

# FY2019 1<sup>st</sup> Quarter Financial Results (April 1 – June 30, 2019)

Tokyo Electric Power Company Holdings, Inc.

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tepcon

# Overview of FY2019 1<sup>st</sup> Quarter Financial Results

(Released on July 31, 2019)

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*(Note)*

*Please note that the following is an accurate and complete translation of the original Japanese version prepared for the convenience of our English-speaking investors. In case of any discrepancy between the translation and the Japanese original, the latter shall prevail.*

## < FY2019 1<sup>st</sup> Quarter Financial Results >

- Although electricity sales volume for TEPCO group companies decreased, operating revenue increased due to a rise in fuel cost adjustment.
- Ordinary income increased due to a gain incurred by fuel cost adjustment system time lag into income and continual cost reductions made by all Group companies.
- Ordinary income and net income showed a profit - the former for six, the latter for five consecutive years.
- The gain on change in equity as a result of the succession of the thermal power generation business to JERA and the loss in the decommissioning of Fukushima Daini as a result of the decision to decommission the Fukushima Daini Nuclear Power Station were appropriated as extraordinary income and loss.

# 1. Consolidated Financial Results

(Unit: Billion kWh)

	FY2019	FY2018	Comparison	
	April-June (A)	April-June (B)	(A)-(B)	(A)/(B) (%)
Electricity Sales Volume	52.2	52.6	-0.4	99.2

(Unit: Billion Yen)

	FY2019	FY2018	Comparison	
	April-June (A)	April-June (B)	(A)-(B)	(A)/(B) (%)
Operating Revenue	1,504.0	1,354.0	150.0	111.1
Operating Income/Loss	51.2	68.8	-17.6	74.4
Ordinary Income/Loss	98.5	67.3	31.2	146.3
Extraordinary Income	313.2	-	313.2	-
Extraordinary Loss	125.7	46.6	79.0	-
Net Income attributable to owners of parent	281.6	16.4	265.1	-

## 2. Points of Each Company

### <TEPCO Holdings>

- Ordinary income increased due to decreases in costs through internalization of outsourcing business, etc.

### <TEPCO Fuel & Power>

- Ordinary income increased due to factors including a gain incurred by fuel cost adjustment system time lag into income at JERA, which has succeeded the thermal power generation business, etc.

### <TEPCO Power Grid>

- Ordinary income increased due to factors including increased transmission revenue and decreased maintenance expenses and depreciation.

### <TEPCO Energy Partner>

- Ordinary income decreased due to intensified competition, etc.

### 3. Overview of Each Company

(Unit: Billion Yen)

	FY2019 April-June (A)	FY2018 April-June (B)	Comparison	
			(A)-(B)	(A)/(B) (%)
Operating Revenue	1,504.0	1,354.0	150.0	111.1
TEPCO Holdings	188.0	194.1	-6.1	96.8
TEPCO Fuel & Power	2.1	414.6	-412.4	0.5
TEPCO Power Grid	412.3	393.0	19.2	104.9
TEPCO Energy Partner	1,379.0	1,270.0	109.0	108.6
Adjustments	-477.5	-917.8	440.3	-
Ordinary Income/Loss	98.5	67.3	31.2	146.3
TEPCO Holdings	156.4	153.8	2.5	101.7
TEPCO Fuel & Power	45.8	22.4	23.3	203.7
TEPCO Power Grid	42.6	38.7	3.8	109.9
TEPCO Energy Partner	-12.0	-8.3	-3.6	-
Adjustments	-134.2	-139.4	5.1	-

## 4. Consolidated Extraordinary Income/Loss

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(Unit: Billion Yen)

	FY2019 April-June (A)	FY2018 April-June (B)	Comparison (A)-(B)
Extraordinary Income	313.2	-	313.2
Gain on reversal of provision for loss on disaster	113.5	-	113.5
Gain on change in equity	199.7	-	199.7
Extraordinary Loss	125.7	46.6	79.0
Expenses for Nuclear Damage Compensation	30.0	46.6	-16.6
Losses on decommissioning Fukushima Daini	95.6	-	95.6
Extraordinary Income/Loss	187.5	-46.6	234.2

### ※1 Overview of Extraordinary Income

#### ◆Gain on reversal of provision for loss on disaster

Of the costs or losses recorded as a provision for loss on disaster, the amount for Fukushima Daini Nuclear Power Station was reverted due to the decision to decommission.

#### ◆Gain on change in equity

Equity income was realized as a result of JERA taking over certain business.

### ※2 Overview of Extraordinary Loss

#### ◆Expenses for nuclear damage compensation

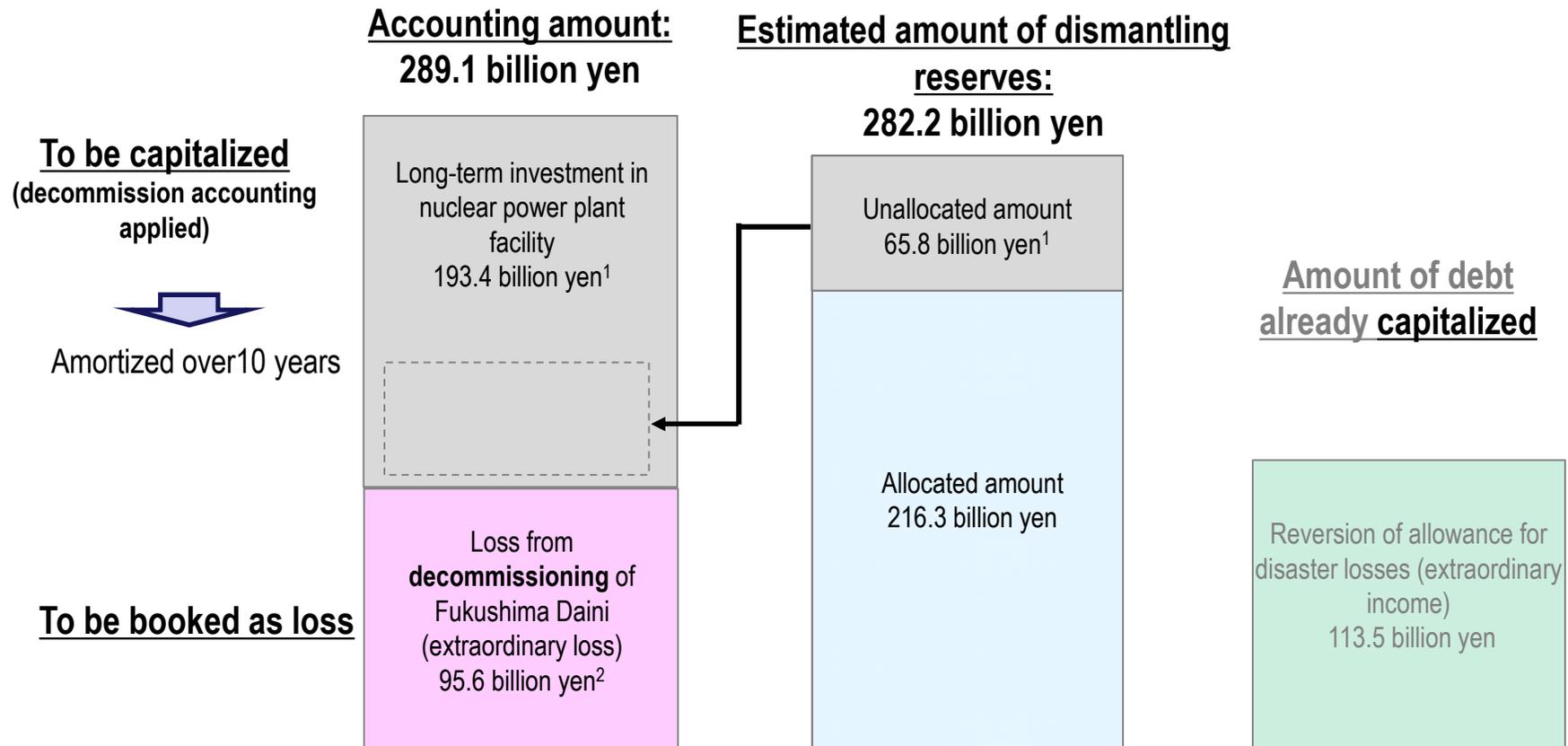
Increase in the estimated amount of compensation for damages due to the restriction on shipment and damages due to reputation, etc.

#### ◆Losses on decommissioning Fukushima Daini

Losses were booked for equipment and nuclear fuel lost due to the decision to decommission.

## 5. Accounting Related to the Decommissioning of Fukushima Daini

- Of the 289.1 billion yen to be accounted for in the face of the decision to decommission, 95.6 billion yen, the book value for the generating facility and nuclear fuel, was recorded as together an extraordinary loss. The remaining 193.4 billion yen will be recognized as an asset and amortized over the next ten years under the decommissioning accounting rules.
- The remaining 113.5 billion yen that was recorded immediately after the Great East Japan Earthquake as a provision for loss on disaster was booked as extraordinary income.



Note 1:

- Reprocessing contribution costs: Contributions that must be paid to the Nuclear Reprocessing Organization of Japan for reprocessing spent fuel, etc.
- Fuel dismantling cost: The cost of making non-irradiated nuclear fuel manufactured for Fukushima Daini NPS available for other reactors
- Unallocated amount of reserves for dismantling: Calculated as the total estimate, based on Article 1 (4) of Ministerial Ordinance on Nuclear Power Facility Dissolution Reserve, minus the amount of provision that had been allocated as of the end of the period (relevant amount is accounted for as "Nuclear Power Plant Facility" as legally required).

Note 2: Book value of power-generation facilities and nuclear fuel

## 6. Consolidated Financial Position

- Total assets balance decreased by 950.5 billion yen primarily due to the transfer of steam-power-generation facilities to JERA.
- Total liabilities balance decreased by 1,227.0 billion yen primarily due to the transfer of TEPCO Fuel & Power's loans to JERA.
- Total net assets balance increased by 276.5 billion yen primarily due to the appropriation of net income attributable to owners of parent.
- Equity ratio improved by 4.2 points.

Balance Sheet as of March 31, 2019

Total Assets 12,757.4 billion yen	Liabilities 9,853.7 billion yen
	Net Assets 2,903.6 billion yen

**Equity Ratio: 22.6%**

Balance Sheet as of June 30, 2019

Total Assets 11,806.9 billion yen	Liabilities 8,626.7 billion yen
(Decrease in Assets -950.5 billion yen)	Net Assets 3,180.2 billion yen

**Equity Ratio: 26.8%**

**Decrease in liabilities  
-1,227.0 billion yen**

- Decrease in interest-bearing loans  
-977.2 billion yen  
(Primarily transfer of FP's loans to  
JERA)

**Increase in net assets  
+ 276.5 billion yen**

- Appropriation of net  
income  
attributable to owners of  
parent  
+ 281.6 billion yen

**Improved by  
4.2 points**

# <Reference> Key Factors Affecting Performance (Results)

## Area Demand

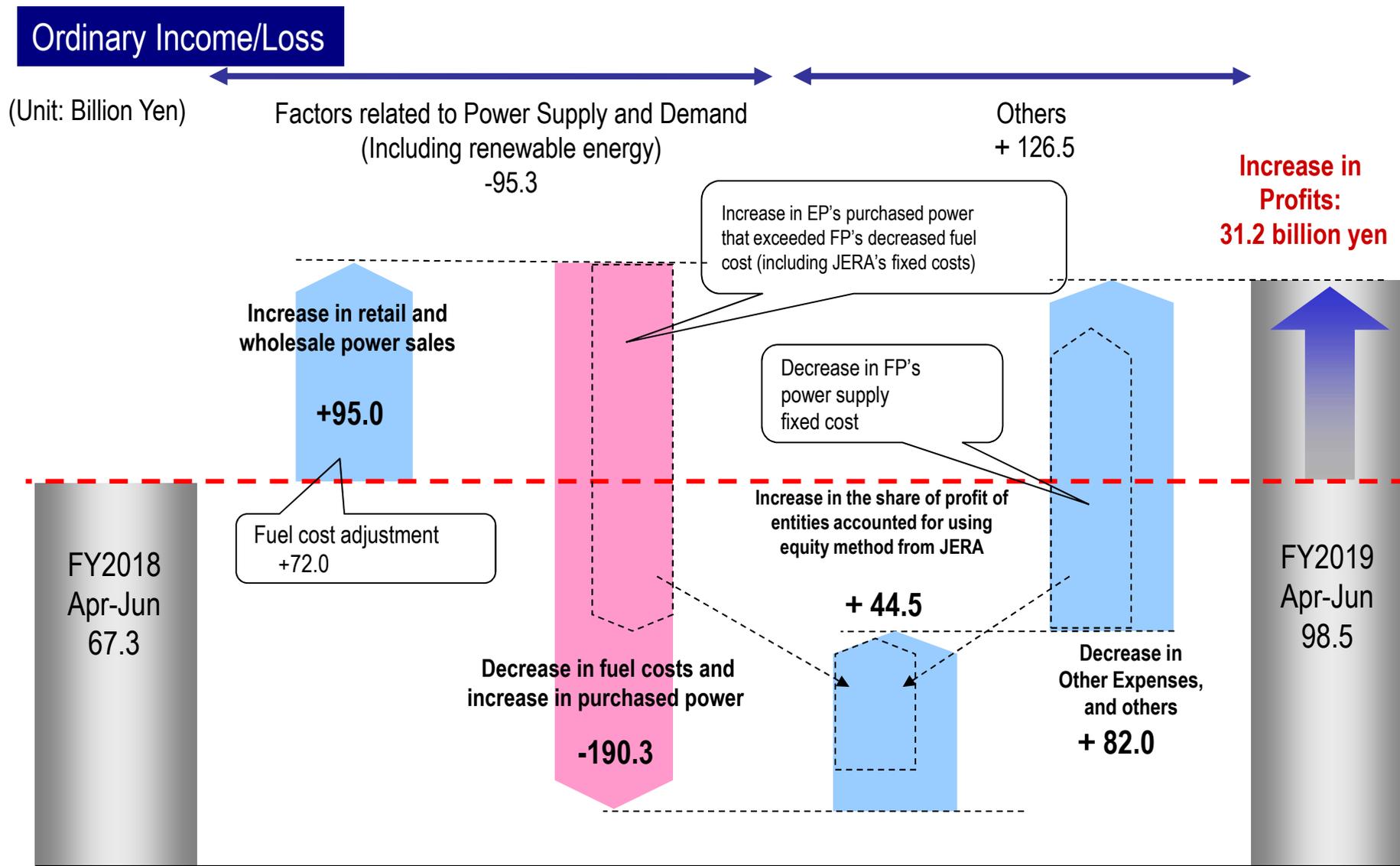
(Unit: Billion kWh)

	FY2019 Apr-Jun (A)	FY2018 Apr-Jun (B)	Comparison	
			(A)-(B)	(A)/(B) (%)
Area Demand	62.3	61.8	0.4	100.7

## Foreign Exchange Rates / CIF

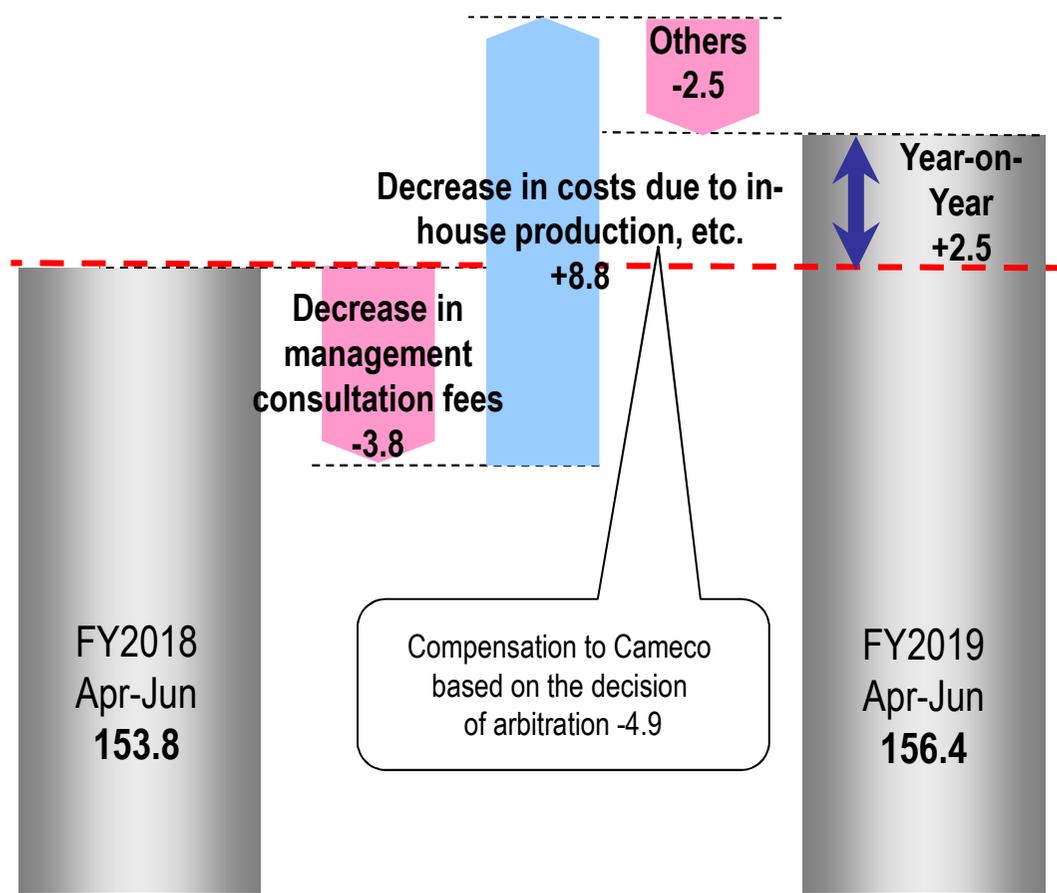
	FY2019 Apr-Jun (A)	FY2018 Apr-Jun (B)	(A)-(B)
Foreign Exchange Rate (Interbank, yen/dollar)	109.9	109.1	0.8
Crude Oil Prices (All Japan CIF, dollar/barrel)	71.5	70.6	0.9

# <Reference> Consolidated Ordinary Income/Loss (Year-on-Year Comparison)



## Ordinary Income/Loss

(Billion Yen)



## Profit Structure

Profit is dividend income, decommissioning charges profit, management consultation fees, electricity sales fees, etc.

## Flow Rate

2019 Apr-Jun
90.8%

## Ordinary Income

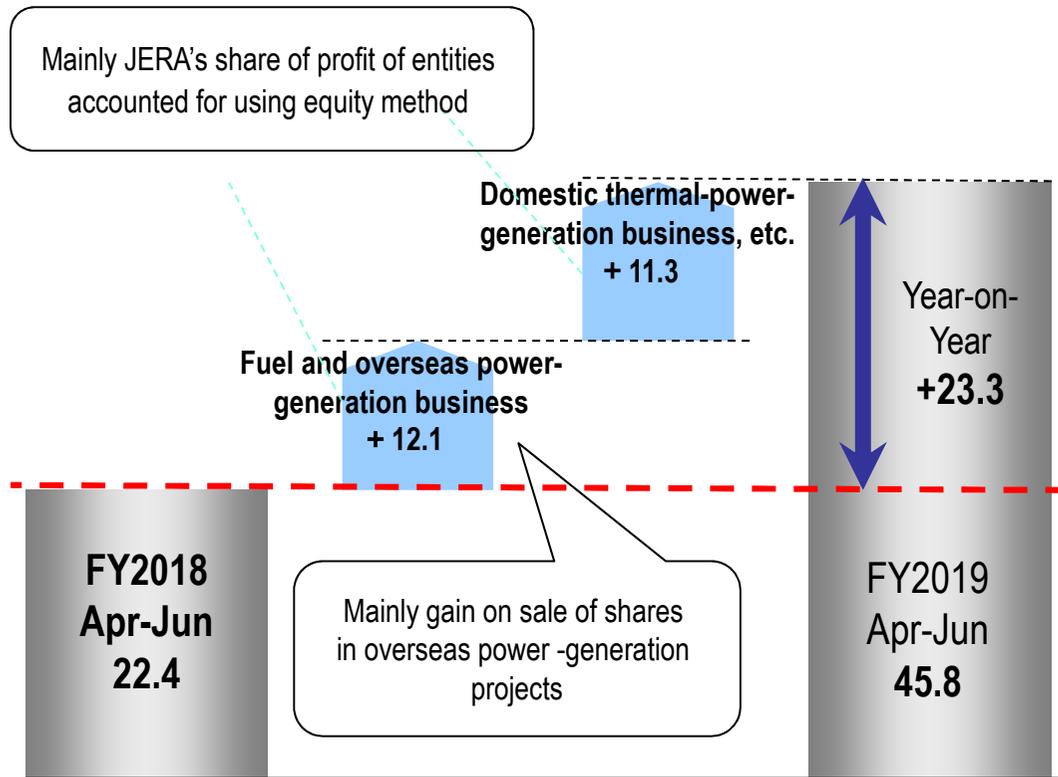
(Unit: Billion Yen)

	FY2018	FY2019
Apr-Jun	153.8	156.4
Apr-Sep	173.4	
Apr-Dec	178.9	
Apr-Mar	232.7	

# <Reference> Year-on-Year Comparison for TEPCO Fuel & Power

## Ordinary Income/Loss

(Billion Yen)



## Profit Structure

Main profit is JERA's share of profit of entities accounted for using equity method.  
 Power-generation business was transferred to JERA on April 1, 2019.

## Timing impact (JERA equity impact)

2019 Apr-Jun  
 +22.0 billion yen

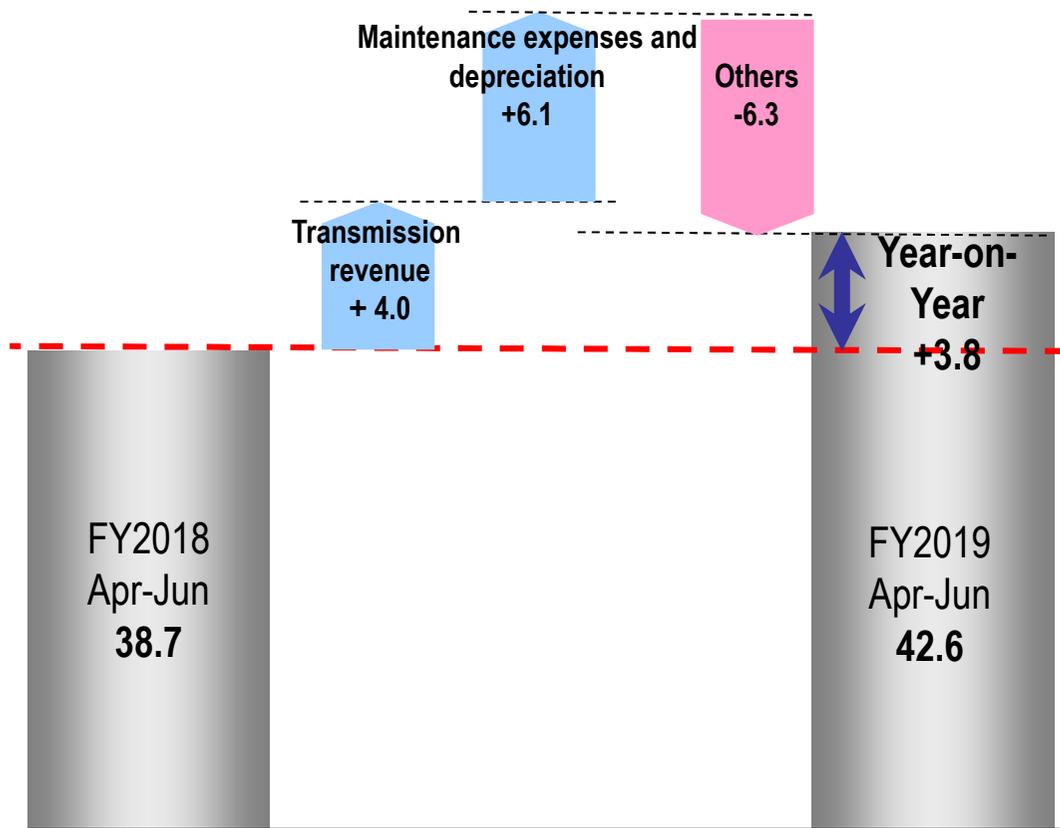
## Ordinary Income

(Unit: Billion Yen)

	FY2018	FY2019
Apr-Jun	22.4	45.8
Apr-Sep	5.2	
Apr-Dec	3.4	
Apr-Mar	3.5	

## Ordinary Income/Loss

(Billion Yen)



## Profit Structure

Operating revenue is mainly transmission revenue, and this is fluctuated by area demand. Expenses is mainly for repairs and depreciation of transmission and distribution facilities.

## Area Demand

(Unit: Billion kWh)

	FY2018	FY2019
Apr-Jun	61.8	62.3

## Ordinary Income

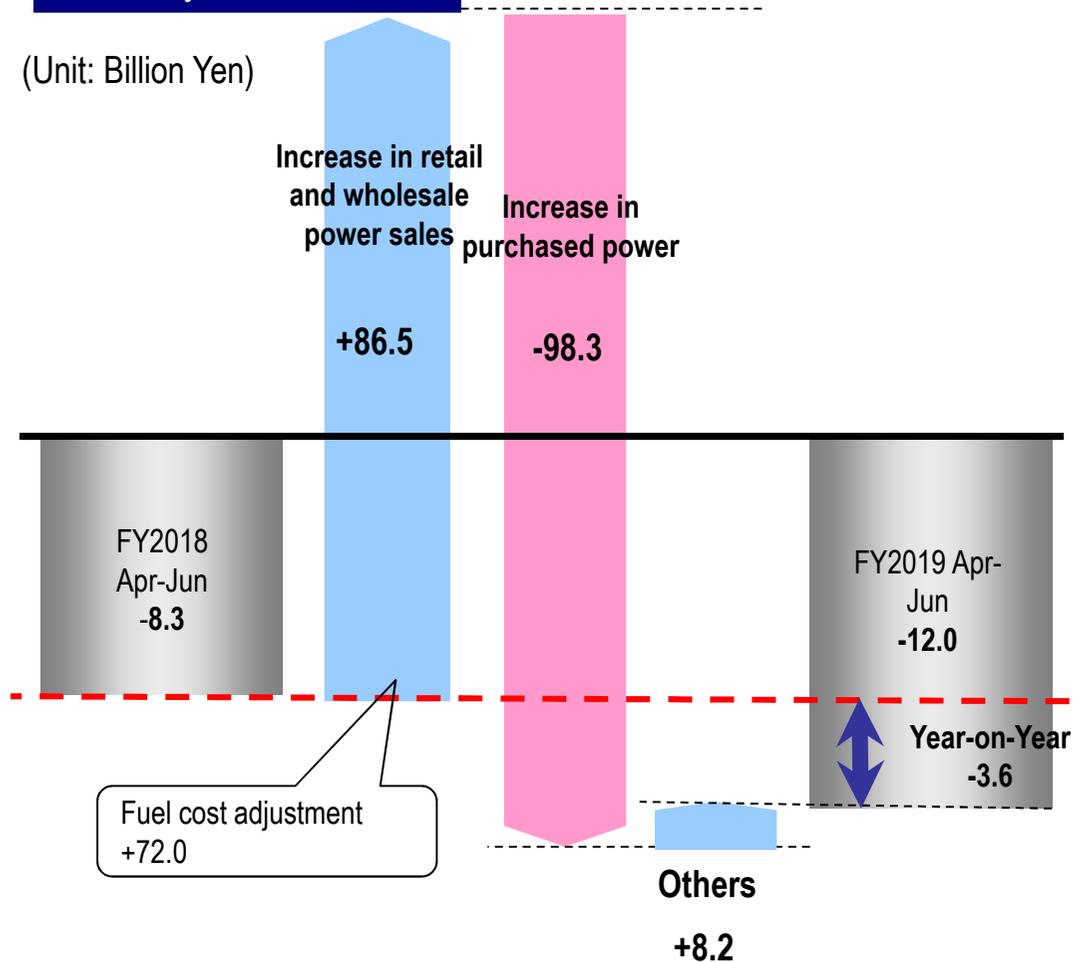
(Unit: Billion Yen)

	FY2018	FY2019
Apr-Jun	38.7	42.6
Apr-Sep	117.0	
Apr-Dec	163.1	
Apr-Mar	113.9	

# <Reference> Year-on-Year Comparisons for TEPCO Energy Partner

## Ordinary Income/Loss

(Unit: Billion Yen)



## Profit Structure

Operating revenue is mainly electricity sales revenue , and this is fluctuated by electricity sales volume . Expenses is mainly power purchasing costs .

## Electricity Sales Volume

(Unit: Billion kWh)

	FY2018	FY2019
Apr-Jun	52.6	52.2

## Gas (including Nichi gas , TEA)

As of March 31, 2019	As of June 30, 2019
Approx. 1.25 million cases	Approx. 1.46 million cases

## Ordinary Income

(Unit: Billion Yen)

	FY2018	FY2019
Apr-Jun	-8.3	-12.0
Apr-Sep	54.1	
Apr-Dec	39.3	
Apr-Mar	72.7	

# Supplemental Material

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# FY2019 1<sup>st</sup> Quarter Financial Results

## Detailed Information

# Consolidated Statements of Income

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(Unit: Billion Yen)

	FY2019	FY2018	Comparison	
	Apr-Jun (A)	Apr-Jun (B)	(A)-(B)	(A)/(B) (%)
Operating Revenue	1,504.0	1,354.0	150.0	111.1
Operating Expenses	1,452.7	1,285.1	167.6	113.0
<b>Operating Income / Loss</b>	<b>51.2</b>	<b>68.8</b>	<b>-17.6</b>	<b>74.4</b>
Non-operating Revenue	61.1	18.4	42.6	330.8
Investment Gain under the Equity Method	58.9	15.6	43.3	377.6
Non-operating Expenses	13.8	19.9	-6.1	69.3
<b>Ordinary Income / Loss</b>	<b>98.5</b>	<b>67.3</b>	<b>31.2</b>	<b>146.3</b>
Reserve for Fluctuation in Water Levels	—	0.0	-0.0	—
Reserve for preparation of depreciation of nuclear power construction	0.0	0.0	0.0	164.9
Extraordinary Income	313.2	—	313.2	—
Extraordinary Loss	125.7	46.6	79.0	—
Income Tax, etc.	4.1	4.1	-0.0	99.8
Net Income attributable to non-controlling interests	0.2	0.0	0.2	—
<b>Net Income attributable to owners of parent</b>	<b>281.6</b>	<b>16.4</b>	<b>265.1</b>	<b>—</b>

# Financial Impact of the Great East Japan Earthquake

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(Unit: Billion Yen)

Item	FY2010 to FY2018	FY2019 Apr-Jun	Cumulative Amount
<b>◇ Grants-in-aid from Nuclear Damage Compensation and Decommissioning Facilitation Corporation</b>			
○ Grants-in-aid based on Nuclear Damage Compensation and Decommissioning Facilitation Corporation Act	* 7,193.1	—	* 7,193.1

Note: Journal Entry: Grants-in-aid receivable from Nuclear Damage Compensation and Decommissioning Facilitation Corporation is debited on the balance sheet.

\* Numbers above are those after deduction of a governmental indemnity of 188.9 billion yen, and Grants-in-aid corresponding to decontamination expenses of 3,585.1 billion yen respectively.

## ◆ Breakdown of the restoration cost and others caused by the Great East Japan Earthquake (Extraordinary Income and Loss)

● Expenses and/ or losses for Fukushima Daiichi Nuclear Power Station Units 1 through 4	1,079.1	1.1	1,080.2
● Other expenses and/ or losses	381.9	-0.0	381.8
<b>Loss on Disaster Sub Total: (A)</b>	<b>1,461.0</b>	<b>1.0</b>	<b>1,462.1</b>
○ Difference of the restoration cost caused by re-estimation due to decommissioning of Fukushima Daiichi Nuclear Power Station Units 5 and 6	32.0	—	32.0
○ Difference of the work cost caused by re-estimation due to decommissioning of Fukushima Daini Nuclear Power Station	—	113.5	113.5
<b>Gain on reversal of provision for loss on disaster (Extraordinary Income) Sub Total: (B)</b>	<b>32.0</b>	<b>113.5</b>	<b>145.5</b>
Total: (A)-(B)	1,429.0	-112.4	1,316.5

## ◆ Loss on Decommissioning

● Expenses and/ or losses for decommissioning of Fukushima Daiichi Nuclear Power Station Units 5 and 6	39.8	—	39.8
● Expenses and/ or losses for decommissioning of Fukushima Daini Nuclear Power Station	—	95.6	95.6

## ◆ Expenses for Nuclear Damage Compensation

● Compensation for individual damages - Expenses for radiation inspection, Mental distress, Damages caused by voluntary evacuations, and Opportunity losses on salary of workers etc.	2,070.6	-2.8	2,067.8
● Compensation for business damages - Opportunity losses on businesses, Damages due to the restriction on shipment, Damages due to groundless rumor and Package compensation etc.	3,045.3	22.8	3,068.1
● Other expenses - Damages due to decline in value of properties, Housing assurance damages and Decontamination costs etc.	5,845.1	10.0	5,855.1
● Amount of indemnity for nuclear accidents from the Government	-188.9	—	-188.9
● Grants-in-aid corresponding to decontamination expenses	-3,585.1	—	-3,585.1
Total	7,187.0	30.0	7,217.1

# Consolidated Balance Sheets

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(Unit: Billion Yen)

	Jun. 30 2019 (A)	Mar. 31 2019 (B)	Comparison	
			(A)-(B)	(A)/(B) (%)
<b>Total Assets</b>	<b>11,806.9</b>	<b>12,757.4</b>	<b>-950.5</b>	<b>92.5</b>
Fixed Assets	9,927.0	10,657.7	-730.6	93.1
Current Assets	1,879.8	2,099.7	-219.8	89.5
<b>Liabilities</b>	<b>8,626.7</b>	<b>9,853.7</b>	<b>-1,227.0</b>	<b>87.5</b>
Long-term Liability	4,645.4	4,766.2	-120.8	97.5
Current Liability	3,974.0	5,080.3	-1,106.3	78.2
Reserve for Preparation of the Depreciation of Nuclear Plants Construction	7.2	7.1	0.0	101.1
<b>Net Assets</b>	<b>3,180.2</b>	<b>2,903.6</b>	<b>276.5</b>	<b>109.5</b>
Shareholders' Equity	3,171.0	2,889.6	281.3	109.7
Accumulated Other Comprehensive Income	-4.9	-0.2	-4.6	—
Non-controlling Interests	14.1	14.2	-0.1	98.9

<Interest-bearing debt outstanding>

(Unit: Billion Yen)

	Jun. 30 2019 (A)	Mar. 31 2019 (B)	(A)-(B)
Bonds	1,996.6	1,956.7	39.8
Long-term Debt	1,124.1	1,161.6	-37.4
Short-term Debt	1,792.6	2,772.3	-979.7
Total	4,913.5	5,890.7	-977.2

<Reference>

	FY2019 Apr-Jun (A)	FY2018 Apr-Jun (B)	(A)-(B)
ROA(%)	0.4	0.6	-0.2
ROE(%)	9.3	0.6	8.7
EPS(Yen)	175.76	10.28	165.48

ROA: Operating Income / Average Total Assets

ROE: Net Income attributable to owners of parent / Average Equity Capital

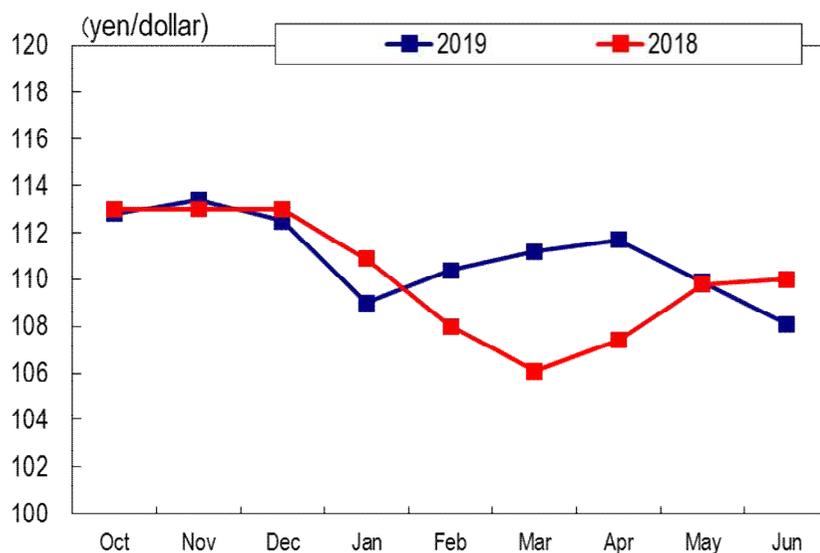
\*On April 1<sup>st</sup>, 2019, TEPCO Fuel & Power Inc., succeeded its existing thermal power generation business to JERA Co., Inc. (50% investment by TEPCO Fuel & Power Inc., 50% investment by Chubu Electric Power Co., Inc.)

# Key Factors Affecting Performance

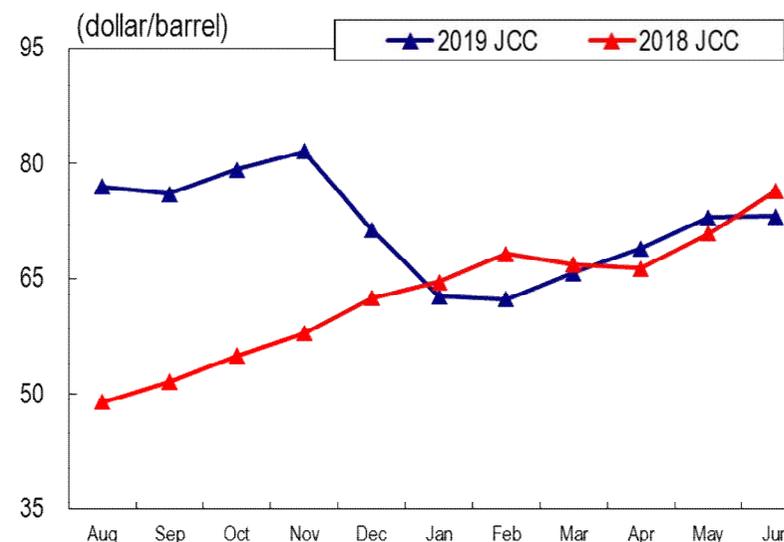
## Key Factors Affecting Performance (Results)

	FY2019 Apr-Jun	FY2018 Apr-Jun	[Reference] FY2018
Electricity Sales Volume (Billion kWh)	52.2	52.6	230.3
Gas Sales Volume (Million ton)	0.39	0.36	1.77
Foreign Exchange Rate (Interbank; yen per dollar)	109.9	109.1	110.9
Crude Oil Prices (All Japan CIF; dollars per barrel)	71.5	70.6	72.1
Nuclear Power Plant Capacity Utilization Ratio (%)	-	-	-

<Fluctuation of Foreign Exchange Rate>



<Fluctuation of All Japan CIF>



# Seasonal Breakdown of Electricity Sales Volume and Total Power Generated

## Electricity Sales Volume

Unit Billion kWh

	FY2019				[Ref.]Year-on-year Comparison (Apr-Jun)
	Apr	May	Jun	Apr-Jun	
Lighting	5.88	4.96	4.41	15.25	
Power	12.19	11.87	12.86	36.92	
<b>Total</b>	<b>18.07</b>	<b>16.83</b>	<b>17.27</b>	<b>52.17</b>	
	FY2018				[Ref.]Year-on-year Comparison (Apr-Jun)
	Apr	May	Jun	Apr-Jun	
Lighting	5.57	5.24	4.78	15.60	97.8%
Power	12.10	11.98	12.93	37.01	99.8%
<b>Total</b>	<b>17.67</b>	<b>17.23</b>	<b>17.71</b>	<b>52.60</b>	<b>99.2%</b>

## Total Power Generated

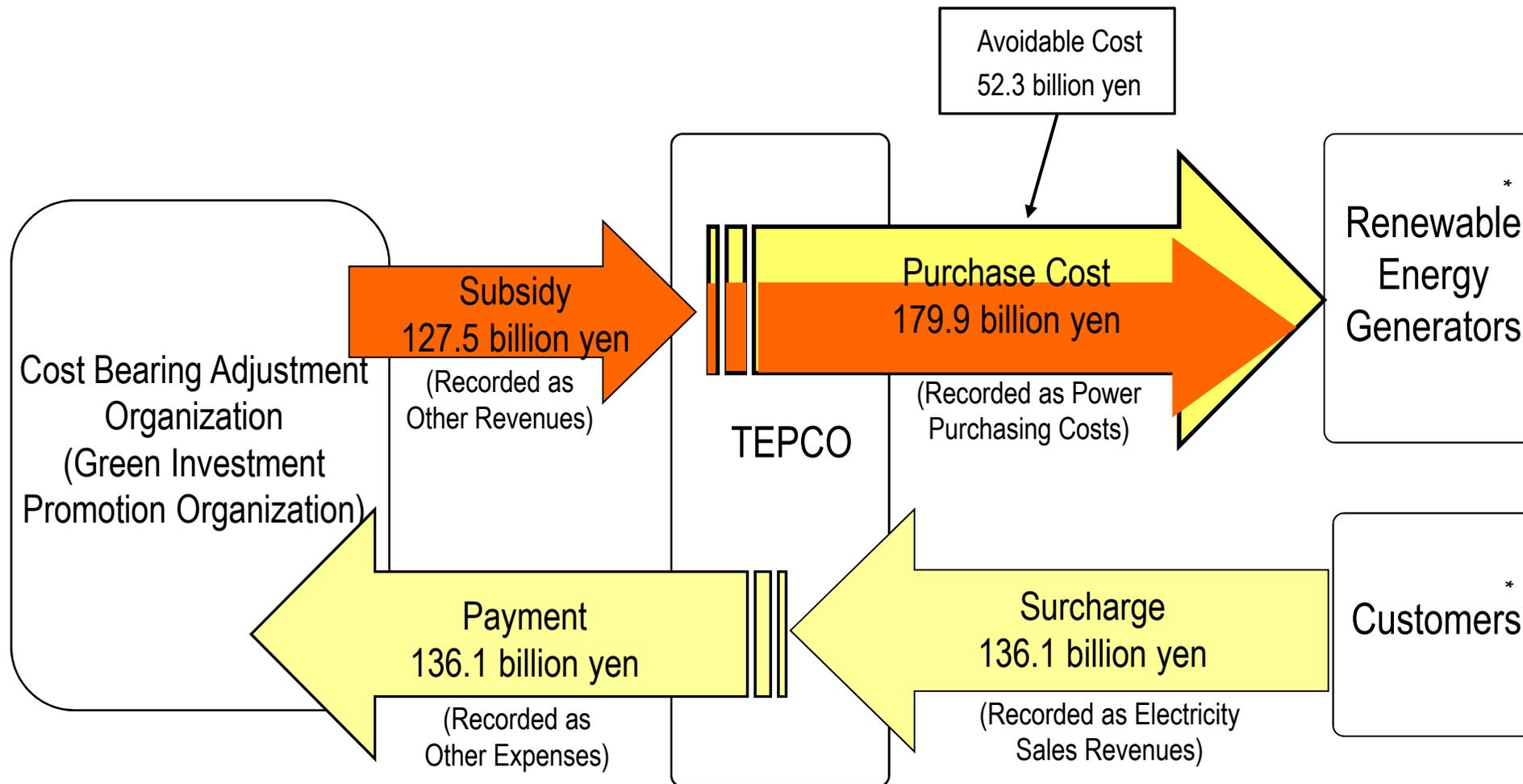
Unit Billion kWh

	FY2019				[Ref.]Year-on-year Comparison (Apr-Jun)
	Apr	May	Jun	Apr-Jun	
Hydroelectric	0.90	1.06	0.95	2.91	
Thermal	0.01	0.01	0.01	0.04	
Nuclear	-	-	-	-	
Renewable etc.	0.01	0.01	0.01	0.02	
<b>Total</b>	<b>0.91</b>	<b>1.08</b>	<b>0.97</b>	<b>2.96</b>	
	FY2018				[Ref.]Year-on-year Comparison (Apr-Jun)
	Apr	May	Jun	Apr-Jun	
Hydroelectric	1.15	1.28	0.94	3.37	86.5%
Thermal	12.54	12.56	14.01	39.12	0.1%
Nuclear	-	-	-	-	-
Renewable etc.	0.01	0.01	0.01	0.02	77.5%
<b>Total</b>	<b>13.70</b>	<b>13.85</b>	<b>14.96</b>	<b>42.50</b>	<b>7.0%</b>

\*On April 1<sup>st</sup>, 2019, TEPCO Fuel & Power Inc., succeeded its existing thermal power generation business to JERA Co., Inc. (50% investment by TEPCO Fuel & Power Inc., 50% investment by Chubu Electric Power Co., Inc.)

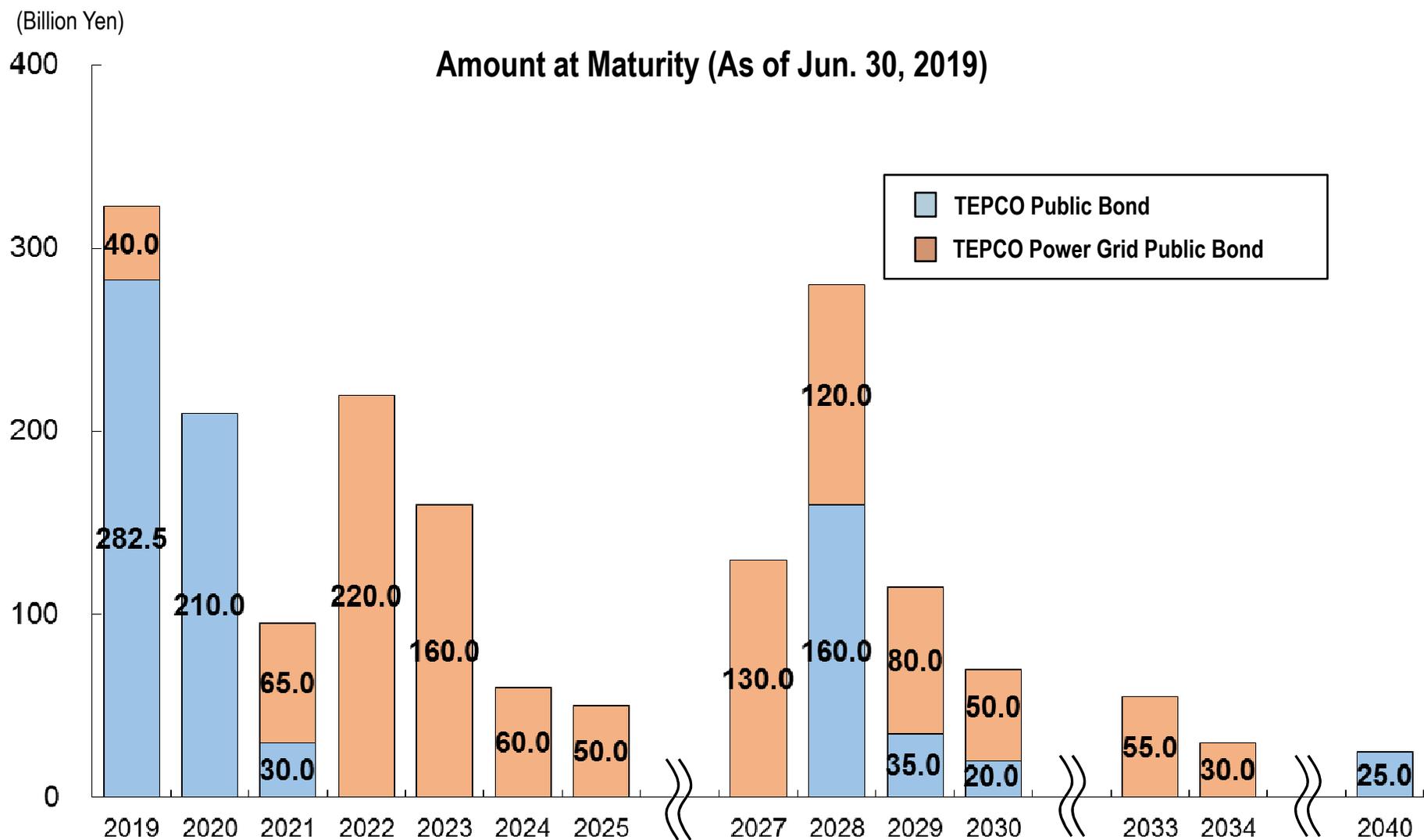
# Feed-in Tariff Scheme for Renewable Energy (Purchase Cost Collection Flow)

(FY2019 Apr.- Jun.)



\* Including TEPCO Group Companies

# Schedules for Public Bond Redemption



Note: The amount redeemed for Apr.- Jun. of fiscal 2019 totaled 80.0 billion yen.

(FY)

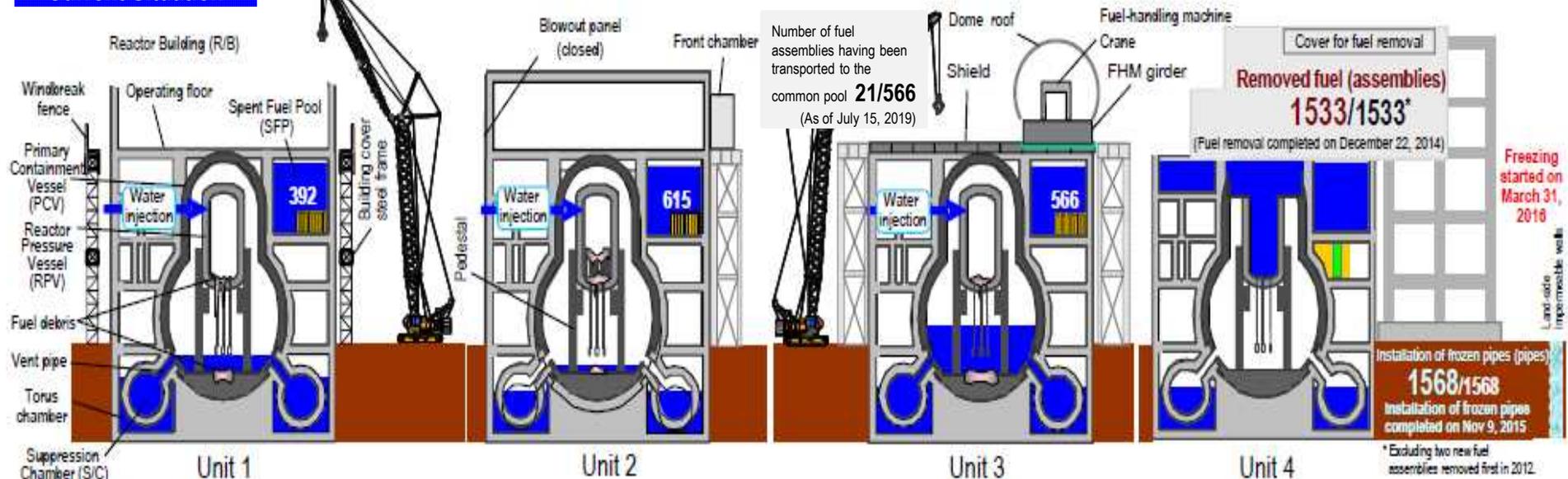
# The Current Status of Fukushima Daiichi Nuclear Power Station and Future Initiatives

# Current Situation and Status of Units 1 through 4

- At Units 1, 2 and 3, it was evaluated that the comprehensive cold shutdown condition had been maintained, judging from the temperatures of the reactors and spent fuel pools as well as the density of radioactive materials. To facilitate the removal of spent fuel, preparation works are underway.
- To formulate the removal of fuel debris, investigation of the inside of Primary Containment Vessel was planned and is underway.

## Current Situation

✓ Please visit our website for latest information about the progress of decommissioning, etc.



<p>Works towards removal of spent fuel and fuel debris</p>	<p>[Spent fuel removal]                  • Planning investigations to determine the handling of the well plug (a concrete lid on the upper part of the upper lid of the RPV), assumed to have been dislodged from its original position due to the effects of the hydrogen explosion. Currently, mockup tests are being conducted. The investigation started on July 17, 2019 after small rubble was removed from around the opening.                  [Fuel debris removal]                  - The status of fuel debris inside the PCV was inspected by a self-propelled investigation device injected into the Unit 1 PCV in March 2017. The status of the inside of PCV has been examined based on the collected image and dose data.</p>	<p>[Spent fuel removal]                  • Confirmed in the operating floor investigation conducted from November 2018 to February 2019, that the air dose rate was falling compared to the investigation conducted in 2011 to 2012.                  • Considering accessing the fuel from the south side (Unit 3 side) that requires minimal dismantling of the upper part of the refueling floor, to reduce dust dispersion risk in building dismantling.                  [Fuel debris removal]                  - In February 2019, investigation by touching deposits was conducted, and it was confirmed that pebble-form deposits can be held and moved and that hard rock-form deposits that cannot be held may exist. Images that will help estimate the contour and size of the deposits were acquired.</p>	<p>[Spent fuel removal]                  • Started fuel retrieval from the spent fuel pool in April 2019. 21 fuel assemblies have been moved to the common pool as of July 15.                  [Fuel debris removal]                  - Analyzing the image data obtained from the pedestal internal survey of July 2017, damage of multiple structures and the structures assumed as core internals, is confirmed. The review of fuel extraction will be continued based on the obtained information.</p>	<p>[Spent fuel removal]                  - Fuel removal from the SFP was completed in December, 2014.</p>
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● The revised version of the Mid-and-Long-Term Roadmap is available via our website.

## 1. Basic Approach toward Revision

- (1) Maintain approach that prioritizes safety and emphasizes risk reduction
- (2) Optimize overall decommissioning so new revelations about field conditions which come to light as the decommissioning work progresses are taken into account
- (3) Emphasize and further enhance communication with the community and society

## 2. Key Revision Points

### (1) Fuel debris removal

NDF compared and reviewed several removal methods, as well as drafted and announced technical recommendations which was submitted to the government at the end of August



Based on the recommendations, a fuel debris removal policy was decided on

- Shift to atmospheric and cross-dyke methods, and move ahead on lower PCV work
- Proceed step-by-step (starting small, advancing in phases)

### (2) Fuel removal from pools

Based on work progress, newly required work was clarified from the standpoint of ensuring safety



Proceed with work prudently by addressing field conditions as they are identified as well as implementing measures to thoroughly ensure safety while adding additional measures as necessary. Optimize overall decommissioning work and make improvements that keep pace with the environment around buildings.

### (3) Contaminated water countermeasures

Preventive and multilayered countermeasures have been advanced, including sub-drains, sea-side impermeable walls, frozen-soil walls, etc. and the quantity of water flowing into buildings has been significantly reduced



Appropriately maintain and manage preventive and multilayered countermeasures, and reliably implement such measures. Thoroughly integrate operation of the frozen-soil wall and sub-drains, and reduce quantity of contaminated water generated. Steadfastly maintain the current policy for handling liquid waste.

### (4) Waste countermeasures

At the end of August, the NDF drafted and announced technical recommendations which was submitted to the government regarding the “basic approach”



Based on recommendations, consolidate the “basic approach.”

- Thoroughly ensure safety (containment and isolation)
- Along with ascertaining properties and conditions, select methods for advanced processing

### (5) Communication

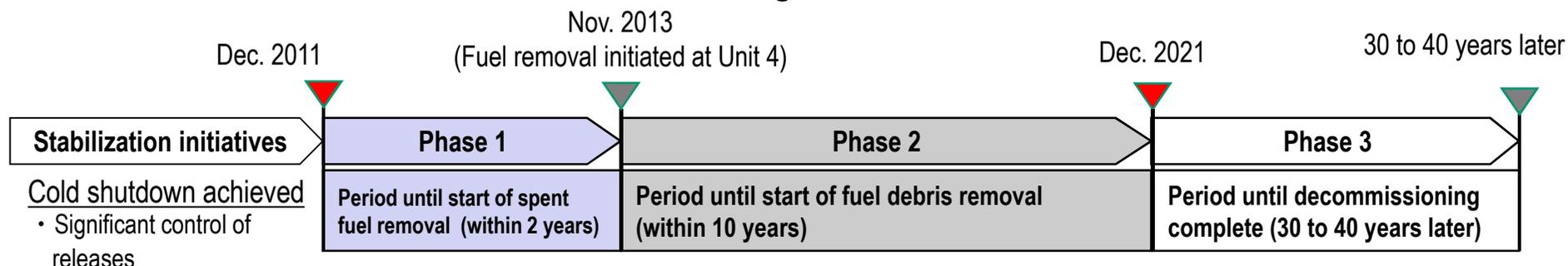
As people return home and areas are rehabilitated, more conscientious information transmission and communication is necessary



Further strengthen communication. In addition to meticulous transmission of information, enhance interactive communication.

# Revised Mid-and-Long-Term Roadmap Milestones

## Maintain Overall Framework of Decommissioning Schedule



## Milestones indicate progress on countermeasures in an easy-to-understand manner

<b>Contaminated water countermeasures</b>	Hold quantity of contaminated water generated to 150 m <sup>3</sup> /day	End of 2020
	Store all water cleaned through treatment systems, etc. in welded tanks	FY 2018
<b>Stagnant water treatment</b>	① Cut off all throughholes between Units 1 and 2 as well as Units 3 and 4	End of 2018
	② Reduce quantity of radioactive materials in stagnant water inside of buildings to 1/10 the level it was at the end of FY2014	FY 2018
	③ Complete treatment of stagnant water inside buildings	End of 2020
<b>Fuel removal</b>	① Start retrieving fuel at Unit 1	Goal of FY 2023
	② Start retrieving fuel at Unit 2	Goal of FY 2023
	③ Start retrieving fuel at Unit 3	Around mid-FY2018
<b>Fuel debris removal</b>	① Finalize method for retrieving fuel debris for first unit	FY 2019
	② Start retrieving fuel debris at first unit	End of 2021
<b>Waste countermeasures</b>	Treatment and disposal policy, and technical prospects pertaining to such safety	Around FY 2021

# Contaminated Water Management

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- In December 2013, the government's Nuclear Disaster Response Headquarters arranged a set of preventative and multi-tiered measures based on the three basic policies for addressing contaminated water issues.

## <Main countermeasures>

### Eliminate contamination sources

- Multi-nuclide removal equipment, etc.
- Remove contaminated water from the trench

### Isolate water from contamination

- Pump up groundwater by groundwater bypass
- Pump up groundwater near buildings
- Land-side frozen impermeable walls
- Waterproof pavement

### Prevent leakage of contaminated water

- Enhance soil by adding sodium silicate
- Sea-side impermeable walls
- Increase the number of (welded-joint) tanks

### Treatment of stagnant water in buildings

- The work to circulate and purify stagnant water inside the buildings started on the Units 3/4 side in February 2018 and on the Units 1/2 side in April 2018.

## < Major Progress >

✓ Please visit our website for the latest information.

### Subdrain operation

- Groundwater pumped up through wells near reactor building (Subdrain system) are discharged after purification by dedicated facilities and quality test. (A cumulative total of 480,634 tons of groundwater has been discharged as of 00:00 on July 17, 2019).
- Construction work for reinforcement and restoration of the subdrain pit is being conducted so that pumping amount of the subdrain can be stably secured. The reinforced pits began to be used, starting from pits whose construction work was completed. In regard to the restored pits, construction work planned for 3 pits has been completed and the pits began to be used on December 26, 2018.

### Land-side frozen impermeable walls

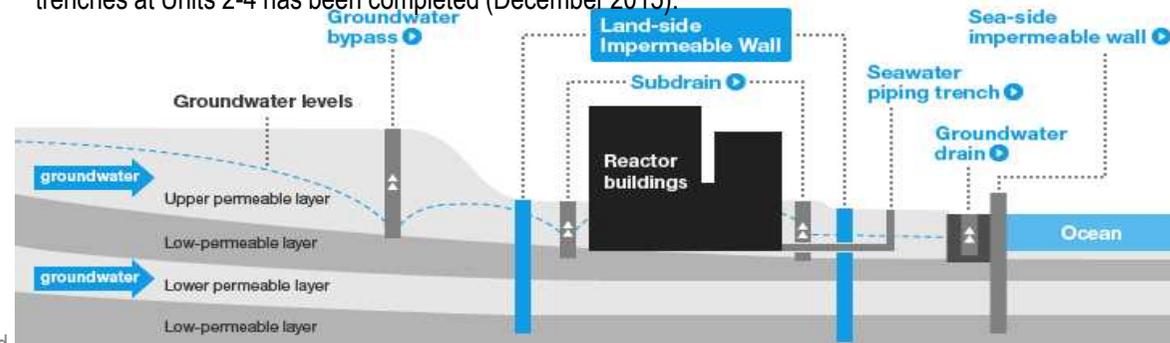
- In March 2018, the land-side impermeable walls were considered completed as the underground temperature had declined below 0°C in almost all areas.
- The Committee on Countermeasures for Contaminated Water Treatment clearly recognized the effect of the land-side impermeable walls to shield groundwater and confirmed that a water-level management system, including the functions of subdrains, etc., to stably control groundwater and isolate the buildings from groundwater had been established.
- Investigations and countermeasures will be conducted to further reduce the generated contaminated water.

### Sea-side impermeable walls

- On October 26, 2015, the seaside impermeable walls were completed to be closed.

### Removal of contaminated water in trenches

- The work to remove approx. 10,000 tons of contaminated water from seawater pipe trenches and fill the trenches at Units 2-4 has been completed (December 2015).



# The Current Status of Kashiwazaki-Kariwa Nuclear Power Station and Future Initiatives

# Main Measures to Secure Safety – 1 [Outline]

◆ We promote the following measures to secure further safety after the Great East Japan Earthquake.

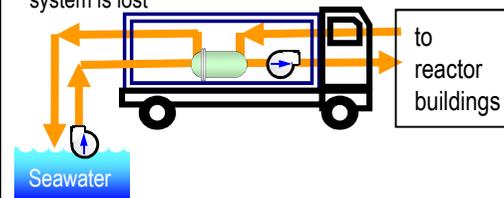
## I. Installation of flooding embankment [banks]

- Install flooding embankment (banks) to prevent Tsunami from invading the site and to protect light oil tanks, buildings and other facilities in the power station



## III. Further enhancement of heat removal and cooling function

- (5) Installation of alternative submerged pumps and seawater heat exchanging system
- Install alternative submerged pumps and other equipments to continue to operate residual heat removal system even if cooling function of sea water system is lost

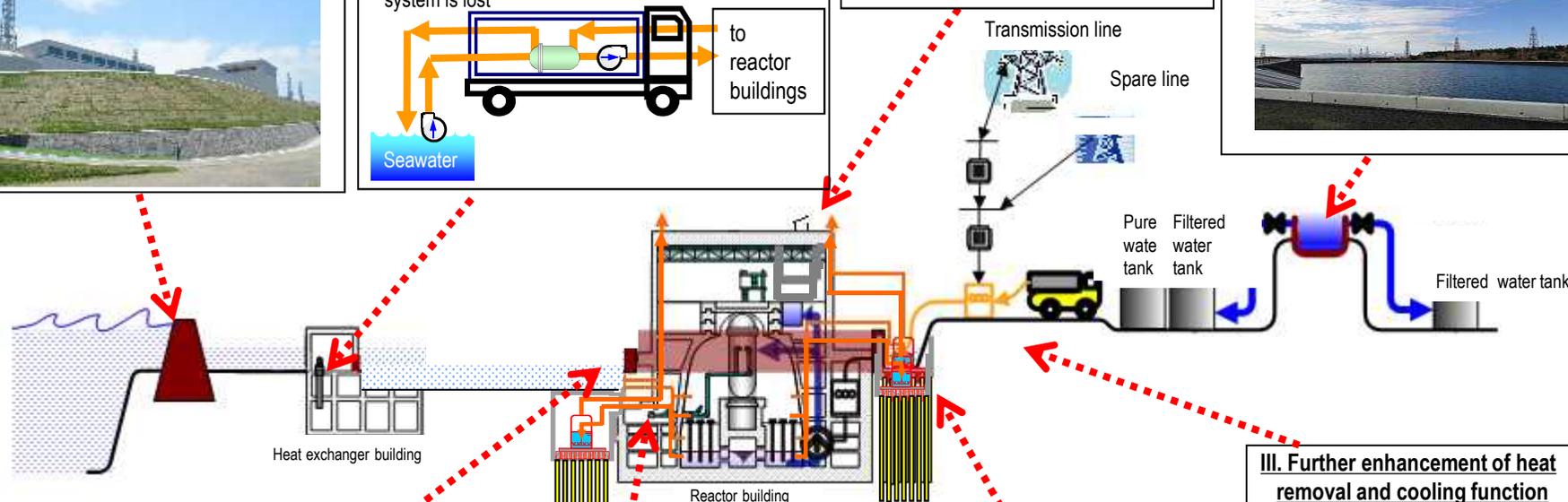


## III. Further enhancement of heat removal and cooling function

- (8) Installation of top venting on reactor buildings
- Install top venting system to prevent hydrogen from piling up in a reactor buildings

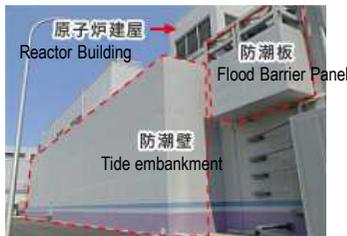
## III. Further enhancement of heat removal and cooling function

- (1) Installation of water source
- Install a freshwater reservoir in the power station to secure stable supply of coolant water for reactors and spent fuel pools



## II. Countermeasures against Inundation into buildings

- (1) Installation of tide embankments (flood barrier panel included)
- Install tide embankments around reactor buildings containing critical equipments in order to prevent Tsunami from damaging power facilities and emergency diesel generators and to secure safety of the power plant



## II. Countermeasures against Inundation into buildings

- (2) Installation of water tight doors
- Install water tight doors at reactor buildings and turbine buildings to protect equipments from water

## III. Further enhancement of heat removal and cooling function

- (12) Installation of warehouses for emergency on high ground
- Install a warehouse for equipments and materials for emergency in case of Tsunami

## III. Further enhancement of heat removal and cooling function

- (7) Installation of filtered vent
- Control of radioactive pollution emitted upon containment vessel venting
  - Installation of underground filtered vent for backfitting

## III. Further enhancement of heat removal and cooling function

- (11) Additional environment monitoring equipments and monitoring cars
- Prepare additional monitoring cars to continuously measure radiation dose at the site

## III. Further enhancement of heat removal and cooling function

- (3) Deployment of gas turbine generators and power supply cars
- Deploy gas turbine generators and power supply cars to ensure that power can be supplied and the residual heat removal system pump operated in a blackout.
- (4) Installation of high voltage power distribution board for emergency and permanent cables for reactor buildings
- Install high voltage power distribution board for emergency and permanent cables for reactor buildings to secure power supply in case of station black out (losing all AC power), and to secure stable supply of power to residual heat removal system

# Main Measures to Secure Safety - 2 [Implementation Status]

As of July 10, 2019

Item	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7
I . Installation of flooding embankment [banks]	Completed *2				Completed		
II . Countermeasures against inundation into buildings							
(1) Installation of tide embankments (flood barrier panel included)	Completed	Completed	Completed	Completed	All closed under 15 meters above sea level		
(2) Installation of water tight doors on reactor buildings, etc.	Completed	Under consideration	Under construction	Under consideration	Completed	Completed	Completed
(3) Countermeasures against inundation into heat exchanger buildings	Completed	Completed	Completed	Completed	Completed	-	
(4) Installation of tide barriers for switching stations*1	Completed						
(5) Reliability improvement of inundation countermeasures (countermeasures against flooding inside buildings)	Under construction	Under consideration	Under construction	Under consideration	Under construction	Under construction	Under construction
III . Further enhancement of heat removal and cooling function							
(1) Installation of water source	Completed						
(2) Installation of storage water barrier	Completed	Under consideration	Under consideration	Under consideration	Completed	Completed	Completed
(3) Deployment of gas turbine generators and power supply cars	Completed					Under construction	Under construction
(4)-1 Installation of high voltage power distribution board for emergency	Completed						
(4)-2 Installation of permanent cables for reactor buildings	Completed	Completed	Completed	Completed	Completed	Completed	Completed
(5) Installation of alternative submerged pumps and seawater heat exchanging system	Completed	Completed	Completed	Completed	Completed	Completed	Completed
(6) Installation of alternative high pressure water injection system	Under construction	Under consideration	Under consideration	Under consideration	Under construction	Under construction	Under construction
(7) Installation of aboveground filter vent	Under construction	Under consideration	Under consideration	Under consideration	Under construction	Under construction	Under construction
(8) Installation of top venting on reactor buildings*1	Completed	Completed	Completed	Completed	Completed	Completed	Completed
(9) Installation of hydrogen treatment system in reactor buildings	Completed	Under consideration	Under consideration	Under consideration	Completed	Completed	Completed
(10) Installation of facilities to fill water up to the top of containment vessels	Completed	Under consideration	Under consideration	Under consideration	Completed	Completed	Completed
(11) Additional environment monitoring equipment and monitoring cars	Completed						
(12) Installation of warehouses for emergency on high ground*1	Completed						
(13) Improvement of earthquake resistance of pure water tanks on the Ominato side*1	-				Completed		
(14) Installation of large-capacity water cannons, etc.	Completed						
(15) Multiplexing and reinforcing access roads	Completed				Under construction		
(16) Environmental improvement of the seismic isolated building	Under construction						
(17) Reinforcement of the bases of transmission towers*1 and earthquake resistance of the switchboards*1	Completed						
(18) Installation of tsunami monitoring cameras	Under construction				Completed		
(19) Installation of Corium Shield	Under consideration	Completed	Completed				

\*1 TEPCO's voluntary safety measures \*2 Additional measures are under consideration

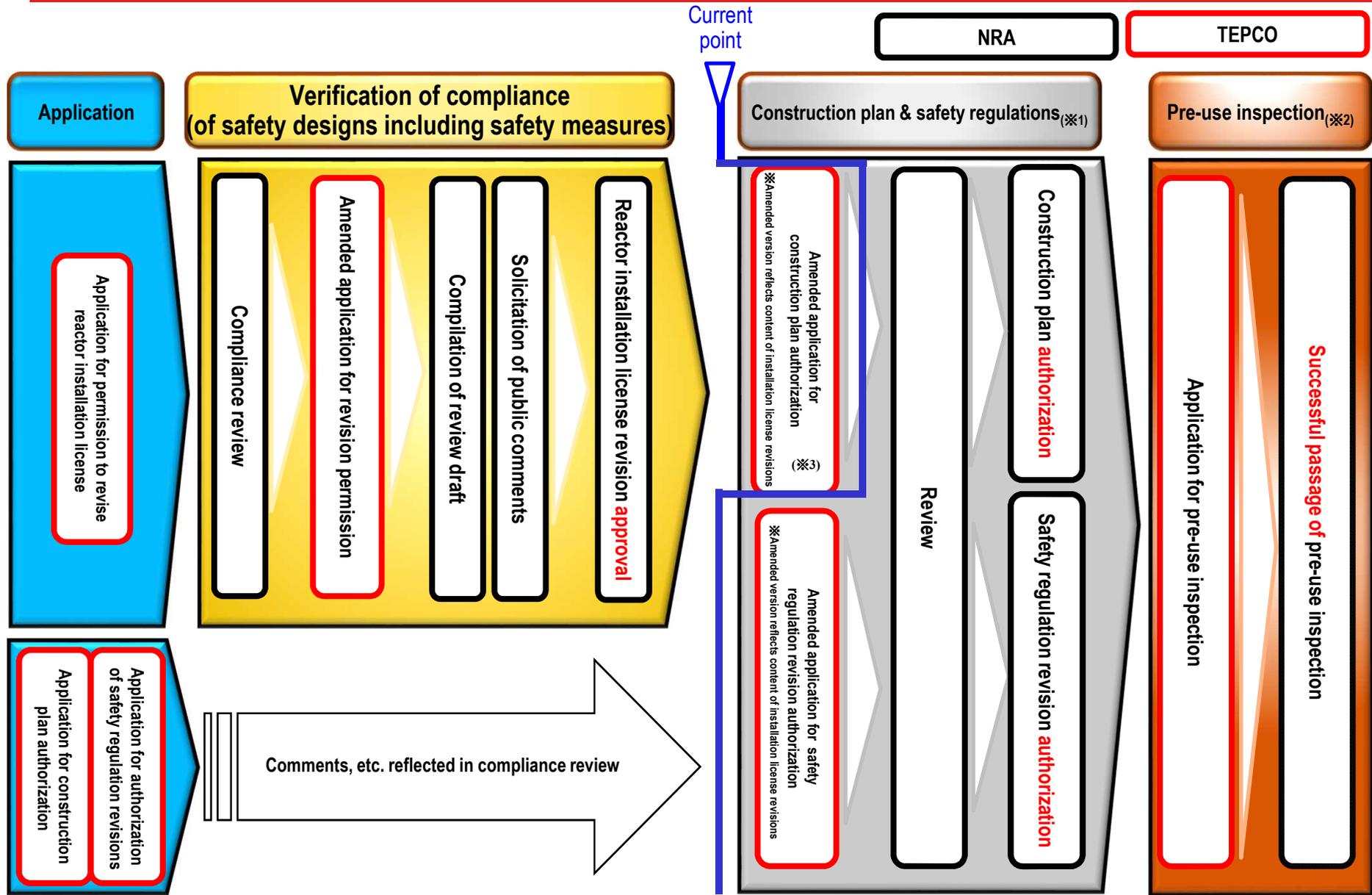
## Latest Review Status

- On September 27, 2013, the applications for permission changes in reactor installation were presented to receive the regulatory standard compliance examination for Units 6 and 7.
- After the application for permission changes in reactor installation was presented, amended applications for revision of the reactor installation license, which reflect changes sought as discussed review meetings held, were submitted to the Nuclear Regulation Authority (NRA) on June 16, August 15, September 1 and December 18, in 2017.
- On December 27, 2017, the NRA approved TEPCO's application for revision of its reactor installation license.
- Amended application for authorization of a construction plan (first) for Unit 7 was submitted on December 13, 2018.
- Amended application for authorization of a construction plan (second) for Unit 7 was submitted on July 5, 2019.

## Upcoming Reviews

- The pending amended applications for authorization of a construction plan and authorization of safety regulation revision will be submitted as soon as preparations are complete (submission time is unknown at present).

# Key License/Permit Steps in Enforcement of New Regulatory Requirements



※1: Basic matters for safety of a nuclear power plant are stated, which an operator must observe.

※2: Inspection conducted by the central government to verify that construction has been carried out in the manner determined by the construction plan.

※3: Amended application for authorization of a construction plan (partial) was submitted

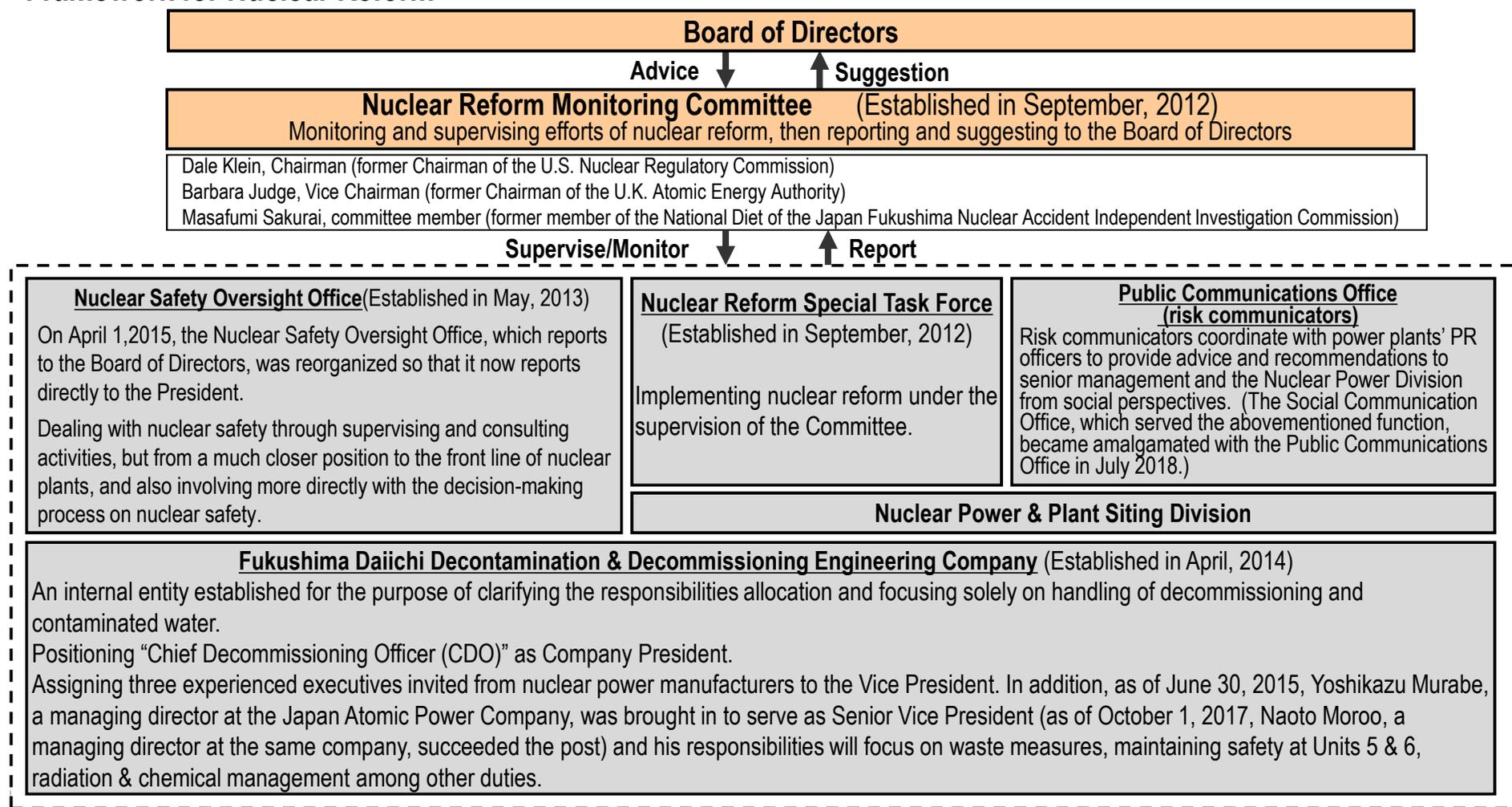
# Other Initiatives

# Efforts towards Nuclear Reform - 1

## - Framework for Nuclear Reform

- Since April 2013, TEPCO has advanced the Nuclear Safety Reform Plan so that it may realize its determination that “the Fukushima nuclear accident will never be forgotten and we will be a nuclear operator which continues to create unparalleled safety and increase the level of that safety to be greater today than yesterday and still greater tomorrow than today.”
- The Mid-and-Long-Term Roadmap for decommissioning Fukushima Daiichi NPS was revised in September 2017 and permission received to revise the reactor installation license for Kashiwazaki-Kariwa NPS Units 6 & 7. TEPCO will now reassess its plans to take into account items pointed out and suggested by the Nuclear Reform Monitoring Committee and faithfully implement these items.

### <Framework for Nuclear Reform>



# Efforts towards Nuclear Reform – 2

## - Report on Status of the Nuclear Safety Reform Plan

- ✓ With respect to the Nuclear Safety Reform Plan, in addition to measures to make up for the inadequacies in "safety awareness", "interaction capabilities", "technical capabilities" that were the underlying factors of the accident, and to enhance these factors, initiatives for strengthening the governance across the organization are being undertaken as well.
- ✓ Reviewed the assessment results for "strengthening human resource development" and "improving communication" in the self assessment for priority challenges, and reported the results to the Nuclear Reform Monitoring Committee.

Recent main initiatives, etc. ※	
Initiatives for strengthening governance	<ul style="list-style-type: none"> <li>- In order to become an organization with the world's highest level of safety, each CFAM (Corporate Functional Area Manager) and SFAM (Site Functional Area Manager) develop the focused self-assessment plan (2-year plan) for areas defined in the management model.</li> <li>- Formulated the FY2019 work plan in the fourth quarter of FY2018 based on the gap analysis by functional area conducted jointly by CFAM and the line (station/headquarters). Decided to continue to work on "risk management reinforcement", "permeation of a focus on operations", "improving the corrective action program", "rolling out human error prevention tools" as excellence activities based on management in FY2019.</li> </ul>
Initiatives for enhancing safety awareness	<ul style="list-style-type: none"> <li>- In efforts for increasing safety awareness, nuclear leaders are benchmarking nuclear power stations with high global recognition and learning about organizational management.</li> <li>- The Deputy General Manager of the Nuclear Power and Plant Siting Division visited the Palo Verde Nuclear Generating Station (Arizona Public Service) and Three Mile Island Nuclear Generating Station (Exelon Nuclear) and benchmarked nuclear safety culture and management of design documents. Good practices in building a management system for design documents will be actively adopted.</li> </ul>
Initiatives for enhancing interaction capabilities	<ul style="list-style-type: none"> <li>- In realizing the goal of "disseminating information in a more understandable manner", the Nuclear Division should share information that is of interest to the public to related departments in a swift and appropriate manner. The communication division (public relations, local correspondence) will disseminate this information in an understandable manner. The communication division needs to share the concerns and interests of the public with the Nuclear Division. To increase awareness of external communication, group discussions on information dissemination, training with external lecturers, training using case studies will be conducted in addition to the kaizen activities in internal and external communication conducted at each power plant.</li> <li>- As part of efforts to "disseminate information in a more understandable manner", a pocket guidebook was created that can be taken home by the Fukushima Daiichi visitor and shared with family and friends.</li> </ul>
Initiatives for enhancing technical capabilities	<ul style="list-style-type: none"> <li>- Although efforts are being made to improve technical capabilities, efforts are beginning to be made for improvement as it was fully realized again that technical capabilities for checking the quality of current equipment and work process and making improvements on one's own accords are lacking.</li> <li>- The Nuclear Education and Training Center introduced a systematic training and education program. In the fourth quarter of FY2018, emergency response personnel received training to learn the response procedures based on plant behavior in an accident to improve individual technical capabilities such as decision making in an accident and appropriate response capabilities.</li> <li>- A vibration test of the blowout panel for Kashiwazaki Kariwa Unit 7 nuclear building was conducted at a test facility in Kobe (E-Defense). The seismic resistance of the closure device was tested, as the blowout panels may be opened in a severe accident to suppress the pressure increasing in the reactor building and then be swiftly closed to contain radioactive materials.</li> </ul>

# Main Efforts to Increase Corporate Value

## <TEPCO Holdings>

- April 23, 2019 Supported the “Task Force on Climate-related Financial Disclosures (TCFD)” that recommends the analysis and disclosure of the effects of climate change on corporate financials, the first domestic energy company to do so
- May 14, 2019 Conducted verification tests on underwater robots and airborne drone use in remote inspection at the Choshi offshore wind farm for the automatization of maintenance inspection work
- May 28, 2019 Participated in the international initiative “EV100”, aiming for promotion of electric cars and zero emission from vehicles and the “EV30@30 campaign”, in which public and private sectors collaborate aiming for a 30% sales share of electric vehicles in new car sales in 2030, the first domestic energy company to do so
- June 13, 2019 Signed an agreement of cooperation with East Nippon Expressway Company Limited (NEXCO East Japan) to facilitate swift recovery in a disaster
- June 20, 2019 Signed an agreement of cooperation with Aeon Co., Ltd. to support the affected in a large-scale disaster

## <TEPCO Power Grid>

- July 17, 2019 Reached an agreement with NExT-e Solutions Inc. to clarify the reuse value of storage batteries and on building a platform to encourage the reuse of storage batteries in promoting storage battery life cycle management

## <TEPCO Energy Partner>

- July 1, 2019 Started a campaign in which the base rate for gas will not be charged for 3 months when the customer signs an electricity and gas contract with TEPCO