# **Management Reference Materials**

## May 2020



The Okinawa Electric Power Company, Inc.

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### **Characteristics** of the Business Bases

Item	Overview	Reference Page
Demand for Energy	<ul> <li>Increasing demand for energy due to population growth and increasing tourists.</li> <li>As the proportion of energy for consumer use is high, effects of economic fluctuations are low for demand for Electric power.</li> <li>Potential demand due to large-scale urban development projects</li> </ul>	2~10
Competition	<ul> <li>OEPC is outside the framework of wide-area power interchange because it has an isolated system.</li> <li>OEPC has voluntarily released power of 10,000kW supplied by J-Power.</li> <li>Competition is advancing due to the entry of energy suppliers.</li> <li>Power producer and supplier is currently implementing plans to construct power plants.</li> </ul>	11
Total Energy Services	<ul> <li>Started selling gas with the introduction of LNG.</li> <li>Developing Total Energy Services by taking advantage of our ability to sell electricity and gas.</li> </ul>	12~14
Electric Power Generation Facilities	<ul> <li>Reliant on fossil fuels only due to difficulties to develop nuclear or hydraulic power generation</li> <li>A sufficient supply capacity is secured after Yoshinoura Thermal Power Plant has started operations.</li> <li>A high reserve supply capacity is required due to an isolated system</li> </ul>	15~17
Remote Islands	<ul> <li>OEPC supplies power to 11 isolated systems including those in the main island.</li> <li>The region has a high cost structure because it has small islands and also because the scale of the economy is small. This leads to constant loss recording.</li> </ul>	18
Renewable Energy	<ul> <li>Reducing fuel consumption and cost is highly effective on remote islands, where fuel unit price is high.</li> <li>Since the system in the main island of Okinawa is small and independent, the limit of connection volume is likely to occur when using renewable energy.</li> </ul>	19~24

### **Okinawa Prefecture Demographics (1/2)**

- While the national population has started decreasing, the population in Okinawa is expected to increase until around 2030. \*
- Demand for lighting is expected to increase as the population and number of households increases in the future.

\* According to the National Institute of Population and Social Security Research, "Regional Population Projections for Japan: 2015–2045 (2018)



#### Source:

Population: The actual figures are based on the data provided by the Ministry of Internal Affairs and Communications (MIC).

The figures for FY2029 are based on estimated data provided by the Organization for Cross-regional Coordination of Transmission Operators, JAPAN (OCCTO).

No. of households: The figures are based on the data provided by the Okinawa Prefecture Government.

Source: The actual figures are based on the data provided by MIC. The figures for FY2029 are based on estimated data provided by OCCTO.

### **Okinawa Prefecture Demographics (2/2)**

- The total fertility rate of Okinawa Prefecture in FY2018 was 1.89, the highest among all prefectures in Japan (nationwide:1.42)
- While the number of the national population in FY2019 decreased by -2.2 persons per 1,000 people, that of Okinawa increased by 3.9 people.

#### **Okinawa Prefecture Demographics**

(People)

		2015	2016	2017	2018	2019
	Nationwide	1.45	1.44	1.43	1.42	_
The total fertility rate (Per Thousand people)	Okinawa	1.96	1.95	1.94	1.89	—
(	Ranking	(1)	(1)	(1)	(1)	—
	Nationwide	-1.1	-1.3	-1.8	-2.1	-2.2
The Increase of population (Per Thousand people)	Okinawa	5.6	4.0	2.6	3.1	3.9
	Ranking	(2)	(2)	(3)	(2)	(2)
	Nationwide	-2.2	-2.3	-3.0	-3.4	-3.8
The Natural Increase of population (Per Thousand people)	Okinawa	3.9	3.8	2.9	2.6	2.0
	Ranking	(1)	(1)	(1)	(1)	(1)
	Nationwide	0.7	1.1	1.2	1.3	1.7
The Social Increase of population (Per Thousand people)	Okinawa	0.8	0.2	-0.3	0.5	1.9
	Ranking	(7)	(11)	(17)	(11)	(8)

Source: "Vital Statistics" by Ministry of Health, Labour and Welfare

The figures in brackets in the chart show Okinawa Prefecture's national ranking

### Number of incoming tourists (1/6)

■ In FY 2019, the number of incoming tourists was 9.47 million. Due to the spread of the novel coronavirus, it fell below the previous year for the first time in eight years.

[Incoming tourists] FY2018 : 10,000 thousand people (Growth rate of 4.4% year-on-year) FY2019 : 9,470 thousand people (Growth rate of -5.3% year-on-year)



Source: "Tourism Guidebook", "Summary Statistics on Incoming Tourists to Okinawa", "2018 Accommodations Fact-finding Survey Result", "FY2019 Visit Okinawa Plan" and "Road map for promoting tourism in Okinawa (revised edition, March 2020)" published by Okinawa Prefectural Government

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### Number of incoming tourists (2/6)

Due to the spread of the novel coronavirus, number of incoming foreign tourists fell sharply from the previous year.

[Incoming foreign tourists] FY2018 : 3.00 million people (Growth rate of 11.5% year-on-year) FY2019 : 2.49 million people (Growth rate of -17.0% year-on-year)



Source: "Tourism Guidebook", "Summary Statistics on Incoming Tourists to Okinawa" and "FY2019 Visit Okinawa Plan" published by Okinawa Prefectural Government

### Number of incoming tourists (3/6)



Monthly trend of the number of incoming tourist

(10 thousand people)



Source: "Tourism Guidebook" and "Summary Statistics on Incoming Tourists to Okinawa" published by Okinawa Prefectural Government

### Number of incoming tourists (4/6)

- The number of cruise ships calling at the port has been increasing, and marked a record high of 581 times (up 10%) in 2019 (calendar year).
- The number between Jan and March 2020 has been reduced to 34 times (Growth rate of -70.7% year-on-year) due to spread of novel coronavirus.
- Aim to strengthen attraction and acceptance system by deploying new berth to ports within Okinawa Prefecture.



Scene of 3 ships calling at Naha Port at the same time (July 28, 2015)

Provided by Naha Port Authority



Change in number of incoming foreign tourists(by Air and Sea)



### Number of incoming tourists (5/6)

### A second runway at Naha Airport started operation on March 26, 2020. Annual departure and arrival capacity has expanded 1.8 times as much as before.

Operation start: March 26, 2020 Departure and arrival capacity: about 135,000 times a year → about 240,000 times a year (an annual increase of 105,000 times) \*excluding helicopters and midnight flights Reclaimed land area: about 160 ha Total construction cost: about 207.4 billion yen



Source : Provided by Okinawa General Bureau ( It was taken on September 2019 )

### Number of incoming tourists (6/6)

- Accompanying an increase in tourists visiting the region, the numbers of accommodation facilities and guest rooms have kept increasing in Okinawa Prefecture.
- Going forward, multiple accommodation facilities are planned to open.

#### **Major Plans for Opening Accommodations**





### Use of returned former U.S. military base sites

If the US military facilities are returned, demand is expected to decrease temporarily. However, demand will subsequently increase on the strength of revitalization of the local economy following redevelopment of the US military facilities sites.



\* Source: The material of the Okinawa Revitalization Council Chair and Specialized Committee Meeting (third session) presented on the Cabinet Office website, and Survey of Consideration of Ripple Economic Effects from Utilization of Former U.S. Forces Sites posted on the Okinawa Prefectural Government website

### **Full liberalization of the Electricity Market**

- After the Full liberalization of the Electricity Market in April 2016, PPS\* that use power supply from J-POWER's Ishikawa Coal Thermal Power Station or the feed-in tariff system have been entering the market. As a result, Okinawa area has also beginning full-scale competition.
- The number of cases of switching increased to 33,400 cases in cumulative total (as of April 2020) due to partly the entry of PPS that take advantage of "the wholesale electricity menu for supply-demand adjustment", which has been on offer since April 2018. As a result, PPS' share in the electricity sales volume in Okinawa area reached 6.3% in the total of all voltages (as of Jan 2020).

[PPS's share in electricity sales volume]

Extra High voltage: 1.6%, High voltage: 12.1%, Low voltage: 3.9%

\* new suppliers, officially called power producer and suppliers



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### Gas supply business

#### Commenced gas supply business in 2015.

■ The OEPC Group will expand to supply to broad areas through pipelines, based on PEC's\*1 satellite facilities.

#### **Pipeline supply** (5 cases)

Supplies gas to customers in the vicinity of the Yoshinoura thermal power plant through gas pipelines after vaporizing and odorizing liquefied natural gas (LNG).

#### Lorry supply (8 cases)

Supplies LNG by tank lorry to customers in areas where pipelines are difficult to be developed.

#### PEC Supply Center (7 cases)

At former U.S. military base site and industrial parks, PEC\*1 constructs supply centers\*2 and supplies gas through pipelines.



### **Energy Service Provider (ESP) Business (1/2)**

- We have established a new company called The Reliance Energy Okinawa, Inc., which is an energy service provider (ESP) in December 2017.
- We own electric and heat source facilities on behalf of customers, and process and supply energy.

[Increase in new energy demand]

- Large-scale development of urban areas (e.g. former U.S. military bases)
- Construction of hotels in response to an increase in the number of tourists
- Construction of large-scale retail stores

[Advancement and diversification of energy needs]

- Initial investment in energy use (e.g. electricity and gas)
- Burdens involved in facility operation/maintenance and emergency response



- · It owns energy facilities on behalf of customers.
- It provides electricity and gas in the forms of, for example, air-conditioning water (cold / hot), hot-water supply and steam.

### **Energy Service Provider (ESP) Business (2/2)**

- In June 2019, a service for the "SAN-A Urasoe West Coast PARCO CITY", was launched.
- We are looking to development of Total Energy Services for broad areas mainly from the energy center that will be built on the premises of the OEPC. For example, we are looking to supplying to buildings on the premises, and supplying to multipurpose building that is planned to be constructed nearby.



### **Power Generation Facilities** (Power Supply Composition)

- The composition of electric power source is highly reliant on fossil fuel, as developing nuclear or hydroelectric power generation is difficult in Okinawa due to the reasons of geographic condition and the small scale of demand. Accordingly, fossil fuels; petroleum, coal and LNG, are the only source for the composition.
- We have secured long-term power supply capacity, the improvement of energy security, and effective countermeasures for global warming issues by commencing the operation of Yoshinoura Thermal Power Plant(since 2012), our first plant using LNG.



#### Electric Power Composition Ratio(Power generating end)

### Power Generation Facilities (Yoshinoura LNG Thermal Power Plant)

- Yoshinoura Thermal Power Plant was constructed as OEPC first LNG thermal power plant from the viewpoints of securing stable supply of electricity, increasing energy security, environmental measures and venturing into gas-related business.
- Yoshinoura Multi Gas Turbine Power Plant was constructed mainly for the purposes of starting power grids in case that the entire main island of Okinawa loses all electricity sources, dealing with the electricity peak of normal time.

#### [Outline of the Power Plant]

Name	Yoshinoura Thermal Power Plant	Yoshinoura Multi-Gas Turbine Power Plant	
Location	Nakagusi	uku-son, Ol	kinawa Prefecture
Power generation capacity	251,000kW×2 power gene	35,000 kW × 1 plant	
Fuel	Liquefied natural gas (LNG	LNG, kerosene (The normal fuel to be used is LNG.)	
Storage facilities	1	40,000kl ×	2 stations
Start of commercial operation	Generator No.1:November Generator No.2:May 23, 20	<sup>.</sup> 27, 2012 013	March 20, 2015
Fuel procurement	Contractor: Contract period: Contracted quantity: Terms of delivery:	Osaka Ga 27 years f supply: Ga About 400 Delivery o	s Co., Ltd. rom FY2012 (main source of orgon in Australia) 9,000 t/year n ship's arrival (EX-Ship)





### **Demand - Supply balance**

- A high generation reserve margin is necessary because of OEPC's isolated system and the responsibility to provide stable supply as a public utility.
- The reserve capacity exceeding of the largest unit is secured so that it is possible to provide stable supply even if the largest unit breaks down.



■ We would ensure long-term and stable supply.

#### Demand-supply balance of maximum electric power (August)

#### (Unit : Thousand kW, %)

		2019 (Reference)	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
<u>&gt;</u>	Supply capacity	2,217	2,002	2,268	2,133	2,277	2,324	2,273	2,274	2,278	2,282	2,286
supp	Peak load	1,500	1,500	1,510	1,521	1,529	1,538	1,547	1,555	1,564	1,572	1,581
mand- balan	Reserve supply capacity	717	502	758	612	748	786	726	719	714	710	705
Del	Reserve supply rate	47.8%	33.5%	50.2%	40.2%	48.9%	51.1%	46.9%	46.2%	45.7%	45.2%	44.6%

Note: Based on FY2020 Supply Plan Notification. (general transmission / distribution business)

### Remote Islands (Efforts to Improve Income and Expenditure)

- The region has a high cost structure because of such reasons as having small islands scattered about a vast sea area and the narrow scale of the economy.
- Remote island business occupies about 10% of electricity sales and residential, commercial and industrial use charges.



### **Status of Wind and Solar Power Electricity Generation Facilities**

The OEPC Group has new energy facilities with total output of 27,868kW (wind power: 22,130kW, solar power: 5,738kW).

#### 【OEPC】

	Name	No. of Units	Output	Remark
	Ogimi Wind Power	2	4,000 kW	
Ľ	Yonaguni Wind Power	1	600 kW	
Ň	Aguni Tiltable Wind Power	1	245 kW	*1
۲ ط	Minamidaito Tiltable Wind Power	2	490 kW	*1
ind	Tarama Tiltable Wind Power	2	490 kW	*1
Š	Hateruma Tiltable Wind Power	2	490 kW	*1
	subtotal(6)	10	6,315 kW	
	Abu Mega Solar Power		1,000 kW	
	Kitadaito Daini Solar Power	—	100 kW	*2
e	Miyako Mega Solar Power		4,000 kW	*2
Ň	Miyako Branch Solar Power		10 kW	
Ъ Ч	Tarama Solar Power	—	250 kW	*2
lar	Yaeyama Branch Solar Power	_	10 kW	
So	Hateruma Solar Power	—	10 kW	
	Yonaguni Solar Power		150 kW	*2
	subtotal (8)	_	5,530 kW	

#### [ Group company]

	Name	No. of Units	Output	Remark
	Sosu Wind Power	2	3,600 kW	
	Nakijin Wind Power	1	1,995 kW	
şr	Gushikawa Wind Power	1	1,950 kW	
Me	Sashiki Wind Power	2	1,980 kW	
Pc	lejima wind Power	2	1,200 kW	
pu	lejima Daini wind Power	2	1,490 kW	
Ň	Karimata Wind Power	2	1,800 kW	
	Sadefune Wind Power	2	1,800 kW	
	subtotal (8)	14	15,815 kW	
L	lejima Solar Power	_	10 kW	
olal	Tokashiki Solar Power		198 kW	
y Q Po Q	subtotal (2)		208 kW	

(As of March 31, 2020)

\*1 Tiltable Wind Power

\*2 Micro grid (a combination of system stabilizing technologies such as storage batteries)

### Challenges for the introduction of renewable energies(1/3)

### Wind power generation

- Examination criteria tightened for construction of wind power generation facilities in Japan (2016).
- "Extreme wind speed"\* ,which is the construction standards in Okinawa, is "90 m/s".
- At present, no wind turbine manufacturers around the world is producing wind power generation facilities that meet these standards. As a result, it is practically impossible to introduce new ones.
- We are considering whether it is possible to install wind turbines by devising operational aspects (maintenance, monitoring system, safety measures, etc.).

\* Extreme wind speed

Extreme mean wind speed that may be experienced in the next 50 years

Extreme wind speed (90 m/s)

- = Reference wind speed (46 m/s)  $\times$  a  $\times$  b  $\times$  c
- a: Coefficient corresponding to the terrain

.....

- b: Coefficient corresponding to the hub height, etc.
- c: Coefficient corresponding to the maximum
- instantaneous wind speed



[Design reference wind speed distribution] \*Image of "Building Standards Act Notice No.1454" categories

Source: Japan Exterior Industry Association website

### Challenges for the introduction of renewable energies(2/3)

### Solar power generation

2

Main island of Okinawa

- The amount of solar PV generation interconnection in the Okinawa area has increased rapidly since the implementation of the feed-in tariff scheme (FIT scheme) in July 2012.
- Since the system in the main island of Okinawa is small and independent, the limit of connection volume is likely to occur when using renewable energy.

■ Main island of Okinawa (MV									
	30-day output control limit	Amount already connected	Connection application amount	Total					
Solar	495	352	101	453					

### [Connection of renewable energies]

■ Remort islands (kV											
	30-day output control limit	output Amount Connection I limit already application connected amount									
Miyako	24,101	28,585	9,660	38,245							
Ishigaki	21,991	19,385	7,353	26,738							
Kume	2,719	2,504	5	2,509							

\* As of March 31, 2020



\* The connectable amount (30-day output control limit) and the connected (applied) amount are figures of solar PV generation only for the Main Island, while those of whole renewable energies including wind power for the three remote islands.

### Challenges for the introduction of renewable energies(3/3)

- Due to expanded introduction of renewable energies, the lower operating limit of thermal power generation which is necessary for a stable supply is approaching.
- There is an increasing possibility of controlling the output of renewable energies in order to maintain the balance between supply and demand.



0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 (Time)

### Efforts to expand the introduction of renewable energies(1/2)

### Introduction of Tiltable wind power generators

- It's problem that damaging to wind turbines due to strong wind because Okinawa is tha area to hit typhoons frequently.
- The introduction of Japan's first tiltable wind power generators has enabled the stable operation of renewable energy and reduced the cost of fuel and repair and maintenance.
- Currently, it has been introduced to 4 remote islands, Aguni, MinamiDaito, Tarama and Hateruma.

<Characteristics and advantages of Tiltable wind power generator>

- Wind power generators can be tilted nearly 90 degrees so that damages by strong winds from typhoons can be avoided by tilting them.
- > Wind power generators do not need large-size cranes to construct and can be constructed in moderate hilly areas.
- Wind power generators are retractable so that maintenance work can be carried out on the ground.
- > Wind power generators are supported by wires.

1





▲Aguni tiltable wind power generators when tilted

### Efforts to expand the introduction of renewable energies(2/2)

### 2

### Introduction of motor generator (MG set) in Hateruma Island

- Demonstration test of motor generator (MG set) is under way.
- The MG set operates powered by a battery charged with excess electricity from renewable energy sources. The system effectively utilizes surplus electricity from renewable energy sources, which could not be supplied to the grid before and therefore was restricted.
- The system is connected to the commercial grid as a unit with the same functions as a diesel generator. This is a globally unprecedented initiative to expand the introduction of renewable energies.
- The electricity used on Hateruma Island was temporarily\* supplied using 100% renewable energy.





\* 1 hour 47 minutes from 5:35 AM to 7:22 AM on November 27, 2018





#### **Current Status and Future Forecast of Okinawa's Economy**

#### ■ The current state

1

Recently, there are increasing more difficult in the prefectural economy by the impacts of the novel coronavirus.

										(70)			
Indicators	FY2019												
Indicators	Apr.	May	Jun	Jul	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	FY
Sales by large-scale retailers	3.8	3.3	3.9	4.2	2.6	8.7	-5.7	1.0	0.4	2.6	0.2	-6.3	1.5
No. of new car sold	3.4	6.0	-11.3	-6.6	8.2	12.8	-17.7	-5.6	-4.0	-7.3	-0.5	-15.5	-3.7
No. of incoming tourists	2.2	0.5	7.2	8.8	-1.9	1.0	0.2	0.5	1.0	-3.4	-23.5	-55.2	-5.3
Value of public works contracts	-24.3	30.4	-18.1	94.2	-17.8	-12.5	29.8	28.2	94.7	1.3	-47.5	-11.7	4.3
New residential Construction starts	-1.5	-38.4	-20.6	-16.0	25.5	10.7	-16.2	-0.8	-17.5	-37.4	-19.1	-18.4	-12.1
Total unemployment rate	2.5	2.7	3.0	2.8	2.9	3.2	2.8	2.5	2.5	3.0	3.1	2.9	2.8
Job Opening Ratio	1.18	1.18	1.19	1.19	1.20	1.19	1.20	1.20	1.19	1.11	1.11	1.06	1.16

#### Trends in Main Economic Indicators of Okinawa Prefecture

Note 1: The figures for 'Sales by large-scale retailers' are calculated on an all-store base. The values in March 2020 are preliminary figures.

Note 2: The figures for 'Total unemployment rates' are raw data, whereas The figures for 'Job Opening Ratio' are a seasonally adjusted value for the current month. (Please note that the values for the fiscal year are both raw data.)

Source: Okinawa General Bureau, Okinawa Prefecture, Ryugin Research Institute, and others.

#### ■ Prospect

The prefectural economy is expected to continue to be affected by the novel coronavirus. Future risk factors include developments in the mainland and overseas economies (including prolonged effects of novel coronavirus and geopolitical risks).

(%)

### **Economic Growth of Okinawa Prefecture under the Okinawa Promotion Plan**

- With implementation of a variety of action plans under the Okinawa Prefectural government's "Basic Plan of Okinawa 21st Century Vision (Okinawa Promotion Plan)" which started in FY2012, the prefecture's GDP posted growth rate increase of outpacing the national average growth rate.
- Recently, the prefectural economy continue to be affected by the novel coronavirus, but the demand for electricity is expected to increase in the medium to long term because it's expected to grow the prefectural economy.

							(Billion yen)
		FY2013	FY2014	FY2015	FY2016	FY2017	FY2018
	Prefectural	4.2%	-0.3%	3.2%	3.2%	3.1%	1.6%
	GDP	3,892.3	3,879.1	4,004.2	4,132.0	4,260.4	4,330.4
ĺ	National	2.6%	-0.4%	1.3%	0.9%	1.9%	0.3%
	GDP	512,534.7	510,704.0	517,223.3	521,963.0	532,070.3	533,645.5

#### **Prefectural GDP and National GDP**

2

Sources: "Prefectural Accounts for FY2016", "Prefectural economic outlook for FY2019" and Cabinet Office "List of Statistical Tables" (Second Preliminary Data for the October-to-December 2019 period)

Note : Prefectural GDP's for FY2017 and FY2018 are estimates. Figures in the upper row are growth rates on a Y to Y basis.

#### **Basic Plan of Okinawa 21st Century Vision (Okinawa Promotion Plan)**

In May 2012, the "Basic Plan of Okinawa 21st Century Vision (Okinawa Promotion Plan)" was formulated under the initiative by the Okinawa Prefectural government (revised in May 2017).

Through the implementation of various measures that are developed based on this plan to take advantage of regional characteristics of Okinawa Prefecture, gross production in Okinawa (nominal) in FY2021 is estimated to increase about 1.4 times compared with that in FY2010 to 5,100 billion yen.

(hillion ven)

#### **Okinawa International Logistics Hub**

Okinawa Prefecture is promoting the establishment of an international logistics hub through accumulating the industries at the areas peripheral to airport and harbor where new business is to be developed through utilizing Okinawa international logistics hub. In addition, Okinawa Prefecture is working hard to attract logistics companies from home and abroad.



3

Source: A pamphlet titled "Okinawa International Logistics Hub" (prepared by the International Logistics Promotion Division, Department of Commerce, Industry and Labor and available on the website of the Okinawa Prefecture)

- Okinawa Prefecture is located in the center of the huge market of two billion people.
- Travel time required between Okinawa Prefecture and major cities in Japan and Asia is about four hours.
- Utilizing late-night cargo flights through 24-hour operation system at Naha Airport.
- O Quick transportation through 24-hour customs clearance system.



### Aviation Industry Cluster

Δ

- Aviation demand in Asia is expected to increase in the future and the total number of aircraft is expected to increase by 2.7x in the next 20years.
- Okinawa Prefecture, taking advantage of the characteristic of the center of Asia, is engaged in the aviation industry cluster focused on MRO\*.
- MRO Japan started aircraft maintenance business at Naha Airport in January 2019.



\* MRO : Maintenance, Repair, & Overhaul

### **MRO**Japan

MRO Japan Co., Ltd.

Established on June 2015 (Head Office: Naha City) Businesses: Aircraft Maintenance, Repair, & Overhaul Paid-in Capital: 1 billion yen Shareholder composition: ANA Holdings Inc. 45% JAMCO Corporation. 25% Mitsubishi Heavy Industries, Ltd. 20% The Okinawa Development Finance Corporation. 2% Bank of The Ryukyus, Ltd. 2% The Bank of Okinawa, Ltd. 2% The Okinawa Kaiho Bank, Ltd. 2% The Okinawa Electric Power Company, Inc. 2%

Source: The Industrial Site Promotion Guide Book 2019-2020

#### **Outline of the U.S. military Forces**

in Okinawa

No. of Fasilities	33
Area	187,099km <sup>2</sup>

<Reference>

No. of employees working for the U.S. Armed Forces in Okinawa: 8,919 \*As of the end of March 2018.

Sources : Japan Ministry of Defense "US Forces and SDF Bases in Okinawa August 2019", Military Base Affairs Division, Executive Office of the Governor, Okinawa Prefecture

### The U.S. Armed Forces' share of total electricity demand (FY2019)



Principal electricity supply destination facilities \*1

Name		Location *2	Area
Camp Gonsalves	[ US Marine Corps ]	Kunigamison, Higashison	36,590km
Okuma Rest Center	[ US Air Forces ]	Kunigamison	546km <sup>*</sup>
Iejima Auxiliary Air Base	[ US Marine Corps ]	Ieson	8,015km <sup>*</sup>
Yaedake Communication Site	[ US Air Forces ]	Motobucho, Nago-shi	37km <sup>2</sup>
Camp Schwab	[ US Marine Corps ]	Nago-shi, Ginozason	20,626km²
Camp Hansen	[ US Marine Corps ]	Nago-shi, Ginozason, Onnason, Kincho	48,728km²
Kadena Ammunitions Storage Area	[ shared use ]	Onnason, Uruma-shi, Okinawa-shi, Kadenacho, Yomitanson	26,585km²
Camp Courtney	[ US Marine Corps ]	Uruma-shi	1,339km²
Camp Mc Tureous	[ US Marine Corps ]	Uruma-shi	379km²
Camp Shields	[ shared use ]	Okinawa-shi	700km²
Torii Station	[ US Army ]	Yomitanson	1,895km <sup>*</sup>
Kadena Airbase	[ shared use ]	Okinawa-shi, Kadenacho, Chatancho, Naha-shi	19,855km <sup>*</sup>
White Beach Naval Facility	[ shared use ]	Uruma-shi	1,568km <sup>*</sup>
Camp Kuwae	[ shared use ]	Chatancho	675km²
Camp Zukeran	[ shared use ]	Uruma-shi, Okinawa-shi, Kitanakagusukuson, Chatancho, Ginowan-shi	5,450km²
Futenma Airport	[ US Marine Corps ]	Ginowan-shi	4,759km
Makiminato Service Areas	[ US Marine Corps ]	Urasoe-shi	2,694km
Naha port facilities	[ shared use ]	Naha-shi	559km <sup>2</sup>

\*1 Professional use and large-demand customers

\*2 Areas where facilities exist on a cross-area basis

\*3 Facilities south of Kadenacho are scheduled to be returned (Partial return applies to Camp Zukeran)

\* Range in figures due to planned return of facilities includes partial return.

### Q3. What is the Current State of Promotion of Electrification?

#### Approach for the promotion and growth in the household sector

- (1) OEPC started to offer the "Rikka Denka Lease", a new lease service plan of the electrical appliance.
- (2) OEPC will open "Membership Site" that is a new web service and introduce the point service in September 2020.
- (3) Strengthening cooperation with local home appliance stores and housing equipment manufacturers, who are the main players delivering value directly to customers.
- ♦ The ratio of all-electric houses to newly-built detached houses in FY2019 : 28.6%

#### Approach for sales promotion in the corporate sector

- (1) Offering customers comprehensive proposals for electrification (air-conditioning systems, kitchens, and water heaters) appropriate for their power usage.
- (2) Strengthening of cooperation with sub-users including manufacturers, contractors, design offices, etc.
- (3) Utilization of public subsidy system, etc.



### Q4. What is the enrichment of electricity rate menus?

#### The electricity rate menu for all electrification

#### ♦ Ee Home Holiday

Suitable for double-income households who use less electricity on weekdays.



#### **Good Value Plan**

The plan that is more advantageous than meter-rate lighting by setting the unit price to be the same as meter-rate lighting or cheaper.



#### ♦ Ee Home Flat

Suitable for households of full-time housewives and senior citizens who use more electricity during the daytime on weekdays.



- ✓ The electricity tariff is equivalent to the electricity tariff charged at the meter-rate lighting plan by OEPC.
- ✓ The au WALLET points corresponding to up to 5% of electricity tariff are returned.

### Q5. What are the efforts to fuel cost reduction?(1/2)

Efforts toward stable procurement of fuels and reduction of fuel costs.



### Q5. What are the efforts to fuel cost reduction?(2/2)

#### Efficient operation of coal-fired plants by reducing consumption of fuel oil and LNG.

\* AFC=Automatic Frequency Control

Reduction of oil consumption by shifting AFC\* that oil-fired plants took charge of to LNG-fired plants.
 A shift to coal-fired plants that have much lower power unit costs by reducing the volume of LNG.



### Q6. What are the efforts to reduce $CO_2$ emissions?(1/3)

#### Efforts in electricity business

- Introducing hydro or nuclear power is difficult in Okinawa Prefecture due to reasons including the region's geological and geographic characteristics and constraints on the scale of demand ⇒ Dependency on fossil fuels (oil, coal, etc.)
- OEPC commenced operation of Yoshinoura Thermal Power Plants, which are fueled by LNG with low CO<sub>2</sub> emissions, in November 2012.
- OEPC efforts to CO<sub>2</sub> emissions reductions in cooperation with the Electricity Business Council for a Low-Carbon Society.

#### [Key measures against global warming]

Stable operation of Yoshinoura Thermal Power Plants, which are fueled by LNG

Use of renewable energy (e.g. mixed combustion of woody biomass fuel, Tiltable wind power generators)

#### Trends of CO<sub>2</sub> emission factors

1



Note 1: Electricity sales volume and CO<sub>2</sub> emission factors related to electricity retailers (the main island of Okinawa) in and after FY2016 due to the full liberalization of the electricity market. Figures in and before FY2015 are for former general electricity utilities (main and remote islands).

Note 2: Adjusted emission factors reflecting adjustments related to the feed-in tariff system and other factors.

#### Improvement of efficiency of energy use

Promotion of energy-saving and CO<sub>2</sub> saving activities

#### Chart: Comparison of CO2 Emission Volumes by Fuel Type

	CO <sub>2</sub> *1		CO <sub>2</sub> *2			
Fuel Type	Emission Volume Per Unit Heat Value [g-CO <sub>2</sub> /MJ]	vs. vs. Coal Oil		Emission Volume Per kWh [kg- CO <sub>2</sub> /kWh]	vs. Coal	vs. Oil
Coal	90.6	1.00	1.27	0.84	1.00	1.20
Oil <sup>*3</sup>	71.5	0.79	1.00	0.70	0.84	1.00
LNG	49.5	0.55	0.69	0.38	0.45	0.54

\*1 The values of the Enforcement Order of the Act on Promotion of Global Warming Countermeasures. (Convert the CO<sub>2</sub> emission factors Kg-C/MJ to g-CO<sub>2</sub>/MJ)

\*2 Calculated using actual value of OEPC's Thermal Efficiency at Generation End at FY2018.

\*3 Oil comparisons were based on type C heavy oil.

### Q6. What are the efforts to reduce $CO_2$ emissions?(2/3)

- OEPC efforts to mix combustion of wood biomass fuels at coal-fired thermal power plants.<sup>\*1</sup>
- In order to promote the use of renewable energy, the decision was made to introduce it at the Kin thermal power plant.<sup>\*2</sup>

\*1 Gushikawa Thermal Power Plant : from March 2010.

\*2 Kin Thermal Power Plant : scheduled to start mixed combustion in March 2021.

- ✓ It uses Woody pellets made from construction wastes that have been incinerated in the prefecture.
- It contributes to the reduction of CO2 emissions in the prefecture by reducing the consumption of coal as fuel while contributing to the promotion of recycling construction wastes.
- ✓ Wood biomass consumption : approx. 30,000 t/year\*
   CO2 reduction: approx. 40,000 t/year\*
   (\*Total of Gushikawa and Kin Thermal Power Plants)
- ✓ Amount of possible mixed combustion : approx. 3% (weight ratio)



### Q6. What are the efforts to reduce $CO_2$ emissions?(3/3)

#### Efforts in OEPC Group

- Through the gas supply business, the OEPC Group is working to shift customers' energy sources from heavy oil to LNG, which is low in CO<sub>2</sub> emissions.
- In the overseas business, the OEPC Group contributes to promoting the wide spread use of renewable energy facilities in Pacific island states with high dependency on fossil fuels similar to Okinawa.
- The OEPC Group will make all-out efforts to reduce CO<sub>2</sub> emissions in a comprehensive manner.

#### [Efforts in gas supply business]

#### Orion Breweries, Ltd.

2

- Orion Breweries became the first brewing company in Okinawa to shift its fuels from heavy oil to natural gas.
- Introduction of natural gas is expected to reduce CO<sub>2</sub> emissions by 1,500t annually.



▲ LNG satellite facilities

#### [ Efforts in overseas business ] Delivery of tiltable wind power generators to Tonga.

- Progressive Energy Corporation (PEC) received an order for ODA project involving the Kingdom of Tonga.
- PEC signed a contract with Tonga Power Limited for five tiltable wind power generators.
- On June 2019, PEC completed constructions of five tiltable wind power generators, and handed over them to the Kingdom of Tonga.



▲ Tiltable wind power generators at the Kingdom of Tonga.

### **Q7. Support for TCFD Recommendations**

In September 2019, Expressing to support the Recommendations adopted by the Task Force on Climate-related Financial Disclosures(TCFD).

#### ■ At the same time, deciding to participate in TCFD consortium.

- The composition of electric power source is highly reliant on fossil fuel, as developing nuclear or hydroelectric power generation is difficult in Okinawa due to the reasons of geographic condition and the small scale of demand.
- Under such conditions, we have been tackling with the issue of global warming and with the reduction of environmental load based on the "Okiden Group's Policy on the Environment".
- Also, through CSR reports and environmental action reports, we have been endeavoring to disclose information on environmental, social and governance initiatives(ESG).
- In recognition of the fact that our business activities are significantly related to the issue of global environment, we agree with the purpose of the TCFD recommendations, which is "analyzing the risks and opportunities related to climate change that affect business and promoting climate-related financial disclosures".
- > We will continue to enhance information disclosure on climate change, improve corporate value, and contribute to the realization of sustainable society.
- At present, OEPC are considering about "Governance" and "Risks and Opportunities". Scenario analysis will be progressively disclosed by 2022.



TCFD: Task Force on Climate-related Financial Disclosures

This task force was established by the Financial Stability Board (FSB), which is an international agency that has central banks, financial regulatory authorities and other organizations from major countries as members. In June 2017, a proposal was published regarding the ideal disclosure of information on climate-related risks and opportunities by companies.

TCFD Consortium :

TCFD Consortium consists of companies and financial institutions supporting TCFD recommendations, where these organizations work together through discussing a path to effective disclosure by companies and adequate utilization of disclosed information in investment decisions by financial institutions. Established on May 27, 2019

### **Q8. The Fuel Cost Adjustment System**

The fuel cost adjustment system was introduced for the purpose of clarifying the "internal factors" such as the results of efforts to promote management efficiency at electric power companies and reflecting "external factors" onto electricity rates such as exchange rates and oil and coal and LNG prices that alter the economic situation.

[Range of fuel cost adjustment]

○We will calculate the average fuel price based on the prices of crude oil, coal and LNG on the trade statistics during the period between five months and three months prior to the fuel cost adjustment, and electricity charge will be automatically adjusted each month by comparing the above price with the standard fuel price at the time of electricity rate revision.

○The maximum level of fuel cost adjustment will be 50%.

[Trend of Average Fuel Price and Standard Fuel Price

OThere will be no lower adjustment limit.



[Conceptual drawing of the fuel cost adjustment system]

E.g. The average fuel price during the period between December and February of the following year will be applied to fuel cost adjustment for the electricity charge for May in the following year.

The average fuel price during the period between January and March will be applied to fuel cost adjustment for the electricity charge for June in the same year.



# Q9. What is the approval that it's possible to engage in electricity transmission and distribution on concurrent?

- After April 2020 when the amended Electricity Business Act comes into effect, the general electricity transmission and distribution utilities must not engage in electricity retail or electricity generation on concurrent business. (Restrictions on Concurrent Business)
- As an exception to the restriction on Concurrent Business, OEPC became the "the approved general electricity transmission and distribution utility" which can operate power retail business and power generation business, and this means that OEPC can continue maintaining the integrated system for power transmission and distribution.
- On the other hand, OEPC implemented the organizational revision to respond conduct regulations aimed at ensuring neutrality of the transmission/distribution sector.

Reasons for exceptions to Restriction on Concurrent Business

- There is a particularly high need for flexible power supply operation because OEPC's power grid is small-scale power system and independent from the mainland.
- There is a particularly high need for the transmission and distribution, retail and power generation divisions to work together in disaster response.



### Q10. What are the Special Tax Measures?

- We consider that special taxation measures are necessary for promoting business in Okinawa Prefecture and improving the lives of Okinawa residents on the grounds that disadvantages inherent in Okinawa's electricity business have remained unchanged. For example, there are many small and isolated systems and Okinawa is dependent on thermal power.
- The amount of tax exemption based on the special taxation measures is deducted from the cost of electricity charge.

#### **Currently Applied Special Tax Measures**

	Relating to Fixed Property Tax	Specific Coal, etc. (Coal and LNG) Used for Power Generation in Okinawa
Details A	Alleviation to 2/3 of Standard Taxable Values	<ul><li>(1) Exemption from the Oil and Coal Tax for coal</li><li>(2) Exemption from the Oil and Coal Tax for LNG</li></ul>
Period ,	April 1, 1982 - March 31, 2022 * Extended for 2 years from April 1, 2020	<ul> <li>(1) October 1, 2003 – March 31, 2022</li> <li>* Extended for 2 years from April 1, 2020</li> <li>(2) April 1, 2012 – March 31, 2022</li> <li>* Extended for 2 years from April 1, 2020</li> </ul>
Basic S Law (	Supplementary Provisions of the Local Tax Law (Article 15.5)	Special Measures Law for the Promotion of Okinawa (Article 65.2) Special Taxation Measures Law (Article 90.4.3.1)

Revision of the Act on the Special Measures for the Promotion and Development of Okinawa

Value of Tax Alleviation Due to the Special Measures

- The Act on the Special Measures for the Promotion and Development of Okinawa was revised in March 2012, and the revised law came into effect on April 1, 2012.
- Under the revised law, etc., OEPC receives favorable treatment based on "Preferential Measure for Standard Taxable Values Relating to Fixed Property Tax" and "Exemption from the Oil and Coal Tax Relating to Specific Coal, etc. (Coal and LNG) Used for Power Generation in Okinawa".

The value of the alleviation measures in FY2019 : about 3.4 billion yen.

The value of the alleviation measures for FY2020 : expected to be 3.4 billion yen.

### Q11. What are the efforts to typhoon measures?

Since many typhoons approach Okinawa every year, the OEPC is taking basic measures by thoroughly inspection patrol electricity transmission/distribution facilities and regularly cutting trees, and is also taking various other precautionary measures.



Transmission towers need to be designed to withstand a wind speed of up to 40 m/s based on the "Ministerial Order to Provide Technical Standards for Electrical Equipment (Ministry of Economy, Trade and Industry)". However, the OEPC design transmission towers that can withstand a wind speed of up to 60 m/s in consideration of the maximum typhoon wind speed in the past.

The OEPC is making an effort to prevent the spread of damage by disseminating typhoon measures at home (e.g. preventing zinc roofs, tents and signboards from flying off) on TVCM, Radio, SNS before the typhoon approaches.

### Reference 1: Trends of Ordinary Income and ROE



### Reference 2: Trends of the Total Assets and Shareholder's equity



### Reference 3: Trends of the Capital Expenditure and Free Cash Flows



\* Based on "Income and Expenditure Statement (Non-consolidated)" on and before 1998, and "Statement of Cash Flow (Consolidated)" on and after 1999, respectively.

### Reference 4: Change in Okinawa Electric Power's Stock Price

#### Recent stock price changes: from January 4, 2019 to March 31, 2020

	Okinawa Electric Power Company, Inc.	Nikkei Average
Stock price as of January 4, 2019 (closing price)	2,206 yen	19,561 yen
All-time high (closing price)	2,206 yen ( - ) as of Jan. 4, 2019	24,083 yen (+23.1%) as of Jan. 20, 2020
All-time low (closing price)	1,548 yen (-29.8%) as of Aug. 13, 2019	16,552 yen (-15.4%) as of Mar. 19, 2020
Stock price as of March 31, 2020 (closing price)	1,980 yen (-10.2%)	18,917 yen (-3.3%)

(Note) .Figures in bracket indicate percentage change in the stock price from its closing price on January 4, 2019.



(Note) The stock split was implemented six times in the indicated period (Record date :End of March 2005, End of March 2007, End of May 2015, End of May 2016, End of May 2017 and End of May 2018), and adjustment has been made for the figures before the end of May 2018.

### Reference 5: Earnings Per Share and Payout Ratio

#### Earnings per Share and Payout Ratio

	FY	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Net income *1	Million yen	8,047	6,956	4,318	4,731	4,943	3,647	5,517	6,273	3,751	6,705
Earnings per Share *1 (Post-adjustment after stock split) *2	yen	460.58 (148.87)	398.15 (128.70)	247.20 (79.90)	270.80 (87.53)	282.99 (91.47)	139.22 (67.50)	140.41 (102.12)	147.00 (117.60)	72.38	129.39
Dividend per Share	Ven	60	60	60	60	60	60	60	60	60	60
(Post-adjustment after stock split) *2	уеп	(19)	(19)	(19)	(19)	(19)	(28)	(44)	(48)		
Payout Ratio <sup>*1</sup>	%	13.0	15.1	24.3	22.2	21.2	43.1	42.7	40.8	82.9	46.4
Dividend Yield	%	1.58	1.75	1.87	1.72	1.38	1.98	2.27	1.96	3.18	3.03
Price Book-value Ratio <sup>*1</sup>	x	0.53	0.45	0.41	0.44	0.52	0.54	0.68	0.84	0.65	0.67
Price Earning Ratio <sup>*1</sup>	х	8.3	8.6	13.0	12.9	15.4	21.8	18.8	20.8	26.0	15.3

\*1 Net Income, EPS, Payout Ratio, PBR, PER are on a consolidated basis

\*2 Shown in the brackets are numbers adjusted for the effects of past stock splits.

### Reference 6: Policy for Returning Profits to Shareholders

- Our basic policy is to "distribute stable and continuous dividends," and we have continuously been distributing an annual dividend of 60 yen per share since 2000.
- We will make efforts to maintain "a DOE of over 2.0%," which is our indicator.



### Reference 7: Stock Split

- We implemented a stock split for the first time in two years on June 2020. (Ninth time since being listed on the stock market.)
- This was to increase the actual amount of dividend per share for maintaining an annual dividend of 60 yen per share.

#### 1. Purpose of stock split

To distribute profits back to all our shareholders and increase the liquidity of our shares

#### 2. Method of stock split

A 1.05-for-1 stock split

#### 3. Number of shares increasing as a result of the stock split

Total number of issued shares prior to the stock split : 54,217,110 shares Number of shares increasing as a result of the stock split : 2,710,855 shares Total number of issued shares after the stock split : 56,927,965 shares Total number of authorized shares after the stock split : 92,800,000 shares **4. Stock Split Calendar** Record date: May 31, 2020 Effective date: June 1, 2020

#### 5. Expected dividend for March 2021 (forecast)

End of 2nd quarter	30 yen per share
End of term	30 yen per share

#### <Reference: Trend in Stock Splits>

Date	Issued number of shares of common stock	Ratio
Feb. 10, 1992	14,728,132	Listed
Nov. 20, 1995	14,875,413	1:1.01
May. 25, 1999	15,172,921	1:1.02
May. 20, 2005	15,931,567	1:1.05
Apr. 1, 2007	17,524,723	1:1.10
Jun.1, 2015	26,287,084	1:1.50
Jun.1, 2016	39,430,626	1:1.50
Jun.1, 2017	43,373,688	1:1.10
Jun.1, 2018	54,217,110	1:1.25
Jun.1, 2020	56,927,965	1:1.05

### Reference 8: Repurchase of Shares

We repurchased treasury stock at FY2017 in accordance with the provisions in the articles of incorporation pursuant to the provisions of the Companies Act.

#### **1. Purpose of repurchasing shares**

To increase capital efficiency and implement flexible capital policy

#### 2. Class of shares to be repurchased

Common shares

#### 3. Total number of shares to be repurchased

1,750,000 shares

4. Total purchase price for repurchase of shares 4,900,602,600 yen

#### 5. Period of repurchase

From Nov. 29, 2017 to Dec.15, 2017

#### 6. Method of repurchase

Market purchases including the purchase of treasury stock through the off-hours trading (ToSTNeT-3)

<Reference: Number of treasury stock held>

Date	Number of treasury stock
As of 2017.09.30	156,197 shares
As of 2018.03.31	1,906,955 shares
As of 2019.03.31	2,389,436 shares
As of 2019.09.30	2,389,762 shares
As of 2020.03.31	2,390,471 shares

\* We implemented a stock split on June 1, 2018.



This document includes statements concerning future results. Such statements are based on calculations and predictions and are neither definite nor guaranteed. Please be aware that future results may change in accordance with changes in assumptions related to the management environment and the like.

[Enquiries regarding this document]

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