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Rating Methodology by Sector

Electric Power

1. Business base

Vital to public interest, the electric power industry is regulated and protected by the government in its role as a supplier of energy fundamental to the country's production and consumption activities. JCR emphasizes stability of the fundamental electric power supply system while paying attention to the characteristics of individual companies. The nuclear accident that followed the Great East Japan Earthquake of March 2011, however, transformed conventional electric business systems. Despite the government's clear, basic policies aimed at preventing global warming and reducing carbon emissions from energy supply, energy policies, particularly in relation to nuclear power, underwent a shift as a result of the Great East Japan Earthquake. Taking into consideration electricity system reform scheduled to be made over several years beginning in FY2015, JCR thinks that the rating method for the electric power industry needs to be modified at any time.

(1) Characteristics of the industry

(i) Market overview

While affected by short-term business fluctuations and weather changes, domestic demand for electric power has been steadily growing along with Japan's economic growth. Although such 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 plants, and diffusion of energy-saving equipment, computerization and electrification of equipment for both household and industrial use may increase, which suggests that the market will generally continue slow but stable growth.

(ii) Competitive situation

Japan has 10 general electricity utilities (power companies), which are electric power suppliers that are involved in the entire process, from power generation and power supply to distribution to consumers, and they provide approximately 85% of all the power used in the country. The Electricity Business Act predetermines the service areas to which electricity is to be supplied and regulates the companies' activities. There are also power producers and suppliers (new electricity retailers) that supply electricity to customers of a certain size using the supply network of power companies. These new electricity retailers were approved for entry into the increasingly liberalized market when the revised Electricity Business Act was enforced in 1999 in expectation of an increase in the range of

liberalization and establishment of the principles of competition. The overall effect, however, has been extremely limited, and in practice, the monopoly of power companies has continued. It is uncertain at this moment whether competition will intensify after full liberalization of retail sale of electricity.

(iii) Cost structure

Electric power 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, can fluctuate relatively significantly, depending on fuel price trends. According to the Electricity Business Act, however, the cost and expenses required for power generation, transmission & distribution, and retailing are charged to the cost account as a “full cost,” to which certain fees are added to set the power rates that equal the income from the sale of electricity (full cost plus pricing). Except in the liberalized areas, therefore, a full return on investment is guaranteed and the cash flow is considered stable currently. After power generation and power retailing are fully liberalized, however, the full cost plus pricing is to be applied only to the power transmission & distribution sector eventually, following the passage of a certain period of transitional measures.

A matter to note concerning cost structures is that an increase in greenhouse gas emissions is inevitable in the electric power industry due to its nature. A possible scenario is that government environmental policies will be implemented to impose a corresponding burden on the electric power industry, depending on the design of individual systems, resulting in an adverse effect on the industry’s income and financial affairs. 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.

(2) Key factors in market position and competitiveness

(i) Market position

As a regulated industry, stability of the electricity business system is a fundamental and important point in supporting credibility of the industry. Changes in the relative positions of the power industry in the overall industry framework, or of power companies among themselves, resulting from modification of the system framework must also be monitored. JCR analyzes the effects when they arise, along with comparing changes in the business environment and their effect on each company’s cash flow, relative levels and degrees of freedom of distribution, and compares and examines financial improvements using cash flows as the capital, and capacity to respond to price cuts before determining a rating for each company.

There are electric power wholesalers that supply electricity to power companies, including Electric Power Development Co., Ltd., and The Japan Atomic Power Company. The former primarily uses coal and hydropower and is constructing a nuclear power plant while the latter uses only nuclear

power as sources of electricity. Both are cost-competitive and in important positions in Japan's power supply portfolio. JCR analyzes and assesses these two power wholesalers, therefore, in relation to the power companies' credit assessment while focusing on the business risk of individual companies and changes in the contractual relationships with power recipients.

(ii) Business structure

While involved in information and communication businesses, using the network infrastructure of their electric power business, as well as life service business based on the public interest they serve and their closeness to local communities, the power companies engage mostly in the electric power business. Domestic electric power business is expected to grow only moderately, and some power companies have been making such secondary movements as regional expansion, including investment in and management of overseas power generation business, equity investment for stable procurement of fuels, and increasing the sale of fuel to other companies. Achieving these challenges, however, requires long-term strategies and a strong financial base to ensure effectiveness of the strategies. For this reason, JCR analyzes financing and investment policies and their past achievements in addition to the progress of building a risk management system.

(iii) Power source composition

Each power company attempts to achieve the "best mix of power sources" by combining hydropower, thermal power, nuclear power, and others in a balanced manner. Under the circumstances where greenhouse gas emission controls and the goal of the best mix of power sources based on the government's energy basic plan are announced, the companies will be making 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 of 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 income. Consequently, JCR considers that effect of time and rate of operation, 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 a large amount. Power companies can receive financial support from Nuclear Damage Compensation and Decommissioning Facilitation Corporation. However, JCR will have to watch carefully method of sharing of the liability burden.

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

Development of power sources is assessed based on such factors as scale of development, amount invested, price competitiveness, and future demand-supply balance. In practice, the operation

is based on assessment of trends in demand and competition in the service areas and changes in the effect of these factors on the income. Concerning demand and supply, the adjustment capacity is increasing 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 rationalization to that implemented in the entire industry as a result of liberalization. In addition to quantitative analysis, therefore, qualitative analysis and comparison to see how each company responds in their decision-making responses to changes in the external environment while observing such changes are considered important.

2. Financial base

(1) Profitability

Trends in fuel prices, particularly import prices of thermal power fuel (petroleum, LNG, and coal), have effect on profit in the short run. For household power rates and other regulated charges, however, a fuel cost adjustment system is in place to apply fuel price fluctuations to the power rates, which reduces the medium-term effect on the income. On the other hand, because future changes in environmental regulations are unlikely to have any positive effects on the income and expenses of the power companies, JCR monitors medium- and long-term changes in profitability.

Being a massive process industry, power companies must make a large initial investment. The business model requires a long time to recover such an investment, with the period varying depending on the power source composition. In addition to capacity utilization of power source facilities, therefore, assessing the investment efficiency while observing the amount and stability of demand inside and outside the service areas becomes key.

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 free cash flow and continuously improved the financial positions. In recent years, however, burden of investment has begun to increase, due to aging of existing power transmission and distribution facilities and installation and replacement of power generation facilities to improve efficiency. Under these circumstances, power companies have been suspending nuclear power operations for a long period of time, increasing rapidly 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. Efforts to improve ability to generate cash flow including cost reductions through improved operational efficiency

or revision of power rates are essential.

Key financial indicators:

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

(3) Safety

Power companies need substantial capital expenditure, and many of them carry a large amount of interest-bearing debt. The financial structure is relatively unstable, with an increased ratio of fixed assets to total assets and a rather poor balance between debt and capital in comparison to other industries. In the future, such expenses different from the conventional ones as investment in overseas power generation business and responses to investment in global warming may increase in the future in addition to those related to renewal and new investment in power generation and supply facilities. The suspension of operations of nuclear power plants for a long period of time worsened profitability of power companies, impairing their financial bases. Efforts to improve financial structure are very important to prepare themselves for the future competition due to electricity liberalization also.

Key financial indicators:

- Equity ratio
- Debt equity ratio

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