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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 the stability of the fundamental electricity utility systems while paying attention to the characteristics of individual companies. The nuclear accident that followed the Great East Japan Earthquake of March 2011, however, may transform conventional electricity utility systems. Despite the government's clear, basic policies aimed at preventing global warming and reducing carbon emissions from energy supply, energy measures—particularly in relation to nuclear power—may themselves undergo a shift as a result of the Great East Japan Earthquake. Since the direction of policies is currently uncertain, JCR considers that the rating method for the electric power industry needs to be modified as appropriate.

(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 growth may slow down in the future, due to a shrinking domestic population, changes in the industrial structure, measures to reduce CO_2 emissions and prevent global warming, and the diffusion of energy-saving equipment, computerization and the 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 transmission to distribution to consumers, and they provide approximately 85% of all the power used in the country. The Electricity Utilities Industry Law predetermines the service areas to which electricity is to be supplied and regulates the companies' activities. There are also power producers and suppliers (PPS) that supply electricity to customers of a certain size using the transmission network of power companies. The PPS were approved for entry in the increasingly liberalized market when the revised Electricity Utilities Industry Law was enforced in 2000 in expectation of an increase in the range of liberalization and establishment of the principles of competition in the retail market. The overall effect, however,

has been extremely limited, and in practice, the monopoly of power companies has continued. Competition is unlikely to intensify in the near future, considering the industry's physical restrictions, Inter-service area power exchange among the companies, and the necessary capacity to be able to respond to fuel purchase and environmental controls.

(iii) Cost structure

This 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 rapidly, depending on fuel price trends. According to the Electricity Utilities Industry Law, however, the cost and expenses required for power generation, transmission, and distribution 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 pricing). Except in the liberalized areas, therefore, a full return on investment is guaranteed and the cash flow is considered stable.

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 will not only add downward pressure on the power companies' credit risk, but also reduce technological development for low-carbon emissions and capital expenditure, potentially inhibiting growth.

(2) Key factors in market position and competitiveness

(i) Market position

As a regulated industry, the stability of the electricity utility systems is a fundamental and important point in supporting the 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. Deregulation and other revisions of the Electricity Utilities Industry Law and related laws and regulations are likely to require a reasonable amount of time. JCR analyzes their 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 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 (JAPC). The former primarily uses coal and hydropower and the latter uses only nuclear power as sources of electricity. Both are cost-competitive and in important positions in Japan's power supply portfolio. Any analysis and evaluation are performed, 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, however, requires long-term strategies and a strong financial base to ensure the effectiveness of the strategies. For this reason, financing and investment policies and their past achievements in addition to the progress of building a risk management system are analyzed.

(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. As greenhouse gas emission controls and the goal of a zero-emission power source ratio based on the government's energy basic plan have been announced, the companies have been making efforts to improve the efficiency of thermal power generation, achieve high stabilization of capacity factor in nuclear power generation, and increase and replace 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 effect of capacity factor on the income. Consequently, JCR considers that the effect of timing and rate of operation, 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.

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

Development of power sources is assessed based on such factors as the scale of development, amount invested, price competitiveness, and future demand-supply balance. In practice, the operation is based on the assessment of trends in demand and competition in the service areas and changes in the effect of these factors on the income or expenditure. Concerning demand and supply, the adjustment capacity is increasing due to the 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) Earnings strength

Trends in fuel prices, particularly the import prices of thermal power fuel (petroleum, LNG, and coal), have a short-term effect on profit. 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 expenditure 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 the rate of operation 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:

- The ratio of ordinary profit to sales
- Return on assets

(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 companies' financial positions. In recent years, however, the burden of investment has begun to increase, due to the aging of existing power supply and distribution facilities and the new installation and replacement of power generation facilities to improve efficiency. Despite the industry's stable demand and likelihood of investment recovery, efforts to improve the ability to generate cash flow 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 which are different from the conventional ones as investment in overseas power generation business and investment for global warming prevention may increase in addition to those related to renewal and new investment in power generation and transmission facilities. Further competitiveness may be required, depending on the trends in deregulation. While acquisition of external funds is not difficult and investments and loans involving high business risk are unlikely, changes in financial position must reasonably be monitored.

Key financial indicators:

- Equity ratio
- Debt equity ratio

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