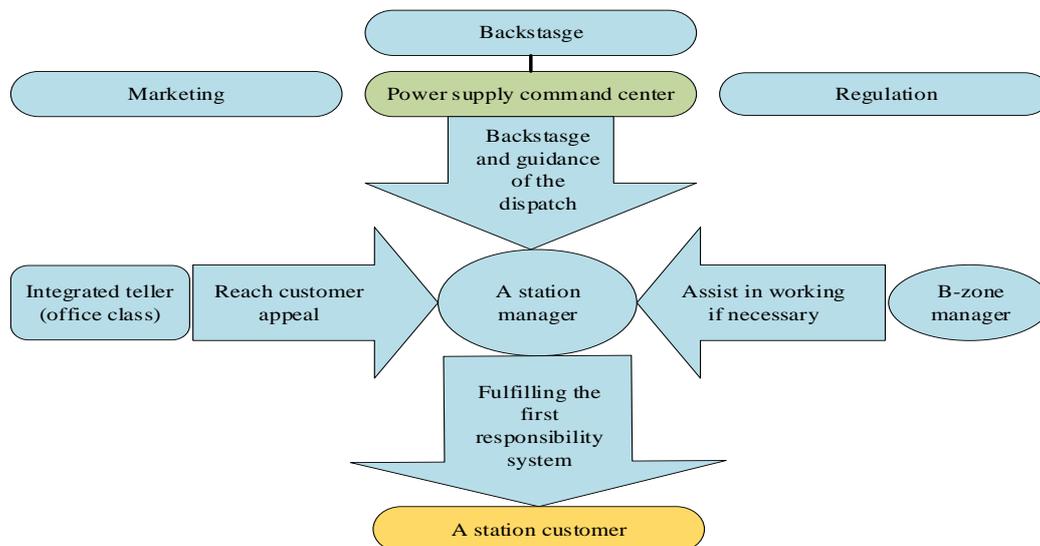


Figure 1. "Business synergy and service once in place" working mode.

(b) Establish a "one post and multi capability" talent team

In the face of the new situation and new business, especially the transformation of distributed photovoltaic and electric energy promotion, and the transformation of service mode brought by "Internet + marketing", in order to respond to customer demands, "one service in place" requires compound employees. Organize compound skills training to achieve "multi capability" for employees. The power supply station adopts the method of combining centralized training with on-the-job training and practical training, with the emphasis on connecting operation and distribution knowledge, and starts the rotation training for all the managers of the stations. In line with the principle of "what is missing and what is made up", the power supply station carries out cross-training of operation and distribution knowledge and skills, implements differentiated training, and makes up for the shortcomings of professional knowledge and skills operation. To improve the pertinence and effectiveness of job training. At the same time, we should actively carry out the special training of related new business to enhance the theoretical knowledge and business skills of the district managers, build a composite staff, and establish a pool of human skills resources. When the task comes, it can quickly and effectively match the appropriate personnel to handle tasks through matching mechanism.

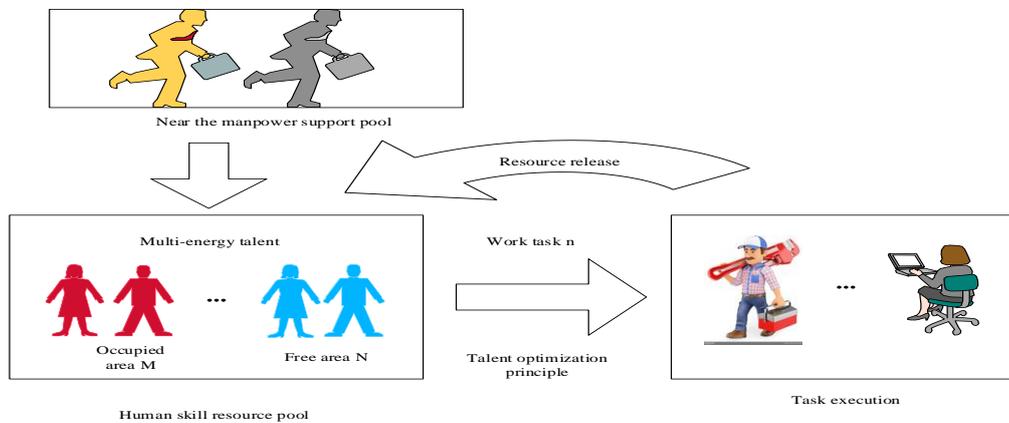


Figure 2. The matching mechanism of human resources under multiple energy conditions.

Construction Effectiveness Evaluation System

The construction effectiveness evaluation system is mainly composed of evaluation organization system and evaluation influencing factors.

(a) Evaluation of organizational system

In a broad sense, the operation performance of the power supply station is supervised by the policy level and guaranteed by the company at all levels. The scientific evaluation is carried out through the formulation of indicators, the improvement measures are determined, and the operation is further optimized.

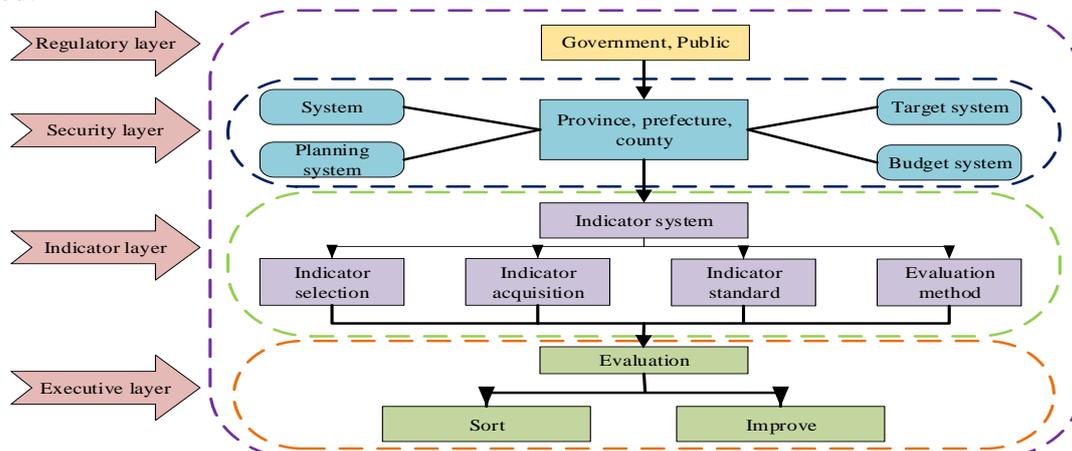


Figure 3. Organizational system for evaluation of construction effectiveness.

The evaluation adopts the principle of "layer-by-layer participation" and takes the year as the cycle. The power supply office puts forward the demand at the beginning of each year, the superior gives the cost input, and evaluates the comprehensive output at the end of the year. Electric power companies at all levels participate in the evaluation of all-round power supply stations from top to bottom according to their functions, and evaluate the rationality and adequacy of the input given by power companies at all levels according to the evaluation results.

Table 1. Key elements of the evaluation system.

Key elements	Meaning content
Evaluation subject	The organizer and implementer of the leading evaluation activities
Evaluation index	Evaluating and comparing the effectiveness of the activity of the evaluated object, including external environmental indicators, cost indicators, output indicators.
Evaluation Criteria	Applied to the assessment object in the assessment activity, reflecting the development direction of the assessed object and the importance of each indicator.
Assessment method	Considering the practicability and scientific nature of the evaluation method, this topic will use a combination of analytic hierarchy process, data envelopment analysis (DEA), etc.

(b)Assessment of influencing factors

External environment: mainly includes the social environment (economic development, urbanization, geographical conditions), the type of power supply, service area size, customer service scale, sales of electricity, electricity load and voltage level of the jurisdiction.

Resource input: mainly includes manpower (number of professionals, working hours, etc.), material resources (production vehicles, safety production tools, instruments and computers, etc.), financial resources (staff salary, training fees, publicity and promotion fees, etc.).

Outcome: mainly include the improvement of internal management efficiency of power supply stations, professional skills of the team, quality assurance of power supply services, reduction of production accidents, effective promotion of new business and other related achievements (such as intellectual property rights).

Construction Effectiveness Evaluation System

Combined with the above factors, using input-output method to build an all-round power supply Building effectiveness evaluation model is as follows:

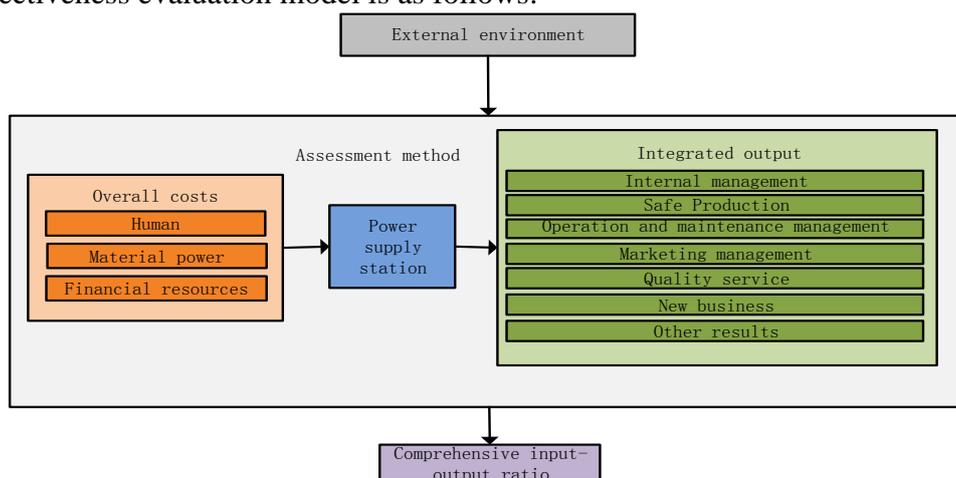


Figure 4. Evaluation model of all-round power supply building.

The cost input index system is as follows:

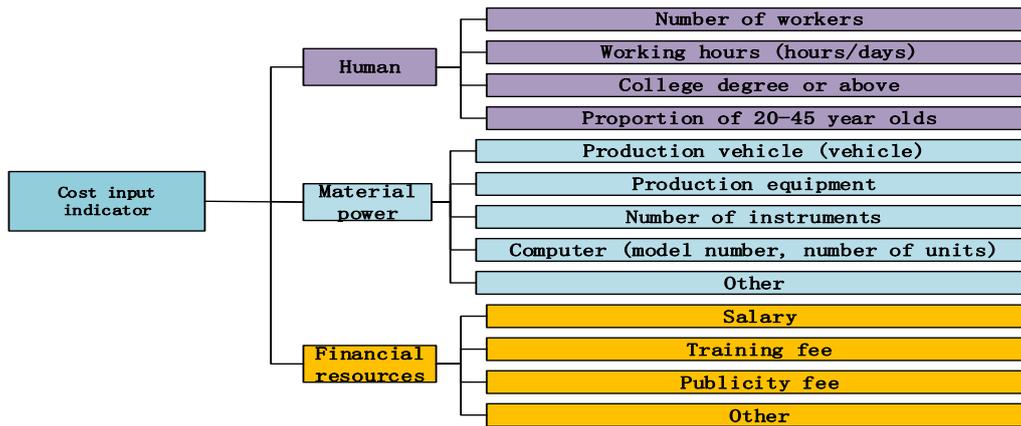


Figure 5. Cost Input Index.

The output indicator system is as follows:

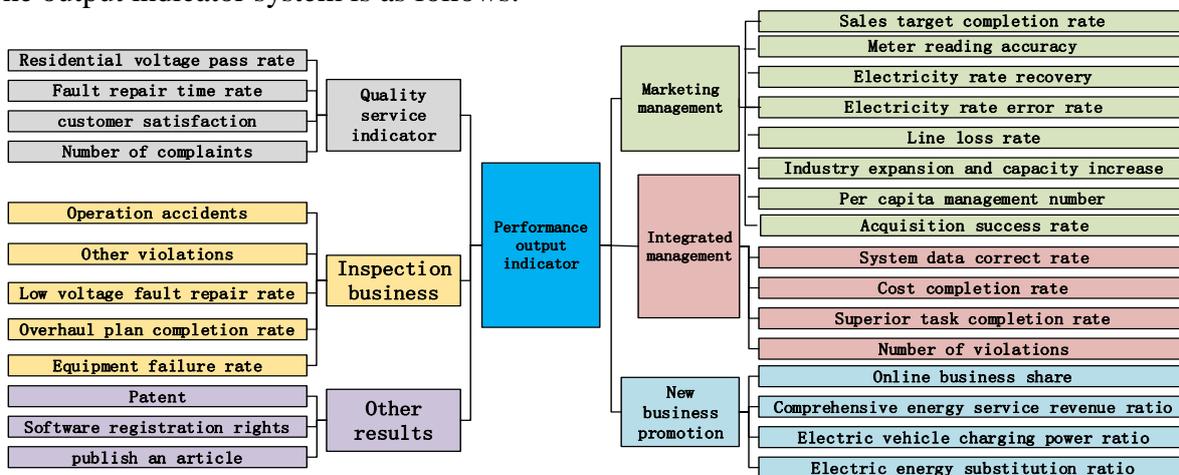


Figure 6. Indicators of achievement output.

Differential Evaluation

According to the types of power supply stations, each type of power supply station is further divided into 2-3 categories according to the social environment and service scale indicators in the external environment indicators. In the final 6-9 types of power supply stations, the total performance scores and rankings of each type of power supply station are defined according to the input-output indicators respectively.

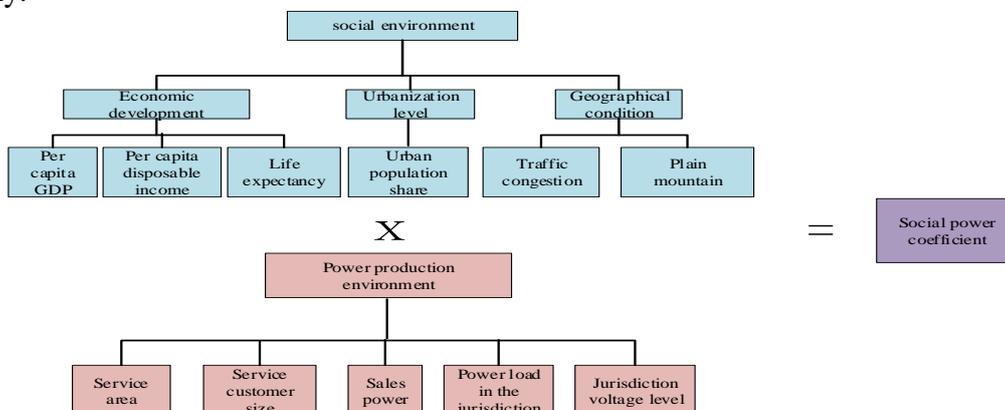


Figure 7. The composition of social electric power integrated system.

Table 2. Comprehensive power coefficient of social power in different types of power supply stations.

	High composite coefficient	Comprehensive coefficient	Low synthesis coefficient
1-township	1-I	1-II	1-III
2-urban area	2-I	2-II	2-III
3-park class	3-I	3-II	3-III

Summary

Evaluation is a process of periodic and dynamic management. It is helpful to the long-term operation and efficient management of power supply stations by comparing the input and output status of different years and power stations vertically and horizontally, and analyzing the basis of the comparative results.

Acknowledgement

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