

# Financial Summary FY2010

May 13, 2011



Tohoku Electric Power Co., Inc.

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# FY2010 Financial Result

# Summary of FY2010 Result

1

(billion yen)

		FY2010 (A)	FY2009 (B)	Comparison		Consolidated/Non-consolidated of FY2010	
				(A) - (B)	(A) / (B)	Comparison	Ratio
Consolidated	Operating Revenues	1,708.7	1,663.3	45.3	102.7%	157.1	1.10 times
	Operating Income	114.6	89.2	25.3	128.4%	17.7	1.18 times
	Ordinary Income	80.2	43.2	36.9	185.7%	17.4	1.28 times
	Net (Loss) Income	(33.7)	25.8	(59.5)	-	(0.5)	-
Non-Consolidated	Operating Revenues	1,551.5	1,507.5	43.9	102.9%		
	Operating Income	96.9	73.5	23.4	131.9%		
	Ordinary Income	62.8	27.7	35.1	226.8%		
	Net (Loss) Income	(33.1)	20.1	(53.2)	-		



# Electricity Sales

2

Electricity Sold  
Year-on-Year Compared up 82,706 million kWh  
3,714 million kWh (+4.7%)

## Major Factors

Effect of temperature

2.1 billion kWh

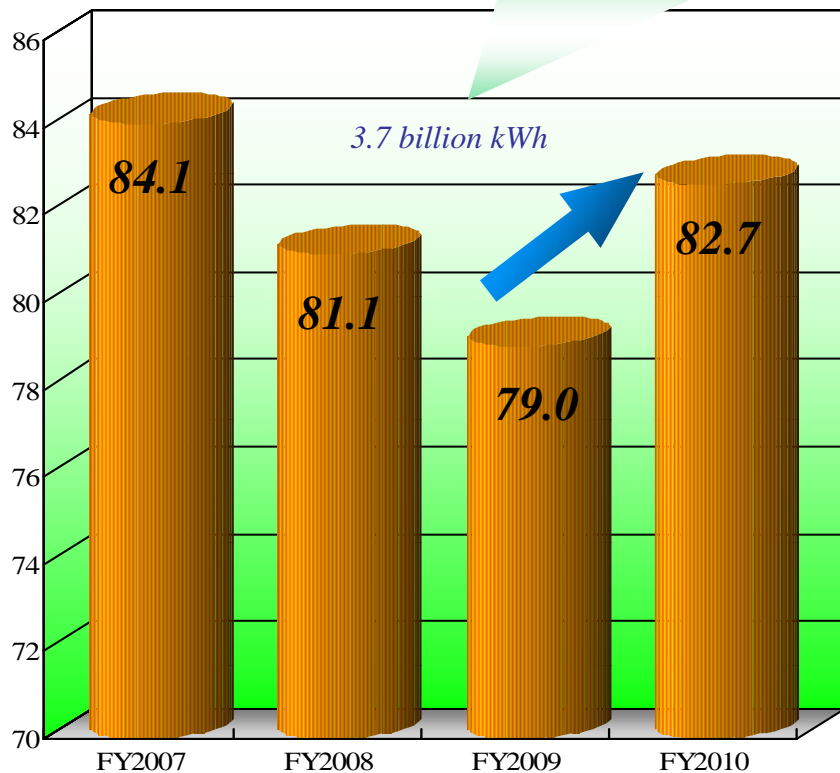
Increasing industrial demand

2.1 billion kWh

Others

- 0.5 billion kWh

(billion kWh)



(million kWh)

Segment		FY2010 (A)	FY2009 (B)	Comparison	
				(A) - (B)	(A) / (B)
Regulated	Residential	26,324	25,036	1,288	105.1%
	Commercial	4,284	4,067	217	105.4%
	Sub-total	30,608	29,103	1,505	105.2%
Deregulated		52,098	49,889	2,209	104.4%
Total		82,706	78,992	3,714	104.7%

## 【 Sub Segment 】

Large Industrial	26,787	25,345	1,442	105.7%
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# Electricity Generated and Purchased

3

(million kWh)

	FY2010 (A)	FY2009 (B)	Comparison	
			(A) - (B)	(A) / (B)
Own Generated power	72,657	73,633	(976)	98.7%
Hydro	8,233	7,607	626	108.2%
Thermal	42,883	44,625	(1,742)	96.1%
Nuclear	20,690	20,380	310	101.5%
Renewable	851	1,021	(170)	83.3%
Purchased Power	22,541	22,830	(289)	98.7%
Power Interchanges (Transmitted)	-20,864	-21,416	552	97.4%
Power Interchanges (Received)	16,055	11,888	4,167	135.0%
Used at Pumped Storage	-99	-41	(58)	237.9%
Total, Generated and Purchased	90,290	86,894	3,396	103.9%

# Major Factors, Sensitivity to Major Factors

4

		FY2010 (A)	FY2009 (B)	Comparison (A) - (B)
Major Factors	Crude Oil CIF Price (\$/bbl)	84.2	69.4	14.8
	Exchange Rate (¥/\$)	86	93	(7)
	Hydro Power Flow Rate (%)	102.2	90.3	11.9
	Nuclear Power Capacity Factor (%)	72.1	71.1	1.0

(billion yen)

		FY2010 (A)	FY2009 (B)	Comparison (A) - (B)
Sensitivity to Major Factors	Crude Oil CIF Price (per \$1/bbl)	2.0	2.2	(0.2)
	Exchange Rate (per ¥1/\$)	2.8	2.3	0.5
	Hydro Power Flow Rate (per 1%)	0.7	0.7	-
	Nuclear Power Capacity Factor (per 1%)	1.7	1.6	0.1



## Comparison Statements of Revenue &amp; Expense (Non-consolidated)

5

(billion yen)

			FY2010 (A)	FY2009 (B)	Comparison		Items
					(A) - (B)	(A) / (B)	
Revenues		Residential	547.0	528.1	18.8	103.6%	Increase in electric sales volume; 60.4 Electricity rate reduction; (14.9)
		Commercial	785.1	758.5	26.5	103.5%	
	Sub Total		1,332.2	1,286.7	45.4	103.5%	
	Sales of Power to Other Utilities		184.6	193.9	(9.3)	95.2%	
	Other Revenues		41.1	33.2	7.8	123.5%	
	[Operating Revenues]		[1,551.5]	[1,507.5]	[43.9]	[102.9%]	
	Total Revenues		1,558.0	1,514.0	43.9	102.9%	
Expenses	Personnel		161.8	179.1	(17.2)	90.3%	Retirement Benefit; (23.2) [Amortization of actual difference; (10.9)]
	Fuel		293.0	272.2	20.8	107.7%	Rise in crude oil CIF price ; 37.8 Appreciation of the yen; (16.1)
	Maintenance		180.6	178.8	1.8	101.0%	Distribution; 5.1, Transmission; 2.1 Hydro power; 1.8, Nuclear power; (7.6)
	Depreciation		219.5	216.7	2.7	101.3%	Thermal power; 101, Nuclear power; (4.5)
	Power Purchased from other utilities		139.4	113.1	26.2	123.2%	Nuclear power; 23.3
	Power Purchased from other companies		189.1	190.8	(1.7)	99.1%	
	Interest		38.7	45.4	(6.6)	85.5%	
	Taxes, etc.		84.3	83.8	0.4	100.6%	
	Nuclear Power Back-end Cost		24.1	22.6	1.5	106.8%	
	Other Expenses		164.1	183.5	(19.3)	89.4%	CO2 credits; (12.9)
	Total Expenses		1,495.1	1,486.3	8.7	100.6%	
[Operating Income ]			[96.9]	[73.5]	[23.4]	[131.9%]	
Ordinary Income			62.8	27.7	35.1	226.8%	
Extraordinary loss			110.6	-	110.6	-	Loss on disaster (The Great East Japan Earthquake); 99.5
Net (loss) income			(33.1)	20.1	(53.2)	-	

# Balance Sheets (Non-consolidated)

6

(billion yen)

	Mar. 31, 2011 (A)	Mar. 31, 2010 (B)	Comparison (A) - (B)	Items
Total Assets	3,700.8	3,589.2	111.5	
Fixed Assets	3,430.6	3,384.9	45.7	Nuclear power plants; 23.2 Long-term investments; 17.0
Current Assets	270.1	204.2	65.8	Cash and deposits; 51.4
Liabilities	3,003.7	2,828.0	175.7	Asset retirement obligations; 125.2 Reserve for loss on disaster; 95.1 Reserve for decommissioning costs of nuclear power units; (58.1)
Net Assets	697.0	761.2	(64.1)	

Interest-Bearing Liabilities	2,010.2	2,003.5	6.7	
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# Statements of Income, Balance Sheets (Consolidated)

7

(billion yen)

## Statements of Income

	FY2010 (A)	FY2009 (B)	Comparison (A) - (B)	Items
Operating Revenues	1,708.7	1,663.3	45.3	
Operating Expenses	1,594.0	1,574.1	19.9	
Operating Income	114.6	89.2	25.3	
Ordinary Income	80.2	43.2	36.9	
Extraordinary Loss	123.1	-	123.1	Loss on disaster (The Great East Japan Earthquake); 109.3 Loss on adjustment for changes of accounting standard for asset retirement obligations; 6.5
Net (Loss) Income	(33.7)	25.8	(59.5)	

(billion yen)

## Balance Sheets

	Mar. 31, 2011 (A)	Mar. 31, 2010 (B)	Comparison (A) - (B)	Items
Total Assets	4,028.8	3,918.5	110.2	
Fixed Assets	3,591.8	3,558.3	33.4	Nuclear power plants; 23.4 Long-term investments; 21.3
Current Assets	437.0	360.2	76.8	Cash and deposits; 61.9
Liabilities	3,152.3	2,974.6	177.7	Asset retirement obligations; 125.4 Reserve for loss on disaster; 101.9 Reserve for decommissioning costs of nuclear power units; (58.1)
Net Assets	876.4	943.9	(67.4)	
Interest-Bearing Liabilities	2,051.8	2,048.8	2.9	

# Statements of Cash Flows (Consolidated)

8

(billion yen)

	FY2010 (A)	FY2009 (B)	Comparison (A) - (B)	Items
Cash Flow from Operating Activities	332.5	327.9	4.6	Reserve for loss on disaster; 101.9 Income before income taxes and minority interests; (91.3)
Cash Flow from Investing Activities	(246.5)	(227.7)	(18.7)	Contributions received in aid of construction; (38.5) Payments for investments and advances; (33.0) Acquisition of property, plant and equipment; 52.1
Cash Flow from Financing Activities	(29.5)	(106.7)	77.1	Loans; 33.3 [Proceeds; 73.9, Repayment; (40.5)] Commercial Paper; 62.0 [Proceeds; 165.0, Redemption; (103.0)]
Net Cash Flow	56.4	(6.5)	63.0	
Free Cash Flow	121.4	141.9	(20.4)	

Note; Our definition of the free cash flow

= (Cash flow from operating activities) + (Cash flow from investing activities) – (Interest and dividend income) – (Interest expense)

# Segment Information (Consolidated)

9

(billion yen)

	FY2010 (A)	FY2009 (B)	Comparison (A) - (B)
<b>Sales * 1</b>	1,708.7	1,663.3	45.3
Electric Power Business	1,540.7	1,497.2	43.5
	1,538.2	1,494.6	43.5
Construction Business	229.3	234.8	(5.4)
	84.2	95.8	(11.5)
Gas Business	36.4	31.7	4.6
	27.2	22.8	4.3
Information Processing, Telecommunication Business	43.3	42.1	1.1
	16.4	15.5	0.8
Others	134.9	131.3	3.5
	42.4	34.3	8.0
<b>Operating income</b>	114.6	89.2	25.3
Electric Power Business	98.0	73.6	24.4
Construction Business	4.2	4.6	(0.4)
Gas Business	2.6	3.3	(0.6)
Information Processing, Telecommunication Business	5.1	4.0	1.1
Others	6.0	5.5	0.4

## 【Major Consolidated Subsidiaries】\* 2

(billion yen)

	FY2010		Year-on-year	
	Sales	Operating income	Sales	Operating income
<b>Electric Power Business</b>				
Tousei Kougyo Co., Inc.	2.9	0.3	(0.1)	(0.0)
Sakata Kyodo Power Co., Ltd.	31.0	0.0	0.4	0.1
<b>Construction Business</b>				
Yurtec Corp.	153.2	1.7	(1.2)	0.0
Tohoku Electric Engineering & Construction Co., Inc.	60.0	1.8	(2.4)	(0.7)
<b>Gas Business</b>				
Nihonkai LNG Co., Ltd.	17.2	1.9	0.4	0.1
<b>Information Processing, Telecommunication Business</b>				
Tohoku Intelligent Telecommunication Co., Inc.	22.5	4.3	1.1	1.5
Tohoku Information Systems Co., Inc.	21.4	0.8	0.1	(0.3)
<b>Others</b>				
Kitanihon Electric cable Co., Ltd.	28.1	0.1	(0.1)	(0.1)

\* 1 Lower is net sales to outside customers.

\* 2 Before elimination of inter-companies transaction



# Large Industry Sector

10

## Large Industrial Demand Year-on-year Comparison

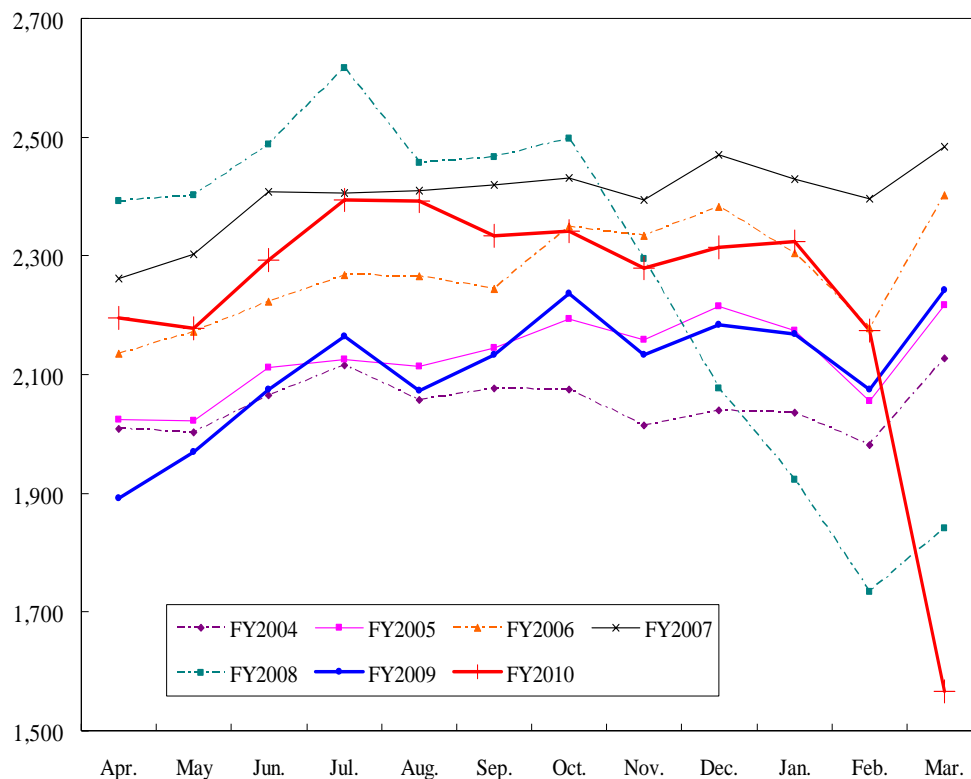
**26,787 million kWh**  
**up 1,442 million kWh (+5.7%)**

(million kWh)

	FY2010 (A)	FY2009 (B)	Comparison	
			(A) - (B)	(A) / (B)
Food Products	1,593	1,568	25	101.6%
Paper/Pulp	1,027	995	32	103.2%
Chemicals	2,201	2,030	171	108.5%
Ceramics	721	678	43	106.3%
Steel	2,892	2,463	429	117.4%
Nonferrous Metals	3,847	3,423	424	112.4%
Machinery and Equipment Manufacturing	8,053	7,852	201	102.6%
Others	6,453	6,336	117	101.8%
<b>Total</b>	<b>26,787</b>	<b>25,345</b>	<b>1,442</b>	<b>105.7%</b>

## Changes in Large Industrial Demand

(million kWh)





## Personnel Expenses and Fuel Expenses (Non-consolidated, year-on-year basis)

11

**Personnel Expenses - ¥ 17.2 billion**

(billion yen)

	FY2010 (A)	FY2009 (B)	Comparison (A) - (B)
Personnel Expenses (Total)	161.8	179.1	(17.2)

Retirement benefit - ¥ 23.2 billion (¥ 41.6 billion to ¥ 18.3 billion)Amortization of actuarial difference - ¥ 10.9 billion (¥ 22.0 billion to ¥ 11.0 billion)**<Amortization of actuarial difference >**

(billion yen)

Recorded Year	Recorded amount	Amortization amount				
		FY2009	FY2010	FY2011	FY2012	FY2013
FY2006	1.8	0.6	-	-	-	-
FY2007	29.6	9.8	9.8	-	-	-
FY2008	34.5	11.5	11.5	11.5	-	-
FY2009	(31.0)	-	(10.3)	(10.3)	(10.3)	-
FY2010	14.5	-	-	4.8	4.8	4.8
Total		22.0	11.0	6.0	(5.4)	4.8

**Fuel Expenses + ¥ 20.8 billion**

(billion yen)

	FY2010 (A)	FY2009 (B)	Comparison (A) - (B)
Fuel Expenses (Total)	293.0	272.2	20.8
Coal (thousand tons)	7,305	7,844	(539)
Heavy oil and Crude oil (thousand kl)	567	460	107
LNG (thousand tons)	2,790	2,949	(159)



# Extraordinary Loss (Consolidated)

12

## ■ Extraordinary loss ¥123.1 billion

### ▪ Due to the Great East Japan Earthquake    **¥ 109.3 billion**

⇒ **Contingent loss on damaged facilities and restoration costs of damaged facilities hereafter  
(Actual results for FY2010 and estimated amount for after FY2011)**

- Loss on adjustment for changes of accounting standard for asset retirement obligations    ¥ 6.5 billion
- Loss on valuation of securities    ¥ 4.7 billion
- Impairment loss on fixed assets    ¥ 2.5 billion

## 【Breakdown of extraordinary loss due to the Great East Japan Earthquake】

(billion yen)

<b>Tohoku Electric Power</b>		<b>99.5</b>
	Generating Facilities	70.1
	Supply Facilities	29.3
<b>Consolidated Subsidiaries</b>		<b>9.8</b>
<b>Consolidated Total</b>		<b>109.3</b>



(Onagawa-town, Miyagi Pref.)



# The Great East Japan Earthquake





# Summary of the Earthquake

1

■ Date and Time : 2:46 p.m. on Friday March 11, 2011

■ Epicenter and Scale (estimate)

▪ Offshore Sanriku Coast

(northern latitude of 38 degrees, east longitude of 142 degrees)

▪ Depth of the earthquake center : about 24 km

▪ **Magnitude 9.0 (largest-ever in Japan)**

■ Maximum seismic intensity (Japanese scale): 7 (northern area of Miyagi Prefecture)

■ Blackout area : All area of Aomori, Iwate, Akita and Miyagi Prefecture

Almost all area of Yamagata Prefecture

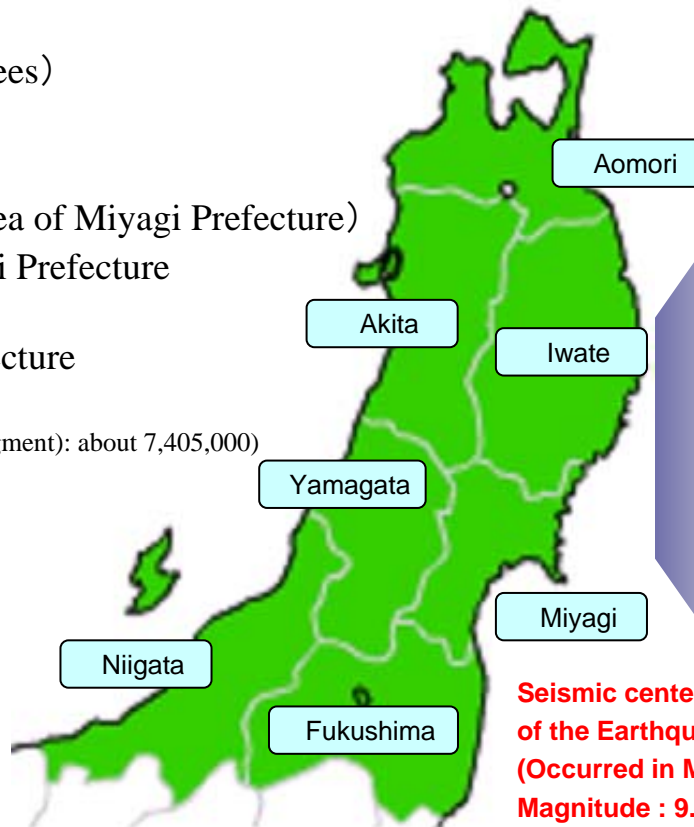
Partial area of Fukushima and Niigata Prefecture

■ Maximum number of blackout : 4,659,265

(Reference: Number of customers on March 31, 2011 (excluding the deregulated segment): about 7,405,000)



(Rikuzentakata City in Iwate Pref.)



**Seismic center  
of the Earthquake  
(Occurred in Mar.11 2:46 p.m.)  
Magnitude : 9.0  
Maximum intensity 7**

## Damage Situation of Our Facilities devastated by the Tsunami (1)

2

### <Damage Situation of Our Facilities>



Shin-Sendai Thermal Power Station  
(located in Sendai-city, Miyagi Pref.)



Sendai Thermal Power Station  
(located in Shichigahama-town, Miyagi Pref.)



Haramachi Thermal Power Station  
(located in Minamisoma-city, Fukushima Pref.)



Transmission facilities (transmission line tower)  
(located in Otsuchi-town, Iwate Pref.)



Tagajo Substation  
(located in Sendai-city, Miyagi Pref.)



Distribution facilities  
(located in Ishinomaki-city, Miyagi Pref.)



# Damage Situation of Our Facilities devastated by the Tsunami (2)

3

(At May 6, 2011)

## 1. Nuclear Power Stations

	Current Situations (including damage situations)
Onagawa	<ul style="list-style-type: none"> <li>· Nuclear reactors automatically stopped operating at all the Units. Observed acceleration was 567.5 gals.</li> <li>· <u>At present, nuclear reactors are in the cold condition where the temperature of all the Units is below 100°C. All reactors are safely shut down.</u></li> <li>· Indications at the monitoring posts began to increase at 11 pm, March 12 and marked a maximum value of 21 <math>\mu</math> Sv/h momentarily. It is concluded that these increases are not due to dispersions of radioactive materials from the Onagawa Nuclear Power Station because all nuclear reactors are in cold shutdown condition and because the radiation monitor readings on the exhaust stack are sufficiently low, although they are higher than usual. Radiation reading is 0.24 <math>\mu</math> Sv/h as of May 6.</li> <li>(Major damage to power station equipment)</li> <li><u>Unit No. 1 – In operation when the earthquake struck, but shut down in cold condition at 0:58 on March 12</u></li> <li>· Due to the failure of the starting transformer, the supply of external power stopped momentarily (currently resumed). However, the emergency diesel power generator started up to supply power to the Unit.</li> <li>· Smoke was observed coming from basement 1F (confirmed that the fire was extinguished). It was confirmed that smoke was coming from the high-voltage power panel.</li> <li>It was confirmed that the outdoor heavy oil tank (to store fuel for the boiler for air-conditioning and waste treatment equipment) toppled over, and that heavy oil leaked from the tank. Since this incident involves damage to major electrical equipment to which a provision of the Electricity Business Act applies, this incident was reported in compliance with the Act on March 29.</li> <li><u>Unit No. 2 – Undergoing periodic inspection when the earthquake struck with the temperature of the reactor below 100°C (in cold condition) because it had just been started up</u></li> <li>· After the emergency diesel power generator (B) and another generator for the high-pressure core spray system started up, they automatically stopped operating because a section of the 3F basement in the nuclear reactor building was flooded with seawater. However, the power needed to operate the Unit could be supplied from an external power source and the emergency diesel power generator (A). Therefore, there were no problems in operating the Unit.</li> <li>· It was confirmed that the motor in the reactor component cooling water system pump (B) and the motor in the high-pressure core spray system cooling water pump in the component cooling water system heat exchanger room were immersed in water. These were taken out to a factory for checking, and they were confirmed to be unusable. This incident was reported on March 29 in compliance with the Nuclear Reactor Regulation Law. Of the two systems making up the reactor component cooling water unit, one was intact and its motor was working, making it possible to preserve the cooling function. The pump in the high-pressure core spray component cooling water system is unused because the reactor is in cold shutdown condition.</li> <li>· Damage was confirmed to the foundations of the steam storage in the auxiliary boiler (A).</li> <li><u>Unit No. 3 – In operation when the earthquake struck, but shut down in cold condition at 1:17 on March 12</u></li> <li>· It was confirmed that the blowout panels in the turbine building were blown away.</li> </ul>
Higashidori	<ul style="list-style-type: none"> <li>· <u>Undergoing periodic inspection when the earthquake struck (while in cold shutdown condition)</u></li> <li>· Unit is currently shut down because of the ongoing periodic inspection. Observed acceleration was 17 gals.</li> <li>· No changes observed in radiation readings at the exhaust stack and the monitoring posts.</li> <li>· <u>Consequences of the earthquake at the Station have all been dealt with.</u></li> </ul>

## 2. Thermal Power Stations

	Current Situation (including damage situation)
Hachinohe	<ul style="list-style-type: none"> <li>· The 1st floor of the turbine building was inundated</li> <li>· The circulating water pump pit was partly flooded</li> <li>· The foundation of heavy-oil unloading facilities were caved in (already recovered)</li> <li>· Unit 4: After automatically shut down, restarted commercial operation on Mar. 20, in operation</li> </ul>
Noshiro	<ul style="list-style-type: none"> <li>· Unit 1: After automatically shut down, restarted commercial operation on Mar. 13, in operation</li> <li>· Unit 2: After automatically shut down, restarted commercial operation on Mar. 14, in operation</li> </ul>
Akita	<ul style="list-style-type: none"> <li>· Unit 2: After automatically shut down, restarted commercial operation on Mar. 12, in operation</li> <li>· Unit 3: After automatically shut down, restarted commercial operation on Mar. 12, in operation</li> <li>· Unit 4: After automatically shut down, restarted commercial operation on Mar. 13, in operation</li> </ul>
Higashi-Niigata	<ul style="list-style-type: none"> <li>· No influence caused by the earthquake</li> <li>· In operation (except for Minato Unit 1 under inspection before resuming operation on May)</li> <li>· Unit 3 &amp; 4 increased their output on Mar. 17</li> </ul>
Niigata	<ul style="list-style-type: none"> <li>· No influence caused by the earthquake</li> <li>· Unit 4 : in operation</li> <li>· Unit 5 series : under construction</li> </ul>
Sendai	<ul style="list-style-type: none"> <li>· Outdoor facilities and the 1st floor of the turbine building were flooded</li> <li>· Major equipment such as boiler and turbine has been checked in detail</li> </ul>
Shin-Sendai	<ul style="list-style-type: none"> <li>· The 1st floors of turbine, boiler and service building were flooded</li> <li>· Outdoor facilities (transformer, switching station etc.) were submerged</li> <li>· The ground surface was partly caved in</li> <li>· Major equipment such as boiler and turbine has been checked in detail</li> </ul>
Haramachi	<ul style="list-style-type: none"> <li>· The service building was inundated up to the 3rd floor, control-cables were partly burned out</li> <li>· 4 coal unloaders and several heavy-oil tanks collapsed, all transformers were submerged</li> <li>· Electrical and mechanical facilities on the 1st floor were flooded</li> <li>· Outdoor buildings (except for the main building and service building) were devastated by the tsunami and swept away</li> <li>· Major equipment such as boiler and turbine has been checked in detail</li> <li>· ※Designated as "Evacuation-Prepared Area in case of Emergency" on Apr.22, 2011</li> </ul>

## 3. Geothermal Power Stations

- Kakkonda Units 1, 2 and Sumikawa Unit 1 : After automatically shut down, restarted commercial operation

## 4. Hydro Power Stations

- Eleven power stations were damaged (debris fall in building, influx of sediment, water leakage etc.), and five of them restart generation

## 5. Transformation, Transmission and Distribution Facilities

- Transformation : Damaged equipment at 57 substations (of which 43 have been temporarily or permanently rectified)  
Major instances of damage : 70 damaged transformers, 197 damaged breakers, 179 damaged disconnectors, etc.
- Transmission : 105 instances of damage to transmission lines (of which 77 have been temporarily or permanently restored)
- Distribution : 22,862 cases of broken/tilted supports etc : 23,201 cases of crossed or broken power cables; 7,060 cases of damaged transformers, breakers etc.



# Current Situation of Our Power Stations in Operation

4

Noshiro Thermal (Noshiro, Akita)			
Situation	Unit	Output	Fuel
In Operation	No.1	600,000kW	Coal
In Operation	No.2	600,000kW	Coal

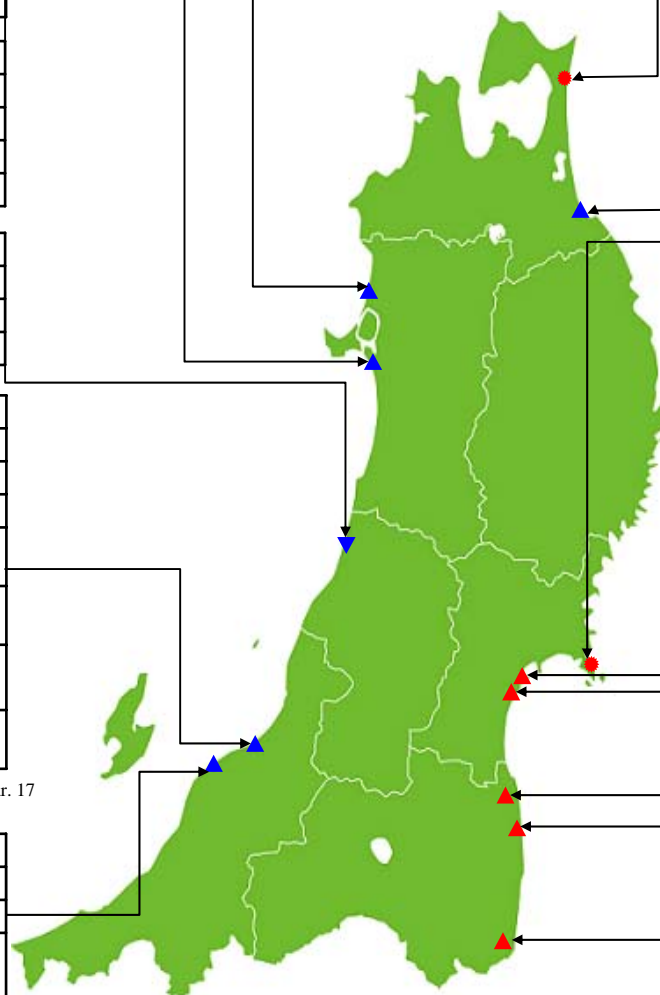
Akita Thermal (Akita, Akita)			
Situation	Unit	Output	Fuel
In Operation	No.2	350,000kW	Oil
In Operation	No.3	350,000kW	Oil
In Operation	No.4	600,000kW	Oil

Sakata Kyodo Power (Sakata, Yamagata)			
Situation	Unit	Output	Fuel
In Operation	No.1	350,000kW (All to us)	Coal
In Operation	No.2	350,000kW (All to us)	Coal

Higashi-Niigata Thermal (Seiro, Niigata)			
Situation	Unit	Output	Fuel
In Operation	No.1	600,000kW	LNG
In Operation	No.2	600,000kW	LNG
In Operation	No.3 series <sup>※1</sup>	1,210,000kW	LNG
In Operation	No.4 series <sup>※1</sup>	1,700,000kW	LNG
Under Inspection before Resuming Operation on May	Minato No.1 <sup>※2</sup>	350,000kW	LNG
In Operation	Minato No.2	350,000kW	LNG

※1 Unit 3 (+120MW) & 4 (+90MW) series increased their output on Mar. 17  
 ※2 Long-term suspension of operation since Apr. 2010

Niigata Thermal (Niigata, Niigata)			
Situation	Unit	Output	Fuel
In Operation	No.4	250,000kW	LNG
Under Construction expected Operation on Jul.	No.5 series	109,000kW	LNG



Higashidori Nuclear (Higashidori, Aomori)		
Situation	Unit	Output
Under regular inspection	No.1	1,100,000kW

Hachinohe Thermal (Hachinohe, Aomori)			
Situation	Unit	Output	Fuel
In Operation	No.3	250,000kW	Oil

Onagawa Nuclear (Onagawa and Ishinomaki, Miyagi)		
Situation	Unit	Output
Automatically Shut down	No.1	524,000kW
Under regular inspection	No.2	825,000kW
Automatically Shut down	No.3	825,000kW

Sendai Thermal (Shichigahama, Miyagi)			
Situation	Unit	Output	Fuel
Shut down	No.4	446,000kW	LNG

Shin-Sendai Thermal (Sendai, Miyagi)			
Situation	Unit	Output	Fuel
Shut down	No.1	350,000kW	Oil
Shut down	No.2	600,000kW	LNG

Soma Kyodo Power Shinchi (Shinchi, Fukushima)			
Situation	Unit	Output	Fuel
Shut down	No.1	1,000,000kW (Half to us)	Coal
Shut down	No.2	1,000,000kW (Half to us)	Coal

Haramachi Thermal (Minamisoma, Fukushima)			
Situation	Unit	Output	Fuel
Shut down	No.1	1,000,000kW	Coal
Shut down	No.2	1,000,000kW	Coal

Joban Joint Power Nakoso (Iwaki, Fukushima)			
Situation	Unit	Output	Fuel
Shut down	No.6 <sup>※3</sup>	175,000kW (Half to us)	Oil
Shut down	No.7	250,000kW (Half to us)	Coal
Shut down <sup>※4</sup>	No.8	600,000kW (Half to us)	Coal
Shut down <sup>※4</sup>	No.9	600,000kW (Half to us)	Coal

※3 Long-term suspension of operation since Jan. 2011

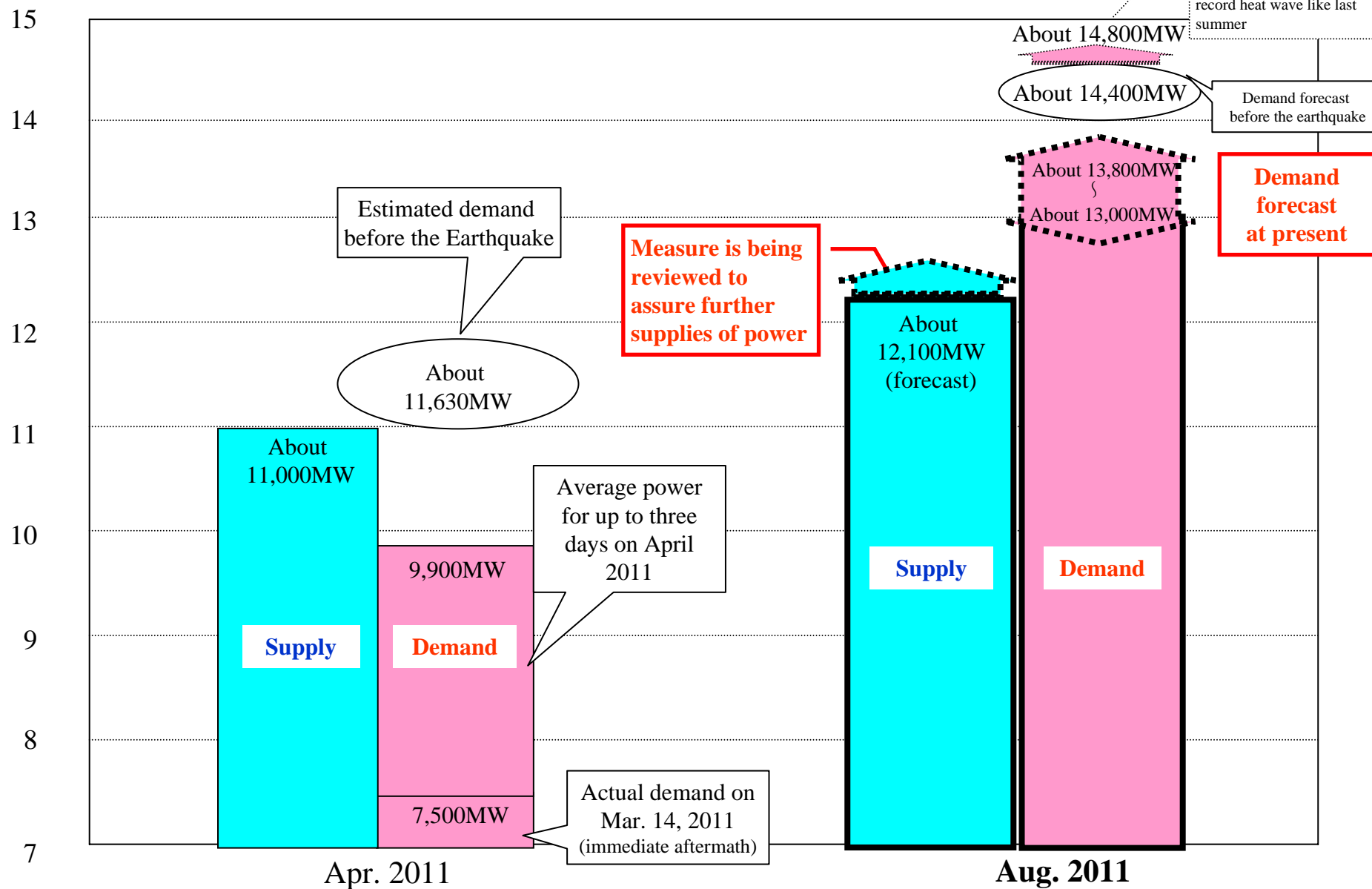
※4 Under inspection before resuming operation in this summer



## Forecast of Electricity Supply and Demand in This Summer

5

(millions of kW)





# Action Being Taken to Assure the Power Supply

6

At present, the amount of power for August that can be assured with a high level of certainty is 12,100 MW or so. Every conceivable measure is being reviewed and taken to make sure that more power will be supplied.

## <Measures and Action Incorporated in the Estimated Supply of 12,100 MW of Power>

- Resumption of operation for **Minato Unit 1 in Higashi Niigata Thermal Power Station** under long-term suspension of operation (in Seiro, Niigata Pref. ; start of operation for 350 MW output slated for end of May)
- **Purchase of interchange power** made available by Hokkaido Electric Power and others (several 100 MW or so)
- **Purchase of surplus power** generated by private power generation equipment owned by corporations etc. (100 MW or so)
- Start of commercial operation of **Unit 5 Series power generators at Niigata Thermal Power Station** (in Niigata, Niigata Pref. ; start of operation for 109 MW output slated for July) 11,500 MW or so
- Resumption of operation of **Units 8 and 9 generators at the Nakoso Power Station** of Joban Joint Power Co., Ltd. that were damaged in the earthquake (in Iwaki, Fukushima Pref. ; resumption of operation slated for July with 300 MW × 2 of power made available to Tohoku Electric Power) 12,100 MW or so

## <Action Being Taken to Assure Further Supplies of Power>

### [Securing a supply of power for this summer]

- **Expansion of plan to purchase surplus power** by supporting the resumption in the shortest possible time of private power generators owned by our customers that were damaged by the earthquake
- Continued review of possible purchase of surplus power generated by private power generators owned by companies and the possibility of **installing diesel power generators and gas turbines (several thousand to several 10s of thousands of kW output)** that can be implemented in a relatively short time period

### [Securing power supplies over the intermediate to long term]

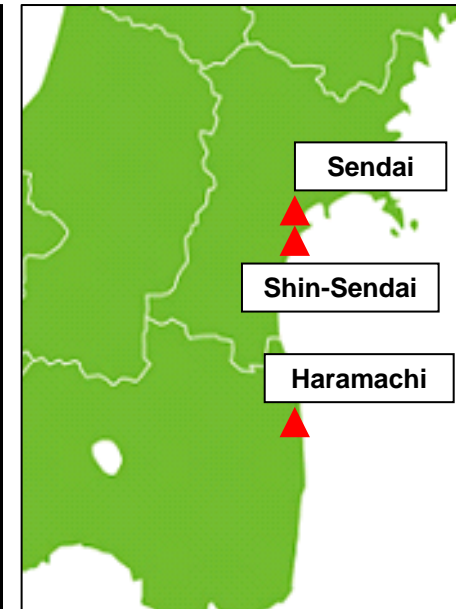
- Resumption in the shortest possible time of **Sendai Thermal Power Station** (in Shichigahama, Miyagi Pref. with 446 MW output) and **Shin-sendai Thermal Power Station** (in Sendai, Miyagi Pref. with 950 MW output) that were damaged by the earthquake
- Assistance provided for the resumption in the shortest possible time of power generator **Units 1 and 2 at the Shinchi Power Station** of Soma Kyodo Power Co., Ltd (in Shinchi, Fukushima Pref. with 500 MW × 2 of power made available to Tohoku Electric Power) that were damaged by the earthquake
- Review of possible **introduction of several gas turbine units** with 300 MW or so output (installation in Hachinohe, Akita and Higashi-Niigata Thermal Power Stations slated for next summer)



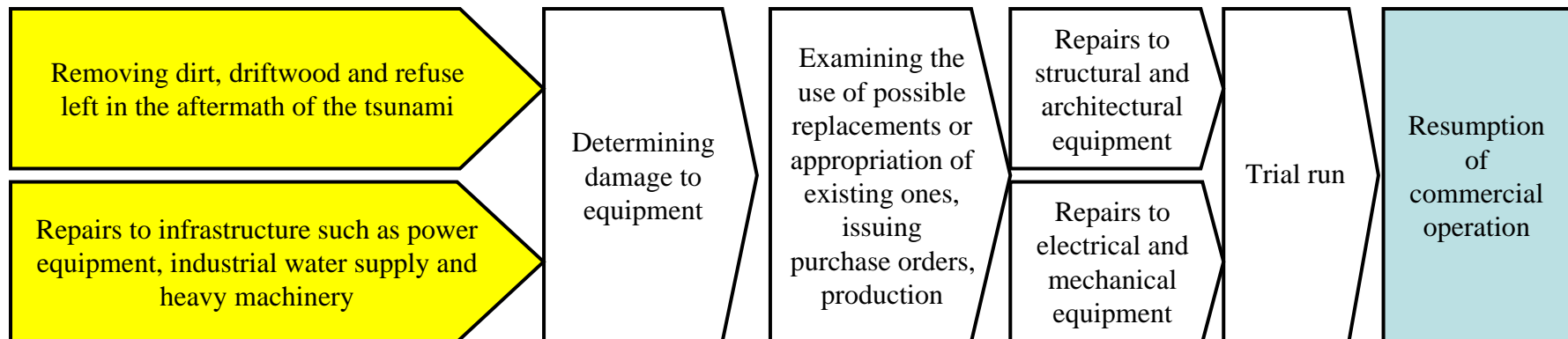
# Recovery Road Map of Our Thermal Power Stations

7

		Immediate aftermath	Major initial incidents
Thermal Power Stations	●Sendai (Shichigahama, Miyagi)		
	Unit 4 (446MW)	Automatically shut down	The 1st floor of both service building and turbine building were flooded
	●Shin-Sendai (Sendai, Miyagi)		
	Unit 1 (350MW)	Under suspension	The 1st floor of both service building and turbine Building were flooded
	Unit 2 (600MW)	Manually shut down	
	●Haramachi (Minamisoma, Fukushima)		
	Unit 1 (1,000MW)	Manually shut down	The service building was inundated up to the 3rd floor, and the turbine building was submerged up to the 2nd floor. 4 coal unloaders and heavy-oil tanks collapsed (※Repair work constrained due to designation as “Evacuation-Prepared Area in case of Emergency”)
	Unit 2 (1,000MW)	Under suspension	



## Road Map toward Resumption of Commercial Operation





# Current Conditions at Nuclear Power Stations and Measures Taken (1)

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All three units of our Onagawa Nuclear Power Station were automatically shut down as originally designed.



“Shut down”, “Cooling” and “Containment” functions were operated soundly, and the reactor temperature is under 100 degrees centigrade. All units are in shut down and under control.

There are no problems concerning about the data of exhaust stack monitors, radioactive monitors of each section.

		Before the earthquake	Condition after the earthquake
Nuclear Power Stations	●Onagawa (Onagawa and Ishinomaki, Miyagi) : Intensity lower 6 (567.5 gal observed by the seismometer to show maximum acceleration value immediately after the earthquake)		
	Unit 1 (524MW)	In operation	○ Reactors stopped operating automatically at all units, and they are in the cold shutdown condition. ○ It is confirmed that the water levels during the tsunami did not exceed the elevation of the premises. · The outdoor heavy oil tank at Unit 1 (to store fuel for boiler for air conditioning and waste treatment equipment equipment) was toppled over by the tsunami. · The component cooling water system at Unit 2 was flooded. However, another component cooling water system was able to provide cooling with no adverse effect on the reactor. ○ A supply of external power was secured. · One circuit on the high-voltage power panel for Unit 1 was damaged by fire, but power was supplied to the Unit from another high-voltage power panel.
	Unit 2 (825MW)	Under the 11th regular inspection	
	Unit 3 (825MW)	In operation	
	●Higashidori (Higashidori, Aomori) : Intensity 4 (17 gal)		
	Unit 1 (1,100MW)	Under the 4th regular inspection	○ Operation was suspended due to periodic inspection. All fuel rods were being cooled in the spent fuel pool. ○ It is confirmed that the water levels during the tsunami did not exceed the elevation of the premises. ○ External power source was lost momentarily, but later restored. · Power was supplied by an emergency diesel generator while the external power was lost.



# Current Conditions at Nuclear Power Stations and Measures Taken (2) 9

## Measures taken so far

- (1) **Confirmation of damage status (continuing in part)**
- (2) **Review of tsunami countermeasures**
- (3) **Checks on integrity of equipment (continuing)**

## Measures to be taken from now on

- (1) **Repair of equipment damaged by the earthquake**
- (2) **Assured implementation of more safety measures**
- (3) **Evaluation against reference seismic movement Ss**

## **Measures taken by Tohoku Electric Power**

- Public announcement of status of nuclear power stations affected by the quake (Our website updated every day. Updated when necessary after April 28.)
- Safety measures for Tohoku Electric Power's nuclear power stations based on consequences of tsunami generated by the Great East Japan Earthquake (Tentative safety measures made public on March 27.)
  - ・ April 20: Emergency safety measures training session at Higashidori Nuclear Power Station made public.
  - ・ April 22: Report on status of implementation of measures at Higashidori Nuclear Power Station submitted to Nuclear and Industrial Safety Agency. (Further implementation reported on April 28.)
  - ・ May 11: Emergency safety measures training session at Onagawa Nuclear Power Station made public.
- Analysis of seismic observation records acquired during the Great East Japan Earthquake and research on tsunami
  - ・ April 7: Report submitted to the Nuclear and Industrial Safety Agency. (Observation records from the Miyagi Prefecture Offshore Earthquake on April 7 etc. submitted on April 25.)

## **Directives etc. issued by Nuclear and Industrial Safety Agency.**

- Regarding implementation of emergency safety measures for power stations other than Fukushima Daiichi and Daini Nuclear Power Stations based on lessons learned from the disaster at these stations
  - ・ March 30: Received directive issued by Minister of Economy, Trade and Industry.
  - ・ April 25 & 26: Onsite inspections of status of implementation of emergency safety measures carried out at Higashidori Nuclear Power Station
  - ・ May 6 : Announcement of adjudication results for emergency safety measures at Higashidori Nuclear Power Station (approval of nuclear reactor facility safety regulations on May 6)
- Measures to be taken at Onagawa Nuclear Power Station based on records of seismic observations and tsunami levels
  - ・ April 7, 13 and 26: Received directives issued by Nuclear and Industrial Safety Agency.

## **Measures taken by local municipalities**

- Onagawa Nuclear Power Station
  - ・ April 26: Onsite inspections carried out by the governments of Miyagi Prefecture, Onagawa Town and Ishinomaki City based on Safety Agreements with them.
- Higashidori Nuclear Power Station
  - ・ May 2: Meeting held with five nuclear power business operators in Aomori Prefecture in attendance.



Onagawa Nuclear Power Station



# Seismological Observation Record

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Although some of the maximum accelerations observed at Unit 1, 2 and 3 Reactor Buildings exceeded the maximum response acceleration calculated against the reference seismic movement Ss, they are virtually equivalent. It is confirmed that the reactor buildings are still able to function properly.

The comparison between observed record when the Great East Japan Earthquake occurred on Mar. 11 and maximum response acceleration spectrum to basic earthquake ground motion.<sup>※1</sup>

Observation Points		Observed data			Maximum Response Acceleration Spectrum against Basic Design Earthquake Ground Motion (gal)		
		Maximum Response Acceleration Spectrum (gal)					
		Horizontal (N-S) ※2	Horizontal (E-W)	Vertical	Horizontal (N-S)	Horizontal (E-W)	Vertical
Unit 1	Rooftop	2000	1636	1389	2202	2200	1388
	Refueling floor (5th floor)	1303	998	1183	1281	1443	1061
	1st floor	573	574	510	660	717	527
	On basement board	540	587	439	532	529	451
Unit 2	Rooftop	1755	1617	1093	3023	2634	1091
	Refueling floor (3rd floor)	1270	830	743	1220	1110	968
	1st floor	605	569	330	724	658	768
	On basement board	607	461	389	594	572	490
Unit 3	Rooftop	1868	1578	1004	2258	2342	1064
	Refueling floor (3rd floor)	956	917	888	1201	1200	938
	1st floor	657	692	547	792	872	777
	On basement board	573	458	321	512	497	476

※1 In case that there are several observation points in horizontal and vertical directions, the maximum is listed.

※2 Reference. Because the tremor exceeded the design limits (2,000) of our seismic meter

Reference The scam<sup>※3</sup> threshold

•Unit1 : Horizontal 200gal (B2F), Vertical 100gal (1F)

•Unit2 : Horizontal 200gal (B3F), Vertical 100gal (B3F)

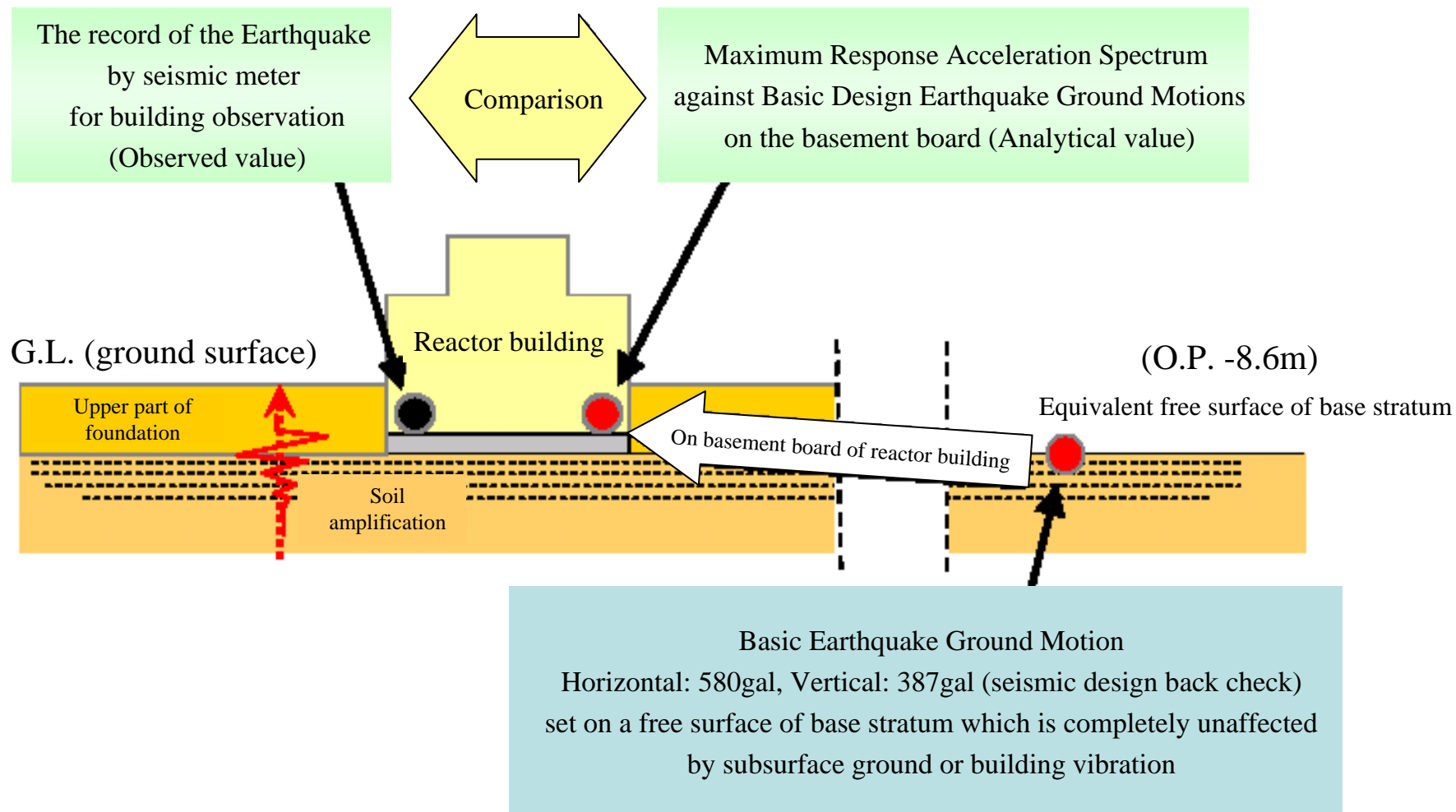
•Unit3 : Horizontal 200gal (B3F), Vertical 100gal (B3F)

※3 To bring reactors to an emergency shut down if an quake exceed the threshold



## The Comparison between Basic Design Earthquake Ground Motions and the Observed Record

11



O.P. → Onagawa construction base level (Tokyo Bay average sea water level -0.74m)



# Summary of the Tsunami Survey Results

12

Both in Onagawa and Higashidori nuclear power stations, we have confirmed that the tsunami water level didn't exceed site level. We continue to implement tsunami countermeasures to improve the reliability of the power stations.

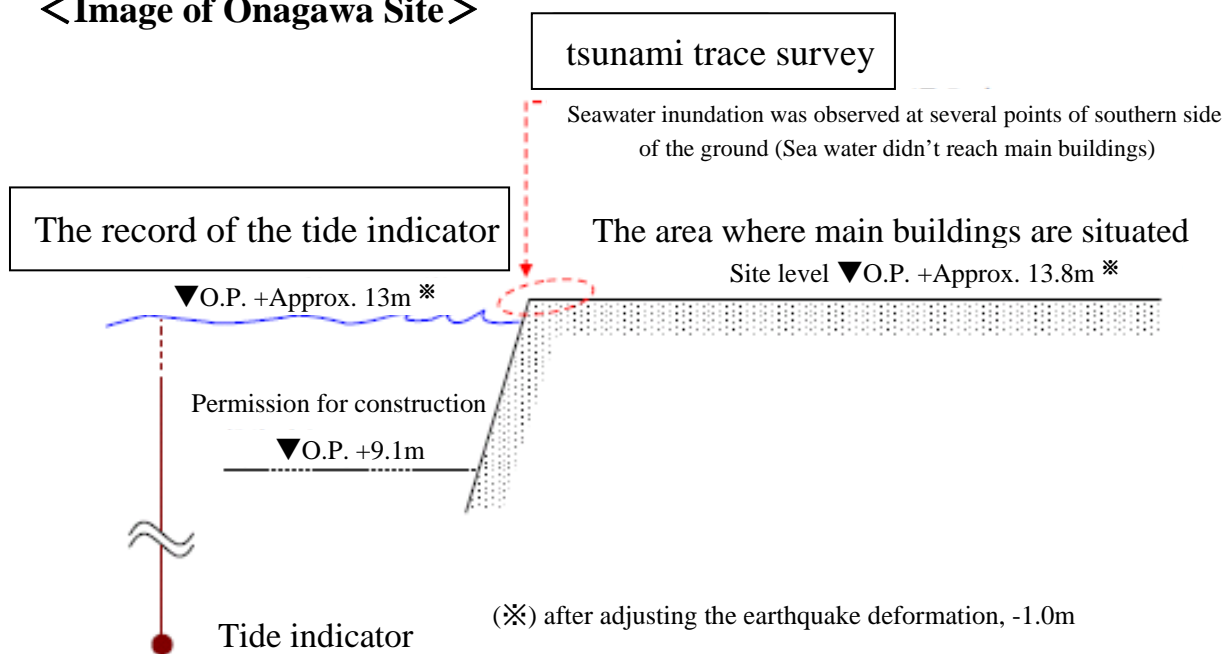
	Site level	Tsunami water level required for permission for construction	Observed Tsunami water level
Onagawa	O.P. + 13.8m (※)	O.P. + 9.1m	O.P. + about 13m (※)
Higashidori	T.P. + 13.0m	T.P. + 6.5m	T.P. + 2.6m

(※) after adjusting the earthquake deformation, -1.0m

T.P. → Tokyo Bay average sea water level

O.P. → Onagawa construction base level (T.P. -0.74m)

## <Image of Onagawa Site>

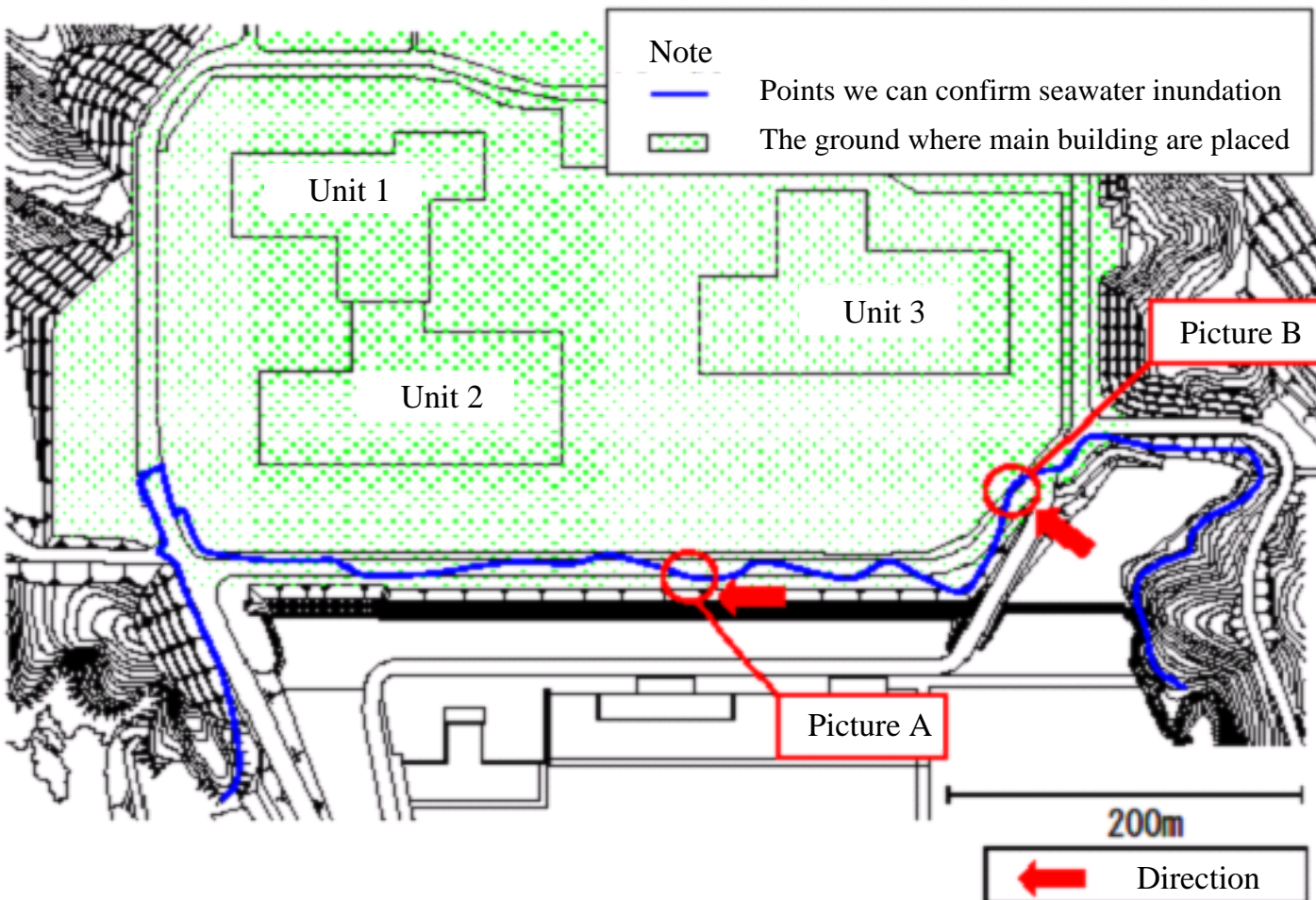


Onagawa Nuclear Power Station



# Results of the Tsunami Trace Survey

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Sea water didn't reach main buildings,  
but seawater inundation was observed at several points of southern side of the ground



## Example of the Tsunami Trace

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Picture A : The debris left on the road  
in Onagawa Nuclear Power Station



Picture B : The debris left on the gravel  
in Onagawa Nuclear Power Station



## Emergency Safety Measures Implemented at Higashidori Nuclear Power Station (1)

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**1. Emergency safety measures implemented in response to the directive issued by the Minister of Economy, Trade and Industry (short-term measures) [Completed]**

- (1) Inspection of devices and equipment to respond to emergencies
- (2) Execution of checks on emergency response plans and drills
- (3) Securing power in an emergency
  - Supplying power from high-voltage power supply vehicles to prevent battery capacity from being drained[(1)]
- (4) Securing final heat removal measures in emergency situations
  - Securing of water source provided by water-supplying fire engines [(2)]
  - Power supplies to water supply pumps (condensation transfer pump, fire extinguisher pump) from high-voltage power supply vehicles and alternative supply of water to nuclear reactors from fire engines [(3)]
  - Assuring venting of containment vessel when AC power supply is cut off [(4)]
- (5) Safeguarding spent fuel pool cooling in an emergency
  - Power supplied to water supply pumps (fuel pool water supply pump, condensation transfer pump, fire extinguisher pump) from high-voltage power supply vehicles and alternative supply of water to spent fuel pools from fire engines [(5)]
- (6) Measures requiring tentative implementation in light of building structures
  - Checks on integrity of penthouse perimeter doors in reactor buildings and integrity of through holes for piping

**2. Measures implemented to assure safety [Ongoing]**

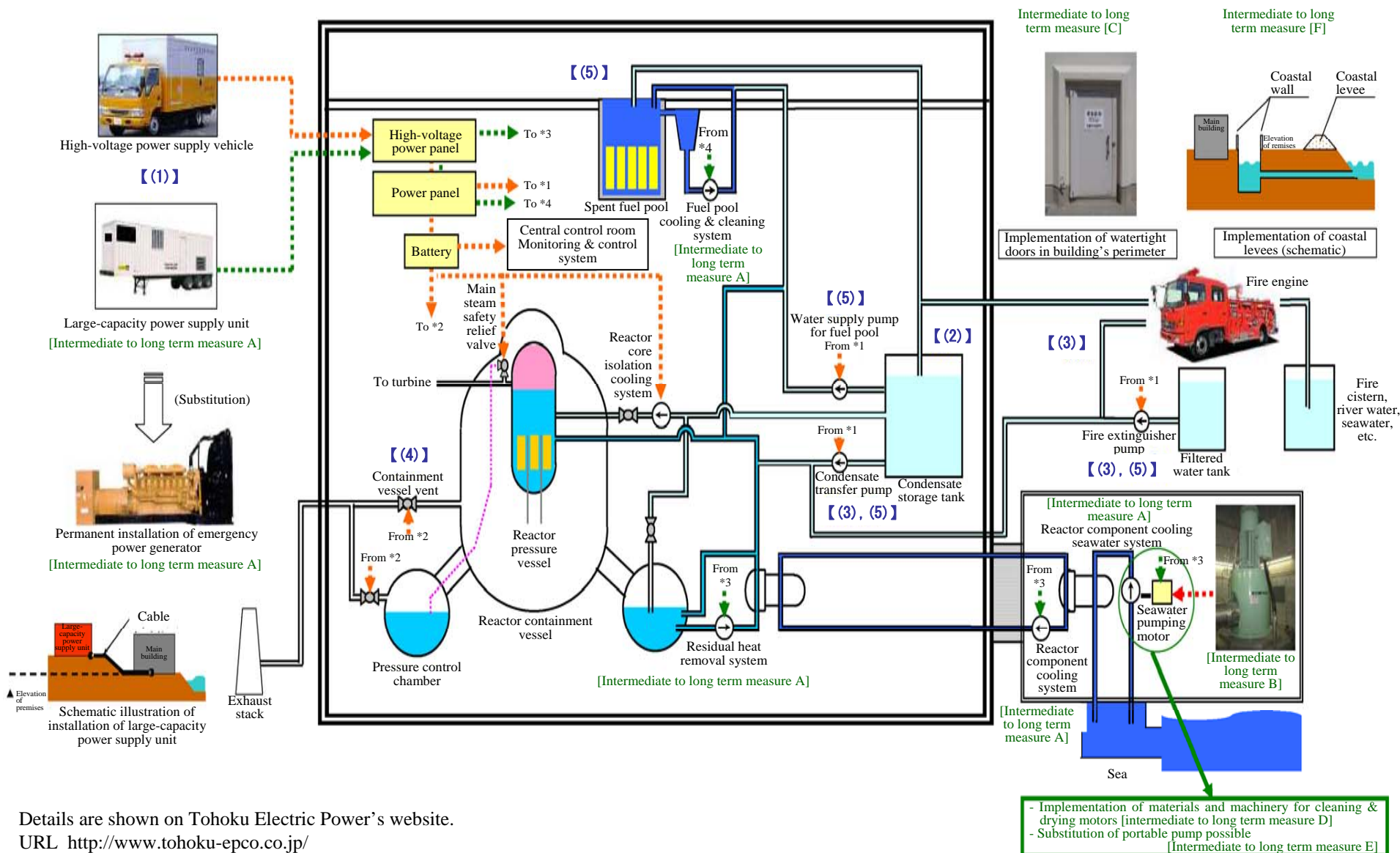
- (1) Securing power supply in emergency situations
  - Implementation of a high-capacity power unit that can supply substitute power from an emergency diesel power generator [Intermediate to long term measure A]
  - Implementation of a permanent power generator for emergencies with the same capacity as the existing emergency diesel power generator [Intermediate to long term measure A]  
(Supply of sufficient power to drive high-capacity pumps, etc for cooling nuclear reactors and spent fuel pools)
- (2) Securing final heat removal measures in an emergency
  - Implementation of materials and machinery for cleaning and drying motors for seawater pumps [Intermediate to long term measure D]
  - Implementation of replacement seawater pumps [Intermediate to long term measure E]
  - Securing backup motors for seawater pumps [Intermediate to long term measure B]
- (3) Measures requiring tentative implementation in light of the structure of individual nuclear power stations
  - Improved water-tightness of doors in buildings [Intermediate to long term measure C]
  - Implementation of coastal levees and walls [Intermediate to long term measure F]



## Emergency Safety Measures Implemented at Higashidori Nuclear Power Station (2)

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## Schematic illustration



## We're Resolved to Put All our Efforts to Reconstruct the Tohoku Region Together with Local Communities



(Onagawa-town, Miyagi Pref.)



(Kesennuma-city, Miyagi Pref.)

(Note)

This presentation solely constitutes reference material for the purpose of providing the readers with relevant information to evaluate our company.

The information contains forward-looking statements based on assumptions and projections about the future with regard to our company. As such, the readers are kindly asked to refrain from making judgment by depending solely on this information.

The forward-looking statements inherently involve a degree of risks and uncertainties. Consequently, these risks and uncertainties could cause the actual results and performance to differ from the assumed or projected status of the company.

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