

## ROLE TRANSITION AND DEVELOPMENT STRATEGIES OF SPG IN THE MARKETIZATION REFORM

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### ABSTRACT

In 2015, the new marketization reform of Chinese electric power system begun. Shaanxi Regional Electric Power Group Co., Ltd (SPG), as an independent large-scale regional power enterprise and a special case very different from other power utilities in China, faces its unique new challenges. This paper introduces SPG's business framework mainly including the business of power distribution and retail, and analyses the changes of internal and external environments, especially the transition of market role and business mode. With the new challenges, the paper presents the short-term development strategies, including the separation of distribution and retail and the restructure of auxiliary business, and discusses the key issues of SPG as a DSO from a longer-term perspective.

### INTRODUCTION

Since the 1990s, the marketization of power industry has begun worldwide [1]. Many countries have gradually formed mature electricity wholesale and retail markets. It has shown that the separation of power generation, transmission and retail may promote the competition and social benefit [2].

Separation of power generation and power grid in China has begun since 2002. To stimulate the market's vitality, Chinese government issued a document in 2015, which declares a new round of electricity marketization reform, aiming to the separation of grid operation and retail business and the establishment of electricity market [3]. Shaanxi Regional Electric Power Group Co., Ltd (SPG) is a state owned regional power company. As an independent distribution and retail company in Shaanxi Province, SPG has developed for 28 years and grown into a power-based, diversified large-scale enterprise.

In most part of China, it is State Grid or China Southern Power Grid who plays the role of network operator and power supplier. Only in a few areas there exist local power supply enterprises, among which SPG is the first domestic regional electric power enterprise with sales revenue more than 10 billion yuan(RMB) and the largest one to date. SPG is a special case in the marketization reform, and has accumulated a lot of experience in power distribution and retail.

This paper firstly introduces SPG's business mode and condition. Challenges and opportunities in the role transition process in the reform are discussed. Then the

development strategies for the whole business layout and main business units are presented.

### BUSINESS CONDITION

The basic information and business condition of SPG is shown in Figure 1.

#### SPG's Business

- ◆ 148.2 million km<sup>2</sup>  
72% of Shaanxi province
- ◆ 5 million customers  
19.3 million people  
51% of the provincial population
- ◆ 9 city-level branches  
69 county-level branches
- ◆ Peak load:  
7680MW
- ◆ Annual consumption:  
35789GWh



Figure 1. Overview of SPG's Business Condition

### Regulation and market

In 1989, Shaanxi province begun that State Grid Shaanxi Electric Power Company (SG) and SPG share the power supply business. SG is responsible for the whole transmission business in Shaanxi and distribution and retail business in most city areas, while SPG has only distribution assets and very few of small generation resources, and has to purchase wholesale power from SG and other generation suppliers. Both SG and SPG are regulated by the Shaanxi Provincial Development and Reform Commission and the Energy Administration, and the purchase and retail prices of electricity are fixed directly by government, which has cross-subsidization between industrial prices and residential ones. For SPG, the basic mode to make profit is by price difference. Distribution and retail business areas of SG and SPG are not completely exclusive. Industrial customers can choose SG or SPG as their power supplier, which leads to market competition.

### **Business mode**

SPG has 4 business units including power supply (distribution and retail), power generation, auxiliary business and diversification, as shown in Figure 2. Power supply as the main business makes up 96% of the total enterprise revenues. SPG has its business only in Shaanxi and 4 separate supply networks covering 72% of the province geographical area which accounts of 148,000 km<sup>2</sup>, almost as large as Greece.

The former SPG established in 1989 and was mainly composed of counties and rural areas, thus with large geographical areas but low electricity consumptions. With the development of social economy, large-scale industrial customers have gradually been increasing and a wholesale-retail profit mode has formed.

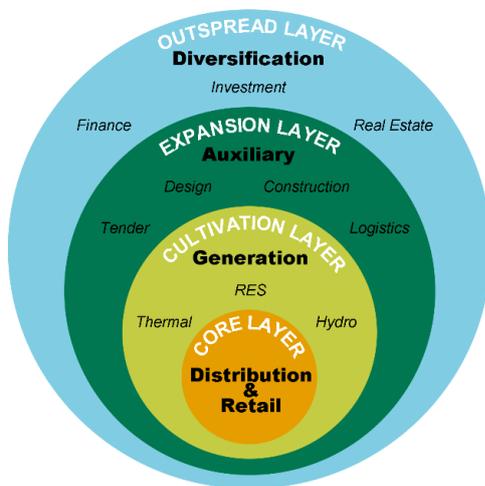


Figure 2. SPG's Business Framework

### **Distribution and retail**

The main network of SPG consists of 110/35kV overhead lines. Peak load in 2015 was about 7680MW. SPG shares 33.88% of the total electricity sales in Shaanxi. In the SPG supply areas, SPG and SG hold respectively 63.55% and 36.45% in sales.

SPG's profit model is to earn the price difference between purchase and retail. Electricity price in Shaanxi province is under the government regulation, i.e., purchase prices and retail prices are given clearly and should be followed strictly by both SG and SPG. Without a price competition, SPG tends to supply more proactive services and more favorable sharing of facilities construction costs to get competitive advantage, especially when competing for new industrial customers. Surely, such a way induces some loss of economic benefits.

More than half of SPG's electricity is purchased from SG, of which the weighted average price is about 0.40yuan/kWh. Electricity from other sources including small thermal generation, small hydropower, wind and photovoltaic power, is about 0.33yuan/kWh, cheap because of no transmission fee.

Most of SPG's customers are residential ones, accounting

for 89% in number, with only 16.6% in consumption. While large-scale industrial customers account for 0.11% of the total customers and 60% in consumption. The price for industry is higher than the average one, thus industrial customers becomes the main source of SPG's cost recover. Since most customers are basic guaranteed ones (residential and agricultural) and their prices are subsidized, SPG's profit is quite limited and with a confliction of benefit and social responsibility.

## **CHALLENGES IN THE NEW REFORM**

### **Macro environment**

#### **Economy environment**

Shaanxi province locates in Central China, with a total GDP growth rate of 8% in 2015. It is expected that the proportion of electric energy in energy consumption will keep growing in future and electric power industry in Shaanxi still has good potential. However, with the downward pressure on the macro economy, the growth rate of electricity consumption may not be as high as before.

#### **Business environment**

SPG has been playing as a network operator and an exclusive retailer. Even though it has the pressure from SG with the monopoly in transmission business, SPG has its own monopoly as a power supplier. With the new marketization reform, generation and retail business will be market oriented, while the network enterprises become regulated public monopoly enterprise. In the context of the reform, SPG continues to show its specificity in the following three aspects:

#### 1) Wholesale market participant

As a power supply enterprise, SPG may no longer be limited to the wholesale purchasing from SG, but bid in the wholesale market to get cheaper electricity and pay transmission tariffs to SG, so as to effectively control the purchase cost. With a lower purchase cost, retail price could be competitive; the service advantages of SPG could fully play, too. With greater market opportunities, SPG should be qualified of being good at bidding and bargaining in the new market.

#### 2) DNO under regulation

As a distribution enterprise, SPG's retail business will be challenged by large customers and third party companies (aggregator) who are allowed to buy electricity from wholesale market either. SPG is supposed to provide distribution services to all the network uses, and to charge distribution tariffs. Moreover, the distribution costs and benefits will be subject to strict supervision of regulators. It is worth mentioning that, a user probably pays transmission tariff to SG and distribution tariff to SPG respectively. It is also a rare case in China that a real separation of transmission and distribution.

#### 3) Tariffs and cross-subsidization

The retail reform is applied only to large industrial users and aggregators. It is expected that SPG would lose some

of its industrial users and thus the proportion of residential and agricultural users would rise. The prices in China contain severe cross-subsidization, i.e., services to residents and agriculture is loss-making and is being subsidized by charging of industry. When the “high-quality” industrial users switch to direct power transactions, SPG’s revenues will decline significantly. We suggest that in the accounting of transmission and distribution tariffs, there needs proper regulations to put the cross-subsidization in order, to ensure power utilities can get reasonable income directly through reasonable prices [4].

**Internal environment**

**Financial condition**

SPG’s financial condition in 2015 is shown in Table 1. In the past five years, the total asset of SPG has grown steadily, with an average annual growth rate of about 10%.

Table 1. SPG’s Financial Condition in 2015

Indicators	Amount (billion yuan)
Main Business Revenue	18.551
Total Profit	0.436
Net Profit	0.325
Profits and Taxes	1.238
Total Assets	23.288
Return on Assets(ROA)	1.93%
Net Assets	10.292
Return on Net Assets(RONA)	4.24%
Asset-liability Ratio	55.81%

In the financial indicators, the ROA and RONA are rather low, which means profitability is very limited. However, in 2011-2014, these two indicators were about 1.5 times of that in 2015. While the total asset kept increasing, the repayment reduced the asset-liability ratio, which caused a substantial increase in net assets. Thus, the book rate of return is low, but profitability still has potential. With the decline in asset-liability ratio, solvency has also increased year by year. Since 2011, the revenues growth rate continued to decline, the development capacity is sobering. SPG needs to explore new development mode.

**Assessment of business units**

For the SPG’s business unit performance in the market, the BCG Matrix is used for analysis, as shown in Figure 3. It shows the following observations.

- 1) Power supply unit, the basic business of SPG, mature and stable, provides stable cash flow for SPG. In the next chapter, we will discuss its developing strategies in detail.
- 2) Power generation unit takes a rather small market share, but in high growth. With the development of distributed renewable energy, it has a good opportunity to strengthen the generation.
- 3) Auxiliary unit is in a low but stable growth. In the past, the design and construction business mainly came from SPG’s own business, affected by the investment scale of

the power grid of SPG, and without external market. The RONA of auxiliary unit keeps more than 20% for years, which can be a new development point of SPG. In the future, the auxiliary unit could take some market share outside SPG.

- 4) Diversification unit accounts for just a very small part. SPG needs to increase investment and financing, especially supporting the development of new energy, charging stations, and other independent retail companies, to seize the new opportunities in the reform.

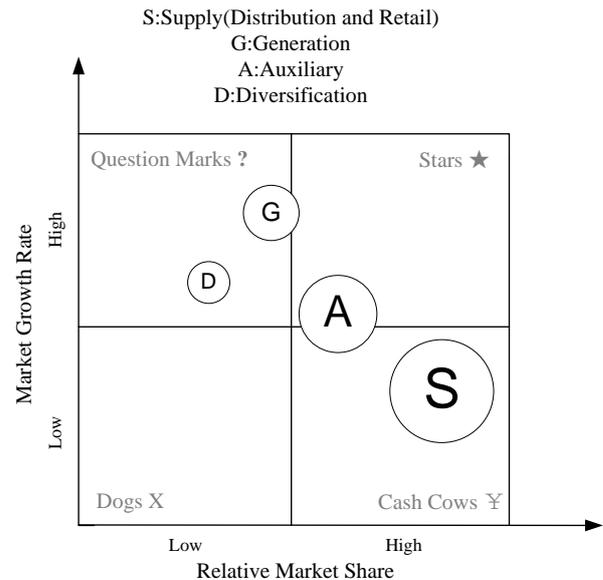


Figure 3. BCG Matrix of SPG’s Business Units

**Comprehensive Analysis**

With the above discussion, the comprehensive situation of SPG is shown in Table 2.

Table 2. SWOT Analysis of SPG’s Development

Opportunities	Strengths
<ul style="list-style-type: none"> <li>● Low-carbon development enhances the potential of electric energy</li> <li>● Growth of GDP induces that of energy consumption</li> <li>● Smart grid technology renews power industry</li> <li>● SPG holds a large proportion of market</li> </ul>	<ul style="list-style-type: none"> <li>● Power grid is strong,</li> <li>● Market share increases steadily.</li> <li>● Financing capacity and solvency improves continuously</li> <li>● Production and operation system is mature</li> </ul>
Threats	Weaknesses
<ul style="list-style-type: none"> <li>● The increasing of social electricity consumption continues to slow down</li> <li>● The reform forces SPG to change role and profit mode</li> <li>● Retail market reform promotes business restructure</li> <li>● Customers have higher demands on power quality and service</li> </ul>	<ul style="list-style-type: none"> <li>● Profitability and development ability need to be improved</li> <li>● Lack of market competition awareness</li> <li>● Organizational structure needs to be optimized</li> <li>● Productivity is not high</li> </ul>

## DEVELOPMENT STRATEGIES

According to the challenges, short-term and long-term development strategies of SPG are discussed in following.

### Business restructure

With the trend of reform, SPG is going to adjust the business structure within the enterprise. The most important tasks are:

#### **Separation of distribution and retail business.**

The retail business of every city and county can be integrated into an independent retail unit with an independent accounting and management. The retail unit is committed to market development and load side management. It buys distribution service from the distribution unit, and conducts internal settlement. The retail unit can be converted into an independent company, to adapt to the requirements of the new reform.

#### **Restructure of auxiliary resources**

The cost of distribution consists of depreciation and operation costs. Operation coats include materials, repairs, staff salaries and other reasonable costs that the DNO needs to maintain the normal network operation. To ensure that SPG's distribution price be properly calculated and approved, it is necessary to adjust the material business and repair business from the auxiliary unit into the distribution business.

### Corresponding strategies

#### **Distribution unit**

SPG should focus on power grid planning to adapt to the access of a large number of distributed energy, and improve the technical and economic operation of the grid. A higher level of power grid automation and interaction is needed for higher reliability and power quality.

#### **Retail unit**

After the restructure, based on the present market share, the retail unit has to break the regional restrictions, keep expanding the retail market by different methods including geographical expansion, capital and technology investment in other areas.

### Long-term development

From a long-term view, with the establishment of medium and long-term market and spot market, as well as the access of distributed power, DNO will gradually change into DSO, that is, the operation and management of power distribution system will be more complicated. As a rare independent DSO in China, SPG's interaction with the energy market and the TSO (SG) is worth exploring.

When SPG can buy electricity in the electricity market, it requires SPG to improve the ability of load forecast and management. By setting price packages, providing multi-services and so on, SPG could encourage users to optimize the load curve, and to increase competitiveness in the wholesale market.

TSO provides transmission services to SPG under a

framework of transmission tariffs, thus it requires SPG to improve the use of transmission grid and reduce overall transmission costs.

The independent distribution regulation mechanism in China is still in its infancy. The important issues like how to promote the development of distribution network and to improve the efficiency of power grid need to be explored by both SPG and the regulatory authorities.

## CONCLUSION

SPG is an independent regional power supply enterprise, and a special case in the electricity reform in China. Since 1989, SPG has accumulated a lot of specific experience on distribution and retail business. In the new marketization reform, SPG is facing a role transition from monopoly power supplier to a DSO, and challenges of business mode and profit mode, and play a more important role in a more complicated market. SPG has to adapt to the reform by business restructure, i.e., separation of distribution and retail business and restructure of auxiliary resources. From a longer-term perspective, SPG should focus on enhancing its ability to play as a DSO. SPG's experience and strategies can be valuable to new retail companies in China and be comparable with distribution and retail companies abroad.

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