

## Direction of Management and Near-Term Managerial Policy of the J-POWER Group

April 27, 2012



## Contents

| To Our Stakeholders  | 3  |
|--|----|
| Initiatives for last Year  | 4  |
| Business Environment and Issues: Post Earthquake Disaster                                    | 5  |
| Direction of Business Strategy   | 6  |
| Maintaining High Capacity Utilization Rates at Facilities and Improving Efficiency           | 7  |
| Contributing to Stable Supply through Facility Formation: Ohma Nuclear Power                 | 8  |
| Contributing to Stable Supply through Facility Formation: Coal-fired Thermal Power (1)       | 9  |
| Contributing to Stable Supply through Facility Formation: Coal-fired Thermal Power (2)       | 10 |
| Contributing to Stable Supply through Facility Formation: Interconnecting Lines              | 11 |
| Responding to Global Environmental Issues: Renewable Energy                                  | 12 |
| Responding to Global Environmental Issues: Increasing Efficiency of Coal-fired Thermal Power |    |
| and its Global Deployment  | 13 |
| Initiatives in the Coal Value Chain  | 14 |
| Initiatives in Overseas Electric Power Generation Business                                   | 15 |
| Promoting J-POWER's Financial Strategy   | 16 |
| Initiatives for Enhancing Competitiveness  | 17 |
| Increasing Corporate Value and Shareholder Returns   | 18 |
| J-POWER's Mission  | 19 |



## To Our Stakeholders

One year on from the Great East Japan Earthquake Disaster, the environment surrounding Japan's electric power business is growing increasingly uncertain. As suspension of operations at nuclear power plants continues, our industry has had to respond to the challenges of stringent conditions in the supply and demand of electric power, increasingly tight conditions in the supply and demand of fossil energy resources, and environmental problems. In addition, the direction of policy discussions over environmental and energy strategies as well as the direction of reforms of electric power system remain unclear.

Consequently, the premises for formulating a medium- to long-term management plan extremely unpredictable and fluid. Therefore, in place of a management plan, we once again decided to prepare the "Direction of Management and Near-Term Managerial Policy of the J-POWER Group" to clarify the future direction of the J-POWER Group business strategy. Underpinning this policy is our plan to invest diverse management resources in multiple growth businesses in a well-balanced manner and to promote our own business globally to achieve sustainable growth in corporate value.

Even in the face of uncertainty for the foreseeable future, our mission at J-POWER remains the same. Our No. 1 task as a electric power supplier is to make every effort to ensure the supply of electricity in Japan. We are committed to contributing to the stable supply and demand of electricity by doing everything we can to enable the assets we own in hydroelectric, coal-fired thermal power and transmission facilities to operate up to full capacity. Taking one step at a time, we will also steadily proceed with our Ohma Nuclear Power Plan and our Takehara Thermal Power Replacement Plan to ensure stable supply and demand of electricity in years to come.

Work on the Ohma Nuclear Power Plant currently under construction has been suspended since immediately after last year's earthquake disaster. We fully acknowledge the gravity of the accident that occurred at the Fukushima Daiichi Nuclear Plant and we are determined to do whatever we can to create a safe electric power plant that will be trusted by people in the community by ensuring that we implement reinforced safety measures without fail and by reflecting at all times new knowledge in its operation.

The second mission of the J-POWER is to contribute to sustainable development in the world. In Thailand at present, we are involved in two large-scale gas combined cycle IPP projects and seven SPP projects currently under construction, and in Indonesia we are moving ahead with preparations for the development of a large-scale high-efficiency coal-fired IPP project, which is expected to commence commercial operations in 2017, bringing our combined owned output in these projects to 8,000MW. The J-POWER Group is fully committed executing these large-scale projects and to making our overseas electric power generation business a mainstream business of the Group on a par with our electric power business in Japan.

Japan's energy industry is currently in the midst of a major paradigm shift, which was precipitated by the earthquake disaster last March. As a company that will be significantly affected by changes set to take place, we at J-POWER are determined to move forward into the future proactively by accelerating our plans and initiatives to respond to various challenges so that we may fulfill our universal mission.

In all of these endeavors, we look forward to your continued support.

President



## Initiatives for last Year

### Initiatives to Promote Stable Supply of Electricity

- · Contributing to stable supply through high facility utilization rates, amid tight supply & demand
- · Suspension of construction work of Ohma Nuclear Power Plant immediately after earthquake
- Reflecting measures to improve safety in light of Fukushima Daiichi Nuclear Power Station incident

#### <u>Initiatives in Response to Global Environmental Issues (Promotion of Renewable Energy)</u>

- · Establish specialist operation and maintenance company to boost capacity utilization rate of wind power generation facilities
- Established J-Wind Service Co., Ltd. to centralize technology, know-how and human resources within J-POWER group
- ·Commence experimental study of ocean-based wind power generation systems at Kitakyushu City offshore
- Increase procurement of biomass fuel to expand co-combustion at coal-fired thermal power plants
  - Start-up of facilities to produce fuel from sewage sludge at Hiroshima City Seibu Water Reclamation Centre
- · Preparations for new geothermal projects following on from Onikobe Geothermal Power Plant
  - Commencement of environmental impact appraisal procedures for plans to build new geothermal power plant in Wasabizawa-Akinomiya area, Yuzawa City, Akita Prefecture (Yuzawa geothermal project)
- ·Boost hydroelectric power generation output through construction of Isawa No.1 Plant (14.2MW), across-the-board facility upgrade at Tagokura (from 380MW to 400MW)

#### Initiatives in the Coal Value Chain

- · Agreement on acquisition of interest in Maules Creek Coal Mine (New South Wales, Australia)
  - Acquisition of 10% interest in mine, contract for long-term thermal coal purchase

#### <u>Initiatives in Overseas Businesses</u>

- · Acquire coal-fired thermal power generation project in Indonesia (2,000MW)
  - J-POWER's first greenfield coal project
  - Highly efficient power generation plant with reduced environmental impact, using sub-bituminous coal from Indonesia
- · Achieve steady progress in projects under development in Thailand
  - IPP Nong Saeng site (1,600MW): Finance contract signed, full-scale construction starting
  - IPP U-Thai site (1,600MW), 7 SPP projects (780MW in total) also developing satisfactorily

Matsuura Thermal Power Plant (Nagasaki Prefecture, Output 2,000MW)



Diagram of ocean-based wind power generation facilities (LHS) & offshore wind observation facilities (RHS)



Local signing ceremony for Indonesian coal-fired thermal power generation project





## Business Environment and Issues: Post Earthquake Disaster

### **Business Environment**

Safety

+

Energy security

**Environment** 

Economic efficiency

Tight supply & demand of electric power

Electric power system reforms

Tighter supply of energy resources

Global environmental issues

### "Basic direction towards a desirable energy mix"

From summary of issues in the formulation of a "new Basic Energy Plan," by the Fundamental Issues Subcommittee, Advisory Committee for Natural Resources & Energy, December 20, 2011

- Extreme strengthening of energy saving & electricity conservation measures
- Maximum acceleration of development & use of renewable energy
- Effective use of fossil fuels (based on clean use)
- Reduced dependence on nuclear power generation wherever possible

#### Issues

Contribute to stable supply of electricity

Continue initiatives in response to global environmental issues

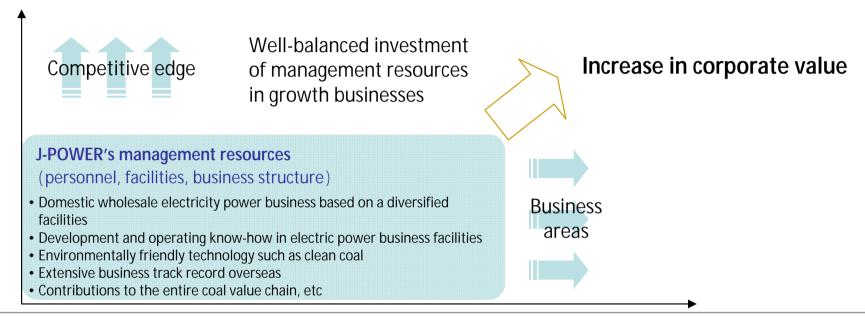
Global business expansion

<u>Strengthen the corporate base - measures to increase competitiveness - </u>



## **Direction of Business Strategy**

 Realize sustainable growth in corporate value through a multiple combination of diverse management resources and promotion of many-sided business expansion



### Contributing to the stable supply of electricity

- ✓ Contribute to stable supply through high facility capacity utilization rates, and maintenance and improvement in efficiency [p. 7]
- ✓ Aim to make Ohma Nuclear Power Plant a dependable electric power plant where safety is the main priority [p. 8]
- ✓ Increase supply capacity through the formation of new facilities including, development of coal-fired thermal power and strengthening of grid facilities [p. 9-11]

## Tackling global environmental issues

✓ Strive for higher efficiency in coal-fired thermal power and renewable energy [p.12,13]

## **Developing business globally**

✓ Promote global business deployment leveraging J-POWER's environmentally friendly technology and the coal value chain [p14,15]

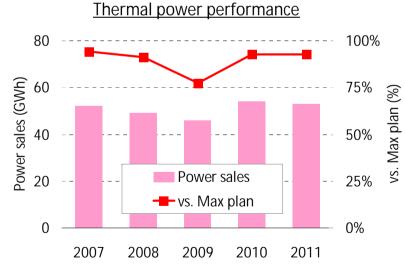


# Maintaining High Capacity Utilization Rates at Facilities and Improving Efficiency

- Contribute to the near-term stable supply of electricity by maintaining high capacity utilization rates across facilities
  - Amid tight supply and demand for electricity, J-POWER facilities (including hydroelectric plants, thermal
    plants, transmission and transformer facilities) maintain high capacity utilization rates close to their
    upper limits and contribute to stable electricity supply and demand.
  - In addition to efficient investment in maintenance needed to meet demands of high capacity utilization,
     J-POWER realize facility reliability and economic efficiency from a medium- to long-term perspective through facility upgrades and other measures.



 Increasing generation output and electricity volume through across-the-board upgrades to water turbine generators (Units No.1 and 2 at Nukabira Power Plant completed, work underway on Unit No.1 at Tagokura Power Plant. Units 2-4 completed to date)



 Coal-fired thermal power plants operating at close to full capacity

vs. Max plan

Actual annual power generation output (kWh)

Assumed annual power generation output with facilities operating at full capacity, excluding periods of regular and interim inspections (kWh)

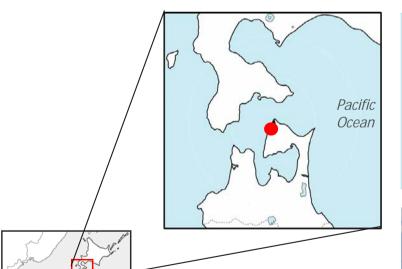


 The Sakuma Frequency Converter Station, which enables the transmission of power between East & West Japan, began operations in October 1965



# Contributing to Stable Supply through Facility Improvement Ohma Nuclear Power

- Aim for a dependable electric power generation plant by ensuring the implementation of reinforced measures to enhance safety
  - Construction work has been suspended since immediately after the earthquake disaster. The J-POWER Group acknowledges the gravity of the accident at the Fukushima Nuclear Power Plant and at the Ohma Nuclear Power Plant intends to put in place, without fails, stricter safety measures. In addition, J-POWER is committed to doing everything in its power to establish a safe electric power plant that will be trusted by people in the community, through ensuring that the plant always reflects new views concerning nuclear power, etc. in its operations.
  - Level of completion as of March 2012: approximately 38%



Location: Ohma, Shimokitagun, Aomori Prefecture

Nuclear reactor type: Advanced Boiling Water Light Reactor (ABWR)

Fuel: Enriched uranium and uranium-plutonium mixed oxide (MOX)

Output: 1,383MW

Start of construction: May 2008

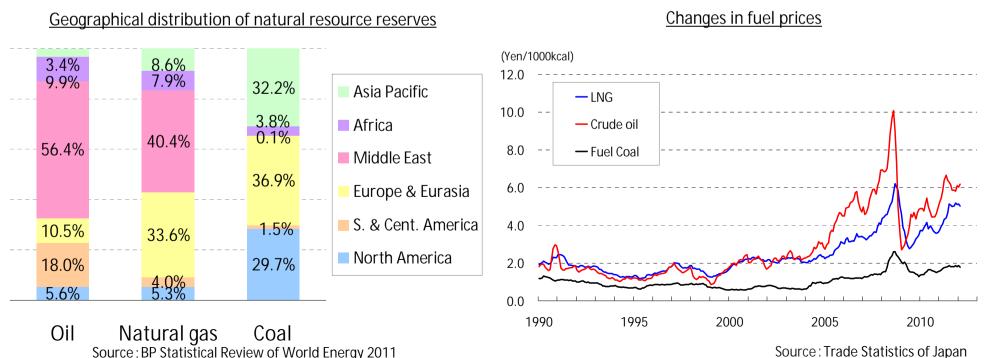
Start of operation: To Be Determined





# Contributing to Stable Supply through Facility Formation Coal-fired Thermal Power (1)

- Secure continuing role of coal-fired thermal power as basic supply capacity
  - Coal is relatively inexpensive, widely distributed or available in countries worldwide, and is superior in terms of both cost effectiveness and supply stability.
  - In measures to combat global warming, we will promote lower CO<sub>2</sub> emissions through improvement in coal efficiency and promotion of biomass co-combustion.
  - At the same time, global supply and demand for coal are expected to tighten in the medium to long term.
     By strengthening our strategic participation in the coal value chain, we will secure ongoing competitiveness in both the stable supply and economic efficiency of coal-fired thermal power.





# Contributing to Stable Supply through Facility Formation Coal-fired Thermal Power (2)

- Contribute to stable supply by strengthening base supply capacity through development of coal-fired thermal power
  - Replacement of Takehara thermal power plant
    - Units No.1 (250MW) and No. 2 (350MW) at Takehara Thermal Power Plant (Takehara City, Hiroshima Prefecture) are to be replaced by new Unit No.1 (600MW), using cutting edge technology. Aiming for a start-up date of FY 2020, we have already submitted an environmental impact assessment method report to jurisdictional authorities.
    - In addition to efforts to reduce the environmental burden by introducing the most advanced technologies, we will realize lower carbon generation through improvement in energy utilization efficiency.

| Unit               | No.1  | No.2  | No.3  |
|--------------------|-------|-------|-------|
| Output             | 250MW | 350MW | 700MW |
| Start of operation | 1967  | 1974  | 1983  |

New unit No.1 (600MW)

Environmental assessment : Dec. 2012- (for approx. 3.5 year)

Start of construction : FY2014 (planned) Start of operation : FY2020 (planned)



Takehara Thermal Power Plant

 Following on from Takehara new Unit No.1, we will pursue the possibilities of building new, or upgrading existing, coal-fired thermal power facilities.



# Contributing to Stable Supply Through Facility Formation Interconnecting Lines

- J-POWER contributes to the wide-area operation of Japan's entire electric power system.
  - Track record in building, maintaining, and operating wide-area interconnecting facilities (Kitahon HVDC Link, Honshi Interconnecting Line, Anan-Kihoku HVDC Trunk Line, and Kanmon Interconnecting Line) as well as the Sakuma Frequency Converter Station, among others.
  - HVDC transmission/transforming technology, cross-channel technology
- Policy discussions for enhancing interconnecting lines
  - To enable flexible interconnection among regions and improve reliability when accidents occur
  - To increase coordination capacity through the utilization of transmission lines for mass introduction of renewable energy
  - To stimulate nationwide trading of electric power

In response to moves toward policy needs in areas such as improvement in supply reliability and the introduction of renewable energy, J-POWER will capitalize on its extensive past experience and technological know-how to contribute to the enhancement and operation of interconnecting facilities.



# Responding to Global Environmental Issues Renewable Energy

## Actively Pursue Renewable Energy

#### -Wind Power

- Promote steady progress in new development through continual sourcing of suitable sites with good wind conditions
- Improve plant operating efficiency through the centralization of specialist know-how and efforts to speed up responses by integrating project companies and establishing a company dedicated to operation and maintenance.
- Engage in initiatives to promote commercial viability of ocean-based wind power.

#### -Biomass Co-combustion

• Engage in ongoing initiatives in the steady introduction of biomass cocombustion at coal-fired power plants by expanding the biomass fuel generation business using sewage sludge, etc.

#### -Geothermal

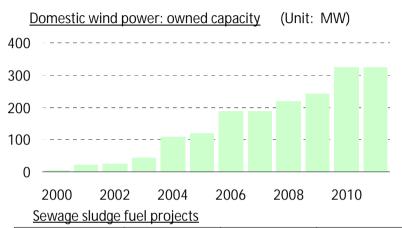
• Move ahead on initiatives in new locations, in addition to the Yuzawa geothermal project, which followed the Onikobe geothermal power plant.

### -Initiatives in Hydroelectric Power

• Promote initiatives in constructing the Isawa No. 1 Power Plant and increasing output through full upgrade of the main equipment for the Tagokura Power Plant.



Construction of the Isawa No. 1 Power Plant In February 2011 we began construction of the Isawa No. 1 Power Plant (14.2MW output) on the right bank directly below the Isawa Dam, which is currently being built by the Ministry of Land, Infrastructure, and Transport in Oshu City, Iwate Prefecture (Designated multi-purpose dam), to take advantage of the dam.



|                                   | Hiroshima             | Kumamoto              | Osaka                 |
|-----------------------------------|-----------------------|-----------------------|-----------------------|
| Processing capacity*              | Approx.               | Approx.               | Approx.               |
|                                   | 28kt/year             | 16kt/year             | 49kt/year             |
| Fuel<br>manufacturing<br>capacity | Approx.<br>4.5kt/year | Approx.<br>2.3kt/year | Approx.<br>8.6kt/year |
| Project period                    | 20 years              | 20 years              | 20 years              |
|                                   | from 2012             | from 2013             | from 2014             |

<sup>\*</sup>Dewatered sludge

Yuzawa geothermal project



**Exploratory Well Drilling** 



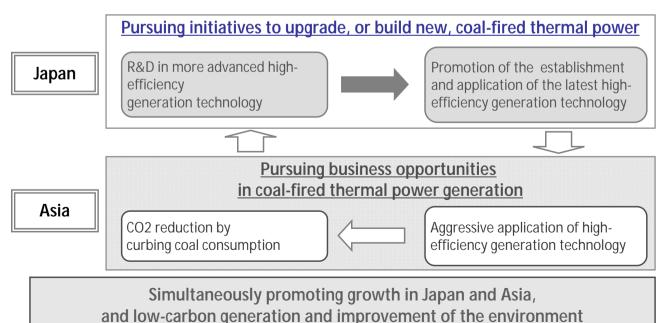
Venting Test



## Responding to Global Environmental Issues

# Increasing Efficiency of Coal-fired Thermal Power and its Global Deployment

- Initiatives Aimed at Achieving High Efficiency
  - Replace the existing Takehara No. 1 and No. 2 units with the latest technology. The goal is to commence operation in FY 2020.
  - Concentrate efforts on the development of oxygen-blown integrated coal gasification combined cycle technology (IGCC and IGFC\*). The goal is to begin a demonstration test in FY2016.
- Global Deployment of Environmentally Friendly Technology
  - Contribute to global low-carbon power generation and the reduction in global energy consumption through the transfer of high-efficiency coal-fired power generation technology to developing countries mainly in Asia.



Oxygen-blown Integrated Coal Gasification Combined Cycle Power Generation (Osaki CoolGen Corp.)

- ✓ Output: 170MW-class
- ✓ Project Phases (tentative):
   March 2013: Start of construction
   March 2017: Start of demonstration test

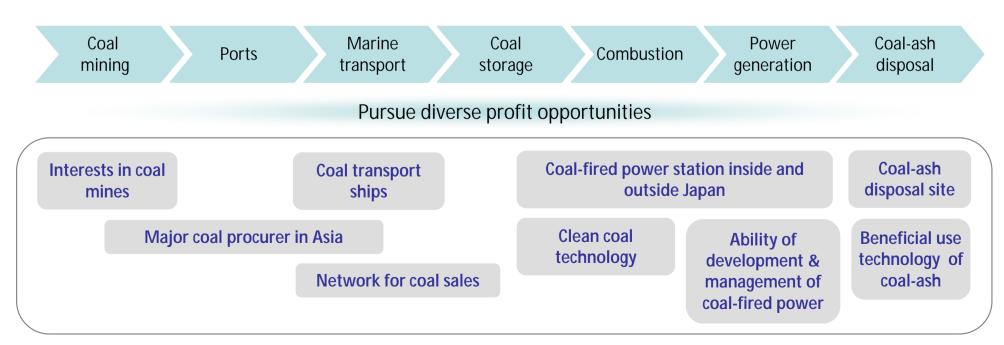




## Initiatives in the Coal Value Chain

- Global coal supplies will tighten over the medium to long-term.
- Expand strategic contributions to the coal value chain:
  - Expand strategic contributions to the entire coal value chain rather than stopping with the "coal to electric power" energy conversion, and pursue diverse profit opportunities including coal sales to others.
- Strive to increase diverse profits for the value chain as a whole while simultaneously ensuring sustainable economics and the stability in supply that coal provides.

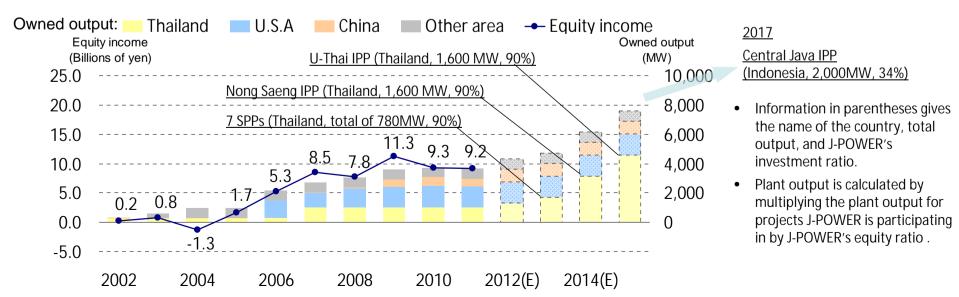
## <u>J-POWER's initiative in coal value chain</u>





## Initiatives in Overseas Electric Power Generation Business

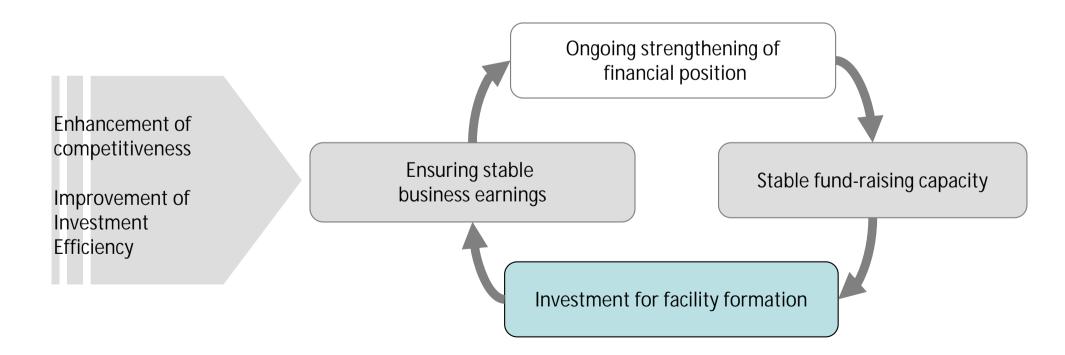
- Currently 29 overseas plants in 7 countries and regions in operation with owned output of approximately 3,600MW
- Firm commitment to large-scale projects currently under development
  - We have a total of 4,600 MW of owned output in Thailand and are the 3rd largest power supplier in the country.
    - Multiple projects under development in Thailand (2 IPPs: 1,600MW x 2 + 7 SPPs: total of 780MW)
  - We are moving ahead with development of our first greenfield coal project in Indonesia, and we are establishing a strong position in the Asian market.
    - Central Java Project (2,000MW)
- Owned output to rise to approximately 8,000MW by 2017, making overseas projects our major business on a par with our domestic business
- Following on from our achievements in projects in Thailand and Central Java, we will focus on rapidly growing countries in Asia for further expand our overseas business.





## Promoting J-POWER's Financial Strategy

- Realize a financial strategy in line with our plans for development
  - Uncertain environment for procuring funds, and increase investment in facility formation
  - Steady strengthening of our financial position will be even more critical in the future.
    - Redouble efforts to improve competitiveness and efficiency in investment.
    - Strive to continually improve shareholders' equity, maintain and strengthen consistent fundraising capacity despite uncertainty and increasing severity of the business environment.





## Initiatives for Enhancing Competitiveness

- Using full privatization in 2004 as leverage, we have simultaneously pursued initiatives to increase our competitiveness and aggressively expanded our business areas.
- As major changes take place in the domestic electric power business, we will continue efforts to strengthen our business base and cost competitiveness to achieve sustainable growth.

## Strengthen Cost Competitiveness

 Review the cost structure for the electric business at Group level
 Optimize and enhance facility maintenance based on facility age and high operating rates.

Centralize procurement, and diversify procurement methods.

Expand operations. Promote and apply technological development
 Expand business scope; diversify the business model; enhance the coal value chain.

## Strengthen Human Resources and the Organizational Framework

- Maintain sustainable and strong Human Resources
   Diversify recruiting methods, and promote skills development and utilization of older workers to form a strong foundation of outstanding, independent human resources.
- Improve organizational efficiency
   Clarify division of work duties and increase delegation of authority.

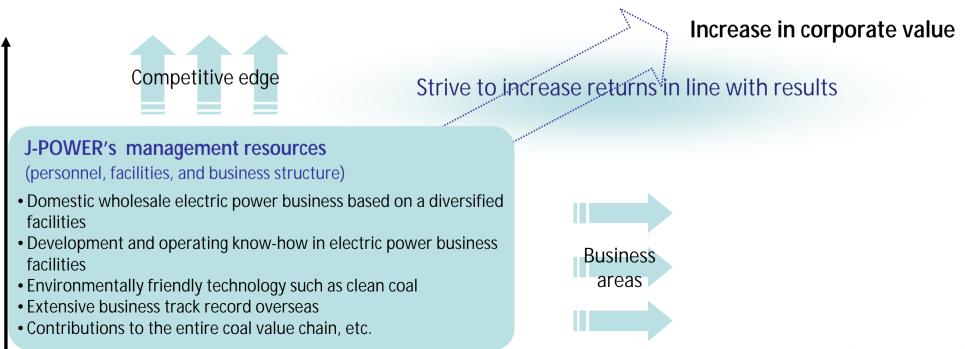
## Strengthen the Risk Management System

- Put systematic disaster prevention measures into place (review the master plan for disaster prevention)
- Reinforce crisis management functions by reviewing disaster readiness drills and training.
- •Ensure compliance and activities to improve security throughout the Group
- •Strengthen corporate governance.



## Increasing Corporate Value & Shareholder Returns

- A prominent characteristic of our business is our investment in power generation plants and other infrastructure, which we operate over a long period of time to recoup our investment.
  - Domestic wholesale electric power business based on diverse facilities
  - Active pursuit of diversification in business areas
  - Expansion of global business fields
- In keeping with this characteristic of our business, we will endeavor to sustainably enhance corporate value and increase returns to shareholders through business results generated over the long-term.





## J-POWER's Mission

We will meet people's needs for energy without fail, and play our part for the sustainable development of Japan and the rest of the world.

- The energy industry in Japan stands at the center of a major shift in paradigms, occasioned by the major disaster that occurred in March last year.
- As a company at the center of these changes, the J-POWER Group is determined to further accelerate our initiatives to meet the challenge of fulfilling our universal mission.



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