

# Summary of FY2017 Earnings Results



Electric Power Development Co., Ltd.

April 27, 2018

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The following contains statements that constitute forward-looking statements, plans for the future, management targets, etc. relating to the Company and/or the J-POWER group. These are based on current assumptions of future events, and there exist possibilities that such assumptions are objectively incorrect and actual results may differ from those in the statements as a result of various factors.

Furthermore, information and data other than those concerning the Company and its subsidiaries/affiliates are quoted from public information, and the Company has not verified and will not warrant its accuracy or appropriateness.

## Display of Figures

- ✓ All figures are consolidated unless stated otherwise.
- ✓ Amounts less than 100 million yen and electric power sales volume less than 100 million kWh shown in the consolidated financial data have been rounded down. Consequently, the sum of the individual amounts may not necessarily agree with figures shown in total columns.

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# I. Summary of FY2017 Earnings Results

# Summary of FY2017 Earnings Results



Consolidated	FY2016 (Apr.-Mar.)	FY2017 (Apr.-Mar.)	(Unit: billion yen)		FY2017 Forecast <sup>*1</sup> (Apr.-Mar.)	(Unit: billion yen)	
			Year-on-year change			Comparison with the forecast	
Operating Revenue	744.4	856.2	111.8	15.0 %	858.0	(1.7)	(0.2) %
Operating Income	81.7	104.3	22.6	27.7 %	106.0	(1.6)	(1.6) %
Ordinary Income	67.1	102.4	35.3	52.6 %	105.0	(2.5)	(2.4) %
Profit attributable to owners of parent	41.4	68.4	27.0	65.2 %	73.0	(4.5)	(6.2) %
Non-consolidated	FY2016 (Apr.-Mar.)	FY2017 (Apr.-Mar.)	(Unit: billion yen)		FY2017 Forecast <sup>*1</sup> (Apr.-Mar.)	(Unit: billion yen)	
			Year-on-year change			Comparison with the forecast	
Operating Revenue	522.4	614.5	92.1	17.6 %	612.0	2.5	0.4 %
Operating Income	27.6	43.0	15.4	55.9 %	44.0	(0.9)	(2.1) %
Ordinary Income	56.4	52.4	(4.0)	(7.1) %	57.0	(4.5)	(8.0) %
Profit	51.5	41.9	(9.6)	(18.6) %	48.0	(6.0)	(12.6) %
Growth indicator	FY2016 (Apr.-Mar.)	FY2017 (Apr.-Mar.)	(Unit: billion yen)		FY2017 Forecast <sup>*1</sup> (Apr.-Mar.)	(Unit: billion yen)	
			Year-on-year change			Comparison with the forecast	
J-POWER EBITDA <sup>*2</sup>	170.6	196.3	25.7	15.1 %	193.0	3.3	1.7 %

\*1 Forecast released on January 31, 2018

\*2 J-POWER EBITDA = Operating income + Depreciation and amortization + Share of profit of entities accounted for using equity method

# Key Data (Electric Power Sales)



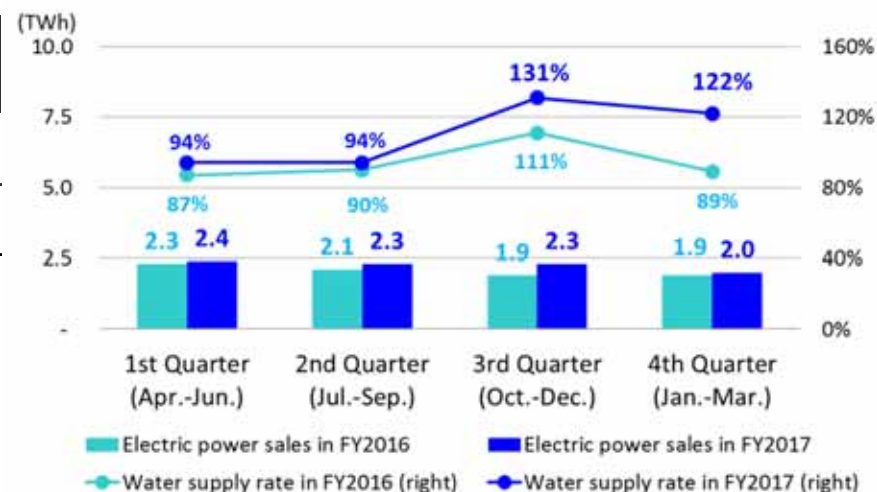
	FY2016 (Apr.-Mar.)	FY2017 (Apr.-Mar.)	Year-on-year change	
<b>Electric Power Sales (TWh)</b>				
Electric Power Business	62.7	67.0	4.2	6.8 %
Hydroelectric Power	8.5	9.2	0.7	8.7 %
Thermal Power	53.5	57.0	3.5	6.5 %
Wind Power	0.7	0.8	0.0	7.2 %
Overseas Business <sup>*1</sup>	14.6	15.8	1.1	8.1 %
Water supply rate	92%	105%	+ 13 points	
Load factor <sup>*2</sup>	75%	80%	+ 5 points	

\*1 Electric power sales volume of overseas consolidated subsidiaries (Electric power sales volume of equity method affiliated companies is not included.)

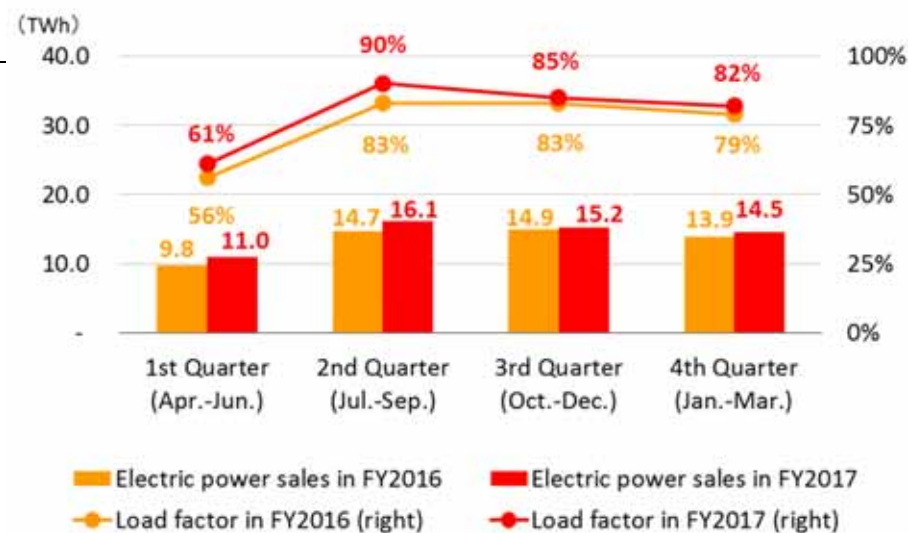
\*2 Load factors of thermal power show the results for non-consolidated only.

## Electric Power Sales for each Quarter

[Domestic Hydroelectric Power Business]



## [Domestic Thermal Electric Power Business]



# Key Data (Operating Revenue)



	FY2016 (Apr.-Mar.)	FY2017 (Apr.-Mar.)	Year-on-year change	
Operating Revenue (Billion yen)	744.4	856.2	111.8	15.0 %
Electric Power Business	538.5	631.9	93.3	17.3 %
Electric Power Generation Business	487.2	577.8	90.5	18.6 %
Transmission / Transformation Business	49.0	48.6	(0.3)	(0.7) %
Overseas Business <sup>*1</sup>	149.8	163.0	13.1	8.8 %
Other Business <sup>*2</sup>	55.9	61.2	5.2	9.5 %
Foreign exchange rate at the end of December (Yen/US\$)	116.49	113.00		
Foreign exchange rate at the end of December (Yen/THB)	3.24	3.45		
Foreign exchange rate at the end of December (THB/US\$)	35.83	32.68		
Average foreign exchange rate (Yen/US\$)	108.34	110.85		

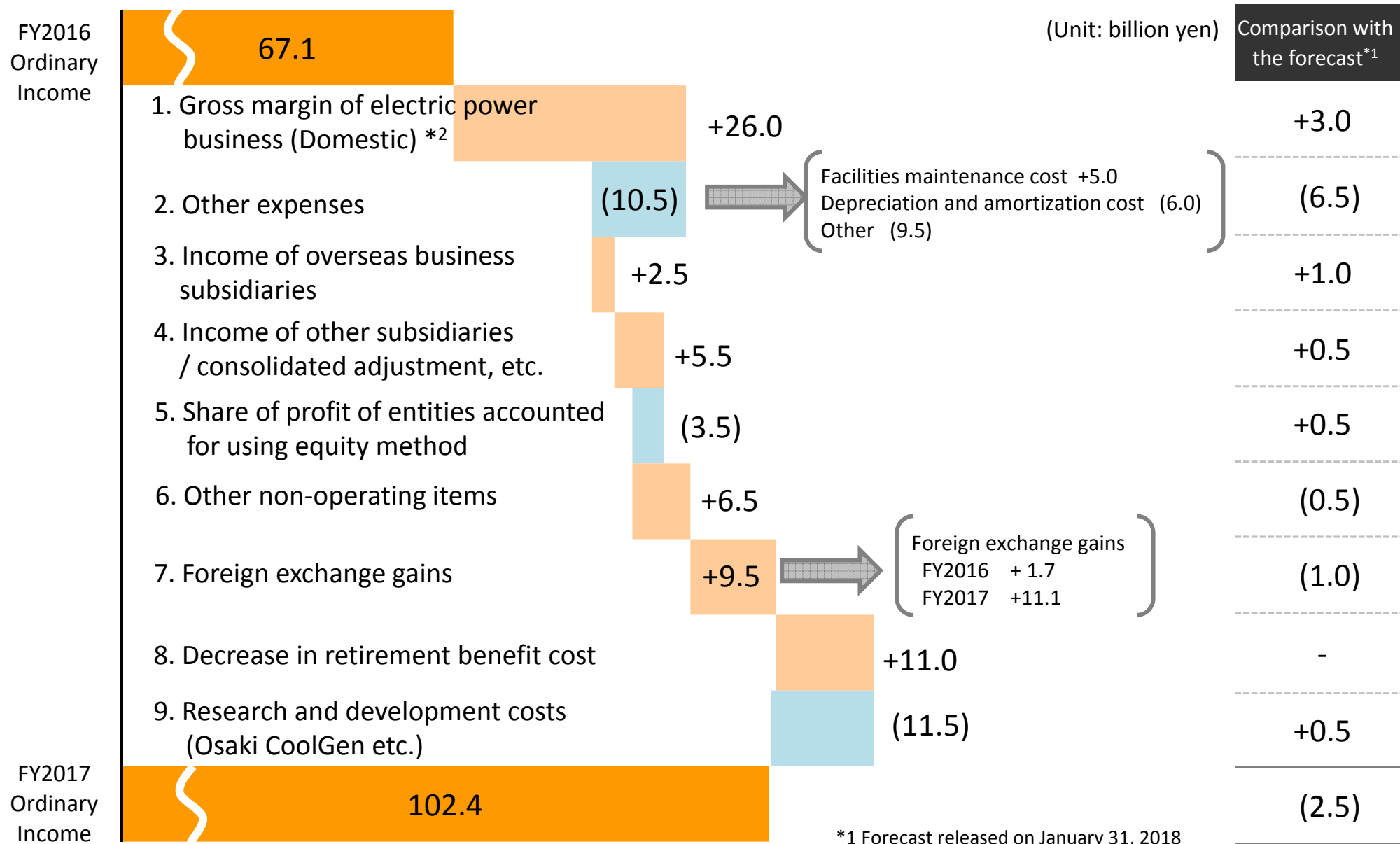
\*1 Sales for the overseas business segment (Sales from overseas consolidated subsidiaries and overseas consulting business, etc.)

\*2 "Other Business" is composed of "Electric Power-Related Business" segment and "Other Business" segment.

# FY2017 Earnings Results (Main Factors for Change)



➤ FY2017 actual ordinary income excluding one-off factors is approximately 70 billion yen



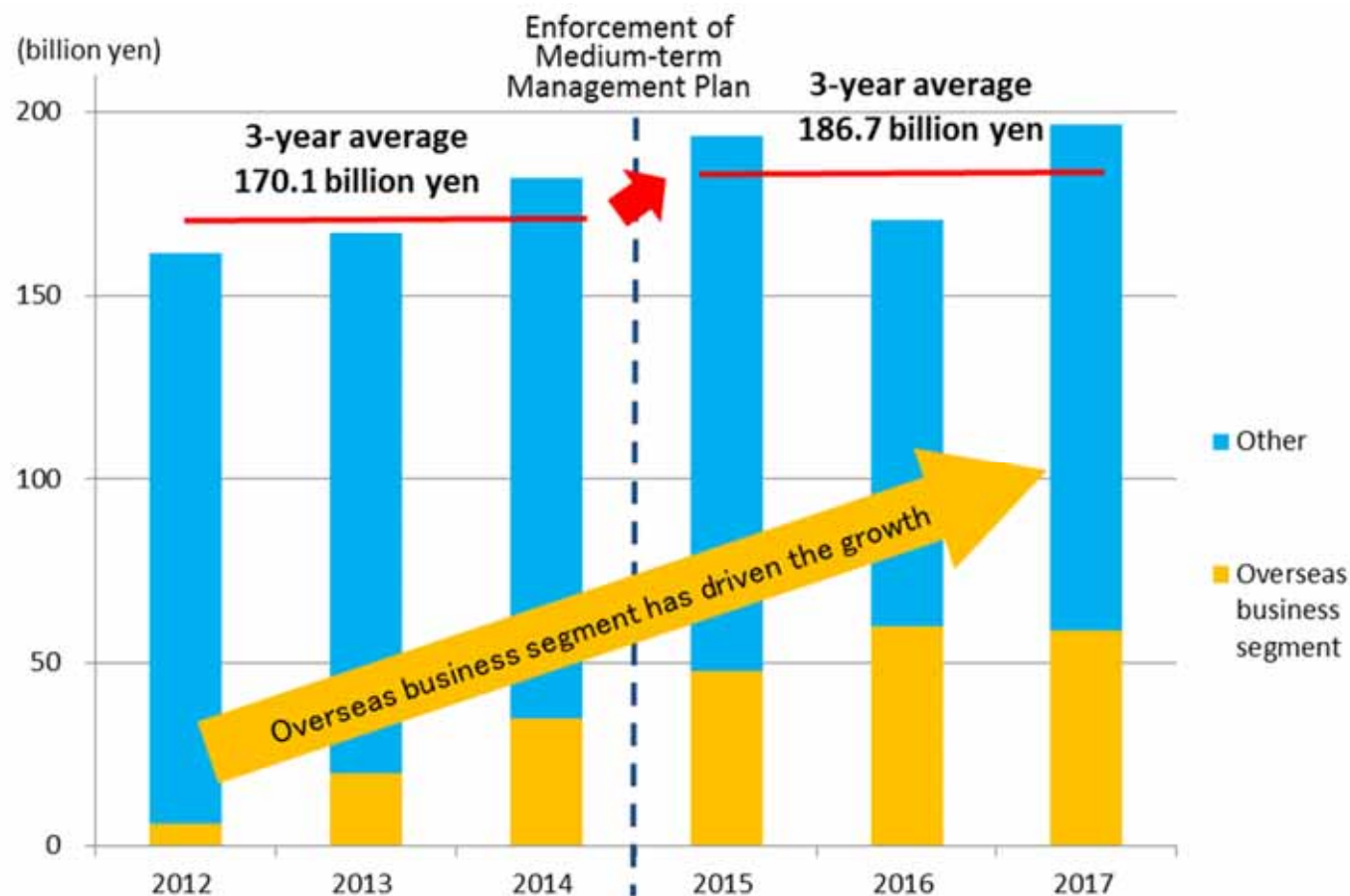
\*1 Forecast released on January 31, 2018

\*2 Gross margin of electric power business (Domestic) : Domestic electric power business revenue (hydro, thermal and wind) – fuel costs, etc.



# Growth of J-POWER EBITDA

- 3-year average of J-POWER EBITDA, our growth indicator, for this period (2015-2017) increased by 16.6 billion yen/ year compared with that of the prior period (2012-2014), mainly due to growth of overseas business segment
- 3-year average outlook for 2015 - 2017, 185 billion yen/ year, shown in the Medium-term Management Plan has been achieved



# Revenue / Expenditure Comparison



(Unit: billion yen)

	FY2016 (Apr.-Mar.)	FY2017 (Apr.-Mar.)	Year-on-year change	Main factors for change
<b>Operating Revenue</b>	<b>744.4</b>	<b>856.2</b>	<b>111.8</b>	
Electric power business	538.5	631.9	93.3	Increase in fuel price and load factor of thermal power plants, etc.
Overseas business	149.8	163.0	13.1	Foreign exchange rate fluctuation (weaker yen), etc.
Other business	55.9	61.2	5.2	Increased sales in an Australian coal mine investment subsidiary, etc.
<b>Operating Expenses</b>	<b>662.6</b>	<b>751.9</b>	<b>89.2</b>	Electric power business +78.3, Overseas business +11.7, Other business (0.8)
<b>Operating Income</b>	<b>81.7</b>	<b>104.3</b>	<b>22.6</b>	
<b>Non-operating Revenue</b>	<b>20.5</b>	<b>29.1</b>	<b>8.5</b>	
Share of profit of entities accounted for using equity method	13.2	9.7	(3.5)	
Foreign exchange gains	1.7	11.1	9.4	
Other	5.4	8.2	2.7	
<b>Non-operating Expenses</b>	<b>35.1</b>	<b>30.9</b>	<b>(4.1)</b>	
Interest expenses	29.7	28.3	(1.4)	
Other	5.3	2.5	(2.7)	
<b>Ordinary Income</b>	<b>67.1</b>	<b>102.4</b>	<b>35.3</b>	Electric power business +17.3, Overseas business +9.2, Other business +8.7
Extraordinary loss	-	3.3	3.3	
<b>Profit attributable to owners of parent</b>	<b>41.4</b>	<b>68.4</b>	<b>27.0</b>	

# Balance Sheet



(Unit: billion yen)

	FY2016 End of FY	FY2017 End of FY	Change from prior year end	Main factors for change
<b>Non-current Assets</b>	<b>2,271.0</b>	<b>2,320.0</b>	<b>48.9</b>	
Electric utility plant and equipment	958.7	951.1	(7.6)	Non-consolidated (11.8), Subsidiaries and others +4.2
Overseas business facilities	332.0	341.4	9.4	Subsidiaries including power generation projects in Thailand +9.4
Other non-current assets	92.5	93.4	0.9	
Construction in progress	476.1	525.7	49.5	Non-consolidated +50.6, Subsidiaries and others (1.1)
Nuclear fuel	73.6	73.8	0.1	
Investments and other assets	337.9	334.5	(3.4)	
<b>Current Assets</b>	<b>335.2</b>	<b>327.2</b>	<b>(8.0)</b>	
<b>Total Assets</b>	<b>2,606.2</b>	<b>2,647.2</b>	<b>40.9</b>	
Interest-bearing debt	1,620.0	1,561.3	(58.7)	Non-consolidated (34.7), Subsidiaries (24.0) [Corporate bonds (60.0), Long-term loans +9.5, Short-term loans (8.1)]
Others	222.1	249.7	27.5	
<b>Total Liabilities</b>	<b>1,842.2</b>	<b>1,811.0</b>	<b>(31.1)</b>	
Shareholders' equity	689.5	745.1	55.6	Increase in retained earnings
Accumulated other comprehensive income	34.2	42.1	7.8	
Non-controlling interests	40.2	48.8	8.6	
<b>Total Net Assets</b>	<b>764.0</b>	<b>836.1</b>	<b>72.1</b>	
D/E ratio (x)	2.2	2.0		
Shareholders' equity ratio	27.8%	29.7%		

## II. Summary of FY2018 Earnings Forecast

# Summary of FY2018 Earnings Forecast and Dividends



	(Unit: billion yen)					(Unit: billion yen)			
	Consolidated					Non-consolidated			
	FY2017 Result	FY2018 Forecast	Comparison with FY2017 result			FY2017 Result	FY2018 Forecast	Comparison with FY2017 result	
Operating Revenue	856.2	863.0	6.7	0.8 %	Operating Revenue	614.5	611.0	(3.5)	(0.6) %
Operating Income	104.3	84.0	(20.3)	(19.5) %	Operating Income	43.0	26.0	(17.0)	(39.6) %
Ordinary Income	102.4	70.0	(32.4)	(31.7) %	Ordinary Income	52.4	49.0	(3.4)	(6.6) %
Profit attributable to owners of parent	68.4	50.0	(18.4)	(27.0) %	Profit	41.9	45.0	3.0	7.3 %

Growth indicator	(Unit: billion yen)		
	FY2017 Result	FY2018 Forecast	Comparison with FY2017 result
J-POWER EBITDA	196.3	175.0	(21.3) (10.9) %

➤ Under the newly established shareholder return policy<sup>\*1</sup>, annual cash dividends for FY2017 have been changed from 70 yen to 75 yen per share

	Cash dividends per share		
	Interim	Year end	Annual
FY2017	35 yen	40 yen	75 yen
FY2018 (Forecast)	35 yen	40 yen	75 yen

\*1 Please refer to page 29.

# Key Data



	FY2017 Result	FY2018 Forecast	Comparison with FY2017 Result			FY2017 Result	FY2018 Forecast
<b>Electric Power Sales (TWh)</b>					Water supply rate	105%	100%
					Load factor	80%	80%
<b>Electric Power Business</b>	<b>67.0</b>	<b>65.1</b>	<b>(1.8)</b>	<b>(2.8) %</b>	Foreign exchange rate at term end		
Hydroelectric Power	9.2	9.3	0.1	1.1 %	Yen/US\$	113.00	115.00
Thermal Power	57.0	54.9	(2.0)	(3.5) %	Yen/THB	3.45	3.50
Wind Power	0.8	0.8	0.0	3.5 %	THB/US\$	32.68	32.68
<b>Overseas Business<sup>*1</sup></b>	<b>15.8</b>	<b>15.4</b>	<b>(0.4)</b>	<b>(2.8) %</b>	Average foreign exchange rate		
<b>Operating Revenue (Billion yen)</b>	<b>856.2</b>	<b>863.0</b>	<b>6.7</b>	<b>0.8 %</b>	Yen/US\$	110.85	115.00
<b>Electric Power Business</b>	<b>631.9</b>	<b>625.0</b>	<b>(6.9)</b>	<b>(1.1) %</b>			
Electric Power Generation Business	577.8	573.0	(4.8)	(0.8) %			
Transmission/Transformation Business	48.6	49.0	0.3	0.7 %			
<b>Overseas Business<sup>*2</sup></b>	<b>163.0</b>	<b>173.0</b>	<b>9.9</b>	<b>6.1 %</b>			
<b>Other Business<sup>*3</sup></b>	<b>61.2</b>	<b>65.0</b>	<b>3.7</b>	<b>6.1 %</b>			

\*1 Electric power sales volume of overseas consolidated subsidiaries (Electric power sales volume of equity method affiliated companies is not included.)

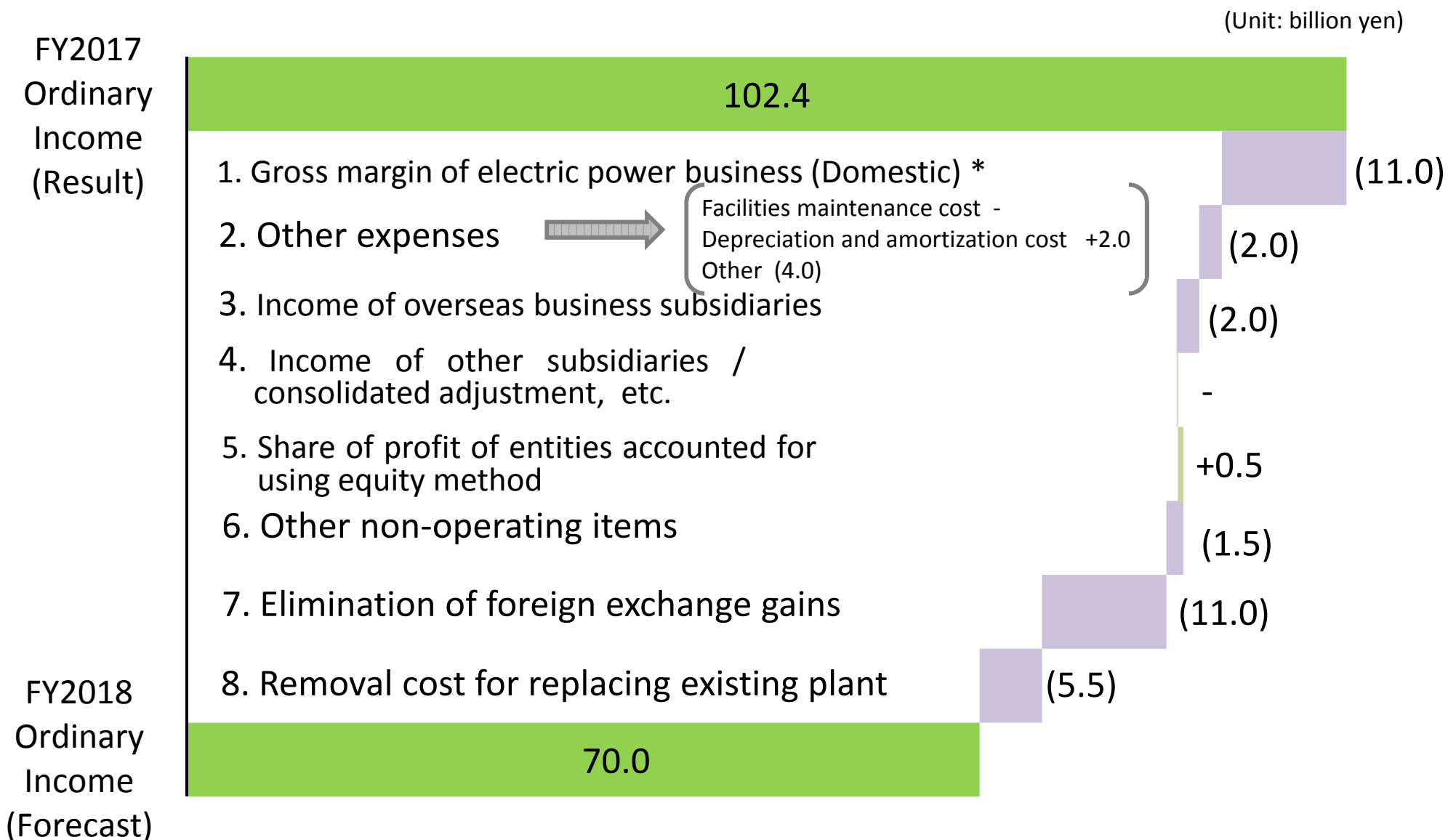
\*2 Sales for the overseas business segment (Sales from overseas consolidated subsidiaries and overseas consulting business, etc.)

\*3 "Other business" is composed of "Electric power-related business" segment and "Other business" segment.

# FY2018 Earnings Forecast (Main Factors for Change)



➤ FY2018 ordinary income is estimated to be 70 billion yen, the same level as FY2017 actual income excluding one-off factors



\*Gross margin of electric power business (Domestic) : Domestic electric power business revenue (hydro, thermal and wind) – fuel costs ,etc.

### III. Status of Addressing the Medium-term Management Plan and Future Initiatives



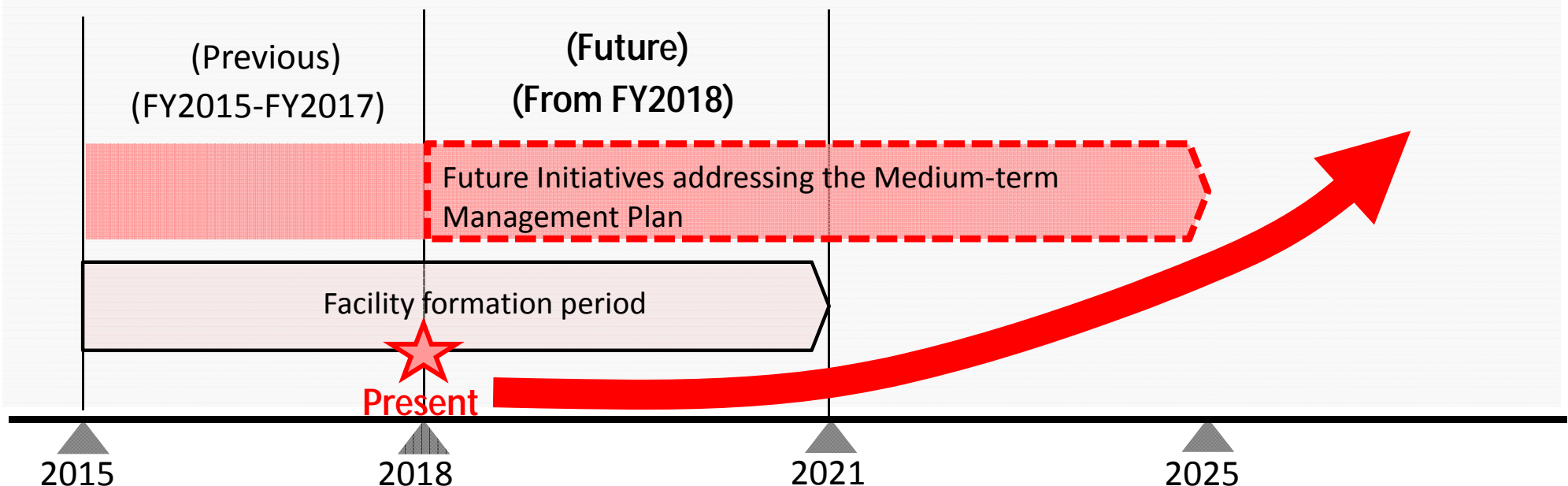
# 1. Status of Addressing the Medium-term Management Plan

- ✓ Through the use of power generation and transmission/transformation facilities throughout the world, and the initiatives to address the Medium-Term Management Plan, the J-POWER Group intends to further increase its corporate value while also contributing to a balanced energy mix and the realization of a low-carbon society.

## Medium-term Management Plan (Released July 31, 2015)

### Key Concepts of the Medium-term Management Plan

- Realize growth in Japan by “Surviving the Competition in a Liberalized Market”
  - Enhancing “Overseas Business Expansion”
  - Further “Low-carbon Technologies” enabling greater business growth globally
- Growth and Soundness Targets**
- Growth target: J-POWER EBITDA  
(Increase to around 1.5 times the level of FY2014 in FY2025)
  - Soundness target: Interest-bearing debts/ J-POWER EBITDA  
(Improve from level at end of FY2014 by end of FY2025)



# Major Initiatives up to This Point (FY2015 to FY2017)



- ✓ Along with initiatives to maintain and improve the reliability and competitiveness of existing facilities, we are also continuing steadily with new development and technology development globally that will become the platform for further growth.

## (Major Initiatives)

Domestic Business	<ul style="list-style-type: none"> <li>• Construction work proceeded on Takehara Thermal Power Plant New Unit No.1 (coal-fired, start of operation scheduled for 2020), Kashima Power (coal-fired thermal power, start of operation scheduled for 2020)</li> <li>• Replacement of Takasago thermal power suspended (continue operation of existing plant)</li> <li>• Environmental assessment of Yamaguchi Ube Power Project (coal-fired thermal power) being conducted</li> <li>• Started demonstration test for Osaki Coolgen Project (oxygen-blown IGCC) (*1)</li> <li>• Start operation of three onshore wind farms (in addition, construction is underway at three sites and preparations for construction are underway at some sites)</li> <li>• Conducted investigations, etc. toward commercialization of offshore wind power in Kitakyushu City Fukuoka (*2)</li> <li>• Construction work proceeded for the Wasabisawa Geothermal (start of operation scheduled for 2019), and an environmental assessment was conducted for the replacement of Onikobe Geothermal</li> <li>• Started operations with increased capacity through upgrading major equipment (repowering) at existing hydroelectric plants (Akiba No. 1 and No. 2)</li> <li>• Started operations of Konokidani (hydroelectric) in 2016</li> <li>• Power supply to the wholesale market from existing plants</li> <li>• Investigations were conducted for an increase of capacity of the Sakuma Frequency Converter Station (300 MW → 600 MW) and relevant transmission lines</li> <li>• Measures preparing for legal unbundling of transmission business (April 2020)</li> </ul>
Overseas Business	<ul style="list-style-type: none"> <li>• Started operation of U-Thai IPP (Thailand, gas-fired thermal power) in 2015</li> <li>• Proceeded with construction work on Central Java IPP (Indonesia, coal-fired thermal power, start of operations planned in 2020)</li> <li>• Acquired additional equity interest in Elwood (USA, gas-fired thermal power, currently operating)</li> <li>• Acquired equity interest in Westmoreland (USA, gas-fired thermal power, start of operations planned in 2018)</li> <li>• For the overseas business, J-POWER's owned capacity is expected to be about 7.6GW after commencement of operations of projects currently under construction</li> </ul>

\*1: Demonstration test of oxygen-blown IGCC, a high-efficiency combined cycle power generation system that uses a gas turbine driven by the gas produced by gasifying coal and a steam turbine. Phase II of the demonstration in which CO2 separation and capture technology are incorporated is scheduled to start in FY2019.

\*2: The consortium that includes J-POWER was selected in February 2017 as the preferred bidder in the public tender for the installer and operator of the Hibikinada Offshore Wind Farm off the coast of Kita-Kyushu City, and a special purpose company was established in April 2017. We will be conducting surveys on the wind conditions and marine areas aiming at commercialization of offshore wind power generation in Hibikinada.

## Medium-term Management Plan (3-year forecast)

- Growth Indicator: J-POWER EBITDA\*  
3-year average of 185 billion yen/year from FY2015 to FY2017
- Soundness indicator: Interest-bearing debts/ J-POWER EBITDA\*  
Maintain same level as results at end of FY2014 (9.5x) at end of FY2017

Steady progress

- Growth Indicator:  
186.7 billion yen/year (3-year average from FY2015 to FY2017)
- Soundness Indicator:  
8.0x (results at end of FY2017)

\* J-POWER EBITDA= Operating income + Depreciation and amortization + Equity in earnings of affiliates

## Awareness of the business environment surrounding J-POWER Group in the Medium-term Management Plan

Intensifying market competition due to the electricity system reform

Climate change (environmental regulations)

Uncertainty surrounding nuclear power policy

Robust growth in electric power demand centered upon developing countries

Although awareness of the business environment has not changed, circumstances surrounding J-POWER Group are changing greater and faster. Focusing on the key concepts lifted up in the Medium-term Management Plan (see p. 17), we will achieve growth by responding more flexibly.

### Future Initiatives of the J-POWER Group

- ✓ Expansion of renewable energy
- ✓ Challenge for carbon reduction and decarbonization in coal use
- ✓ Promotion of the Ohma Nuclear Power Plant Project, with safety as the major prerequisite
- ✓ Expansion of overseas business
- ✓ Improvement of value of existing facilities

Growth indicator: J-POWER EBITDA \*

210 billion yen or more in FY2020

Soundness indicator: Interest-bearing debts/ J-POWER EBITDA

Maintain same level as results at end of FY2017 (8.0x) at end of FY2020

\* J-POWER EBITDA= Operating income + Depreciation and amortization + Equity in earnings of affiliates

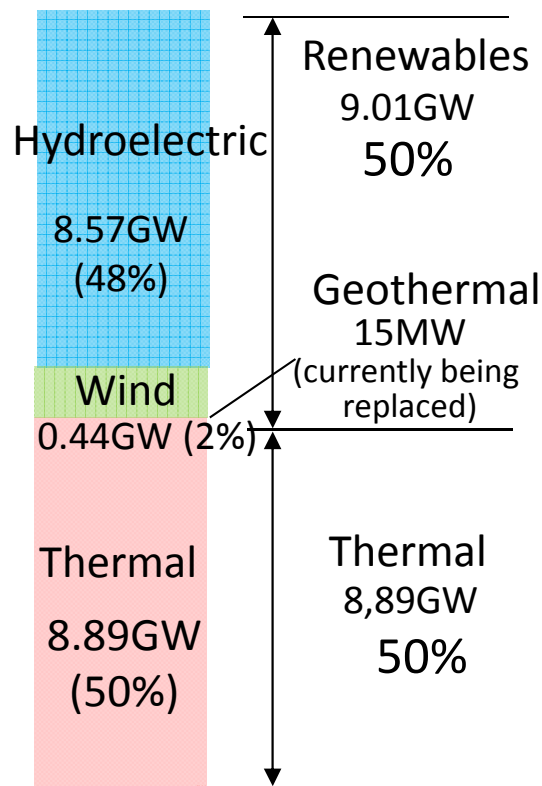
## 2. Future Initiatives of the J-POWER Group

- (1) Expansion of renewable energy
- (2) Challenge for carbon reduction and decarbonization in coal use
- (3) Promotion of the Ohma Nuclear Power Plant Project, with safety as the major prerequisite
- (4) Expansion of overseas business
- (5) Improvement of value of existing facilities

# (1) Expansion of renewable energy

- ✓ With establishing Department of Renewable Energy, contribute to realizing a low-carbon society through renewable energy, as a leader in the business of fully domestically produced and CO2 free energy
  - Take steps to develop renewable energy capacity such as small- to medium- scale hydroelectric, wind, and geothermal power plants
  - Take steps in technology development aiming for expanding renewable energy
  - Take steps toward long-term stable operation of hydroelectric power plants that will contribute greatly to the stable supply of electricity and reduction of CO<sub>2</sub> emissions

## Expand renewable energy capacity



### Hydroelectric

- Increase in capacity through upgrades of major equipment (repowering) at existing plants
- New development of small- to medium- scale hydroelectric plants

### Wind

- New development of onshore wind power and steady replacement of existing facilities
- Proceed with offshore wind business in addition to Hibikinada

### Geothermal

- New development, replacement of existing facilities

### FY2025 Target (Renewable energy)

### **New development with 1GW scale**

**[Hydroelectric 0.3TWh/year increase\*, wind and others 2.5TWh/year increase\*]**

### Carbon reduction and decarbonization for coal use

Biomass mixed combustion, Oxygen-blown IGCC, CCS, etc.

\* Please see page 24 for details

### CO2-free capacity (future)

Ohma Nuclear Power Plant

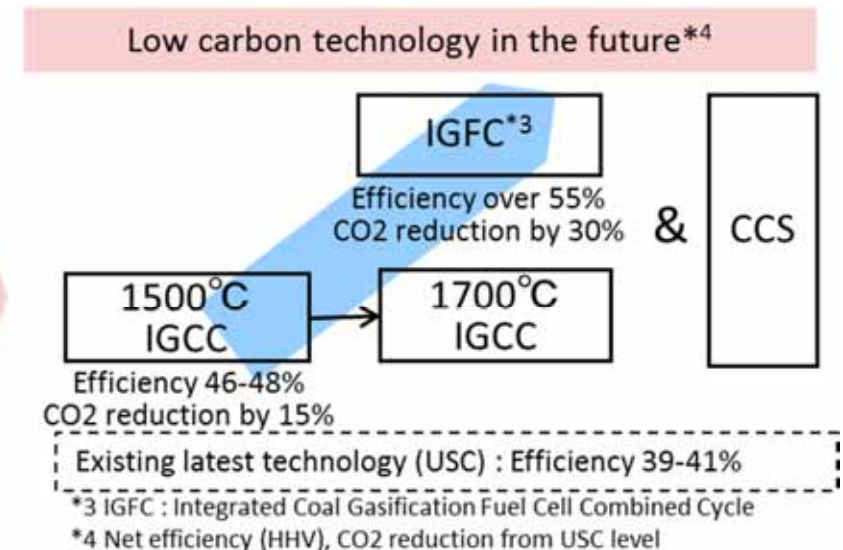
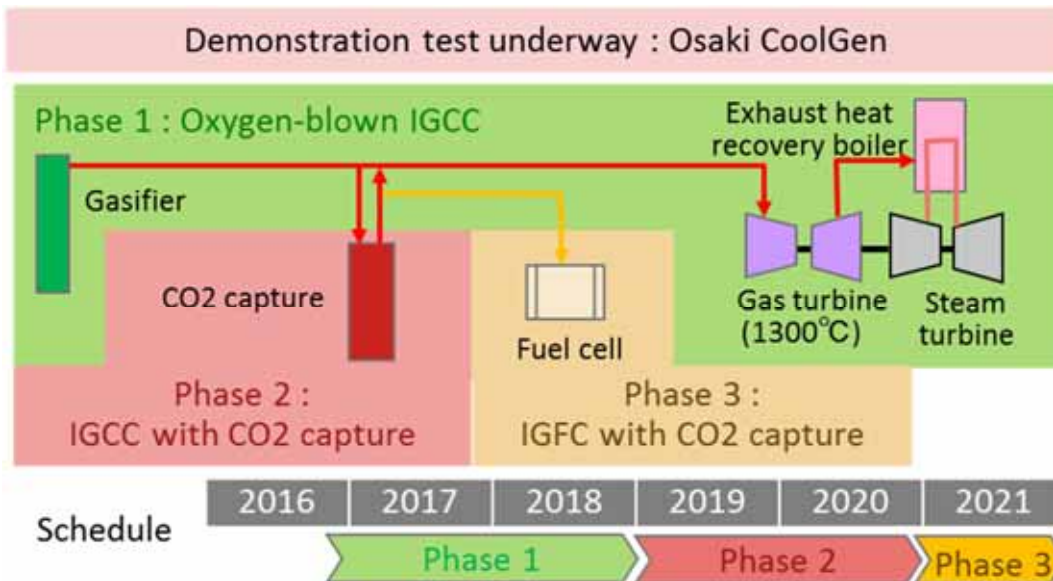
\* Please see page 25 for details

FY2017  
(As of March 31, 2018)  
Total 17.9GW



## (2) Challenge for carbon reduction and decarbonization in coal use

- ✓ Contribute to realizing a balanced energy mix through use of coal, a stable energy source that is widely available around the world, while contributing to achieving a low-carbon society through challenges for decarbonization of fossil energy power sources
  - ◆ Develop technologies aiming for zero emissions in the 2050s
    - Commercialization of oxygen-blown IGCC\*<sup>1</sup>
    - R&D of CCS\*<sup>2</sup> (Osaki CoolGen), hydrogen (Brown coal hydrogen demonstration project)
  - ◆ Promote development of high-efficiency coal-fired thermal power
  - ◆ Take steps toward biomass mixed combustion, focusing on wood-based biomass fuel
    - Continue combustion at existing coal-fired power plants
    - Aim for a maximum of 10% mixed combustion in Takehara Thermal Power Plant New Unit No.1 (start of operations planned for 2020)



\*1 Integrated Coal Gasification Combined Cycle

\*2 CO<sub>2</sub> Capture and Storage

### (3) Promotion of the Ohma Nuclear Power Plant Project, with safety as the major prerequisite



- ✓ Through the use of MOX fuel, play a central role in the nuclear fuel cycle and contribute to energy security
- ✓ Contribute to realizing a low-carbon society as a CO2-free energy source

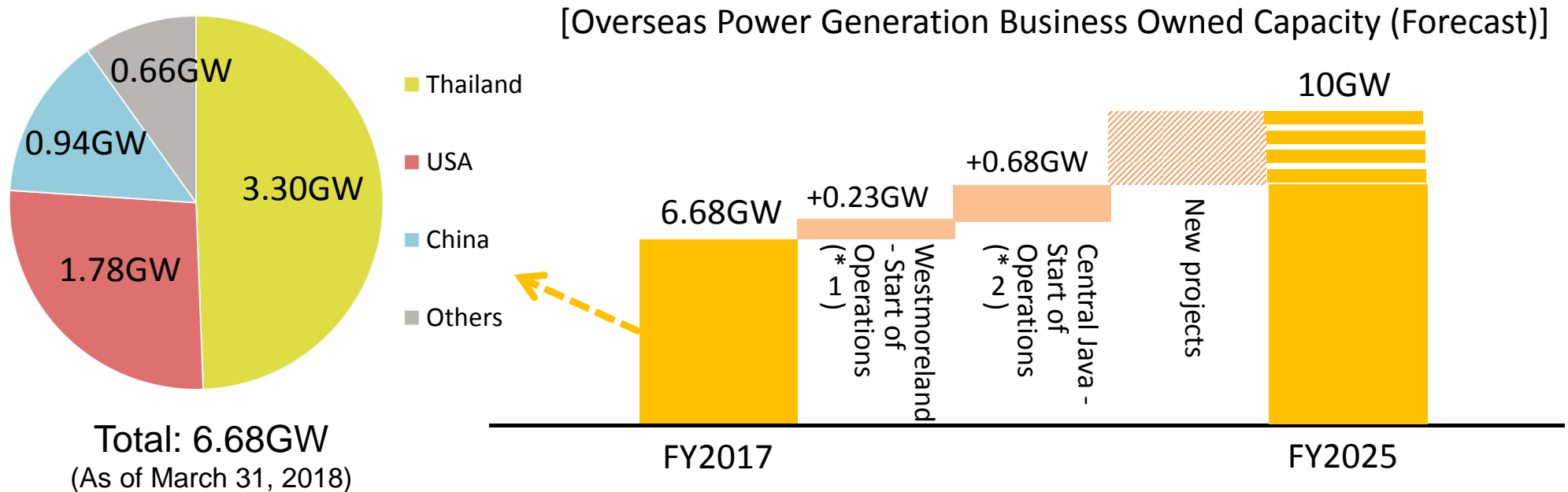
(Details of initiatives)

- Pursue further improvements in safety continuously
- Sincerely and appropriately respond to compliance reviews and aim to restart full scale construction work quickly
- Strive for more polite information communication and mutual communication so that we can gain the understanding and trust of the community

Overview of the Ohma Nuclear Power Project	
Location	Ohma-machi, Shimokita-gun, Aomori Prefecture
Capacity	1,383MW
Type of nuclear reactor	Advanced Boiling Water Reactor (ABWR)
Fuel	Enriched uranium and uranium-plutonium mixed oxide (MOX)
Start of construction	May, 2008
Start of operation	To be determined
Status	In December 2014, J-POWER submitted to NRA an application for permission for alteration of reactor installment license and an application for construction plan approval in order to undertake review of compliance with the new safety standards

# (4) Expansion of Overseas Business

- ✓ Have operations started for Central Java IPP in Indonesia (coal-fired thermal power, start of operations planned for 2020), Westmoreland in USA (gas-fired thermal power, start of operations planned for 2018)
- ✓ Expand business in Thailand, USA and China where we have our business platform, and aim to acquire projects in Indonesia and Taiwan where we already have results, and in new markets with robust energy demand
- ✓ Utilizing the technological capabilities we have built up in our domestic business, take steps to expand the renewable energy business overseas, including wind and hydroelectric power
- ✓ Increase the scale of generation assets (GW) through strengthening resources and expanding fields of activities



(\*1) Output capacity 926MW, gas-fired thermal power (CCGT: combined cycle), our owned capacity is 232MW from our equity holdings of 25%  
 (\*2) Output capacity 2,000MW, coal-fired thermal power (USC: ultra-super critical), our owned capacity is 680MW from our equity holdings of 34%

## (5) Improvement of value of existing facilities

- ✓ In the context of intensifying competition in association with deregulation, the J-POWER Group will play its expected role toward activating the wholesale electricity market essential for a competitive market through initiatives such as supplying power to the baseload power market
- ✓ Along with the increasing electricity sales volume for the wholesale electricity market accordingly, we will take the following steps to strengthen production division and diversify sales, in the stream toward fragmentation of the value for electricity into values of supply capability, adjustment capability, and non-fossil generation

(Strengthening production division)

- Strengthening our cost competitiveness through measures such as strengthening structures, based on the premise of stable supply and ensuring safety
- Increasing the flexibility of facility operations in response to market needs, and optimizing maintenance

(Diversifying ways of sales)

- Maximization of the value of the J-POWER Group's generating assets through diversification of ways of sales in response to the deregulated market
  - Supplying about 6 TWh to the baseload power market in the first year, followed by step-by-step expansion of power supply to the newly established markets including capacity market, non-fossil value market, and supply-demand adjustment market
- ✓ Concerning J-POWER's interconnecting lines and other transmission facilities, along with taking steps to maintain and improve facility reliability, we will contribute to the nationwide improvement of power grid by measures such as the strengthening of the Sakuma Frequency Converter Station and relevant facilities

## 3. Returns to Shareholders

- ✓ While there continue to be areas of uncertainty in its business environment, the J-POWER Group has formulated a new shareholder return policy in anticipation of changes in its business environment such as the progress of liberalization in Japan
- ✓ There will be no change in the basic emphasis on continuing to provide stable dividends, but based on changes in our earnings structure, while keeping a certain pay-out ratio in mind, we aim to continue providing returns that are in accordance with our profit level, within an appropriate balance of shareholder returns, business assets formation, and financial soundness
- ✓ We will continue to sustainably increase our corporate value and strive to enhance the returns to shareholders as a result of our growth

## Concept of Returns to Shareholders

Taking into account of factors such as the level of profit, earnings forecasts, and financial condition, we strive to enhance stable and continuous returns to shareholders in line with a consolidated pay-out ratio of around 30% excluding short-term profit fluctuation factors

# [Reference] Status of Major Projects under Development (1)

	Project	Output capacity	Construction status		Remarks
			In preparation	Underway	
Hydro	Akiba No.1 Repowering	45.3→47.2MW		◇	Completion of repowering : FY2018 (planned)
	Shinkaturazawa/ Kumaoui	21.9MW		◇	Start of operation : FY2022 (planned)
	Ashoro Repowering	40.0→42.3MW	◇		Completion of repowering : FY2022 (planned)
Wind	Setana Osato	50MW		◇	Start of operation : FY2019 (planned)
	Kuzumaki No.2	44.6MW		◇	Start of operation : FY2019 (planned)
	Nikaho No.2	41.4MW		◇	Start of operation : FY2019 (planned)
	Minami Ehime No.2	Max. 40.8MW	◇		Under environmental impact assessment
	Kaminokuni No.2	41MW ~ Max. 180MW	◇		Under environmental impact assessment
	Hibikinada Offshore*1	Max. 220MW	◇		Under environmental impact assessment
	Seiyo Yusuvara	Max. 180MW	◇		Under environmental impact assessment
	Kita-Kagoshima	Max. 180MW	◇		Under environmental impact assessment
	New Tomamae Replacement	30.6MW	◇		Under environmental impact assessment
	New Sarakitomanai Replacement	14.9MW	◇		Under environmental impact assessment
Geo-thermal	Wasabizawa*2	42MW		◇	Start of operation : FY2019 (planned)
	Onikobe Replacement	14.9MW	◇		Start of operation : FY2023 (planned)

\*1 J-POWER's equity ratio: 40% Joint venture with Kyuden Mirai Energy Company, Hokutaku, Saibu Gas, and Kyudenko Corporation

\*2 J-POWER's equity ratio: 50% Joint venture with Mitsubishi Materials Corporation and Mitsubishi Gas Chemical Company

# [Reference] Status of Major Projects under Development (2)

	Project	Output capacity	Construction status		Remarks
			In preparation	Underway	
Thermal	Takehara New Unit No.1	600MW		◇	Start of operation : FY2020 (planned)
	Kashima Power (Coal-fired)*3	645MW		◇	Start of operation : FY2020 (planned)
	Yamaguchi Ube Power (Coal-fired)*4	1,200MW	◇		Under environmental impact assessment
Nuclear	Ohma	1,383MW		◇	Under review of compliance with the new safety standards
T&D	Sakuma Frequency Converter Station and relevant facilities	300MW	◇		Increase of capacity: 300MW→600MW
Overseas	Westmoreland (U.S.A., gas-fired)*5	926MW		◇	Start of operation : FY2018 (planned)
	Central Java IPP (Indonesia, coal-fired)*6	2,000MW		◇	Start of operation : FY2020 (planned)

\* 3 J-POWER's equity ratio: 50% Joint venture with Nippon Steel & Sumitomo Metal Corporation

\* 4 J-POWER's equity ratio: 45% Joint venture with Osaka Gas and Ube Industries

\* 5 J-POWER's equity ratio: 25% Joint venture with Tenaska, Inc. and Diamond Generating Corporation

\* 6 J-POWER's equity ratio: 34% Joint venture with PT. ADARO POWER and ITOCHU Corporation



- ✓ Our hydroelectric generation capacity of approx. 8.57GW (61 plants) stands among the top in Japan
- ✓ We possess many dams and large capacity reservoirs with life of 100 years or more, which enables stable generation by CO<sub>2</sub>-free energy for a long time to come



Nukabira Dam  
(Hokkaido prefecture)



Okutadami Dam  
(Niigata prefecture, Fukushima prefecture)

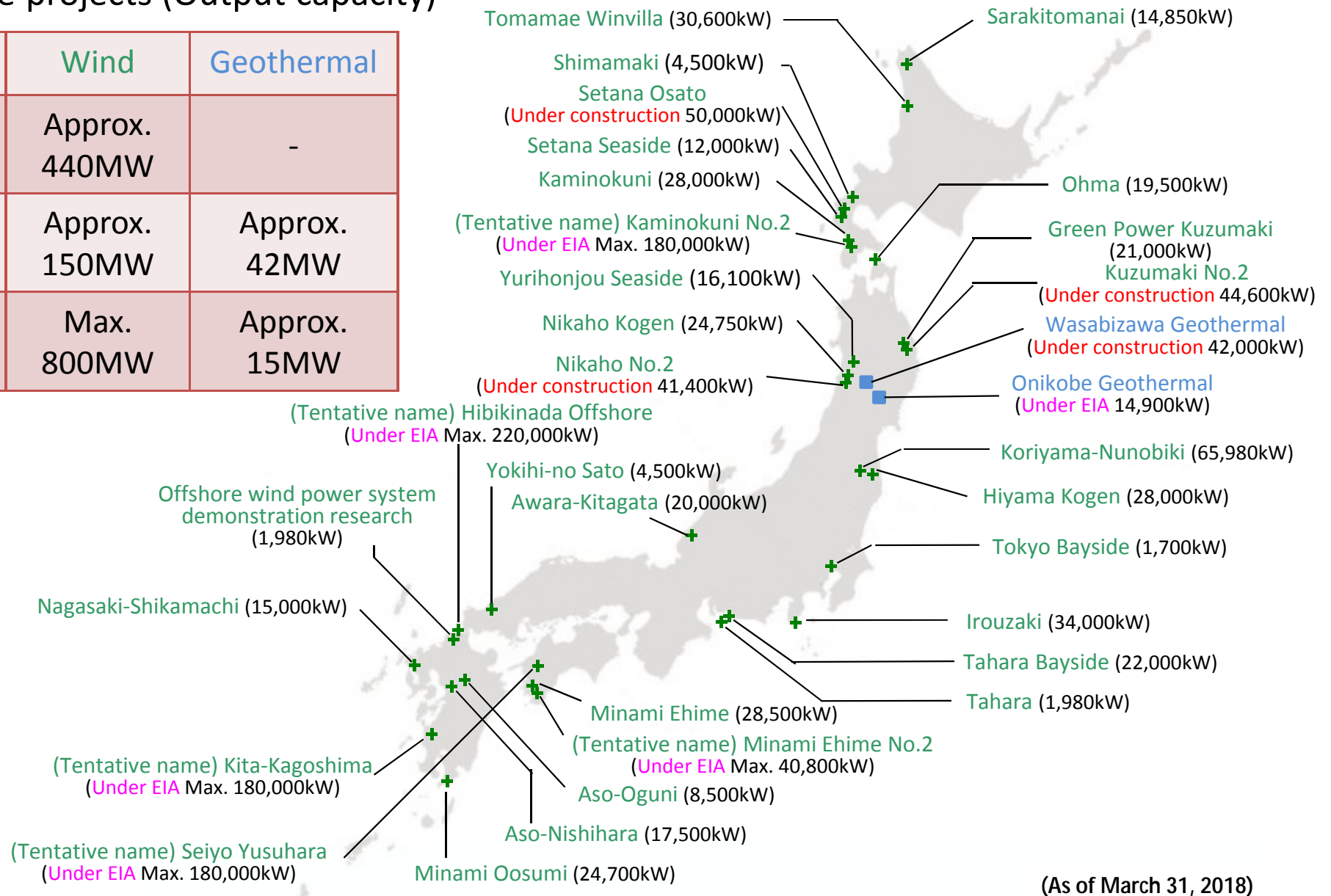


Sakuma Dam  
(Shizuoka prefecture, Aichi prefecture)

- ✓ We will continue to contribute to the stable power supply through continuous efforts to operate power plants, making use of the experience and technology we have built up over the past 60 years
- ✓ We are aiming for increase hydroelectric power generation by 0.3TWh/year compared with FY2017, through increase in power generation by CO<sub>2</sub>-free energy in association with new development and repowering of hydroelectric power plants

## ✓ Renewable projects (Output capacity)

	Wind	Geothermal
In operation	Approx. 440MW	-
Under construction	Approx. 150MW	Approx. 42MW
Under EIA*1	Max. 800MW	Approx. 15MW



(As of March 31, 2018)

\*1 EIA: Environmental Impact Assessment

# APPENDIX

(1) Financial section 35 ~ 47

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(2) Business section 48 ~ 61

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# (1)-1. Consolidated: Revenues and Expenses



(Unit: 100 million yen)

	FY2013	FY2014	FY2015	FY2016	FY2017
<b>Operating revenue</b>	<b>7,068</b>	<b>7,506</b>	<b>7,800</b>	<b>7,444</b>	<b>8,562</b>
Electric utility operating revenue	6,090	5,881	5,708	5,385	6,319
Overseas business operating revenue	428	1,089	1,559	1,498	1,630
Other business operating revenue	549	535	532	559	612
<b>Operating expenses</b>	<b>6,476</b>	<b>6,777</b>	<b>6,921</b>	<b>6,626</b>	<b>7,519</b>
<b>Operating income</b>	<b>591</b>	<b>728</b>	<b>879</b>	<b>817</b>	<b>1,043</b>
<b>Non-operating revenue</b>	<b>223</b>	<b>227</b>	<b>178</b>	<b>205</b>	<b>291</b>
Share of profit of entities accounted for using equity method	163	156	108	132	97
Other	59	70	69	72	193
<b>Non-operating expenses</b>	<b>414</b>	<b>362</b>	<b>472</b>	<b>351</b>	<b>309</b>
Interest expenses	253	282	304	297	283
Other	161	79	167	53	25
<b>Ordinary income</b>	<b>400</b>	<b>593</b>	<b>585</b>	<b>671</b>	<b>1,024</b>
Extraordinary income	23	21	-	-	-
Extraordinary losses	-	-	-	-	33
<b>Profit attributable to owners of parent</b>	<b>286</b>	<b>432</b>	<b>400</b>	<b>414</b>	<b>684</b>

# (1)-2. Consolidated: Cash Flow



(Unit: 100 million yen)

	FY2013	FY2014	FY2015	FY2016	FY2017
<b>Operating activities</b>	1,221	1,478	1,461	1,154	1,603
Profit before income taxes	427	615	584	671	990
(reference) Non-consolidated depreciation and amortization	815	778	734	496	534
<b>Investing activities</b>	(1,773)	(1,429)	(1,315)	(1,376)	(1,096)
Capital expenditure for subsidiaries (reference)	(957)	(879)	(375)	(175)	(147)
Non-consolidated CAPEX*	(865)	(611)	(1,063)	(998)	(941)
<b>Free cash flow</b>	(552)	48	145	(222)	506

\* Non-consolidated capital expenditure: Increase in tangible and intangible noncurrent assets

# (1)-3. Consolidated: Segment Information



(Unit: 100 million yen)

		Electric power	Electric power -related	Overseas	Other	Subtotal	Elimination*	Consolidated
FY2017	Sales	6,337	4,127	1,630	272	12,367	(3,805)	8,562
	Sales to customers	6,319	369	1,630	243	8,562	-	8,562
	Ordinary income	395	230	405	12	1,044	(19)	1,024
FY2016	Sales	5,402	3,573	1,498	239	10,714	(3,270)	7,444
	Sales to customers	5,385	340	1,498	219	7,444	-	7,444
	Ordinary income	222	142	312	13	690	(19)	671
year-on-year change	Sales	934	553	131	32	1,653	(534)	1,118
	Sales to customers	933	29	131	23	1,118	-	1,118
	Ordinary income	173	88	92	(1)	353	(0)	353

## “Electric Power Business”

J-POWER group’s hydroelectric, thermal power (including subsidiaries’ thermal power (IPPs, for PPSs and others)), wind power and transmission business. The majority of consolidated revenue is derived from this segment.

## “Electric Power-Related business”

These focus on peripheral business essential for the operation of power plants and transmission facilities, such as designing, executing, inspecting and maintaining power facilities and importing and transporting coal. Intra-group transactions account for a large portion of this segment, such as Company’s power plant maintenance, coal transportation activities.

## “Overseas business”

Overseas power generation business, overseas engineering and consulting business

## “Other business”

Diversified business such as telecommunication, environmental and the sale of coal

\* Elimination includes elimination of intersegment sales

# (1)-4. Consolidated: Key Ratios and Key Data



(Unit: 100 million yen)

	FY2013	FY2014	FY2015	FY2016	FY2017
<b>(PL)</b> Operating revenue	7,068	7,506	7,800	7,444	8,562
Operating income	591	728	879	817	1,043
Ordinary income	400	593	585	671	1,024
Profit attributable to owners of parent	286	432	400	414	684
<b>(BS)</b> Total assets	23,852	26,591	25,407	26,062	26,472
Construction in progress	5,126	5,069	4,410	4,761	5,257
Shareholders' equity	5,162	6,887	6,665	7,238	7,872
Net assets	5,194	6,962	6,754	7,640	8,361
Interest-bearing debt	16,499	17,236	16,287	16,200	15,613
<b>(CF)</b> Investing activities	(1,773)	(1,429)	(1,315)	(1,376)	(1,096)
Free cash flow	(552)	48	145	(222)	506
(Ref) Non-consolidated CAPEX*1	(865)	(611)	(1,063)	(998)	(941)
(Ref) Non-consolidated depreciation	815	778	734	496	534
ROA (%)	1.8	2.4	2.3	2.6	3.9
ROA (ROA excl. Construction in progress) (%)	2.2	2.9	2.8	3.2	4.8
ROE (%)	5.9	7.2	5.9	6.0	9.1
EPS ( ¥ )	191.23	284.43	218.97	226.33	373.93
BPS ( ¥ )	3,440.23	3,762.52	3,641.59	3,954.22	4,300.98
Shareholders' equity ratio (%)	21.6	25.9	26.2	27.8	29.7
D/E ratio	3.2	2.5	2.4	2.2	2.0
Number of shares issued*2 (thousand)	150,051	183,050	183,049	183,049	183,049

\*1 Non-consolidated capital expenditure: Increase in tangible and intangible noncurrent assets

\*2 Number of shares issued at the end of the fiscal year (excluding treasury stock)



# (1)-5. Non-consolidated: Revenues and Expenses



(Unit: 100 million yen)

	FY2013	FY2014	FY2015	FY2016	FY2017	YOY change
<b>Operating revenue</b>	<b>5,828</b>	<b>5,579</b>	<b>5,523</b>	<b>5,224</b>	<b>6,145</b>	<b>921</b>
<b>Electric power business</b>	<b>5,729</b>	<b>5,485</b>	<b>5,430</b>	<b>5,109</b>	<b>6,014</b>	<b>905</b>
Sold power to other suppliers	5,167	4,953	4,902	4,579	5,456	877
Transmission and other	562	532	527	529	558	28
<b>Incidental business</b>	<b>99</b>	<b>93</b>	<b>93</b>	<b>115</b>	<b>131</b>	<b>15</b>
<b>Operating expenses</b>	<b>5,423</b>	<b>5,133</b>	<b>5,107</b>	<b>4,948</b>	<b>5,715</b>	<b>766</b>
<b>Electric power business</b>	<b>5,334</b>	<b>5,049</b>	<b>5,023</b>	<b>4,842</b>	<b>5,593</b>	<b>750</b>
Personnel expense	298	285	318	436	342	(94)
Amortization of the actuarial difference in retirement benefits	(30)	(43)	(23)	107	(1)	(108)
Fuel cost	2,502	2,284	2,184	1,968	2,573	604
Repair and maintenance cost	585	610	583	683	634	(48)
Depreciation and amortization cost	815	778	734	496	534	37
Other	1,133	1,090	1,202	1,257	1,508	251
<b>Incidental business</b>	<b>89</b>	<b>84</b>	<b>84</b>	<b>105</b>	<b>122</b>	<b>16</b>
<b>Operating income</b>	<b>404</b>	<b>445</b>	<b>415</b>	<b>276</b>	<b>430</b>	<b>154</b>

# (1)-5. Non-consolidated: Revenues and Expenses



(Unit: 100 million yen)

【Amortization of the actuarial difference】		FY2013	FY2014	FY2015	FY2016	FY2017
Actuarial difference	The remainder in the previous year (c)	2	(14)	(20)	(10)	49
	Actuarial difference in the previous year	(47)	(49)	(13)	167	(51)
	Subtotal (a)	(45)	(63)	(33)	156	(1)
Amortization *(b)		(30)	(43)	(23)	107	(1)
The remainder in the present year (c=a-b)		(14)	(20)	(10)	49	(0)

(Unit: 100 million yen)

【Repair expense】		FY2013	FY2014	FY2015	FY2016	FY2017
Hydroelectric		117	133	121	119	119
Thermal		419	423	409	507	460
Transmission		32	36	34	39	39
Others		15	15	16	17	15
Total		585	610	583	683	634

(Unit: 100 million yen)

【Depreciation and amortization cost】		FY2013	FY2014	FY2015	FY2016	FY2017
Hydroelectric		213	209	206	132	151
Thermal		408	379	334	230	243
Transmission		150	143	138	100	105
Others		42	44	55	33	34
Total		815	778	734	496	534

\* Actuarial difference is amortized by the declining-balance method over two years from the year following the year in which they occurred.

# (1)-6. Non-consolidated: Balance Sheet



	(Unit: million yen)	
	FY2016 End of FY	FY2017 End of FY
<b>Assets</b>		
<b>Non-current assets</b>	<b>1,892,648</b>	<b>1,933,261</b>
<b>Electric utility plant and equipment</b>	<b>932,819</b>	<b>921,000</b>
Hydroelectric power production facilities	357,508	358,916
Thermal power production facilities	318,961	311,298
Renewable power production facilities	939	-
Transmission facilities	160,596	155,982
Transformation facilities	30,988	31,097
Communication facilities	8,815	9,022
General facilities	55,009	54,683
Incidental business facilities	2,199	2,029
Non-operating facilities	313	452
<b>Construction in progress</b>	<b>483,067</b>	<b>533,741</b>
Construction in progress	482,143	531,567
Retirement in progress	923	2,174
Nuclear fuel	73,682	73,800
Nuclear fuel in processing	73,682	73,800
Investments and other assets	400,565	402,235
Long-term investments	63,824	65,105
Long-term investment for subsidiaries and associates	277,179	284,479
Long-term prepaid expenses	36,609	28,011
Deferred tax assets	22,953	24,756
Allowance for doubtful accounts	-	(116)
<b>Current assets</b>	<b>168,232</b>	<b>142,444</b>
Cash and deposits	5,169	10,550
Accounts receivable-trade	43,488	50,026
Other accounts receivable	2,838	1,932
Short-term investments	51,000	9,000
Supplies	36,360	39,350
Prepaid expenses	2,752	2,764
Short-term receivables from subsidiaries and associates	5,381	5,835
Deferred tax assets	2,305	3,449
Other current assets	18,936	20,447
Allowance for doubtful accounts	-	(913)
<b>Total assets</b>	<b>2,060,881</b>	<b>2,075,706</b>

	(Unit: million yen)	
	FY2016 End of FY	FY2017 End of FY
<b>Liabilities</b>		
<b>Non-current liabilities</b>	<b>1,156,280</b>	<b>1,226,571</b>
Bonds payable	494,991	554,991
Long-term loans payable	605,486	607,250
Long-term accrued liabilities	269	5,269
Lease obligations	133	157
Long-term debt to subsidiaries and associates	1,805	1,652
Provision for retirement benefits	47,395	46,340
Asset retirement obligations	1,646	6,231
Other non-current liabilities	4,552	4,677
<b>Current liabilities</b>	<b>342,408</b>	<b>258,207</b>
Current portion of non-current liabilities	190,745	94,210
Short-term loans payable	16,650	16,650
Accounts payable-trade	6,141	7,233
Accounts payable-other	10,560	12,035
Accrued expenses	14,391	12,833
Accrued taxes	7,362	13,892
Deposits received	294	491
Short-term debt to subsidiaries and associates	92,253	97,507
Other advances	3,067	201
Other current liabilities	941	3,152
<b>Total liabilities</b>	<b>1,498,688</b>	<b>1,484,778</b>
<b>Net assets</b>		
Shareholders' equity	545,629	574,753
Capital stock	180,502	180,502
Capital surplus	109,904	109,904
Legal capital surplus	109,904	109,904
Retained earnings	255,228	284,352
Legal retained earnings	6,029	6,029
Other retained earnings	249,198	278,323
Reserve for special disaster	69	72
Exchange-fluctuation preparation reserve	1,960	1,960
General reserve	182,861	222,861
Retained earnings brought forward	64,308	53,429
Treasury shares	(5)	(6)
Valuation and translation adjustments	16,562	16,174
Valuation difference on available-for-sale securities	14,276	15,592
Deferred gains or losses on hedges	2,286	581
<b>Total net assets</b>	<b>562,192</b>	<b>590,927</b>
<b>Total liabilities and net assets</b>	<b>2,060,881</b>	<b>2,075,706</b>

\* For consolidated balance sheet, please refer to the Financial Results disclosed on April 27, 2018

# (1)-7. Non-consolidated: Statement of Income



(Unit: million yen)

	FY2016 (Apr.-Mar.)	FY2017 (Apr.-Mar.)
Operating revenue	522,460	614,591
Electric utility operating revenue	510,909	601,475
Sold power to other suppliers	457,953	545,659
Transmission revenue	49,021	48,679
Other electricity revenue	3,933	7,136
Incidental business operating revenue	11,551	13,115
Operating revenue-consulting business	2,591	1,687
Operating revenue-coal sale business	7,912	10,357
Operating revenue-other businesses	1,047	1,070
Operating expenses	494,829	571,519
Electric utility operating expenses	484,288	559,300
Hydroelectric power production expenses	57,093	58,562
Thermal power production expenses	322,317	388,300
Renewable power production expenses	645	-
Purchased power from other suppliers	4,283	6,588
Transmission expenses	23,560	23,485
Transformation expenses	5,751	6,175
Selling expenses	1,209	970
Communicating expenses	4,301	4,342
General and administrative expenses	58,071	62,998
Expenses for third party's power transmission service	478	179
Enterprise tax	6,577	7,697
Incidental business operating expenses	10,540	12,219
Operating expenses-consulting business	1,905	1,165
Operating expenses-coal sale business	7,896	10,295
Operating expenses-other businesses	738	759
Operating income	27,630	43,071

(Unit: million yen)

	FY2016 (Apr.-Mar.)	FY2017 (Apr.-Mar.)
Non-operating income	45,458	27,036
Financial revenue	43,456	25,846
Dividend income	42,543	25,000
Interest income	913	846
Non-operating revenue	2,002	1,190
Gain on sales of non-current assets	2	12
Miscellaneous revenue	1,999	1,177
Non-operating expenses	16,619	17,648
Financial expenses	15,739	14,526
Interest expenses	15,442	14,159
Bond issuance cost	297	366
Non-operating expenses	879	3,122
Loss on sales of non-current assets	15	1
Miscellaneous loss	863	3,120
Total ordinary revenue	567,919	641,628
Total ordinary expenses	511,449	589,168
Ordinary income	56,470	52,460
Extraordinary loss	-	3,205
Impairment loss	-	3,205
Profit before income taxes	56,470	49,254
Income taxes-current	7,691	10,350
Income taxes-deferred	(2,773)	(3,033)
Total income taxes	4,917	7,316
Profit	51,552	41,938

\* For consolidated statement of income, please refer to the Financial Results disclosed on April 27, 2018

# (1)-8. Monthly Electricity Sales:

## Domestic Power Generation Business (Thermal Power)



▶ Apr. 2016 - Mar. 2017 Results (Cumulative)

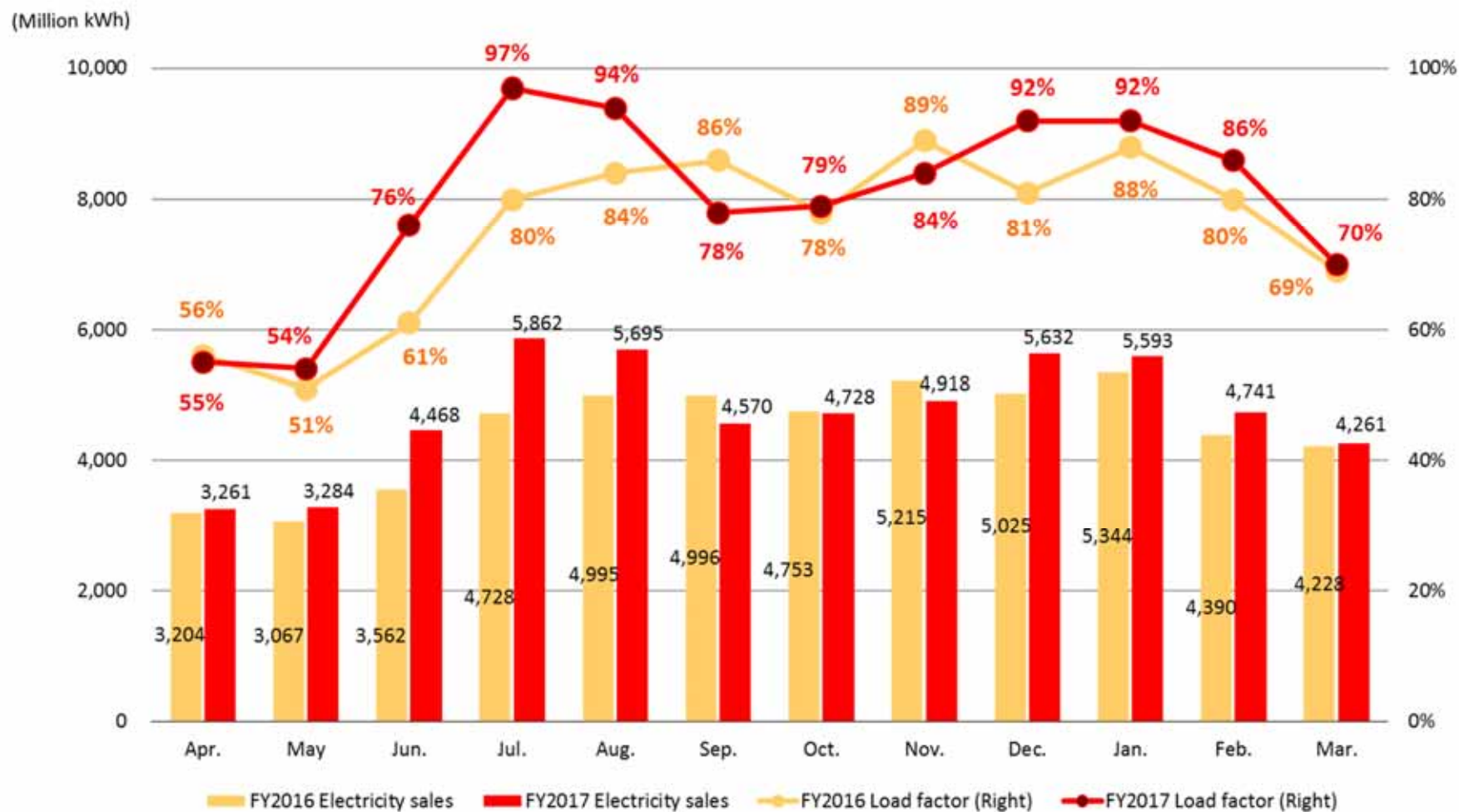
Load factor 75%

Electricity sales ⇒ 53.5TWh

▶ Apr. 2017 - Mar. 2018 Results (Cumulative)

Load factor 80%

Electricity sales ⇒ 57.0TWh



\* Load factors of thermal power show the results for non-consolidated only.

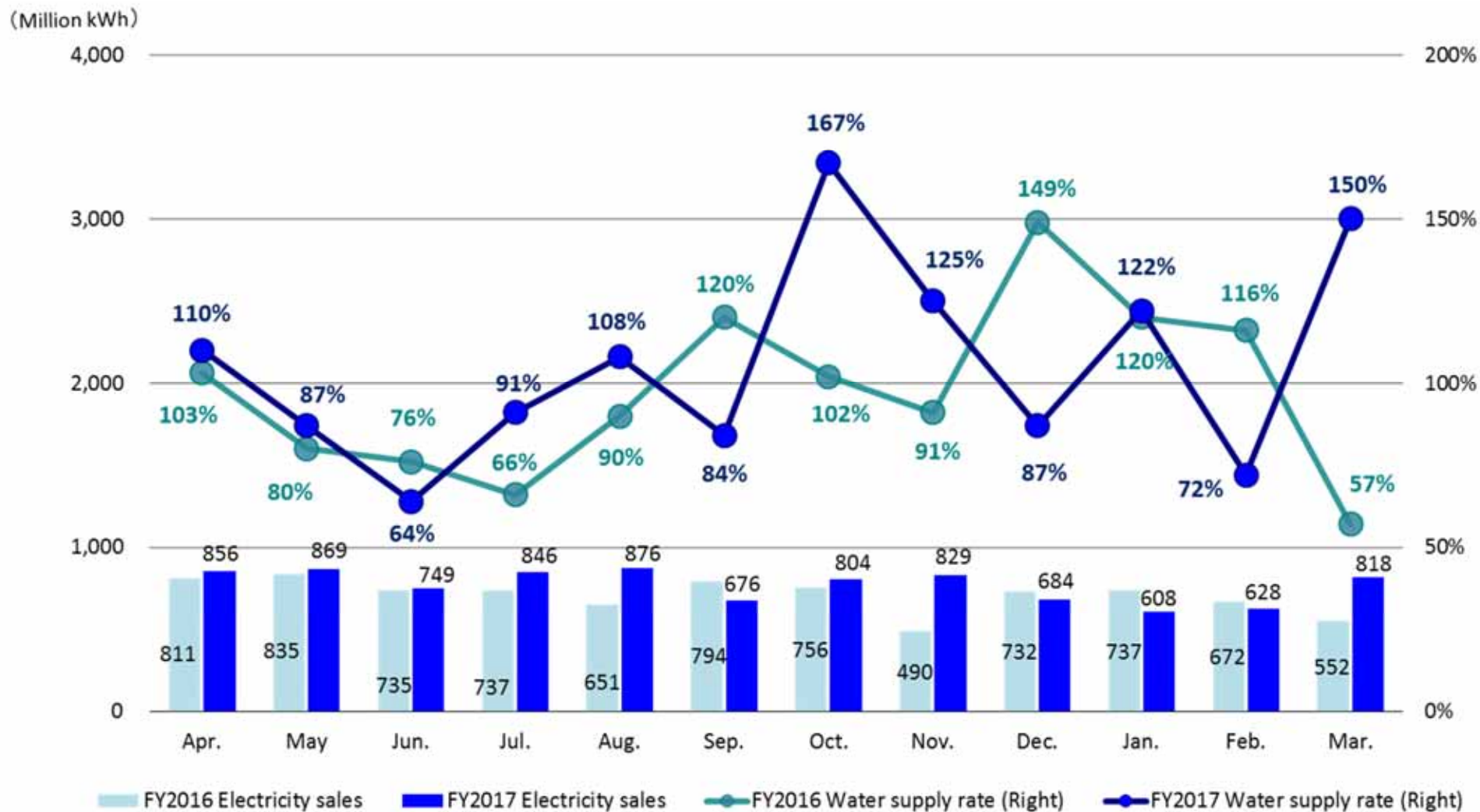
\* Proportion of equity holding is not taken into account.

# (1)-8. Monthly Electricity Sales:

## Domestic Power Generation Business (Hydroelectric Power)



▶ Apr. 2016 - Mar. 2017 Results (Cumulative)	▶ Apr. 2017 - Mar. 2018 Results (Cumulative)
Water supply rate 92%	Water supply rate 105%
Electricity sales ⇒ 8.5 TWh	Electricity sales ⇒ 9.2 TWh

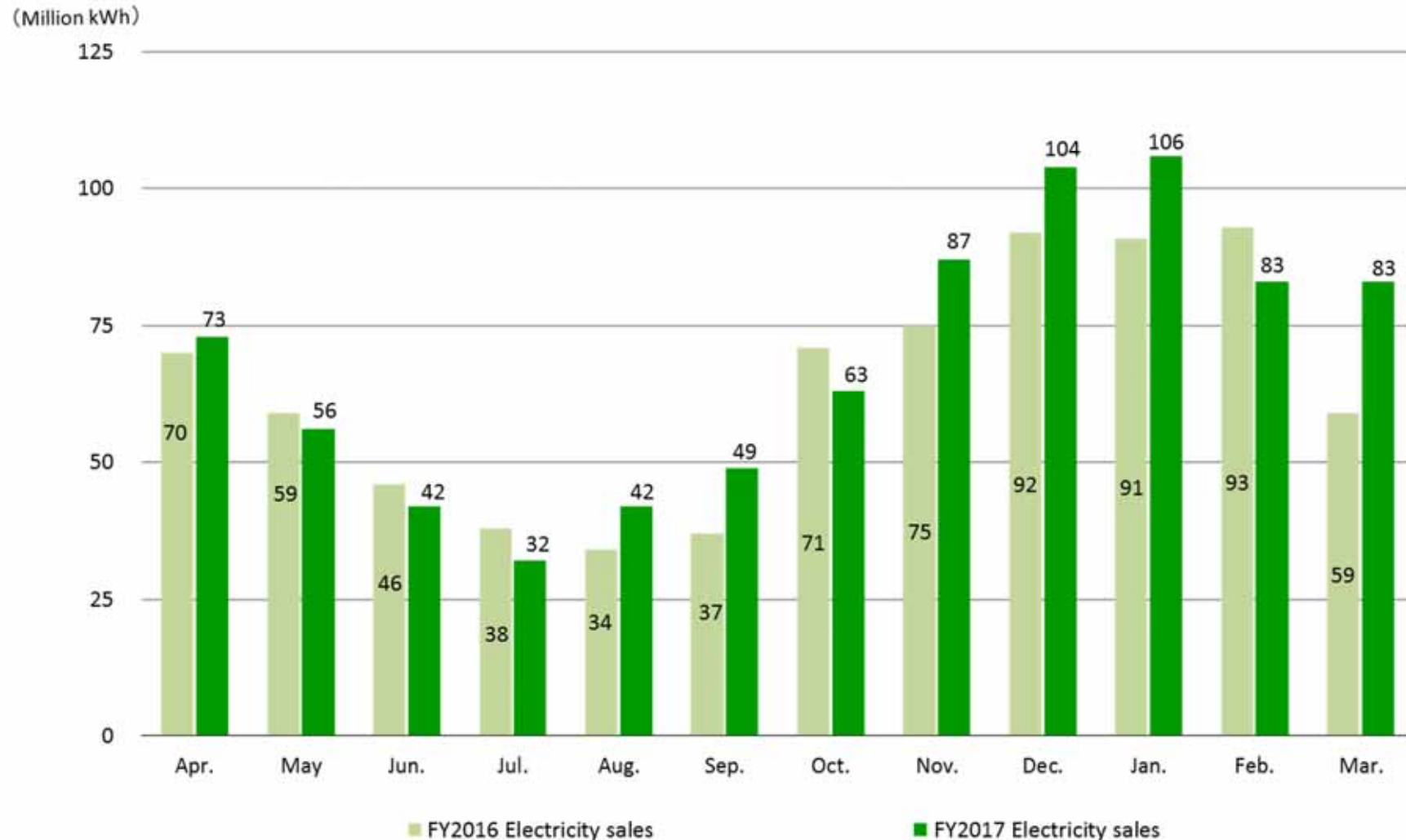


# (1)-8. Monthly Electricity Sales:

## Domestic Power Generation Business (Wind Power)



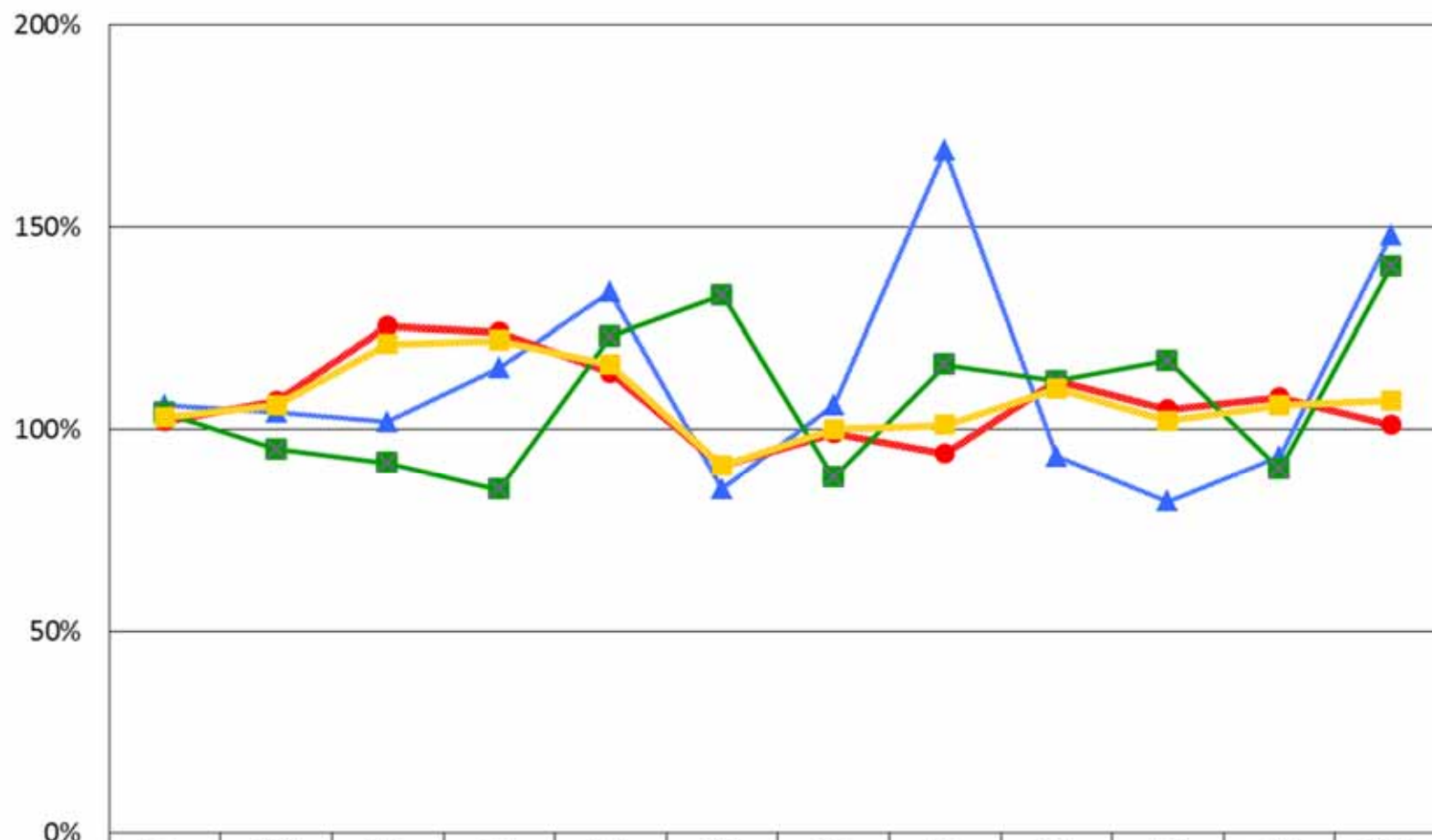
- ▶ Apr. 2016 - Mar. 2017 Results (Cumulative) 0.76TWh
- ▶ Apr. 2017 - Mar. 2018 Results (Cumulative) ⇒ 0.82TWh



\* Proportion of equity holding is not taken into account.

# (1)-8. Change in Monthly Electricity Sales:

## Domestic Power Generation Business



	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr. - Mar.
Year-on-year (Hydro)	106%	104%	102%	115%	134%	85%	106%	169%	93%	82%	93%	148%	109%
Year-on-year (Thermal)	102%	107%	125%	124%	114%	91%	99%	94%	112%	105%	108%	101%	107%
Year-on-year (Wind)	104%	95%	92%	85%	123%	133%	88%	116%	112%	117%	90%	140%	107%
Year-on-year Total	103%	106%	121%	122%	116%	91%	100%	101%	110%	102%	106%	107%	107%

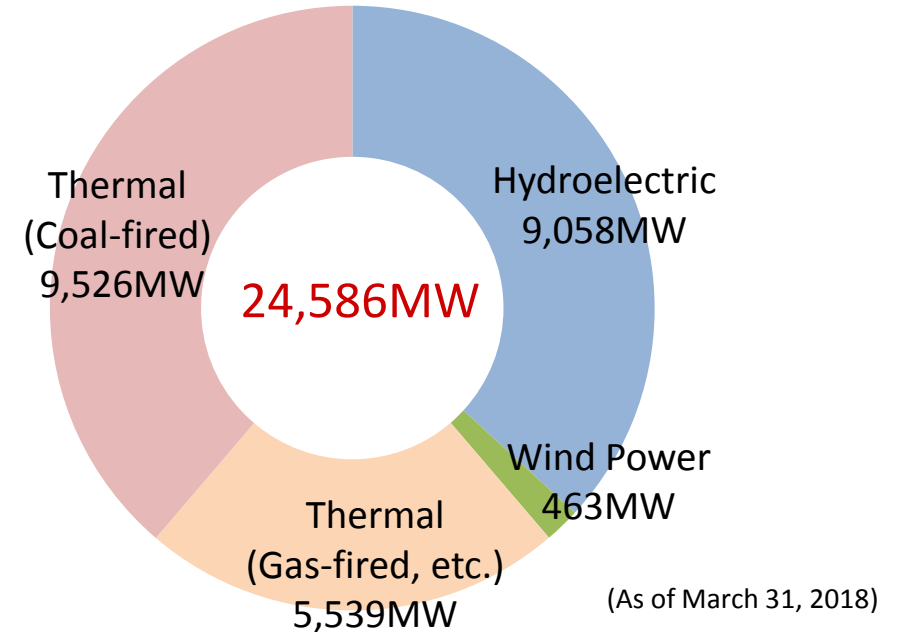
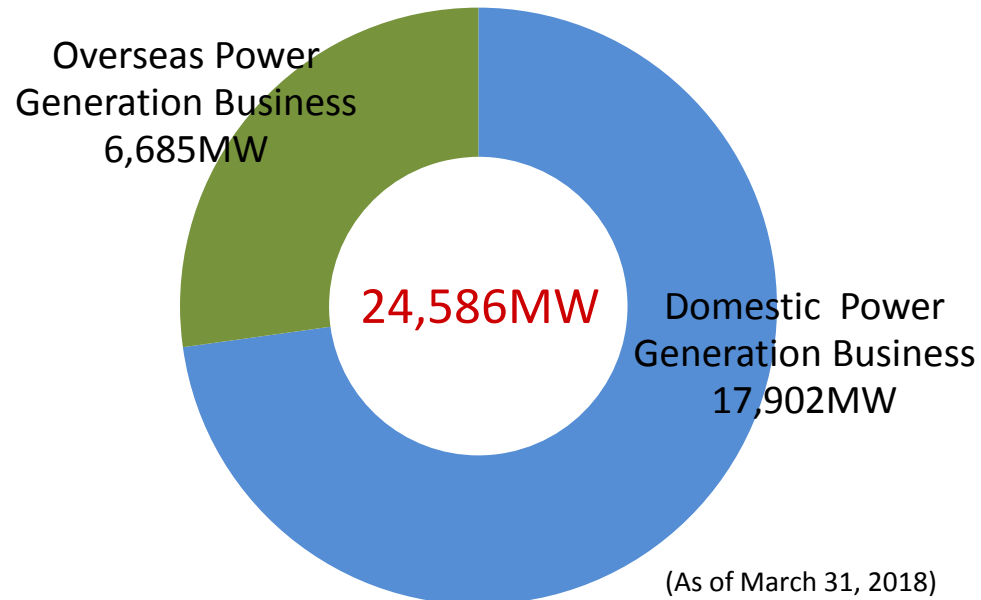


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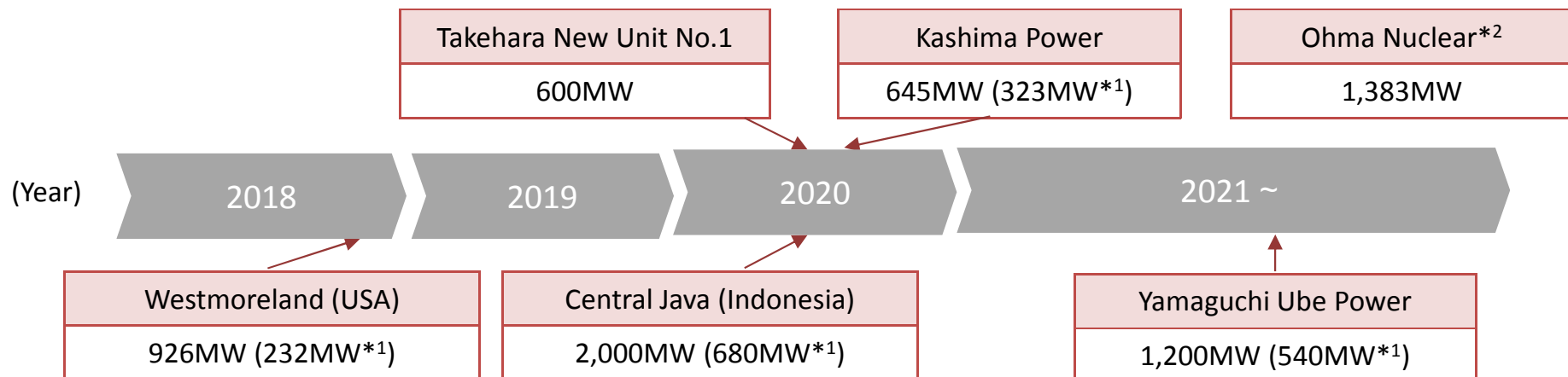
# (2)-1. Overview of J-POWER Group Power Generation Facilities



## Consolidated Power Generation Capacity\*1



## Major Projects under Development



\*1 Owned capacity: Output capacity of each facility is multiplied by J-POWER's investment ratio (equity ratio).

\*2 Schedule of commencement of operation is to be determined.

## (2)-2. Domestic Electric Power Business Facilities (As of March 31, 2018)



Thermal(J-POWER): 7 power plants, 8,412MW

	Power plant (Location)		Beginning of operation	Capacity (MW)
Coal	Isogo (Kanagawa)	New No.1	2002	600
		New No.2	2009	600
	Takasago (Hyogo)	No.1	1968	250
		No.2	1969	250
	Takehara (Hiroshima)	No.1	1967	250 <sup>*2</sup>
		No.2	1974	350
		No.3	1983	700
	Tachibanawan (Tokushima)	No.1	2000	1,050
		No.2	2000	1,050
	Matsushima (Nagasaki)	No.1	1981	500
		No.2	1981	500
	Matsuura (Nagasaki)	No.1	1990	1,000
		No.2	1997	1,000
	Ishikawa Coal (Okinawa)	No.1	1986	156
		No.2	1987	156

Thermal(Others): 5 power plants, 478MW\*1

Power plant	Location	Fuel	Ownership	Output capacity (MW)
Bayside Energy Ichihara	Chiba	Gas	100%	108
Mihama Seaside Power Shinminato	Chiba	Gas	100%	105
Itoigawa	Niigata	Coal	64%	149
Tosa	Kochi	Coal	45%	167
Genex Mizue	Kanagawa	Gas oil Residue	40%	238

\*1 Owned capacity: Output capacity of each facility is multiplied by J-POWER's investment ratio (equity ratio).

\*2 Takehara No.1 was abolished for replacement in April, 2018.

## (2)-2. Domestic Electric Power Business Facilities (As of March 31, 2018)



Hydroelectric: 61 power plants, 8,572MW\*<sup>1</sup>

Power plant	Location	Beginning of operation	Capacity (MW)
Shimogo	Fukushima	1988	1,000
Okutadami	Fukushima	1958	560
Otori	Fukushima	1963	182
Tagokura	Fukushima	1959	400
Okukiyotsu	Niigata	1978	1,000
Okukiyotsu No.2	Niigata	1996	600
Numappara	Tochigi	1973	675
Shintoyone	Aichi	1972	1,125
Sakuma	Shizuoka	1956	350
Miboro	Gifu	1961	215
Nagano	Fukui	1968	220
Tedorigawa No.1	Ishikawa	1979	250
Ikehara	Nara	1964	350
Sendaigawa No.1	Kagoshima	1965	120
Other 47 plants			

Wind Power: 22 wind farms, 439MW\*<sup>2</sup>

Wind farm	Location	Ownership	Output capacity (MW)
Tomamae Winvilla	Hokkaido	100%	30.6
Kaminokuni	Hokkaido	100%	28.0
Green Power Kuzumaki	Iwate	100%	21.0
Nikaho Kogen	Akita	100%	24.8
Koriyama-Nunobiki Kogen	Fukushima	100%	66.0
Hiyama Kogen	Fukushima	100%	28.0
Irouzaki	Shizuoka	100%	34.0
Tahara Bayside	Aichi	100%	22.0
Awara-Kitagata	Fukui	100%	20.0
Minami Ehime	Ehime	100%	28.5
Minami Oosumi	Kagoshima	100%	24.7
Other 11 wind farms			

\*1 Including 3,275MW of pure pumped storage type.

\*2 Owned capacity: Output capacity of each facility is multiplied by J-POWER's investment ratio (equity ratio).

## (2)- 3. Overseas Power Generation Projects (As of March 31, 2018)



Project	Type	Output capacity (MW)	Ownership	Owned capacity (MW)	Power purchaser	Validity of purchase agreement
<b>Thailand (16 projects)</b>		<b>5,947</b>		<b>3,300</b>		
Roi-Et	Biomass (Chaff)	10	24.7%	2	EGAT*1	Valid to 2024
Rayong	CCGT*3	112	20%	22	EGAT*1/ Companies in the industrial park	Valid to 2024
Gulf Cogeneration	CCGT*3	110	49%	54	EGAT*1/ Companies in the industrial park	Valid to 2019
Samutprakarn	CCGT*3	117	49%	57	EGAT*1/ Companies in the industrial park	Valid to 2020
Nong Khae	CCGT*3	120	49%	59	EGAT*1/ Companies in the industrial park	Valid to 2021
Yala	Biomass (Rubber wood waste)	20	49%	10	EGAT*1	Valid to 2031
Kaeng Khoi 2	CCGT*3	1,468	49%	719	EGAT*1	Valid to 2033
7 SPPs*2	Consolidated Subsidiaries	790	57.7%	456	EGAT*1/ Companies in the industrial park	Valid to 2038
Nong Saeng		1,600	60%	960	EGAT*1	Valid to 2039
U-Thai		1,600	60%	960	EGAT*1	Valid to 2040
<b>United States (10 projects)</b>		<b>4,504</b>		<b>1,785</b>		
Tenaska Frontier	CCGT*3	830	31%	257	Exelon Generation Company, LLC	Valid to 2020
Elwood Energy	SCGT*4	1,350	50%	675	PJM market	-
Green Country	CCGT*3	795	50%	398	Exelon Generation Company, LLC	Valid to 2022
Birchwood	Coal	242	50%	121	Virginia Electric and Power Company	Valid to 2021
Pinelawn	CCGT*3	80	50%	40	Long Island Power Authority	Valid to 2025
Equus	SCGT*4	48	50%	24	NYISO market	-
Fluvanna	CCGT*3	885	15%	133	Shell Energy North America	Valid to 2024
Edgewood	SCGT*4	88	50%	44	Long Island Power Authority	Valid to 2018
Shoreham	Jet Fuel (Simple cycle)	90	50%	45	Long Island Power Authority	Valid to 2020
Orange Grove	SCGT*4	96	50%	48	San Diego Gas & Electric	Valid to 2035

\*1 EGAT(Electricity Generating Authority of Thailand): State-owned electric power utility in Thailand

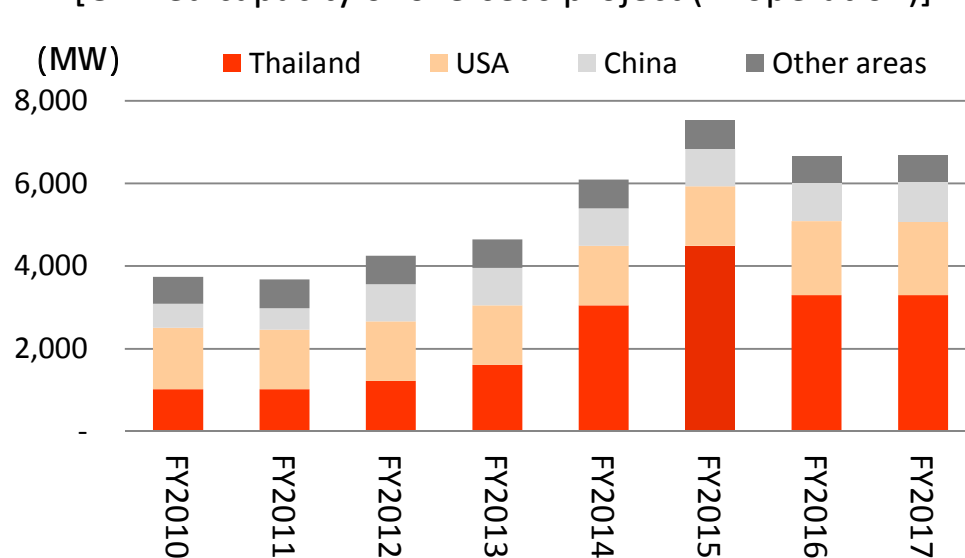
\*2 7 SPP projects (KP1,KP2,TLC,NNK,NLL,CRN,NK2). J-POWER holds 45% stake in NLL and 60% stake in other 6 plants.

\*3 CCGT: Combined Cycle Gas Turbine \*4 SCGT: Simple Cycle Gas Turbine

## (2)- 3. Overseas Power Generation Projects (As of March 31, 2018)

Project	Type	Output capacity (MW)	Ownership	Owned capacity (MW)	Power purchaser	Validity of purchase agreement
<b>China (5 projects)</b>		<b>9,070</b>		<b>944</b>		
Tianshi	Coal Waste	50	24%	12	Shanxi Province Power Corporation	Renewed every year*1
Hanjiang (Xihe/Shuhe)	Hydroelectric	450	27%	122	Shaanxi Electric Power Company	Renewed every year*1
Gemeng*2	Mainly Coal	6,480	7%	455	Shanxi Province Power Corporation	-
Hezhou	Coal	2,090	17%	355	Guanxi Power Grid Co.	Renewed every year*1
<b>Other country/region (5 projects)</b>		<b>1,446</b>		<b>656</b>		
CBK (3 projects) (Philippines)	Hydroelectric	728	50%	364	National Power Corporation	Valid to 2026
Chiahui (Taiwan)	CCGT*3	670	40%	268	Taiwan Power Company	Valid to 2028
Zajaczkowo (Poland)	Wind Power	48	50%	24	ENERGA OBROT S.A.	Valid to 2023

[Owned capacity of overseas project (in operation)]



Country/Region	In operation	Under development	Total
Thailand	3,300	-	3,300
USA	1,785	232	2,016
China	944	-	944
Other areas	656	680	1,336
<b>Total</b>	<b>6,685</b>	<b>912</b>	<b>7,596</b>

\*1 Although power purchase agreements are renewed every year, J-POWER makes other agreements with power purchasers for continuous power purchase during the plant operation.

\*2 Gemeng International Energy Co., Ltd. is an electric power company that owns 14 power generation companies.

\*3 CCGT: Combined Cycle Gas Turbine

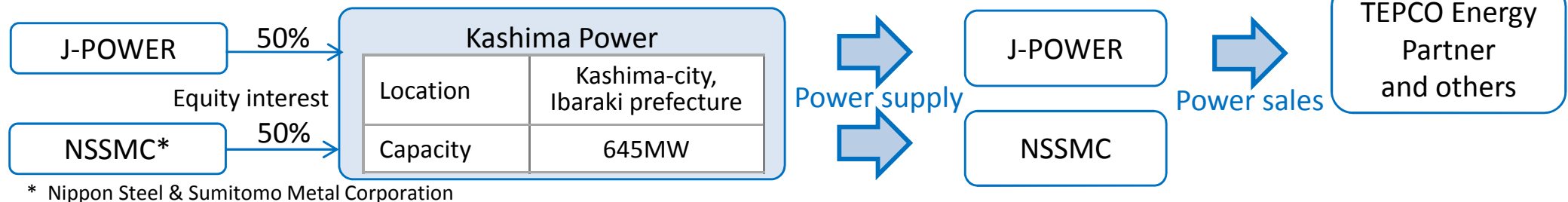
## (2)-4. New Coal-fired Power Projects in Japan

### Takehara Thermal Power Plant New Unit No.1 (Replacement)

Location	Takehara-city, Hiroshima prefecture
Status	Under construction
Start of operation	Scheduled for June 2020
Capacity	600MW (Unit No.1 & 2) → 600MW (New Unit No.1) (Replacement in the same capacity)
Steam Condition	Sub-Critical → Ultra-supercritical

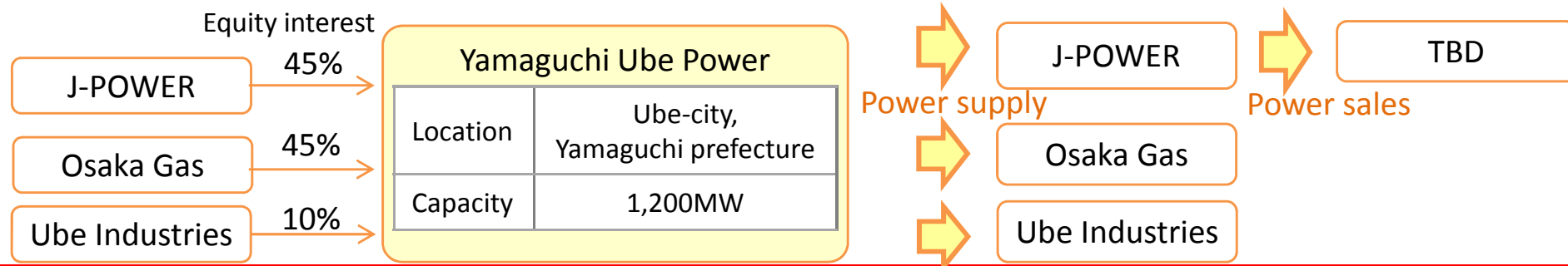
### Kashima Power (New Capacity)

- ✓ Status : Under construction (Commenced in November 2016)
- ✓ Start of operation : scheduled for July 2020



### Yamaguchi Ube Power (New Capacity)

- ✓ Status : Implementing environmental assessment
- ✓ Start of operation : scheduled for 2023 (No.1), 2025 (No.2)



## (2)-5. Overseas Projects under Development (As of March 31, 2018)

Project	Overview	Location of the power plant
<p><b>Central Java (Indonesia)</b></p> <p>Capacity: 2,000MW (1,000MW x 2) Type: Coal (USC*1) Ownership: 34% Status: Under construction Start of operation No.1: Jun. 2020 No.2: Dec. 2020</p>	<ul style="list-style-type: none"> <li>• IPP project (newly developed coal-fired power plant) awarded through international tender in Indonesia in 2011.</li> <li>• The plan is to construct a high-efficiency coal-fired power plant in Batang city, Central Java Province.</li> <li>• After startup of operation, the plant will sell electricity to Indonesia's state-owned electric power utility for a period of 25 years.</li> </ul>	
<p><b>Westmoreland (USA)</b></p> <p>Capacity: 926MW Type: CCGT *2 Ownership: 25% Status: Under construction Start of operation: 2018</p>	<ul style="list-style-type: none"> <li>• Acquisition of equity interest (25%) in January 2017</li> <li>• The power plant is expected to start its commercial operation in late 2018 and supply electricity to PJM*3, the largest deregulated electricity market in the US.</li> <li>• Our investment in the US will expand to 11 projects with the aggregated owned capacity exceeding 2GW after it starts commercial operation.</li> </ul>	

\*1 USC: Ultra - Supercritical

\*2 CCGT: Combined Cycle Gas Turbine

\*3 PJM: The independent system operator in the eastern US that operates the largest wholesale electricity market in the US as well as runs its electric power system.

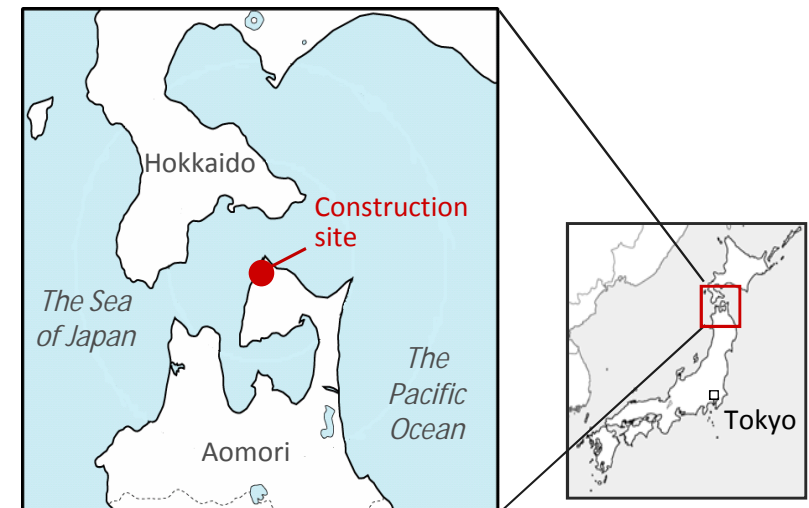


## (2)-6. Ohma Nuclear Power Project

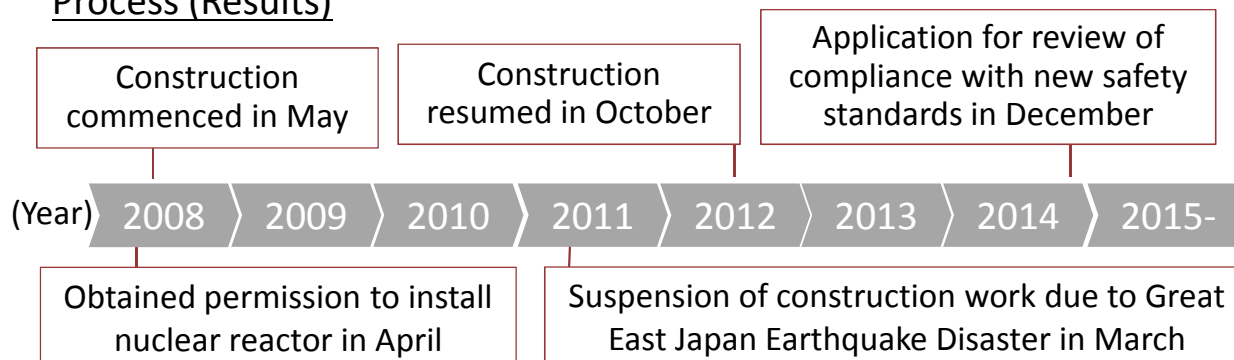
- ▶ In December 2014, J-POWER submitted to NRA\* an application for permission for alteration of reactor installment license and an application for construction plan approval in order to undertake review of compliance with the new safety standards
- ▶ Pursue further improvements in safety continuously
- ▶ Sincerely and appropriately respond to compliance reviews and aim to restart full scale construction work quickly
- ▶ Strive for more polite information communication and mutual communication so that we can gain the understanding and trust of the community

### Overview of the Project

Location	Ohma-machi, Shimokita-gun, Aomori Prefecture
Capacity	1,383MW
Type of nuclear reactor	Advanced Boiling Water Reactor (ABWR)
Fuel	Enriched uranium and uranium-plutonium mixed oxide (MOX)
Commencement of operations	To be determined



### Process (Results)



\* Nuclear Regulatory Authority

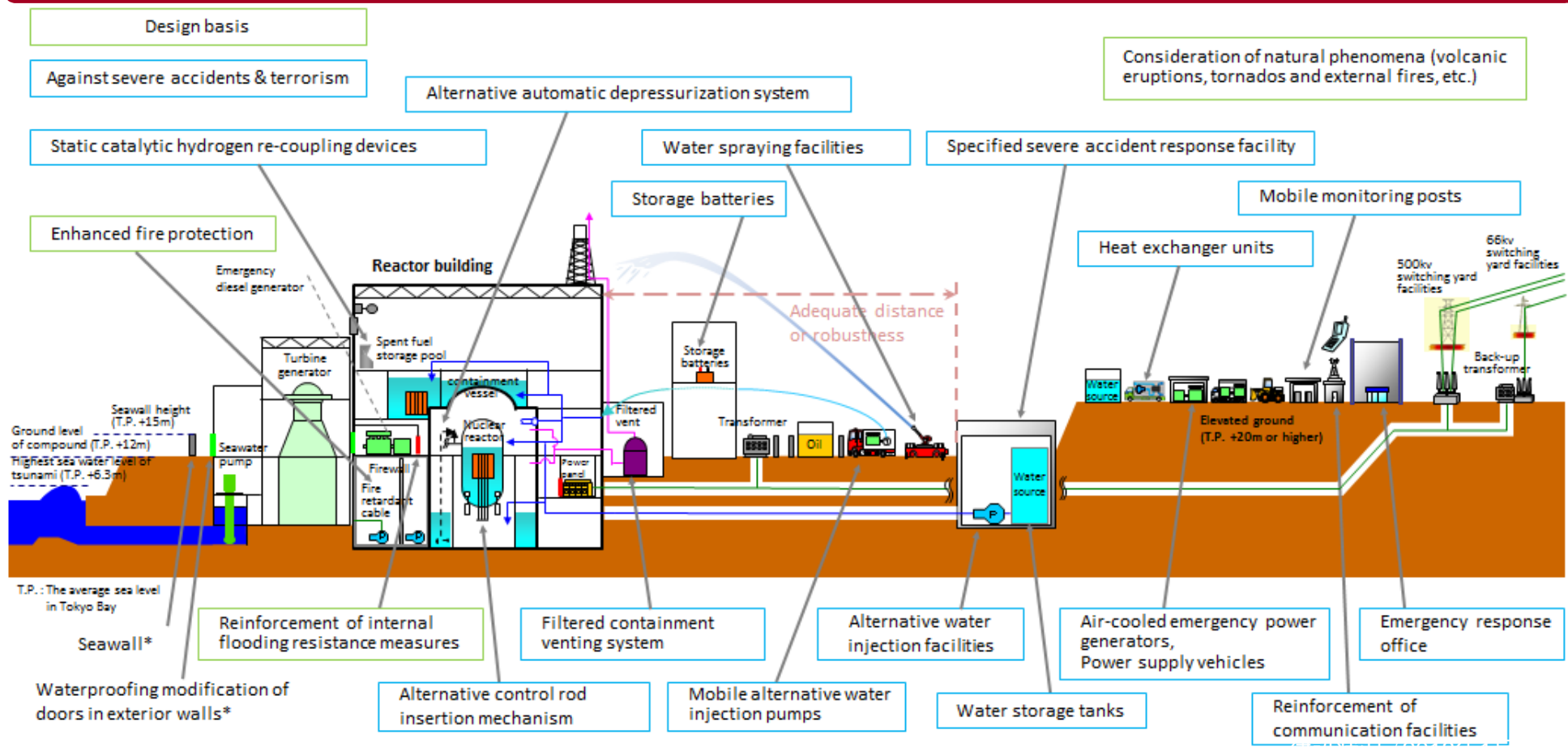
■ Construction Works for Measures for Reinforcing Safety

✓ Construction Period: From the 2<sup>nd</sup> half of 2018 to the 2<sup>nd</sup> half of 2023

✓ Construction Cost: Approx. 130 billion yen

(The construction plan is based on J-POWER's projections, which incorporate estimations of examination and permit process durations by the NRA)

Measures for Reinforcing Safety



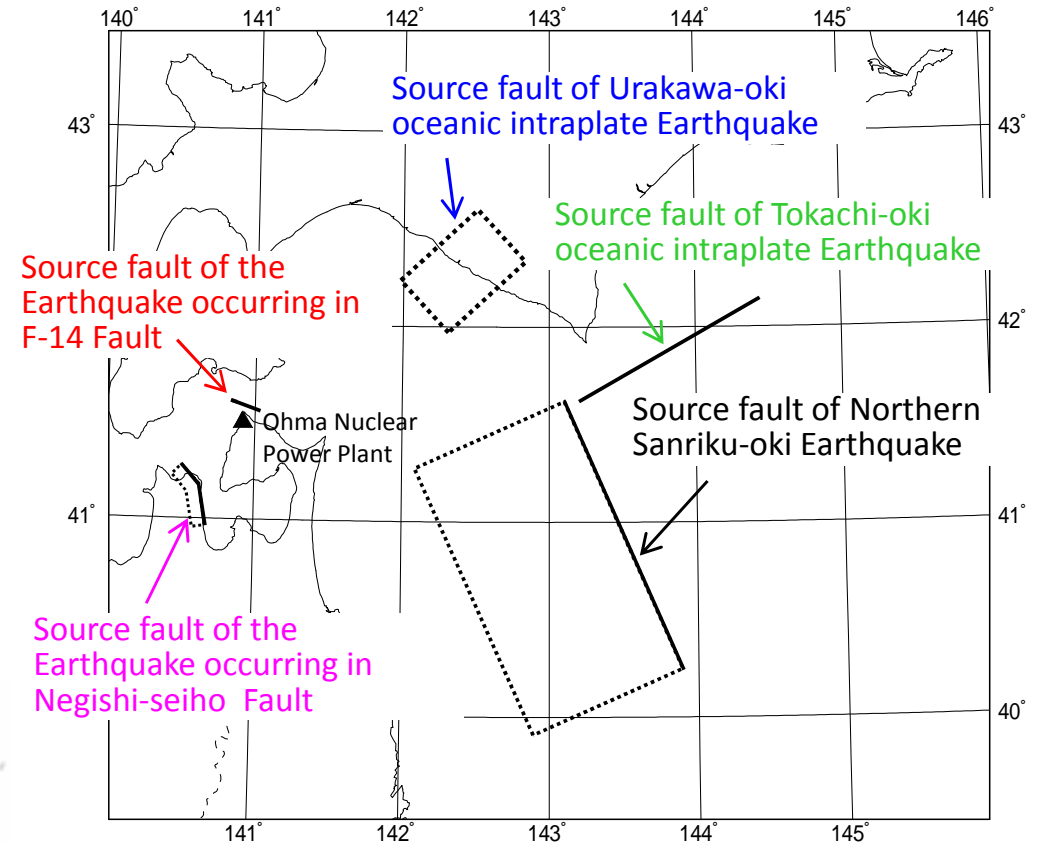
\*Independent measures

■ Earthquakes for Investigation

✓ Earthquakes listed below by earthquake type have been investigated

Earthquake type	Earthquake for investigation	Magnitude
Interplate earthquakes	Northern Sanriku-oki Earthquake*	Mw8.3
Oceanic intraplate earthquakes	Urakawa-oki oceanic intraplate Earthquake	M7.5
	Tokachi-oki oceanic intraplate Earthquake	M8.2
Inland crustal earthquakes	Earthquake occurring in Negishi-seiho Fault	M7.5
	Earthquake occurring in F-14 Fault	M6.7

\* Evaluation considering uncertainty of simultaneous rupture of north-off Sanriku area and off Tokachi and off Nemuro areas along Kuril trench (Mw9.0), based on experience of the 2011 off the Pacific coast of Tohoku Earthquake



Source faults of earthquakes for investigation

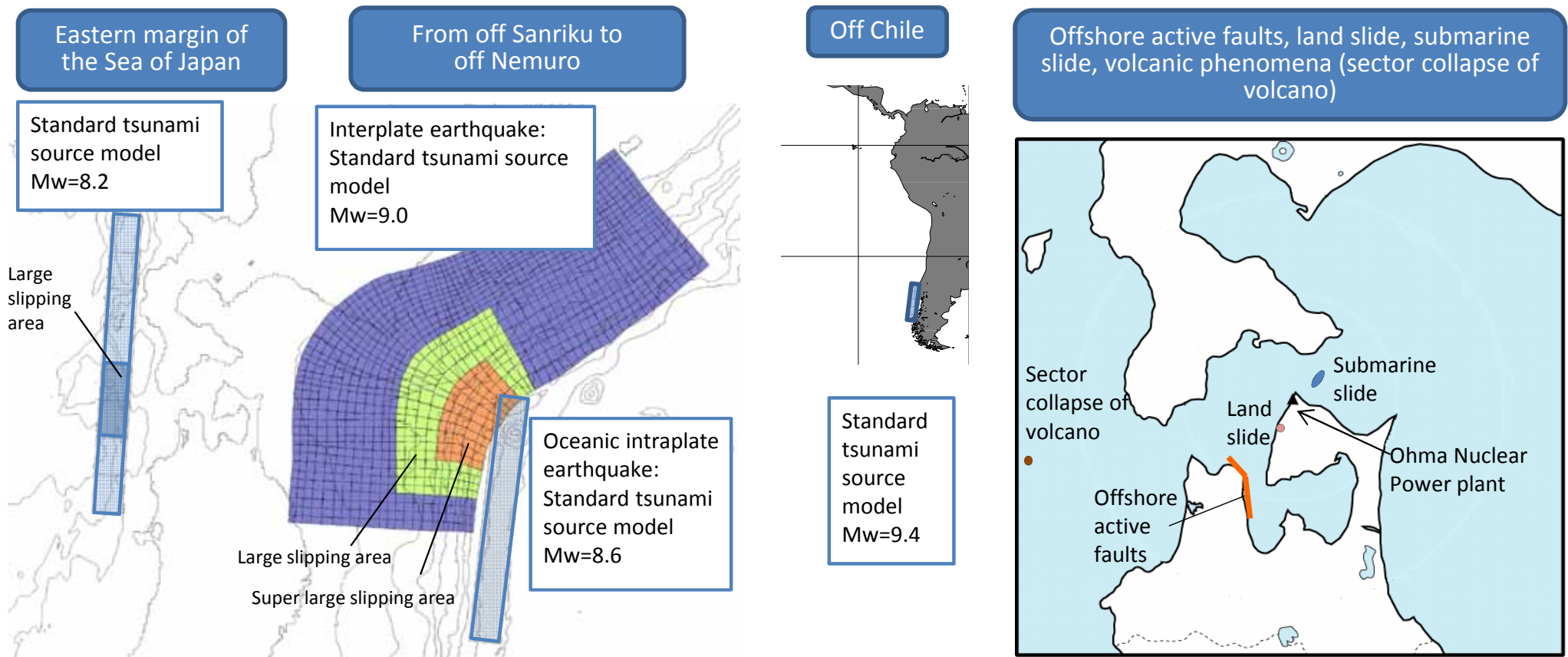


**Standard seismic motion:** Horizontal 650 cm/s<sup>2</sup>  
(Maximum acceleration) Vertical 435 cm/s<sup>2</sup>

## (2)-7. Response to the New Safety Standards at the Ohma Nuclear Power Plant (Main Conditions)

### ■ Design Basis Tsunamis

- ✓ Tsunami source models based on the latest knowledge such as the 2011 off the Pacific coast of Tohoku Earthquake Tsunami
- ✓ Estimated earthquakes larger than ever considered as tsunami sources at the eastern margin of the Sea of Japan, from off Sanriku to off Nemuro, off Chile and offshore active faults
- ✓ Taking into consideration of non-earthquake-oriented tsunamis (caused by land slide, submarine slide, sector collapse of volcano)



The highest sea water level by design basis tsunami: approx. T.P.+6.3m  
The lowest sea water level by design basis tsunami: approx. T.P.-4.1m

## (2)-8. Osaki CoolGen Project: Demonstration Test of Oxygen-blown IGCC

Large-scale demonstration test on oxygen-blown IGCC, IGFC and CO<sub>2</sub> capture to verify total system performance before commercialization

Organization	Osaki CoolGen Corporation (Ownership: J-POWER 50%, Chugoku Electric Power Company 50%)
Location	Chugoku Electric Power Company Osaki Power Station premises (Hiroshima)
Output	166MW (Coal consumption: 1,180 t/day)



- Integrated Coal Gasification Combined Cycle (IGCC):  
An integrated power generation system with a twin-turbine configuration; the gas produced from coal is used as fuel to drive a gas turbine, the exhaust gas from which is used in a steam turbine
- Integrated Coal Gasification Fuel Cell Combined Cycle (IGFC):  
Most efficient coal-fired power generation system combining fuel cells with gas and steam turbines in a triply integrated power generation configuration

### Demonstration Test Schedule

Demonstration test of IGCC commenced in March 2017

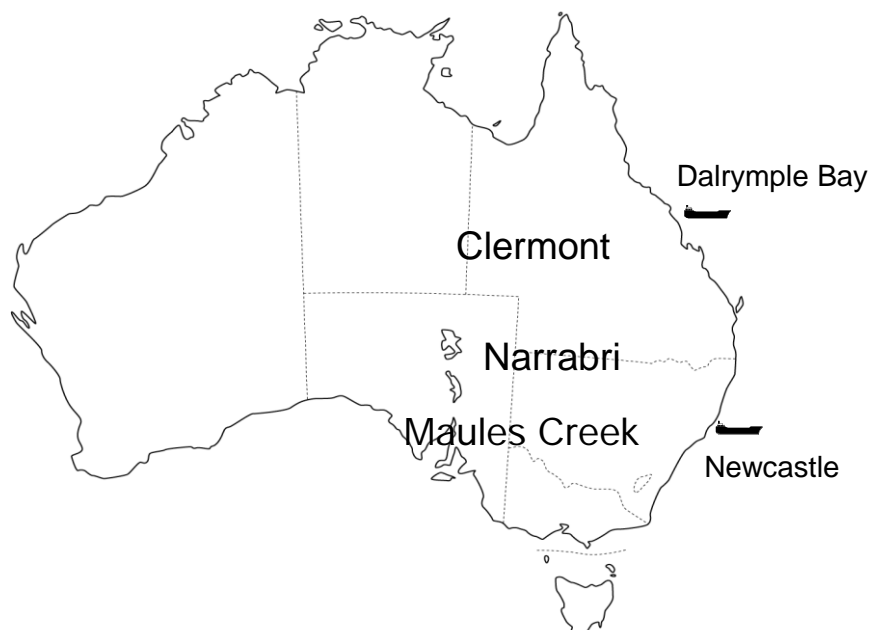
(Fiscal Year)		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	
Phase 1	Oxygen-blown IGCC	Design/manufacture/installation					Demonstration tests					
Phase 2	IGCC with CO <sub>2</sub> separation and capture					Design/manufacture/installation			Demonstration tests			
Phase 3	IGFC with CO <sub>2</sub> separation and capture							Design/manufacture/installation		Demonstration tests		

## (2)-9. Coal Mine Projects in Australia

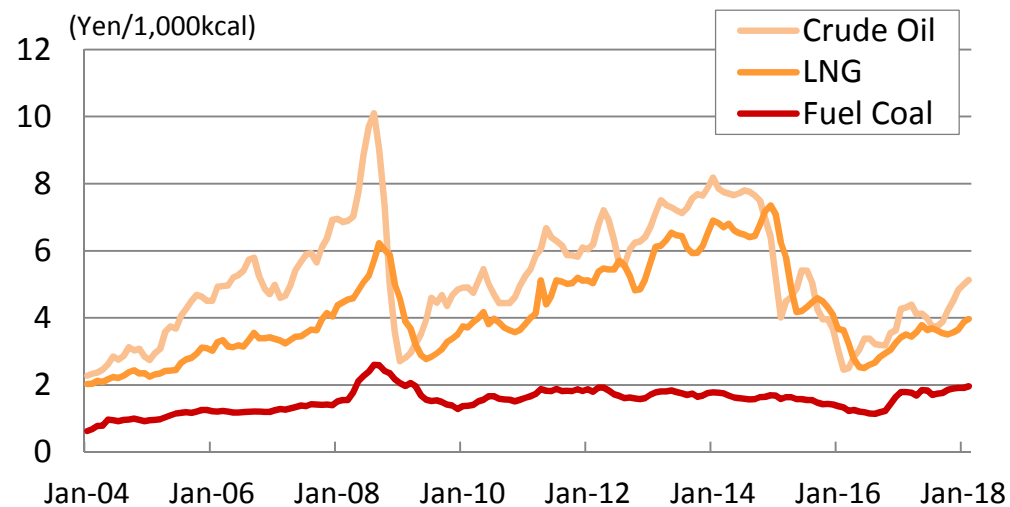
### Coal Mine Projects

Coal mine	Location	Loading port	Production volume in 2017	Ownership* <sup>1</sup>	Start of commercial production
Clermont	Queensland	Dalrymple Bay	11.37 Million t	15%	2010
Narrabri	New South Wales	Newcastle	6.64 Million t	7.5%	2010
Maules Cleek	New South Wales	Newcastle	9.22 Million t	10%	2014

\*1 Investment through a subsidiary, J-POWER AUSTRALIA PTY. LTD.



### Calorific Unit Price by Fossil Fuel (Imports) in Japan



Data charted up to February 2018  
Source: The Institute of Energy Economics, Japan



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<http://www.jpowers.co.jp/english/>

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