

Rating Methodology by Sector

Electric Power

1. Business base

JCR in this report primarily describes outline of rating methodology for Japan's electricity utilities (power companies), which are engaged in power generation, transmission/distribution, and retail, and adds factors that should be noted for the past wholesale electricity utilities. JCR expects regulations on power industry will be reduced for several years from fiscal 2015, changing the competitive situation.

As a supplier of energy that is fundamental to Japan's production and consumption activities with a high degree of public use, Japan's electricity business is regulated by the government in many ways to protect the users. Step-wise regulations have been made 4 times since 1995. The electricity system reform as a result of the Great East Japan Earthquake was a large-scale revision to the system for the first time in 60 years. This reform is intended for utmost control of electricity rate and expansion of users' options and business operators' business opportunities based on assumption of stable supply of electricity. It will be carried out for 5 years in 3 stages from April 2015 to April 2020: In the 1st stage, the Organization for Cross-regional Coordination of Transmission Operators was established in April 2015; In the 2nd stage, full liberalization of retail market and abolishment of wholesale regulation are planned in April 2016; In the 3rd stage, unbundling of transmission/distribution sector from generation or retail sector is scheduled for April 2020.

From the 2nd stage beginning in April 2016, business types of "general electricity utility," "specified-scale electricity utilities" and "wholesale electricity utility" are abolished and 3 types including "generation company," "transmission/distribution company" and "retail company" are to be established. However, regulations on electricity rates and obligation to supply electricity will remain unchanged for the time being, and regulations on electricity rates will be abolished when the government affirms progress of competition along with the unbundling of transmission/distribution sector scheduled for April 2020. JCR assesses individual power companies, placing value on stability of Japan's electricity business system while also paying attention to the individual companies' characteristics. JCR will appropriately reflect impact of expected changes in regulations such as non-application of the past permitted regional monopoly as well as full cost plus pricing method on the business base of power companies.

(1) Characteristics of the industry

(i) Market overview

While affected by short-term business fluctuations and weather changes, demand for electricity has been steadily growing along with Japan's economic growth. Demand may decline in the future, due to

a shrinking domestic population, changes in the industrial structure, measures to reduce CO₂ emissions and prevent global warming, well-established consumer mind for saving electricity after suspension of operations of nuclear power stations at Fukushima Daiichi of Tokyo Electric Power Company, and diffusion of energy-saving equipment. At the same time, advancement of informatization and electrification of equipment will increase demand for both household and industrial use electricity.

(ii) Competitive situation

Economies of scale strongly work on electricity business, which is a social infrastructure. Electricity cannot be saved in high volume and its quality is always the same, despite differences in frequencies. In cases where principle of market mechanism is introduced into this kind of market or product, it will fall into price competition at last, and the existing customer base, capacity to procure fuel, financial strength, and so on determine the competitive strength. As a supplier of electricity, power companies, which are engaged in power generation, transmission and distribution for the users, account for majority of the market at the moment. These power companies, however, will face a risk that their business base will be impaired by new entrants' entry into the monopolistic market in effect. On the other hand, the principle of market mechanism will allow them to take strategic management approaches including increasing their opportunities to enter into areas outside their own service areas and flexible setting of electricity rates. JCR will check speed and degree of changes of the market into race condition in the advancement of the electricity system reform and will assess how changes in the power companies' competitive strengths in the future in terms of their acquisition or loss of demand can have an impact on the earnings power and financial structure.

(iii) Cost structure

Excluding retail business, electricity is a typical large process industry that requires a large amount of fixed cost in an inflexible cost structure. The cost of fuel, a major variable cost of power generation business, can fluctuate relatively significantly, depending on fuel price trends. A matter to note concerning cost structures for power generation business is that an increase in greenhouse gas emissions is inevitable due to its nature. A possible scenario is that government environmental regulations will be strengthened, causing a burden to the electricity industry, depending on design of such regulations, and will result in an adverse effect on the industry's profit and financial structure. This may not only add downward pressure on the power companies' credit risk, but also slow down their growth by spending their management resources on technological development and capital expenditure for low-carbon emissions.

After the passage of a certain period of transitional measures, the full cost plus pricing method will not be applied any longer to power generation and retail businesses. Given this plan, JCR will check stability of customer base to assess the investment recovery.

In accordance with the Electricity Business Act, the costs required for power transmission/distribution are charged to the cost account as a “full cost,” to which certain fees are added to set the electricity rates that equal the revenue from electricity sale (full cost plus pricing). For this reason, a full investment recovery will be guaranteed and high stability of the cash flow will be maintained after the electricity system reform.

(2) Key factors in market position and competitiveness

(i) Market position

JCR will examine how the relative positions of the electricity industry in the overall industries, or of power companies among themselves can change with changes to the framework of the electricity business system and impact of these changes on the individual power companies’ cash flow levels, flexibility of distribution of their cash flows, improvement of financial conditions, etc.

There are 2 companies in the industry, Electric Power Development Co., Ltd., and The Japan Atomic Power Company, who supply electricity to power companies as major generation companies. The former primarily uses coal and hydropower for its power plants and is constructing a nuclear power plant, while the latter uses only nuclear power as a source of electricity. Both are cost-competitive. As these 2 companies have important positions in Japan’s power supply portfolio, JCR analyzes and assesses these 2 companies in line with the power companies’ credit assessment, while focusing on individual business risk of these companies and changes in the contractual relationships with power recipients.

(ii) Business structure

While involved in information and communication businesses, using network infrastructure of electricity business, as well as life service business based on public interest and closeness to local communities, power companies engage themselves mostly in the electricity business. Domestic electricity business is expected to grow only moderately in the future, and derivative business developments including enhancement of gas business or sale of fuel to other companies, regional expansion to overseas investment in or management of power generation business, and investment in interests for stable procurement of fuels may progress. Achieving these challenges, however, requires long-term strategies as business operator of an integrated energy and a strong financial base to ensure effectiveness of the strategies. For this reason, JCR will check financing and investment policies, achievements in these policies, and building a risk management system as well as direction of the strategies.

(iii) Power source composition

Power companies attempt to achieve the “best mix of power sources” by combining hydropower, thermal power, nuclear power, and others in a balanced manner. In anticipation of presentations by the

government on targets for greenhouse gas emission controls and the best mix of power sources based on the government's energy basic plan, companies will make more efforts to improve efficiency of thermal power generation, achieve high stabilization of capacity utilization in nuclear power generation or decommission their facilities.

Note should be taken on nuclear power generation, which is the base power source with high power generation efficiency. The higher the ratio of nuclear power in the power source composition, the larger the effect of capacity utilization on the profit. Consequently, JCR considers that effects of time and capacity utilization rate, applicable period of regular inspection cycle, and status of alternative power sources in the case of unexpected low-operation rate (or shutdown, including reactor decommissioning) on the income must be examined. If a nuclear accident happens, risks from it including liability for damage will become large. Power companies can receive financial support from Nuclear Damage Compensation and Decommissioning Facilitation Corporation. However, JCR will have to watch carefully future method of sharing of the liability burden. Furthermore, it is necessary to watch trend of improvement of environment for a private business operator for its stable assumption of nuclear power business including decommissioning in the fully liberalized market. As described above, risks in relation to nuclear power generation business are diverse and many of them put downward pressure on credit ratings for a long period of time and structurally, and impact on the credit ratings is large.

(iv) Investment in power sources and transmission/distribution network

Development of power sources in anticipation of non-application of the full cost plus pricing method in the future is assessed based on factors such as scale of development, investment amount, price competitiveness, and future demand-supply balance. In practice, the operation is based on assessment of trends in demand and competition and changes in the effects of these factors on the profit. Concerning demand and supply, the adjustment capacity is large due to postponement of a power source development plan and suspension and cancellation of long-term plans for obsolete power sources. Meanwhile, JCR considers that there is still some room for additional implementation of rationalization that was promoted in the entire industry as a result of liberalization. In addition to quantitative analysis, therefore, qualitative analysis and comparison to see how each company makes a decision in response to changes in external environment is also important.

Legal unbundling of transmission/distribution sector is scheduled for 2020 to ensure neutrality of this sector. Judging from the rules governing behavior of the transmission/distribution sector that are being considered in order to ensure the neutrality at the moment, JCR considers it is possible to assess power companies for ratings based on integration of the Group as a whole after the legal unbundling, because supply of capital in the Group is not separated. If the policy authorities strengthen its rules governing behavior of the transmission/distribution sector, restricting liquidity of funds, JCR may revise the rating methodology.

2. Financial base

(1) Profitability

For the power generation business, trends in fuel prices, particularly import prices of thermal power fuels (petroleum, LNG, and coal), have effects on profit in the short run. Fuel cost adjustment functions that reflect short-term fluctuations in the fuel price are often incorporated into electricity rates, enabling companies to reduce impact on profits in the medium run. JCR considers, however, price competition in retail market, changes to the government environmental regulations, and so on will have significant negative impact on electricity utilities. JCR will therefore monitor medium- and long-term profit margin. Construction of a large-scale power station requires a large amount of initial investment. As it is a business model that requires a long time to recover the investment, while the payback period differs depending on the power source composition, JCR will examine investment efficiency, watching carefully capacity utilization of power source facilities, demand size and stability of demand inside and outside the service areas.

Key financial indicators:

- Ratio of ordinary income to sales
- Capacity utilization of power source facilities

(2) Cash flow

Further deregulation encouraged power companies to increase competitiveness by improving their management efficiency with limited investment in facilities etc., which increased their free cash flow and improved financial structure. In recent years, however, burden of investments has begun to increase due to investments for existing aging power transmission/distribution facilities as well as installation and replacement of power generation facilities for higher efficiency. Under these circumstances, power companies have been suspending nuclear power operations for a long period of time, rapidly increasing their burden of fuel costs for thermal power facilities that are operated as substitutes for the nuclear power plants. In addition, power companies need to make large investments to conform to the new regulatory requirements by the Nuclear Regulation Authority for the nuclear power plants. In the midst of a full-scale price competition in retail market, raise in electricity rates is difficult. JCR will pay attention to whether companies take measures to improve their cash flow generation capacity by cost reduction through management efficiency.

Key financial indicators:

- EBITDA
- Free cash flow
- Ratio of interest-bearing debt to EBITDA

(3) Safety

As power generation and transmission/distribution businesses require a large amount of capital

investment, many companies carry a large amount of interest-bearing debt. Their financial structure is relatively unstable, with a higher ratio of fixed assets to total assets and a weaker balance between debt and capital as compared with other industries. In the future, needs for capital that are different from the conventional such as needs for investment in overseas power generation business and those for investment for measures against global warming may increase in the future. Suspension of operations of nuclear power plants for a long period of time significantly worsened profitability of power companies, impairing their financial bases. They are required to improve their impaired financial bases. Taking approaches for improving financial structure is important for power companies to prepare themselves for competition arising from future liberalization.

Key financial indicators:

- Equity ratio
- Debt equity ratio

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