Kansai Electric Power Group

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Kanden Investor Day

– Nuclear Power Generation

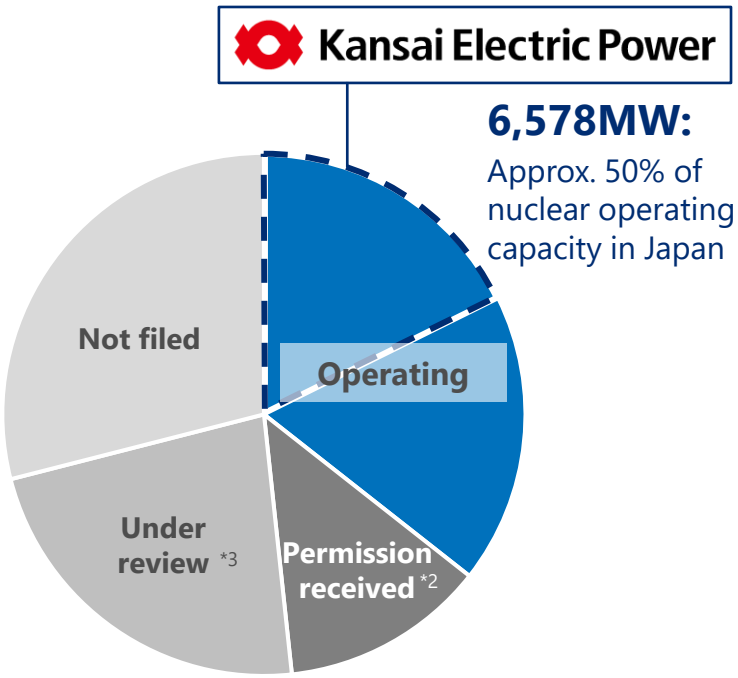
December 8, 2025

Today's Agenda

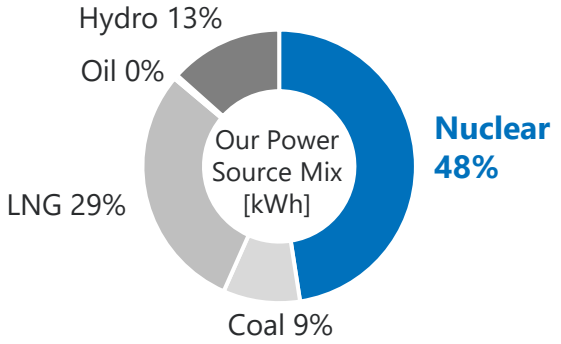
Our Nuclear Power Generation Business

- We are the largest nuclear power producer in Japan.
- Approximately 50% of Japan's operating nuclear capacity is supplied by us.

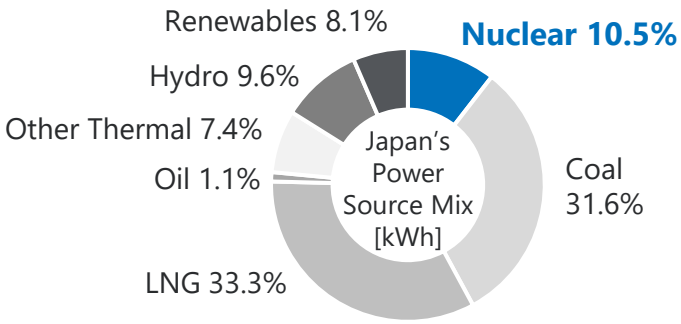
Nuclear Power Plants (NPPs) in Japan– Total Installed Capacity by Operational Status*1 (Excl. Decommissioned Plants)【Total 37,224 MW】



Our Power Source Mix [Generation Output by Power Source FY2024]



Japan's Power Source Mix [Generation Output by Power Source FY2024]



Source: Japan Atomic Industrial Forum, Inc.

Source: Partially adapted from materials published by the Agency for Natural Resources and Energy (ANRE)

*1 As of November 10, 2025
*2 Government approval for amendment to the Reactor Installation Permit
*3 Regulatory compliance review under the new regulatory standards by the government

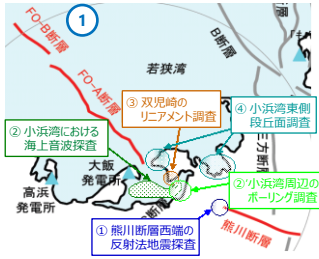
Safety Measures

○ Already completed safety measures for all seven plants under the new regulatory standards, with total investments of approximately JPY 1.19 trillion.

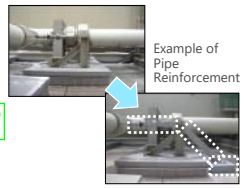
Protective measures to safeguard power stations from phenomena (accident prevention)

Earthquake Preparedness

○ Conducting detailed investigations into the interconnectivity and other characteristics of faults around the power plant



Conservatively assess interconnectivity, raise seismic standards, and reinforce critical areas



Example of Pipe Reinforcement

Tsunami Preparedness

○ Assuming the largest possible tsunami and installing coastal protection facilities such as seawalls

In case of unexpected events

○ Installing watertight doors and other protective measures to safeguard safety-critical equipment

Intake Channel Floodgate

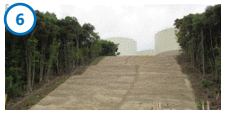
Protective Wall Around Pumps

Watertight Door

Fire Preparedness

○ Installing sprinklers and securing water sources to prepare for internal fires

○ To prevent the spread of wildfires, clearing trees around the power plant facilities to secure an 18-meter firebreak



Tornado Preparedness

○ Installing tornado-protection facilities to shield equipment from flying debris*

* Assuming that, in the event of a tornado with wind speeds of 100 m/s—exceeding Japan's historically highest recorded wind speed of 92 m/s—steel materials (135 kg) could become airborne.

Before

After

To Prevent Severe Accidents

Measures to ensure stable cooling of the reactor and other equipment to prevent severe accidents (accident progression prevention)

Enhancing Power Supply Resilience

○ Strengthening external power sources and increasing redundancy and diversity of on-site power systems

Existing External Power Supply

Contingency for Unavailability

Existing 4* emergency diesel generators

4* air-cooled emergency power generators

5* generator trucks

* Total for Takahama Unit 3 and 4

Enhancing Cooling Functions

○ Diversifying Seawater Intake Methods

Spare pump motors

Preparation

Seawater Pump

Preparation

Large-capacity pump

○ Diversifying Cooling Methods for Steam Generators

Existing auxiliary feedwater pumps

Preparation

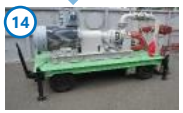
Medium pressure pump

Water supply vehicle

○ Diversifying Direct Core Cooling Methods

Existing emergency cooling system

Preparation



Portable backup water injection pump

In Preparation for a Severe Accident, Should One Occur

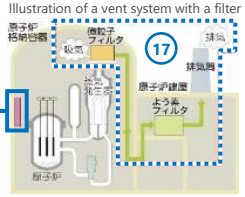
Measures to Respond to a Severe Accident, Should One Occur (accident escalation prevention)

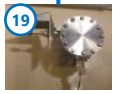
Measures to Prevent Containment Vessel Damage and Hydrogen Explosions

○ Installing Hydrogen Concentration Reduction Systems

Passive catalytic hydrogen recombiner

Illustration of a vent system with a filter





Hydrogen combustion device (designed to burn hydrogen in a controlled manner during core damage)

Securing Access Routes

○ Deploying heavy machinery for debris removal

Suppressing the Spread of Radioactive Materials

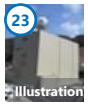
○ Water Cannons (Airborne Dispersion Suppression)

○ Silt Fences (Marine Dispersion Suppression)

Emergency Response Center

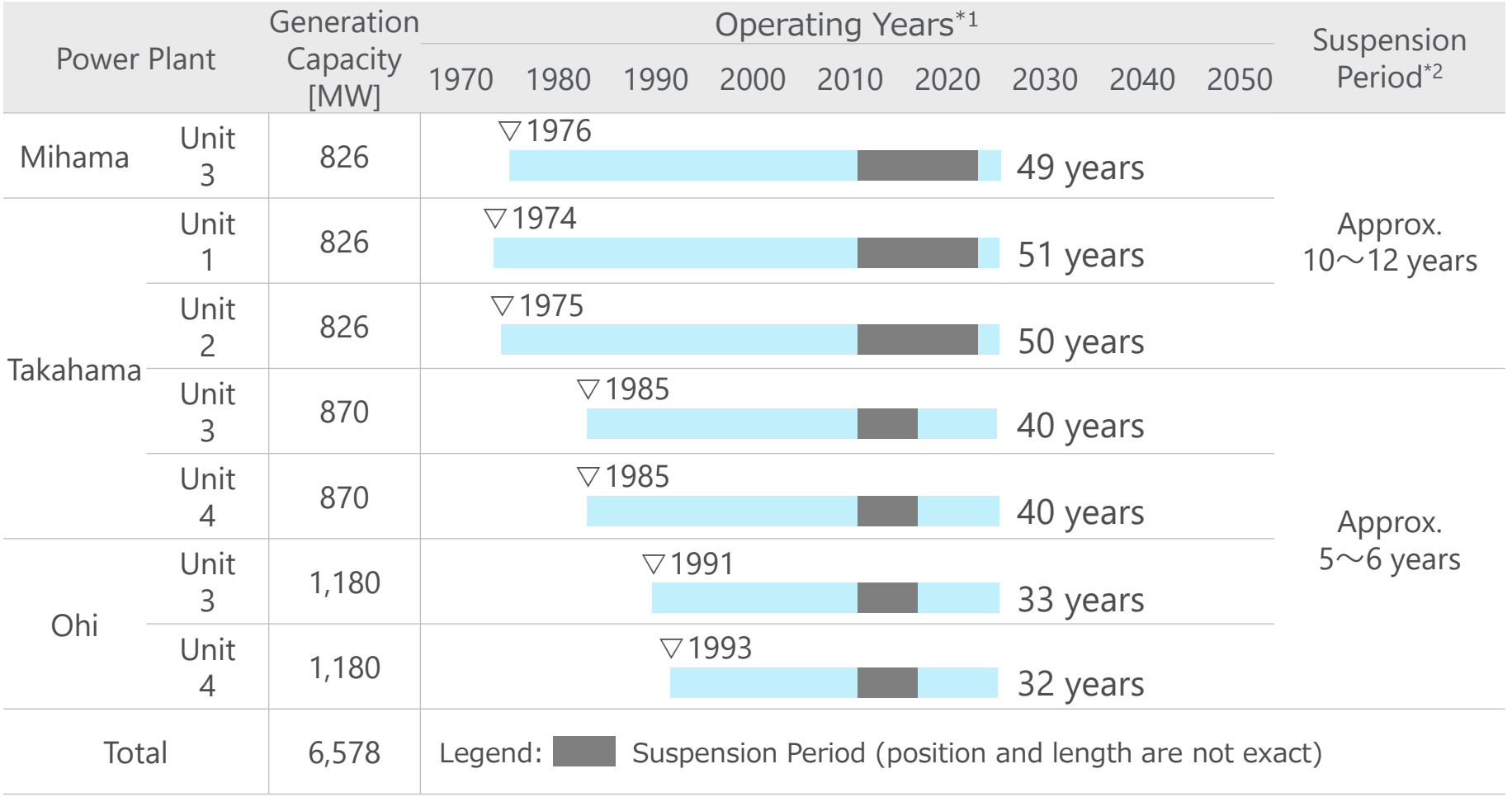
○ Establishing an Emergency Response Center

○ Additionally installing a seismically isolated administration building



Operating Years

- Five out of our seven operating plants have achieved over 40 years of operation.
- Under current regulations, the maximum operational period is set at 60 years.
- However, suspension periods separately approved by the government can be excluded from the calculation of the operational period.



*1 As of December 8, 2025

*2 the period currently assumed, taking into account the expected timing of the restart of our power stations

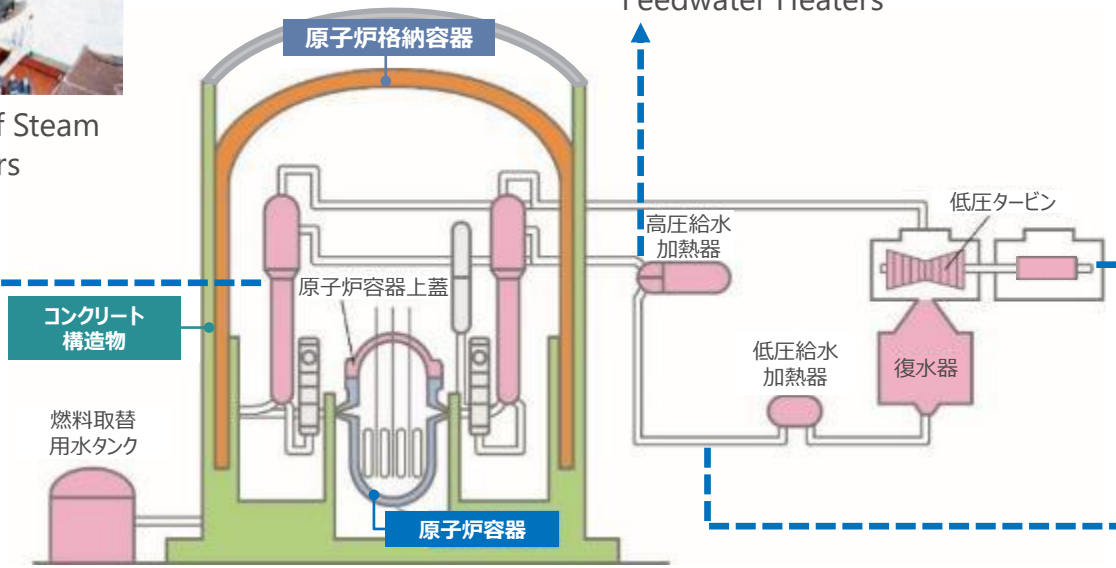
Ensuring Plant Reliability

- Conduct maintenance management for all equipment and facilities at our plants with maintenance plans.
- Ensure plant reliability by systematically replacing major equipment.

Replacement of Steam Generators

Replacement of High-Pressure Feedwater Heaters

Rewinding of Generator Coils



Replacement of Piping

The sections highlighted in ▭ represent major equipment that has already been replaced.
In addition to the items above, we also replace small equipment and components.

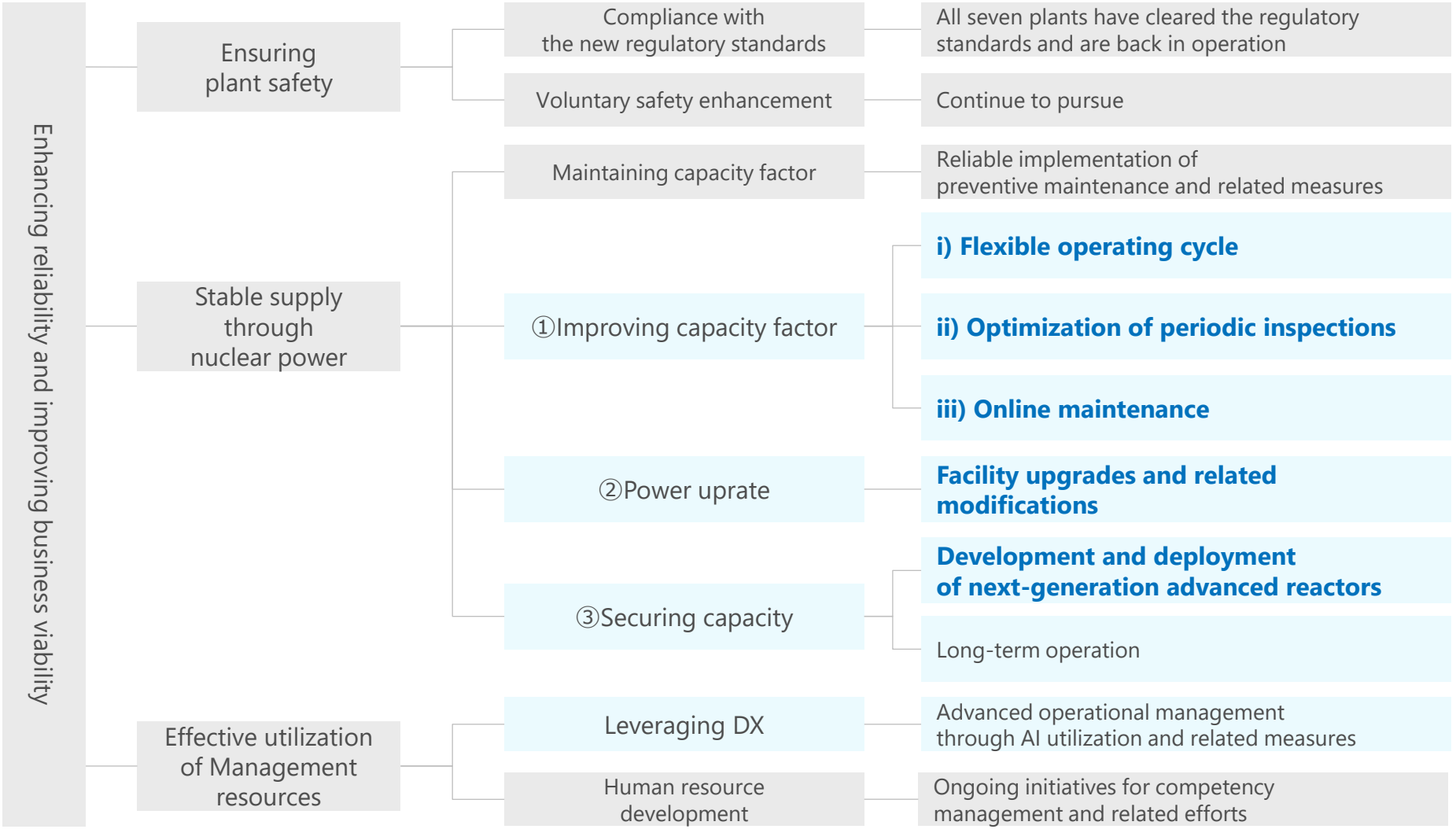
Today's Agenda

1. Business Overview
   - Our Nuclear Power Generation Business ···· P. 2
   - Safety Measures
   - Operating Years
   - Ensuring Plant Reliability

2. Future Initiatives
   - Future Direction ···· P. 7
   - Enhancing Capacity Utilization
   - Power Uprating
   - Securing Capacity

Future Direction

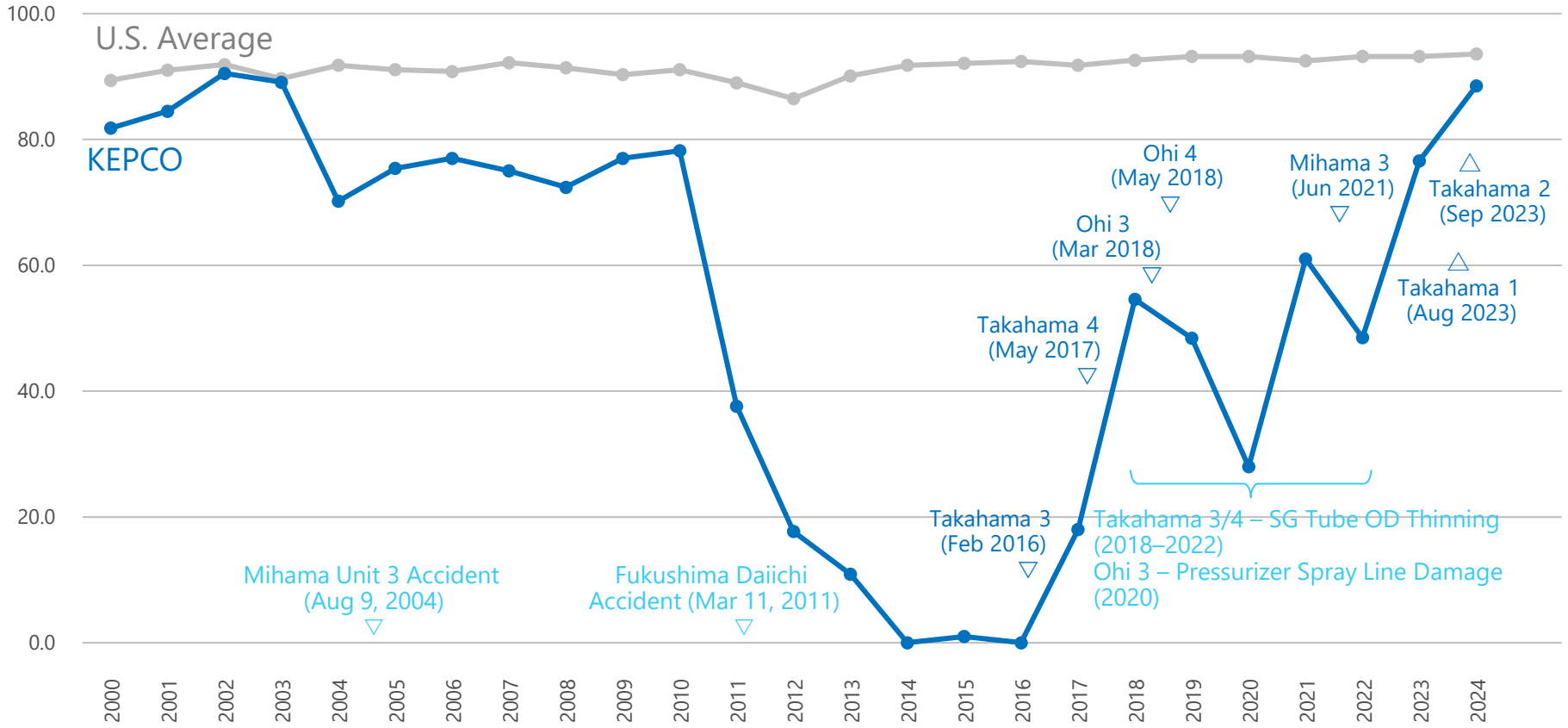
○ Aim to **enhance reliability and improve business viability** by maximizing the utilization of our existing reactors and by steadily advancing the development of next-generation advanced reactors.



① Enhancing Capacity Utilization (Advanced Operation of NPPs)

- With safety as the top priority, advancing measures –including DX- to maximize the utilization of existing reactors, aiming to achieve operational standards comparable to leading overseas plants.
  - **i) Introduction of flexible operating cycles**
  - **ii) Optimization of periodic inspections**
  - **iii) Introduction of online maintenance**

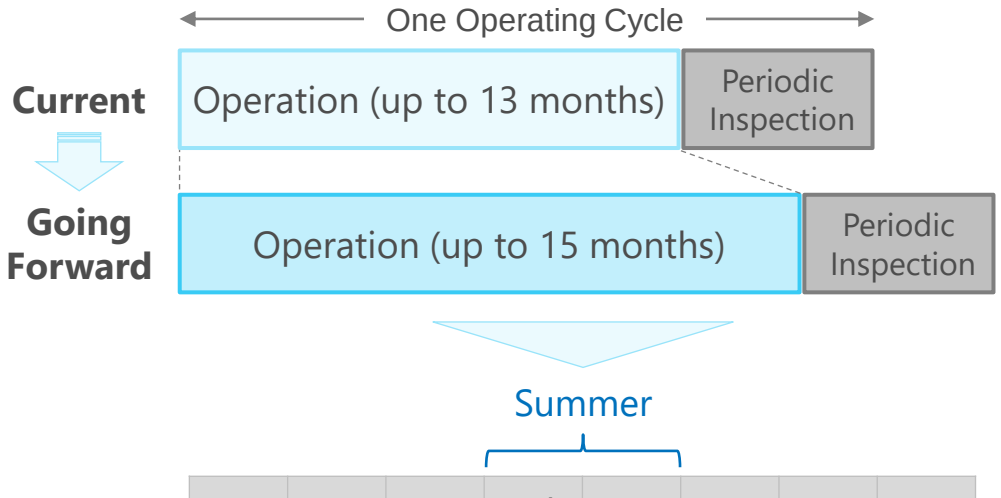
Trends in Capacity Utilization of NPPs



▽△: Restart Timing

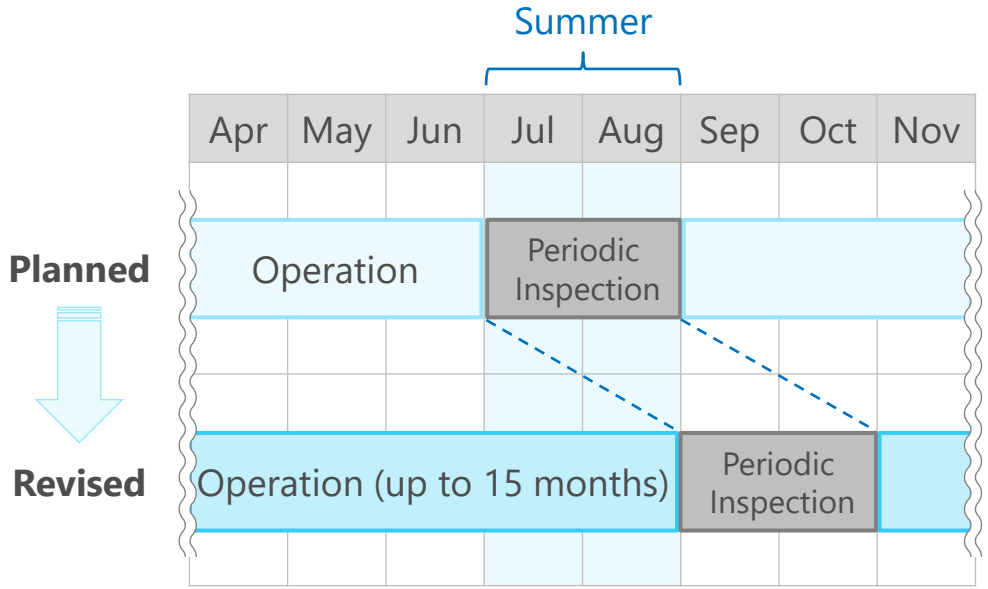
①-i) Introduction of Flexible Operating Cycles

- NPPs alternate between operation and equipment maintenance conducted during periodic inspections.
- By extending the maximum operating period from 13 months to 15 months, it becomes possible to avoid conducting periodic inspections during periods of tight supply–demand conditions, enabling a more flexible operating cycle than before.



Higher capacity factor within each operating cycle
(assuming the inspection duration remains unchanged)

$$\frac{\text{13 months}}{\text{13 months + inspection period}} < \frac{\text{15 months}}{\text{15 months + inspection period}}$$



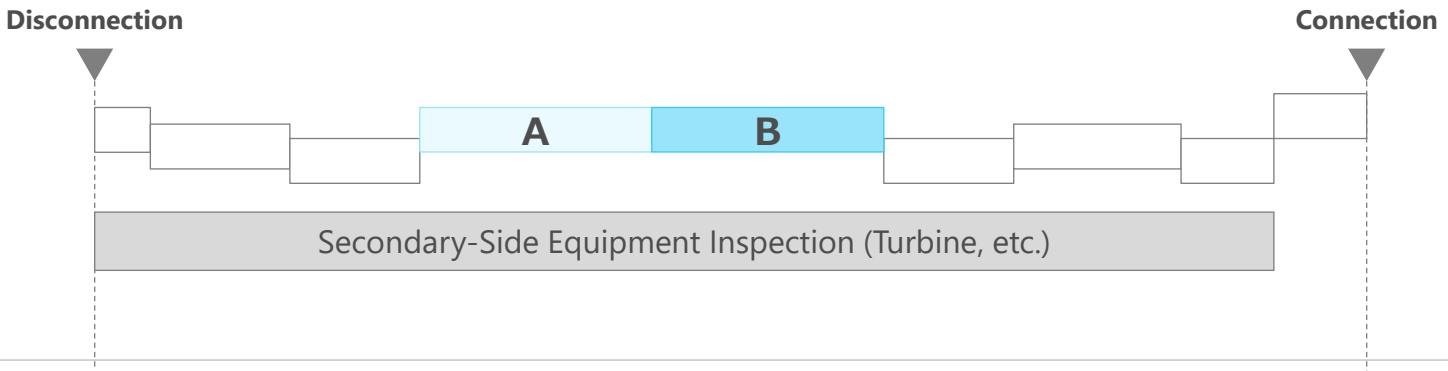
By enabling greater flexibility in the start and end dates of periodic inspections, the inspection period can be adjusted to ensure sufficient electricity supply during high-demand periods.

①-ii) Optimization of Periodic Inspections

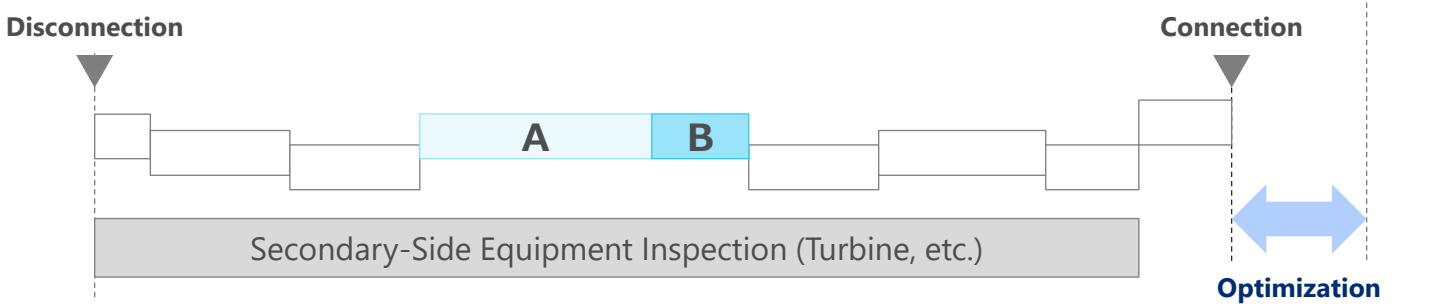
- Benchmark against U.S. and domestic practices, identify best practices, and examining/introducing their application to our plants.
- By optimizing maintenance, we have already shortened several days of periodic inspection duration, with safety as the highest priority.

Optimization of Periodic Inspection Processes through Maintenance Optimization

Standard Practices



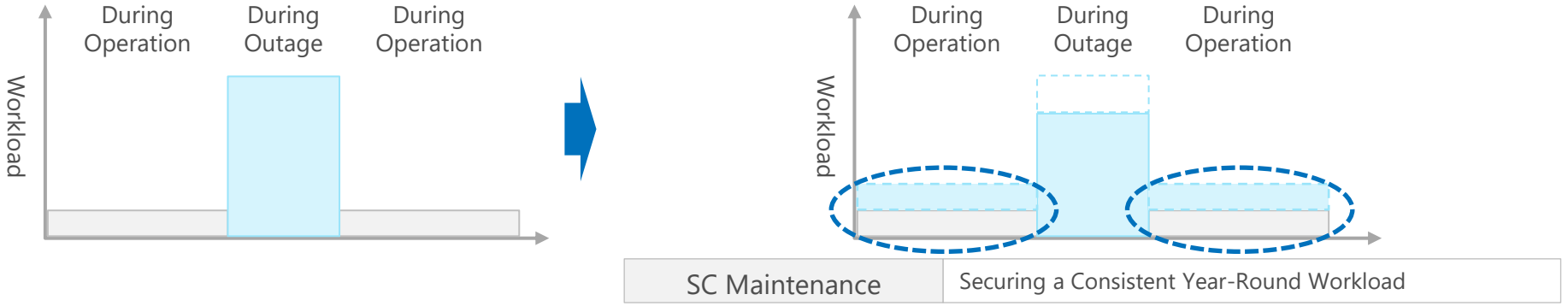
Examples of Initiatives

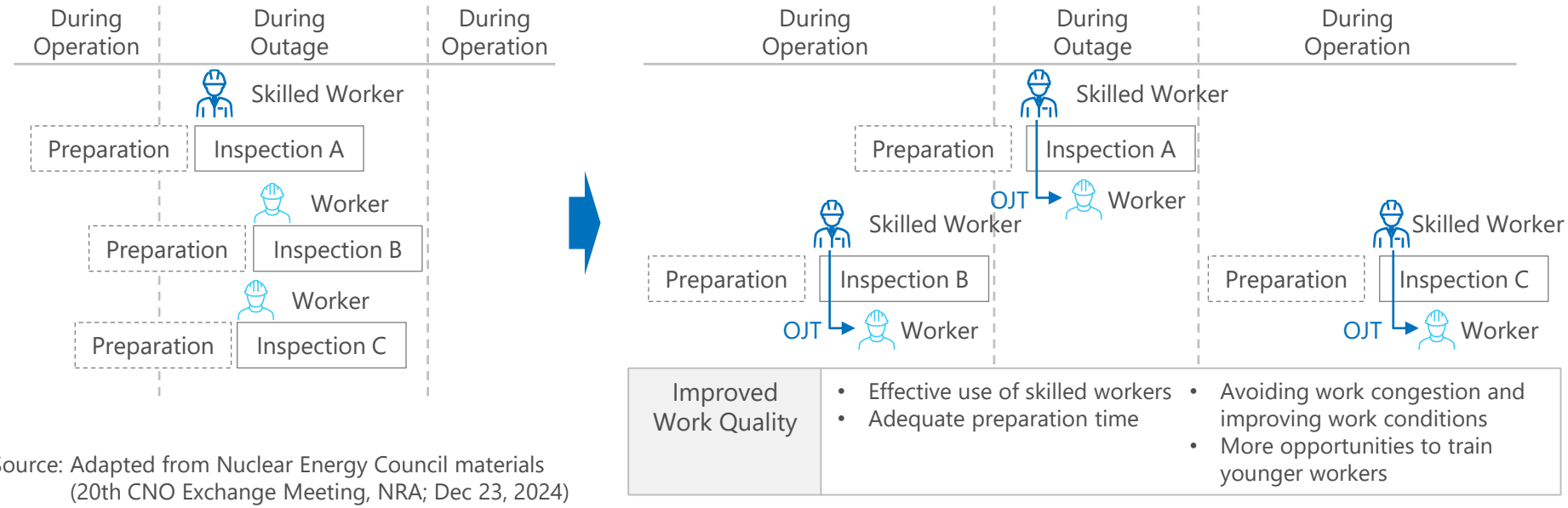


By reviewing inspection intervals and introducing spare units for some large pumps, we have optimized the inspection duration.

①-iii) Introduction of Online Maintenance

- Enabling planned workload leveling throughout the year helps improve work quality and sustain the supply chain (SC).
- Online maintenance has already been implemented at the Ikata NPP of Shikoku-EPCO as a representative domestic case, and we have conducted benchmarking.





Source: Adapted from Nuclear Energy Council materials (20th CNO Exchange Meeting, NRA; Dec 23, 2024)

② Power Uprating

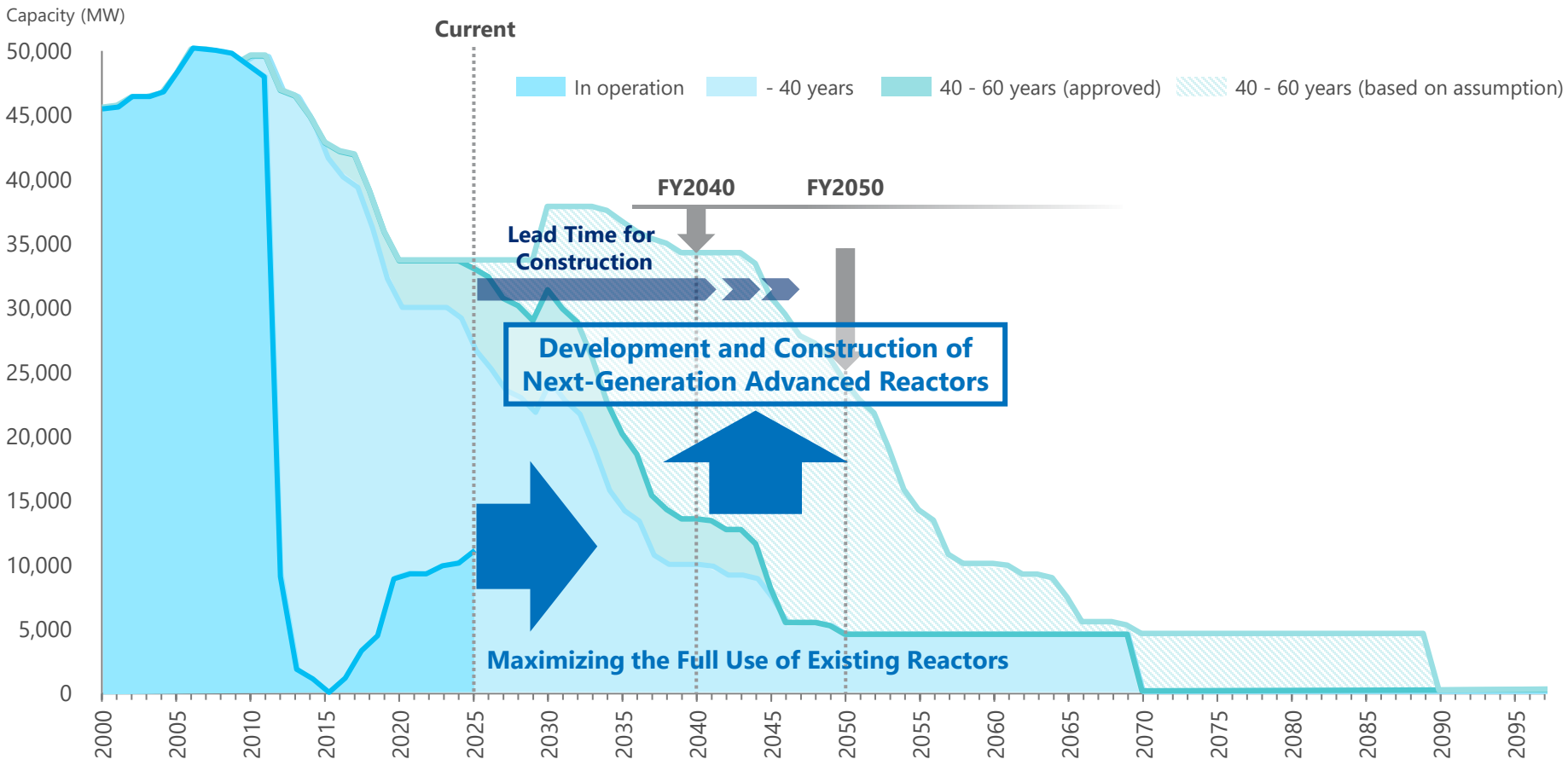
- By shifting from constant electric output operation to constant thermal output operation, electric output has already increased by a few percent.
- At Takahama Units 3 and 4, the planned replacement of the steam generators from FY2026 onward -aimed at ensuring long-term reliability- is also expected to result in a modest increase in electric output.
- Going forward, we will study the uprating initiatives implemented at NPPs in the U.S. and assess the feasibility of applying similar measures to our own plants.

■ Examples of Power Uprating in the US (Based on Public Information)

Power Plant	Reactor Type	Overview
Beaver Valley 1&2	PWR	NRC approval in Jul 2006; ~8% uprating Upgrades: steam turbine, steam generators, transformers
Comanche Peak 1&2	PWR	NRC approved in Jun 2008; ~4.5% uprating Upgrades: steam turbine, condensers
Turkey Point 3&4	PWR	NRC approved in Jun 2012; ~15% uprating Upgrades: fuel improvements, steam turbine, generator, heat exchangers

③ Direction of Our Initiatives for Securing Capacity

- To sustainably maintain nuclear power generation as a stable, it is essential to fully utilize existing reactors and secure capacity over the medium to long term.
- Steadily advance both the maximization of existing reactors and the development and installation of next-generation advanced reactors to secure capacity.



Source：Adapted from materials of the 45th Nuclear Subcommittee Meeting (Jun 24, 2025), based on the 7th Strategic Energy Plan

③ Securing Capacity（Resumption of a Voluntary On-site Survey）

- Resumption of a voluntary on-site survey for the successor plant of Mihama PS, followed by the formulation of the survey plan and the commencement of the survey.
- Decisions on installing a successor plant must consider this results, trends in advanced light-water reactor development, regulatory directions, and the business environment.

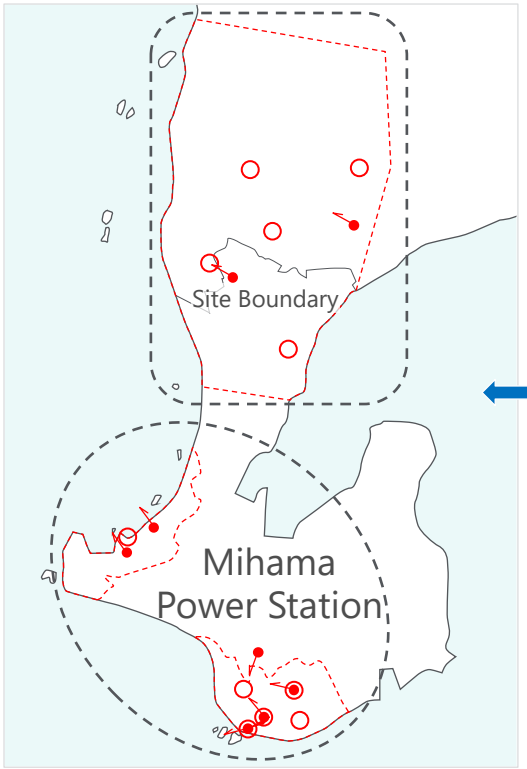
Survey Plan Overview

- Preliminary Survey:
  Based on the geological overview, we will select the most suitable area for the construction site.
- Detailed Survey:
  In the selected area, we will confirm whether the geological and ground conditions are appropriate for the installation of nuclear facilities.

Implementation Period (Planned)

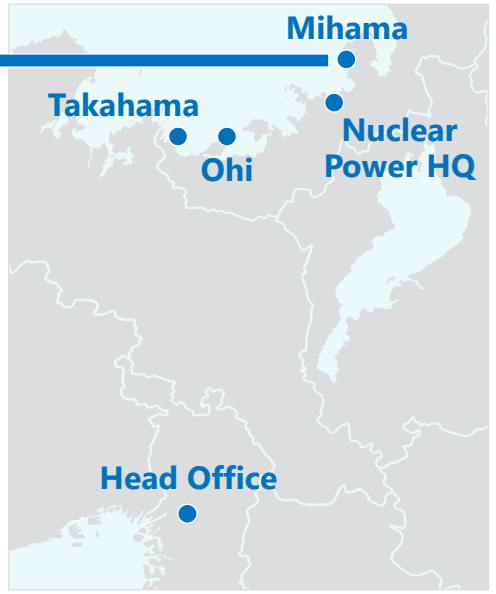
- Preliminary Survey:
  Nov. 2025 – Mar. 2027
- Detailed Survey:
  Apr. 2027 – 2029–2030

Preliminary Survey Location (Planned)



Legend
- ---- : Surface Survey Area
- ○ : Vertical Boring Survey Point
- —● : Inclined Boring Survey Point

(The locations for seismic exploration will be determined based on the results of boring surveys and other relevant data.)



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This material contains statements on future results and plans Such statements do not guarantee future results or plans, and may entail risks and uncertainties Please be advised that future results and plans may change due to changes in premises for the business environment, etc.