
Feature 1 Operating Four Nuclear Power Stations

In 2018, Kyushu Electric Power restarted Genkai Nuclear Power Station Units 3 and 4, which had been in a state of long-term suspension to enable government inspection under the new regulatory standards.

This brought the number of operating units to four, following the 2015 restart of Sendai Nuclear Power Station Units 1 and 2. Two representatives of our senior management, Naoyuki Toyoshima and Makoto Toyoma, responded to questions regarding the impact of the restart and efforts to achieve stable operation.



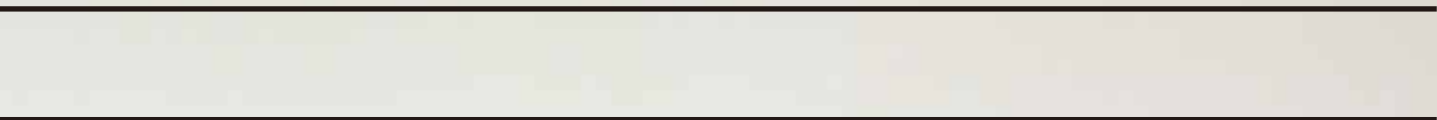
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Q1

Four of the nine nuclear power stations in Japan (Sendai Nuclear Power Station Units 1 and 2, Takahama Nuclear Power Station Units 3 and 4, Oi Nuclear Power Station Units 3 and 4, Genkai Nuclear Power Station Units 3 and 4, and Ikata Unit 3) that have resumed operation in the wake of the Great East Japan Earthquake are operated by Kyushu Electric Power. What enabled the company to achieve restart comparatively earlier than others?

A1

Toyoshima

After the new regulatory standards were put into place in 2013, Kyushu Electric Power moved quickly to obtain all required permits for the restart of Sendai Nuclear Power Station Units 1 and 2 and Genkai Nuclear Power Station Units 3 and 4.

In 2014, Sendai Nuclear Power Station Units 1 and 2 were selected by the Nuclear Regulation Authority for early inspection, and the entire company worked diligently to accommodate all relevant government inspection requirements. We also worked closely with manufacturers and partners to implement safety measures, and proceeded carefully step by step with safety as our utmost priority.

Thanks to these efforts, the two units at Sendai

Nuclear Power Station were restarted in 2015. We applied the experience gained from this process to the government inspection and testing of Genkai Units 3 and 4, and by carefully implementing safety measures, we were able to restart these units in 2018.

With regard to our restart efforts, we also strived to gain understanding from everyone in the local community about our safety measures. Because we believe that peace of mind on the part of residents is of the utmost importance, we engaged in a broad range of face-to-face communication activities.

We believe that these “tangible” and “intangible” efforts were behind our success in achieving a relatively early restart.

Overview of Nuclear Power Stations

Power plant	Genkai Nuclear Power Station				Sendai Nuclear Power Station	
	Unit 1	Unit 2	Unit 3	Unit 4	Unit 1	Unit 2
Operation commencement	Oct. 1975	Mar. 1981	Mar. 1994	Jul. 1997	Jul. 1984	Nov. 1985
Output	559 MW	559 MW	1,180 MW	1,180 MW	890 MW	890 MW
System	Pressurized water reactor (PWR)					
Operational status	Suspended December 2011 Decommissioned April 2015	Suspended January 2011	Suspended December 2010 Restarted March 2018	Suspended December 2011 Restarted June 2018	Suspended May 2011 Restarted August 2015	Suspended September 2011 Restarted October 2015

(Of 39 nuclear power plants in Japan, as of July 2018, nine are in operation.)



Q2

What management advantages does Kyushu Electric Power expect to derive from the restart of these nuclear power stations?

A2

Toyoma

We see three principal advantages.

First is a supply advantage. While power station operation was suspended, we adopted such measures as utilization of older thermal power facilities to secure energy supplies. With the restart of the nuclear power units, we no longer need to rely on these older thermal power facilities, and can supply power on a more stable basis.

Second is a revenue advantage. The restart will enable us to reduce the power output at our thermal power facilities, and the reduction in fuel and other costs will boost revenue. The improvements will vary with power output, fuel costs, and other changing factors, but we are projecting a monthly positive impact of approximately ¥9 billion for Sendai Nuclear Power

Station Units 1 and 2, and ¥11 billion for Genkai Nuclear Power Station Units 3 and 4.

The third advantage is environmental. We expect a CO₂ emission reduction of approximately 14 million tons through the restart of the four units. This represents a roughly 30% emission reduction from the FY2014 total of around 48.6 million tons, when operation of all four units was suspended. As a source of power that does not emit carbon dioxide, nuclear power is essential to the international trend away from carbon as reflected, for example, in the Paris Agreement. Kyushu Electric Power is eager to do its part in contributing to carbon emission reductions through stable operation of our nuclear power stations.

Q3

Safety measures required for restart have been completed, but what is the status of other measures necessary under the new regulatory standards? Also, what is the approximate cost impact of implementing such measures?

A3

Toyoshima

Currently we are progressing with construction of specific safety facilities, such as to prevent damage to the reactor containment vessel from, for example, an intentional large aircraft collision.

In 2015 we submitted an application for permission for a change in reactor installation to the government for Sendai Nuclear Power Station Units 1 and 2, and received approval in 2017. Subsequently, we submitted our application for construction planning permission in three stages, to enable us to carry out construction efficiently, and are now progressing steadily with government inspections and construction activities for which we have already received approval. We submitted an application for permission for a change in reactor installation for Genkai Nuclear Power Station Units 3 and

4 to the government in 2017, and are now undergoing inspections.

Under the new regulatory standards, safety upgrade construction must be completed within five years of receipt of construction planning permission for the main reactor building. We are therefore working diligently and meticulously with respect to government inspections and construction, so that the latter may be completed within the specified period.

Including safety measures implemented to date in connection with the restart of operation, Kyushu Electric Power's total investment in safety upgrades at the Sendai and Genkai Nuclear Power Stations totals more than ¥900 billion.

Q4

Kyushu Electric Power is making significant investments in safety measures. How effective do you believe these investments will be? Will the company be able to maintain its cost competitiveness in nuclear power generation?

A4

Toyoma

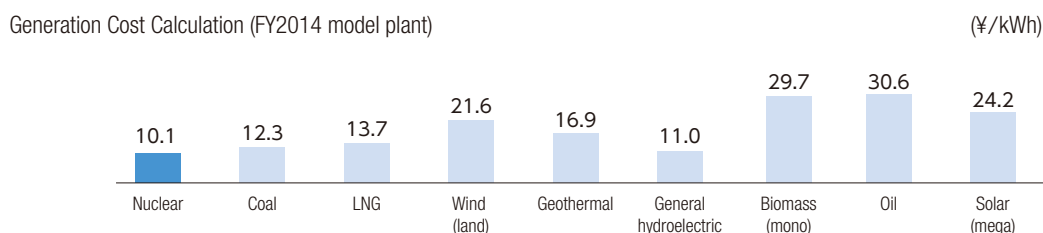
The scale of investment is indeed large, but in view of the anticipated revenue advantage mentioned earlier, we believe the investments will prove to be fully cost-effective.

In 2015, the Japanese government's Power Generation Cost Verification Working Group estimated the unit cost for nuclear power generation at ¥10.1/kWh, compared to ¥12.3 for coal-fired power generation and ¥13.7 for LNG-fired power generation.

The calculation for nuclear power generation below

does not include all costs associated with newly-mandated safety measures. When these are also taken into account, the cost of nuclear power is on par with both coal-fired and LNG-fired power generation.

Going forward, by maintaining safe, stable operation of our nuclear power generating capacity and a high utilization rate, Kyushu Electric Power will restrict its power generation unit cost and remain competitive in nuclear power generation over the medium and long term.



Source: Materials released by the Power Generation Cost Verification Working Group.

Q5

What future challenges do you expect in maintaining stable operation of the nuclear power stations, and what preparations are you making to meet those challenges?

A5

Toyoshima

Spent fuel storage is one of the issues we face going forward in maintaining safe, stable operation of our nuclear power.

Kyushu Electric Power's policy is to send spent fuel to Rokkasho Low Level Radioactive Waste Disposal Center. We are currently conducting a thorough review of our spent fuel storage policies, with consideration of such factors as reserve storage capacity for spent fuel pits.

To speak to this in more detail, we have already reracked the spent fuel rods for Sendai Nuclear Power Station Units 1 and 2. Reracking involves reducing the spacing between fuel assemblies to gain additional storage capacity. The application for government

approval for Genkai Nuclear Power Station Unit 3 was halted after the accident at the Fukushima Daiichi Nuclear Power Station, but we are working to restart that process as soon as possible.

In addition to pool storage, we are exploring ways to diversify our storage strategies, such as storing spent fuel rods in air-cooled dry casks after a fixed period. In this and other ways, we are undertaking to further enhance safety at our nuclear power stations, and are evaluating our technical options.

We will continue working to improve the safety and stability of our nuclear power stations through storage measures for spent fuel.



Toyoma

Lawsuits are an additional challenge. Kyushu Electric Power has prevailed in lawsuits to date, but in some instances, other electric power providers have been forced to halt power station operation due to provisional dispositions. For example, a disposition handed down by the Hiroshima High Court in December 2017 ordered the electric power company concerned to suspend operation of a nuclear power station due to the risk of a catastrophic volcanic eruption.

In accordance with the volcano threat evaluation guide issued by Japan's Nuclear Regulation Authority, Kyushu Electric Power has evaluated factors such as eruption history characteristics and magma accumulation status at Kyushu's caldera volcanos. The

results of this evaluation suggest an extremely low likelihood of a catastrophic eruption at any of Kyushu's caldera volcanos during the period of operation of our nuclear power stations. Nevertheless, in recognition of the unpredictability of nature, we are continuing to monitor these volcanos closely for possible changes, and consulting volcanologists and other experts to further enhance the safety and reliability of our operations.

With respect to pending lawsuits, we will continue to act with sincerity, complying with court instructions and making every effort to present our case thoroughly, to obtain understanding concerning the safety of our nuclear power stations.

Q6

In closing, what are your hopes for the future utilization of nuclear power?

A6

Toyoshima

With the successful restart of Genkai Nuclear Power Station Units 3 and 4, together with Sendai Nuclear Power Station Units 1 and 2, we now have four nuclear power stations in operation.

Going forward, we will cooperate with government inspections and carry out construction sincerely and meticulously to achieve autonomous and ongoing enhancement of the safety and reliability of our nuclear power stations, including installation of facilities to address specific large-scale disasters, and measures to deal with spent fuel storage.

Restart of our power generation units is indeed a start, not an end goal. We are keenly aware that enhancing nuclear power safety will always be an ongoing effort. Into the future, safe, reliable operation will be our highest priority.

Toyoma

The government's Strategic Energy Plan, revised in July 2018, positions nuclear energy as an important base load power source.

In view of such factors as Japan's energy self-sufficiency ratio, which is only 7%, and the global trend away from carbon-based energy sources, we believe that the importance of nuclear energy will only increase into the future. We will therefore continue our efforts with diligence, and with safety as our utmost priority.