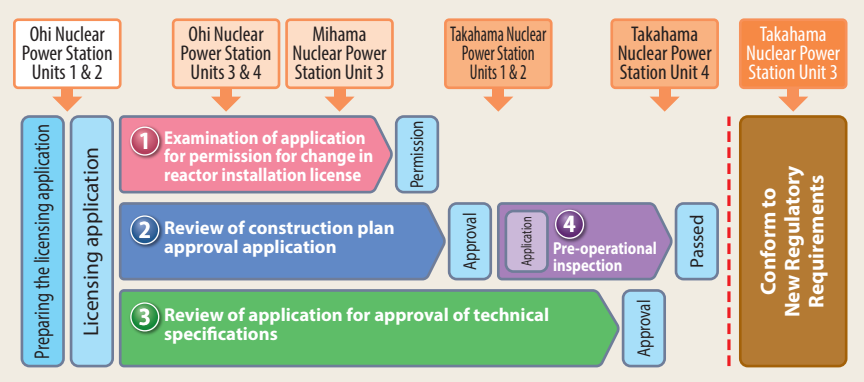
Toward the restart of nuclear power plant operation

Since the Great East Japan Earthquake, in addition to emergency safety measures, our company has been thoroughly strengthening countermeasures for earthquakes, tsunamis and other natural disasters along with measures to prevent damage to reactor pressure vessels. Applications are being made to the Nuclear Regulation Authority for the nuclear power plants that have implemented these measures for examination of their compliance with the new regulatory requirements. We will continue to respond earnestly to these evaluations and focus all our abilities on assuring the safety of nuclear power generation. In addition, as we gain understanding from the public, including the communities where these nuclear power plants are located, about the efforts of our company, we will continue to seek to resume the operation of those that have been confirmed to be safe as soon as possible.

■ Status of new regulatory requirement conformity examinations for each plant (as of June 20, 2016)



1. Confirm that the basic designs for installation and system maintenance of facilities conform to installation permission standards for handling the serious accidents and other items mentioned in the application documents.
2. In the nuclear reactor installation and upgrading permit, confirm that detailed plans (construction plans) based on the basic design for permitted reactor pressure vessel facilities conform to technical standards.
3. Confirm that security regulations that regulate items related to reactor pressure vessel facilities, including operator management (procedures, systems, etc.), are sufficient in terms of preventing disasters at reactor pressure vessels and other facilities.
4. Through records and actual operation, confirm that manufacture and installation are in accordance with the permitted construction plans and that functions, performance levels and other items are as prescribed.

Ongoing voluntary efforts to enhance the safety of nuclear power generation

We have taken to heart the lessons from the Fukushima Daiichi Nuclear Power Station disaster. Our company has been unified in working to improve the safety of nuclear power generation based on "Further Strengthening of Ongoing Voluntary Efforts to Enhance Nuclear Safety," which we set as a roadmap, since June 2014.

We have a strong determination and resolution that there will be no end to our efforts for the improvement of safety in nuclear power generation. We will not be limited to just regulatory frameworks as we continue our unceasing efforts to increase safety in nuclear power generation.

● Roadmap overview

Item	–2013	2014	2015	2016–
1. Permeation and establishment of nuclear safety				
(1) Sharing our Philosophy on Nuclear Safety	President's Declaration	Internal announcement	Permeation to all employees	
(2) Strengthen governance from top management	Corporatewide promotion			
	Evaluation revised	Nuclear Power Subcommittee established	Continuous improvement	
(3) Develop safety culture	Execution of extensive cultivation activities		Continuous improvement	
2. Enhance risk management				
(1) Deepen our knowledge in Japan and abroad (2) Enhance risk management	Efforts to learn from the world	Thorough gathering of knowledge from overseas and continuous improvement		
(3) Promote PRA* utilization * Probabilistic Risk Assessment	Application to inoperative plants		Promotion of PRA utilization	
(4) Enhance risk communication	Business management rooted in communities	Communication with external stakeholders		
(5) Handle evacuation plans proactively	Apply results of risk communication			
3. Maintain foundations for safety improvement				
(1) Promote safety improvement measures	Promote safety improvement measures			
(2) Improve accident response capabilities	Maintain initial response systems	Improve response capabilities and cultivate safety oversight personnel		
(3) Enhance systems	Establish Nuclear Safety Department		Continuous improvement	

■ Takahama Nuclear Power Station Units 1 and 2 are first in nation to receive approval for operating period extension

On June 20, 2016, Takahama Nuclear Power Station Units 1 and 2, which have been operating for more than 40 years, received approval for operating period extension* from the Nuclear Regulation Authority. This is the first approval for an operating period extension in Japan, and we believe that it will be a pioneer for later plants.

In the same way, we are applying for an operating period extension for the Mihama Nuclear Power Station Unit 3 and responding earnestly to the investigations by the Nuclear Regulation Authority. (The deadline for approval of the operating period extension is November 30, 2016.)

* The operating periods of nuclear power plants are set by the Nuclear Reactor Regulation Law to 40 years counting from the date that operation started. With approval from the Nuclear Regulation Authority, however, this can be extended once for a maximum of 20 years. We submitted applications for approval of operating period extension for Takahama Nuclear Power Station Units 1 and 2 on April 30, 2015 and Mihama Nuclear Power Station Unit 3 on November 26, 2015.

■ Responding to the provisional disposition preventing the operation of Takahama Nuclear Power Station Units 3 and 4

On March 9, 2016, a motion for provisional disposition to suspend the operation of Units 3 and 4 of the Takahama Nuclear Power Station was approved at the Otsu District Court. (Currently, Takahama Nuclear Power Station Units 3 and 4 cannot be operated until this provisional order is rescinded.)

Since the declaration of this order, we have been contending and demonstrating concretely based on scientific, technical and specialized expertise that the safety of these power stations has been assured, including in regards to items explained in investigations made by the Nuclear Regulation Authority. Since this decision does not take the contentions presented by our company into account, we cannot possibly consent to it, so we submitted a petition of exception on March 14.

Electricity rates have risen since the Great East Japan Earthquake Disaster, putting a great burden on our customers. In order to end this situation as soon as possible, our company will continue to focus all our abilities on contending and demonstrating the safety of Takahama Nuclear Power Station Units 3 and 4 so that this provisional disposition will be rescinded quickly.

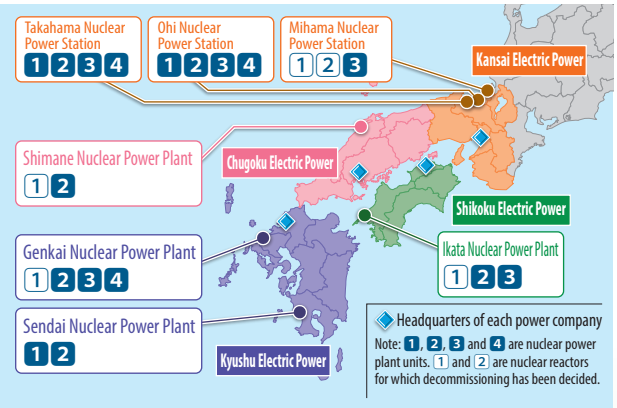
■ Strengthening cooperation among businesses in the nuclear power industry

On April 22, 2016, our company made an agreement of mutual cooperation in the nuclear power business with the Chugoku Electric Power Company, the Shikoku Electric Power Company and the Kyushu Electric Power Company. The purpose of this is to build a framework for the four companies that enables effective utilization of our resources and expertise regarding nuclear power and mutual cooperation taking advantage of our geographical proximity as we seek to further increase the safety and reliability of nuclear power generation and to smoothly implement and advance the nuclear power business.

● Overview of mutual cooperation in the nuclear power business

Area	Purpose	Main features
Cooperation in the event of nuclear power disaster	Utilizing the geographical proximity of the four companies, dispatch essential personnel, provide materials and machinery and otherwise cooperate mutually in order to respond even more rapidly	①Dispatch essential personnel ②Provide materials and machinery ③Provide support, including advising businesses where disasters have occurred using teleconferencing among nuclear power division leaders ④Conduct regular trainings with cross-participation among the companies
Cooperation during decommissioning	Increase safety in decommissioning and respond thoroughly to related investigations	①Investigate technologies and procurements involved in large-scale construction work ②Share information about decommissioning situations, for example
Cooperation in facilities for dealing with specific serious accidents	Increase safety and respond thoroughly to investigations related to facilities for dealing with specific serious accidents	①Investigate unifying facility specifications, for example ②Share information about the status of plants that are ahead in the process, for example

● Areas supplied and nuclear power plants operated by the power companies



■ Enhancing response capabilities through training and drills

In addition to repeatedly conducting the necessary training and various types of drills, we are striving to increase our capabilities to respond to accidents by revising the contents of our drills, including by not presenting the scenarios in advance and increasing their difficulty. Through training and drills, we will continue to identify points that should be improved by ourselves, and continuously increase our abilities to respond to accidents by building on improvements.

● Training and drill record (fiscal 2015)

	Number of participants in training and practice programs (total)	Number of drills
Mihama Nuclear Power Station	About 1,400	About 830
Takahama Nuclear Power Station	About 2,500	About 890
Ohi Nuclear Power Station	About 1,300	About 1,100

● Takahama Nuclear Power Station response drill (October 23, 2015)


Nuclear Power Division

High-capacity pump connection drill

Decommissioning of Mihama Nuclear Power Station Units 1 and 2 with a priority on safety

On February 12, 2016, we submitted application forms for approval of our decommissioning measures plan for Mihama Nuclear Power Station Units 1 and 2 to the Nuclear Regulation Authority. We have divided decommissioning into four stages to be conducted over the next 30 years, and we will advance the process safely and steadily as we seek to be a pioneer in the decommissioning of pressurized water reactor (PWR) plants in Japan.

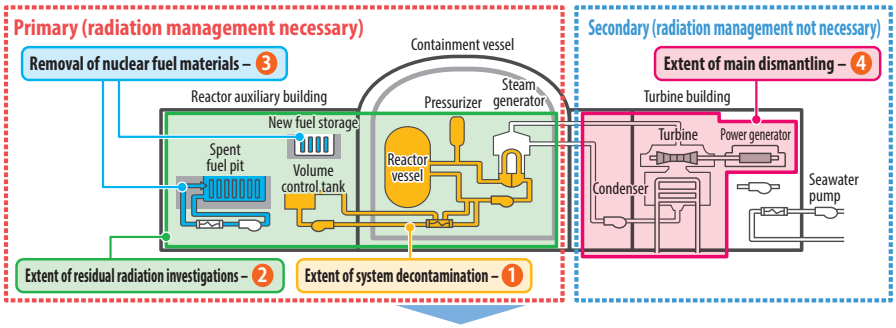
● Fundamental policies for decommissioning

Assurance of safety for people and the environment	With assuring safety as our top priority, we will make steady progress while maintaining functions necessary to preserve safety and seeking to reduce the amount of radiation exposure and the generation of radioactive waste.
Determination of work methods and techniques for safe execution	We will determine and implement procedures and methods for dismantling and removal that reduce the radiation exposure of the public in the surrounding area and the workers conducting work with radioactive materials. These will incorporate effective decontamination techniques and the utilization of remote equipment while maintaining facility functions that are necessary for waste processing.
Infallible organization	In order to advance the decommissioning of Mihama Nuclear Power Station Units 1 and 2 safely and steadily, we will work in unity with cooperating companies, led by our Decommissioning Management Section (established in June 2015 in our Nuclear Power Division).

● Entire work process (planned)

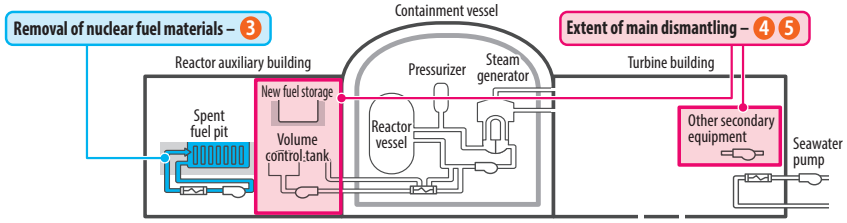
1st stage: Preparation for dismantling

Fiscal 2016 (after approval) – fiscal 2021



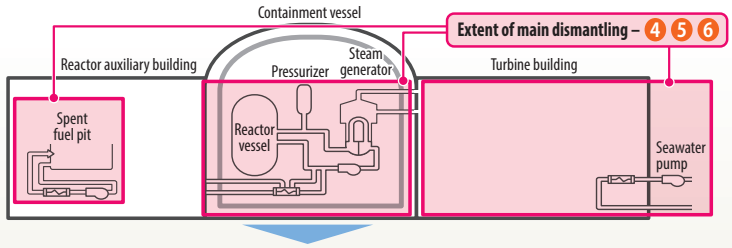
2nd stage: Dismantling and removal of equipment around reactor

Fiscal 2022 – fiscal 2035



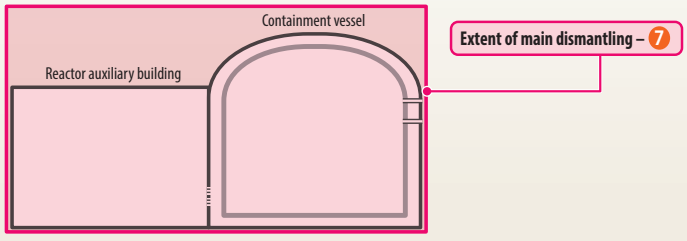
3rd stage: Dismantling and removal of reactor section

Fiscal 2036 – fiscal 2041



4th stage: Dismantling and removal of structures, etc.

Fiscal 2042 – fiscal 2045



1 Using chemicals, we will remove radioactive substances that have adhered to the internal surfaces of pipes, machinery and other equipment in order to decrease radioactivity within the facilities and reduce the amount of exposure to workers in the future. Specifically, we will inject chemicals into the systems that contain radioactive materials, and circulate them for several days per cycle. We will confirm and evaluate the effectiveness of the decontamination and repeat the process until we reach the target values (approximately 5–10 cycles).

2 We will investigate the distribution of radioactivity both inside and outside the reactor vessels in order to establish measures to reduce worker radiation exposure and methods to treat and dispose of waste from dismantling rationally. Specifically, we will collect samples using radiation measuring devices, concrete sample collection equipment and remote control equipment, and we will conduct chemical analyses and measure radioactivity and the like to evaluate and prepare contamination distribution diagrams.

3 We will manage and store new and spent fuel in the fuel storage facilities of the power plant until the fuel is removed.
New fuel: The plan is to remove 108 units of new fuel to a processing facility by fiscal 2021 when the 1st stage completes.
Spent fuel: We will remove spent fuel to reprocessing plants in order to use it again as fuel in accordance with the national policy. The plan is to remove the 741 retained units of spent fuel to reprocessing plants or interim storage facilities by fiscal 2035 when the 2nd stage ends.

4 We will dismantle the turbine buildings and outside facilities.

5 We will dismantle facilities inside the reactor auxiliary buildings and containment vessels, including new fuel storage, spent fuel pits and steam generators.

6 We will dismantle the reactor auxiliary buildings and the containment vessels.

7 We will dismantle the reactor auxiliary buildings and the containment vessels.