

# Business Operations That Fulfill Social Responsibility



The J-POWER Group undertakes business operations that fulfill our corporate social responsibility (CSR) by continuously reinforcing the foundations of business operations including management and human resources and efforts to achieve mutual benefit with local communities and society as well as environmental management in accordance with our corporate principle of contributing to the sustainable development of Japan and the rest of the world in response to changes in social conditions and the business environment.

## Foundations of Business Operations

### Corporate Governance

#### Officers and Management Council System

At J-POWER, members of the board focus on supervisory functions while executive directors, executive managing officers, and executive officers perform executive functions. In addition, an independent director participates in management decision-making from outside directors based on specialized knowledge and experience. Under the Management Council System, J-POWER established an Executive Committee, which deliberates on matters that are of importance to the company as a whole, and a Management Executing Committee, which handles important matters relating to specific aspects of business execution. The system facilitates appropriate and timely decision-making and efficient corporate operations.

#### System of Audits and Supervision

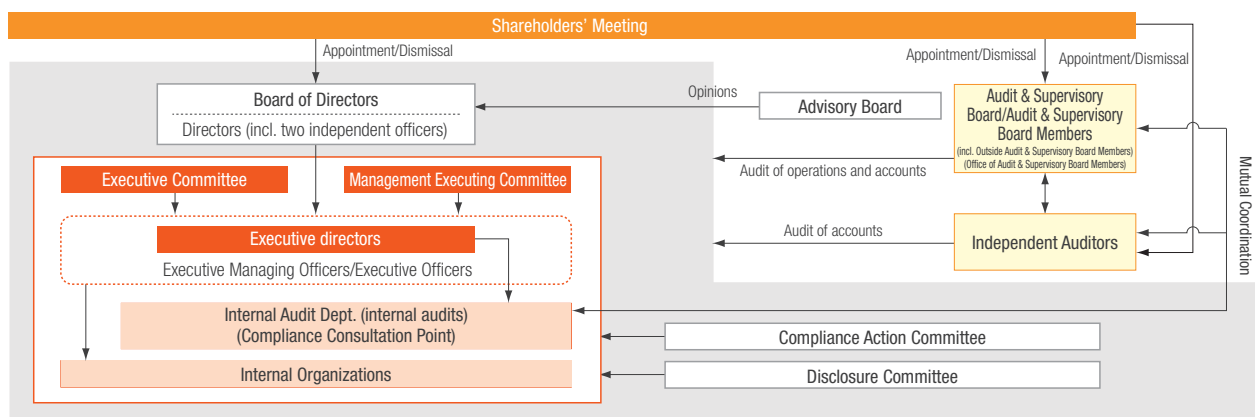
J-POWER's Audit & Supervisory Board comprises five Audit & Supervisory Board Members, of which three are Outside Audit &

Supervisory Board Members including one fulltime member, enhancing the oversight functions of the Audit & Supervisory Board. Separate from the audits conducted by the corporate auditors, the Internal Audit Department, which is independent from J-POWER's other internal organizations, conducts internal audits, and individual organizations also perform periodic voluntary audits.

#### Group Internal Controls

To implement internal controls in accordance with the Financial Instruments and Exchange Act, J-POWER creates internal regulations to ensure the reliability of financial reporting and operates internal control systems. In FY 2014, we confirmed the status of development of internal control systems and their operational status, determined that they are effective, and reported the results to the Prime Minister in the form of an internal control report.

J-POWER Group's Corporate Governance Framework (as of the end of July 2015)



## Information Disclosures

With regard to the outside disclosure of information, the Disclosure Committee chaired by the president makes active, fair, and transparent disclosures of corporate information.

The J-POWER Advisory Board was established in September 2008 to receive advice and proposals concerning corporate management from outside experts in a wide range of fields.

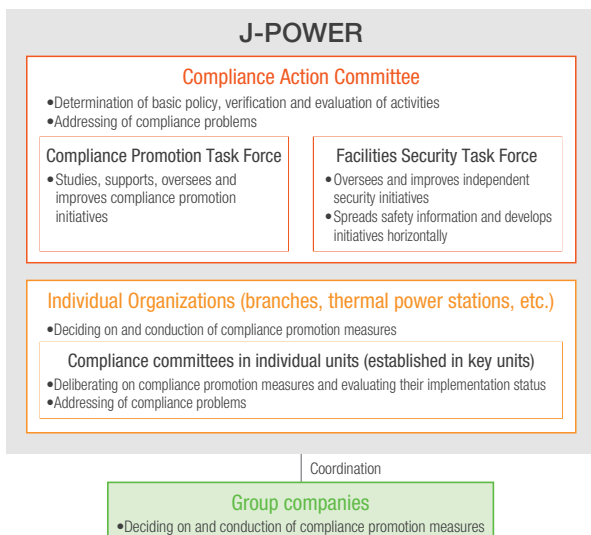
## Compliance Initiatives

### Implementation Measures

In accordance with its corporate philosophy, J-POWER adopted Corporate Conduct Rules and a Compliance Code. To ensure compliance, J-POWER established the Compliance Action Committee and other organizations shown below and takes Group-wide action with the participation of Group companies.

We also established compliance consultation hotlines staffed by internal and external experts to prevent and quickly identify violations of laws and regulations and breaches of corporate ethics. To raise awareness of compliance, we conduct training and hold lectures on compliance topics, create opportunities for officers and employees to exchange views and for personnel responsible for compliance matters to exchange information, and conduct compliance-related questionnaires, e-learning, and other programs.

### J-POWER Group Compliance Promotion Structures



## Information Security

### Basic Policy

As advanced computerization and the use of information technology by businesses advances, instances of cyber terrorism and attacks targeting specific companies have increased, making information security more important than ever. The J-POWER Group, a key infrastructure business responsible for stable electric supplies and construction of nuclear power plants in Japan and other countries, must ensure higher levels of information security.

J-POWER adopted a Basic Policy on Information Security and publicizes Group-wide information security measures on its website.

### Specific Measures

Each year, we formulate and implement an annual plan setting forth specific information security measures based on the status of activities in the preceding year. The main measures are described on the J-POWER website.

To rapidly and appropriately respond to IT harm to important systems relating to electric power operations, we are reinforcing collaborative systems with relevant government ministries and agencies and the electric power industry as a whole and contributing to the IT aspects of stable electric power supplies. With regard to construction of the Ohma Nuclear Power Plant, IT divisions are working with nuclear power divisions to implement robust security measures.



**Basic Policy on Information Security**  
[http://www.jpowers.co.jp/english/privacy/privacy\\_003\\_e.html](http://www.jpowers.co.jp/english/privacy/privacy_003_e.html)



**Information Security Countermeasures**  
[http://www.jpowers.co.jp/english/privacy/privacy\\_004\\_e.html](http://www.jpowers.co.jp/english/privacy/privacy_004_e.html)

## Emergency Management

### Crisis Management Measures

The J-POWER Group recognizes a variety of events as emergencies, and as an electricity wholesaler, the greatest emergency would be an impairment to the production and distribution of electricity, our product, that prevented the supply of electric power.

We take the following measures to prevent such an occurrence.

- (1) Installation of appropriate facilities and development of disaster recovery systems in preparation for natural disasters including earthquakes, typhoons, lightning strikes, and tsunamis.
- (2) Enhanced security to prevent malicious and violent conduct.
- (3) Ongoing enhancement of facility inspections to prevent major impediments to electric power supply and appropriate repairs and upgrades in response to deterioration, decline of function, and breakdowns.
- (4) Preparation of action plans for responding to pandemics and other events that could have a major impact on business operations.

The J-POWER Group has established the following systems to accurately forecast and prevent accidents, facility incidents, and other crisis events and to respond promptly and appropriately if such events occur and manage them.

### Emergency Management Systems

#### (1) Emergency Response Team

A permanent organization at the J-POWER Headquarters. The Team oversees immediate responses and emergency management operations in the event that an emergency occurs.

#### (2) Emergency managers and emergency duty personnel

Emergency managers and personnel are appointed at the Headquarters and Regional Headquarters with relevant local units to take first-response action and report information.

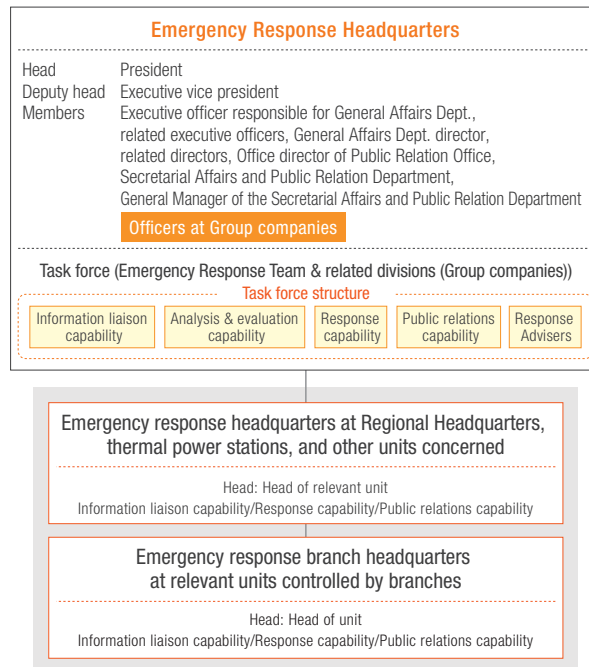
#### (3) Emergency Response Headquarters and branches

When an emergency is predicted to occur or occurs and the seriousness warrants emergency countermeasures, the Emergency Response Headquarters (and branches) are established.



A group discussion during disaster preparedness training

### Emergency Countermeasures (after establishing Emergency Response Headquarters)



### Disaster Response and Business Continuity Measures

As an electric power supplier with responsibility for vital lifelines, J-POWER has been designated a designated public institution under the Disaster Countermeasures Basic Act.

To carry this out, we actively implement physical measures in anticipation of a large-scale natural disaster as well as non-physical measures including the formulation of various rules relating to the occurrence of accidents and establishing systematic disaster response systems that cover the entire organization from the head office to local bodies. We are also reinforcing disaster response systems to ensure business continuity even in the event of damage that exceeds expectations.

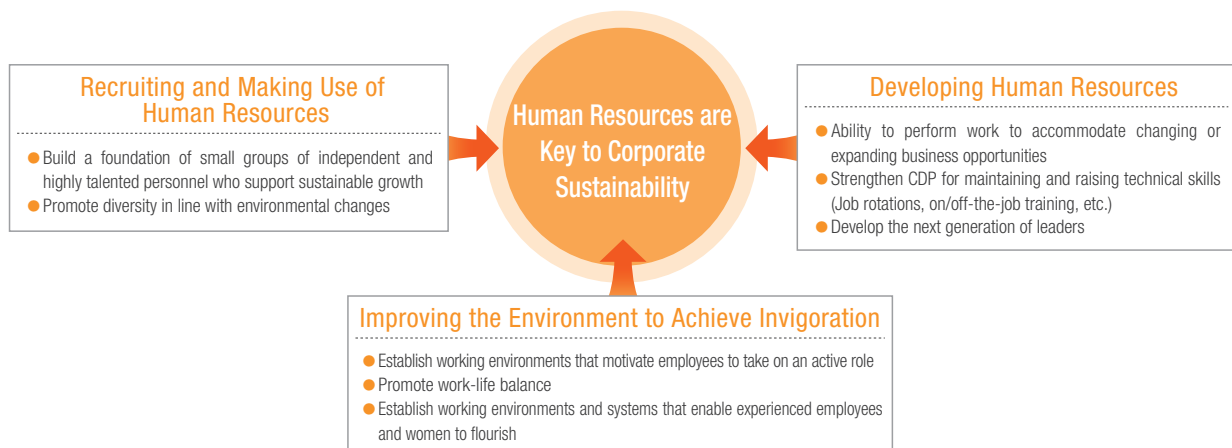
With regard to business continuity, considering the importance of immediately shifting to an emergency structure following the occurrence of an emergency and undertaking recovery operations, we have determined the minimum necessary actions to maintain business during an emergency. We periodically conduct disaster response training and confirm the effectiveness of manuals and the status of emergency stores. In accordance with Tokyo Metropolitan ordinances, the J-POWER Headquarters is preparing for a Tokyo Inland Earthquake by increasing its stores of emergency foodstuffs and taking other measures.

## Recruiting and Developing Human Resources and Creating Dynamic Workplaces

The J-POWER Group strives to provide safe, comfortable working environments for every one of our employees. We consider human resources to be valuable assets upholding our fundamental sustainability as a corporation. At the same time, we endeavor to create a corporate culture that respects the character and individuality of our employees and makes them feel it worthwhile to constantly take on new challenges.

The J-POWER Group positions human resource recruitment and development as crucial policy measures for the company's sustainable growth. We are reinforcing the foundation for career development, with a focus on CDP (the Career Development Program), establishing workplace environments and systems that make advantageous use of diversity, and promoting work-life balance in order to improve individual skills and workforce productivity.

### Developing Group Human Resources and Creating Dynamic Workplaces



### Recruiting and Making Use of Human Resources

#### The J-POWER Group's Conceptual Approach to Human Resource Recruitment

The J-POWER Group approach is to conduct stable hiring in the interest of sustainable growth, and also to seek human resources from people in a wide range of fields and age groups to whom we provide opportunities to take an active part.

With regard to personnel hiring and utilization, the J-POWER Compliance Code stipulates respect for individuality and human rights and prohibits discrimination. We are also conducting awareness-raising on these matters in human rights training. We are currently creating systems and working environments that enable our diverse personnel to fully demonstrate their capabilities, without regard for gender, age or other such distinctions.

#### Employment of New Graduates (J-POWER)

	FY 2013	FY 2014	FY 2015
Men	67	59	<b>60</b>
Women	9	5	<b>2</b>
Total	76	64	<b>62</b>

#### Measures to Promote Diversity

As a measure to further increase the hiring of elderly people, we have reviewed the continuing employment system, which is a system for employment of people who have reached retirement age, to bring it in line with the amendment of the Law for the Stabilization of Employment of the Aged in April 2013. In combination with the personnel registration system, which introduces job opportunities in the Group, we will harness the experience, technology, and motivation to work possessed by older people

in the Group and make use of it for the sustained growth of our business. As of the end of March 2015, 93 employees (J-POWER) had taken advantage of the continuing employment system and related programs.

The employment rate for persons with disabilities was 2.21%, which is higher than the statutory employment rate, as of June 1, 2015. A "consultation desk to provide employment assistance and information on working environments to employees with disabilities" having been established, we will continue to take measures to enhance working environments and promote understanding through such initiatives as making office buildings barrier-free. In the future, we will continue striving to raise the employment ratio.

#### Voice

#### Aiming to Build a Workplace Where Diverse Human Resources Can Take Continuously Active Parts

The J-POWER Group operates in a changing business environment, and in order to make maximum use of the human resources in future business operations to create new corporate value and grow, we are striving to create workplaces and an organizational atmosphere where a diverse workforce that includes recently hired employees to veterans with various individual attributes can work with enthusiasm and display their skills as a single team.

To support worksite on-the-job training, which is the key to human resource development, we are working to enhance training for leaders while pursuing effective collaboration between on-the-job and off-the-job training including updating training programs based on changes in the workforce age composition and work styles.



Human Resource Development Office,  
Personnel and Employee Relations  
Department

Yuichirou Horiike

## Human Resources Development

### Human Resource Development Programs

Our aim in the J-POWER Group is to develop all our employees into independent, talented, professional human resources who contribute to the organization with a multiplicity of specialized knowledge and a broad perspective. We are adopting the Career Development Program (CDP) as a measure to achieve that aim.

#### CDP Overview



### Evaluation and Assessment System

The J-POWER Group established an evaluation system in 2004 that is based upon a goal management system. Through initiatives aimed at achievement of specific goals, the system encourages every employee to perform work autonomously, heighten his or her achievement motivation, and improve his or her work performance. We also seek to realize our organizational strategies by having employees engage in mutual collaborative action that is based upon organizational goals.

### Various Training Programs

The J-POWER Group is conducting various kinds of training as Off-JT, including level-specific training, career training, objective-specific training, and divisional training. These programs are conducted to develop human resources in line with CDP. We have also established training facilities for the technical divisions (civil engineering and architectural engineering divisions; hydroelectric power, transmission and substation, and telecommunications divisions; and thermal power divisions). Systematic development for engineers is conducted at these facilities.

### Helping Employees Voluntarily Develop Their Careers and Abilities

J-POWER is introducing a self-assessment system for employees to convey their career planning hopes and intentions to the company once a year and discuss them with their immediate superiors. We are also introducing a voluntary training incentive program and an academic training program to support employees developing their abilities on their own initiative.



A level-specific training session for employees in their fifth year

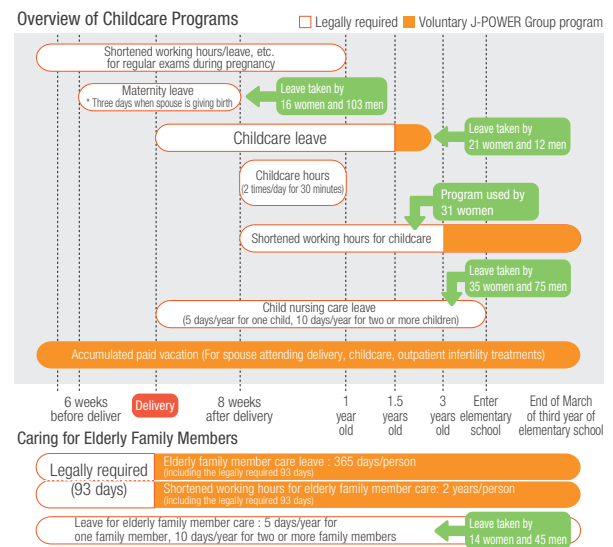
## Developing Environments to Create Dynamic Workplaces

### Toward Realization of a Work-Life Balance

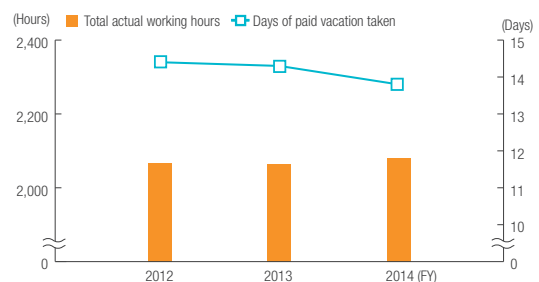
We are actively developing working environments and cultures that enable every employee to autonomously enhance their work and personal life and focus on highly creative work.

We are taking measures to help employees achieve a good work-life balance including enhancement of childcare and nursing care support programs, encouraging their use and normalizing working hours.

### Overview of the Childcare and Nursing Care Support Programs and Results in FY 2014 (J-POWER Group)



### Change in Total Actual Working Hours and Paid Vacation Taken (J-POWER)



### "Kurumin" Mark of Next-Generation Certification

Following certification in 2010 as a corporation that actively supports measures for developing the next generation, J-POWER again received the Kurumin mark of certification in 2013.

We will continue our efforts to establish even better working environments that enable each employee to maintain a balance between their work and private life and to provide meaningful and fulfilling work.



"Kurumin"

### Consultation Desk

We are working to build a work-friendly environment in the workplace by establishing a consultation desk where employees can discuss working hours, the workplace environment, sexual harassment, and power harassment.

We have also developed in-house regulations, manuals, and other such resources related to harassment, and we are implementing education for increased awareness in level-specific training courses, posters, and other such measures to resolve problems as well as to prevent them.

Our goal is a working environment where human rights and individuality are respected and where diverse personnel are completely at ease in going about their work.

Voice

#### Childcare Support Program Users

We took childcare leave in order to give birth to and take care of our children.

During the leave, we were able to observe our children's growth while maintaining close and frequent contact with them, making the most of every day.

We planned to return to work, so even during the leave, we heard about goings-on at the workplace from colleagues and received advice from workers who had previously taken childcare leave about preparations for placing our children in childcare and maintaining a balance between work, housework, and childcare after returning to work. Thanks to the support, we were able to easily adjust to the workplace after resuming work.

Even now, we make use of the reduced working hours tailored to our individual working styles and are able to maintain a balance between work and life.

JP Business Service Corporation  
JP Business Promotion Office

**Miyuki Fukunaga** (right)  
**Erika Furushima** (left)



## Safety and Health Management

### J-POWER Group's Health and Safety Measures

The J-POWER Group's health and safety measures are intended to create safe and healthy workplaces that provide meaningful work as the foundation of our business activities. J-POWER and Group companies each have roles and responsibilities and collaborate on implementing health and safety management to prevent workplace accidents and maintain and improve the health of our employees.

#### Measures Pursuant to the Group Occupational Safety and Health Plan

The J-POWER Group established a Group Occupational Safety and Health Plan that organizes common issues that the Group needs to address and set subsequent priority topics. Based on the plan, individual Group companies formulate their own occupational health and safety plans and take measures in cooperation with the Group.

### Safety Priorities

- (1) Promoted Communications through Collaboration among Personnel at Different Worksites and Offices
- (2) Prevention of occupational accidents
- (3) Prevent traffic accidents resulting in injury or death and other commuting-related accidents

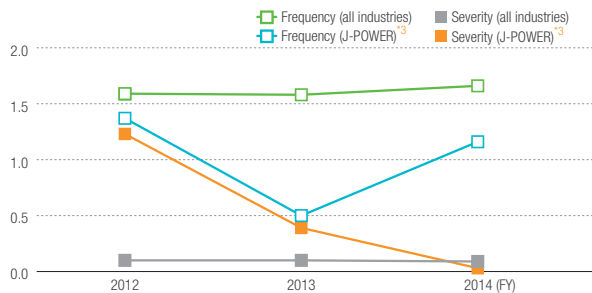
### Health Issues

- (1) Promote mental and physical health

### Initiatives for the Prevention of Workplace Accidents

In recent years, many occupational accidents have been work accidents relating to construction and other work, and consequently, it is important to conduct unified safety activities that include cooperating companies. As a result, we are taking measures to invigorate communications throughout the workplace and raise safety awareness while taking ongoing measures to prevent the occurrence of all types of occupational accidents and traffic accidents including repetitive-pattern accidents.

#### Accident Frequency<sup>\*1</sup> and Severity<sup>\*2</sup>



**\*1 Frequency:**

Index of the frequency of accident occurrence. (Number of deaths or injuries caused by occupational accidents per one million working hours. Covers accidents causing loss of one day or more of work. Does not include accidents of employees on temporary transfer.)

**\*2 Severity:**

Index of accident severity. (Number of days of work lost per 1,000 working hours. Does not include accidents of employees on temporary transfer.)

**\*3** Accidents involving J-POWER employees and accidents involving contractors (principal contractors and subcontractors) doing construction and other work ordered by J-POWER

#### Incidence of workplace accidents<sup>\*3</sup> ★

	FY2012	FY2013	FY2014
Deaths	3	1	—
Serious Injury	13	2	<b>9</b>
Minor Injury	8	7	<b>12</b>

### Maintaining the Health of Employees and Their Families

To maintain and improve the health of employees and their families, we encourage them to receive health checks, health maintenance guidance, and infectious disease prevention measures. In addition, we place priority on the prevention of lifestyle-related disease and mental health disorders and conduct special health checks and designated health guidance as well as THP activities\* to support good physical and mental health.

**\* THP Activities:**

Activities aimed at total health, both physical and mental, based on Ministry of Health, Labour and Welfare guidelines on Total Health Promotion Plans.

## Coexistence with the Community and Society

The J-POWER Group rolls out business based on harmonious coexistence with local communities and society as an electric power company with power generation and power transmission and substation facilities throughout Japan and overseas. Going forward, we will perform business that centers on “Communication with society” and “Contribution to society” as advocated in the J-POWER Corporate Conduct Rules as a means to drive advancement in local communities and society.

### Communication with Society

The J-POWER Group implements fair and transparent public relations (PR) activities and information disclosure in order to secure good lines of communication with many stakeholders in different communities and in society. We are committed to making pinpoint response when it comes to PR in light of the characteristics of the stakeholders and our relationship with them, including local residents, shareholders, investors and society at large. We also promote stakeholder dialog, cognizant of the importance of two-way communication. In terms of information disclosure, we distribute information through our PR activities and respond to inquiries while also disclosing IR information via the Disclosure Committee.

#### PR and IR Activities

##### PR Activities

PR activities aim to enhance awareness of J-POWER as widely as possible, beginning with people in local communities. With this in mind, our basic policy is to distribute corporate information accurately and in a timely manner through all of our business activities and respond to inquiries concerning J-POWER sincerely and respectfully.

With regard to reporting, we strive to distribute appropriate information at appropriate timing, including through press releases and notifications. We also utilize TV commercials and magazines for advertising and do our best to gain broad understanding of our business.

J-POWER provides the opportunity for face-to-face contact with stakeholders as well as through events that include tours of power stations by each business unit, so that stakeholders can track our business activities with peace of mind.

##### IR Activities for Investors and Individual Shareholders

For institutional investors, we hold presentation briefings related to management plans and financial results around twice a year and actively convene meetings in Japan and overseas as the need arises. For individual investors, we hold corporate presentation briefings several times a year and provide opportunities for them to talk directly with J-POWER members, including management.

For individual shareholders, we issue a biannual shareholder newsletter (Kabunushi Tsushin) and actively disclose information on management activities and the overall condition of the company by giving tours of our power stations and other facilities twice a year.

We're working to enhance information disclosures through these

types of communications activities on our website and by publishing annual reports and other documents. We also use communications tools such as Navi-Map and dam cards to conduct public relations in an accessible and user-friendly manner.

#### Information Disclosure

J-POWER endeavors to disseminate appropriate information on its PR and IR activities in a timely manner to stakeholders through press releases and notifications on its website.

In particular, we comply with all pertinent laws and regulations such as the Financial Instruments and Exchange Act and securities listing regulations for information related to the J-POWER Group business, operations or results that may have a significant impact on the investment decisions of stakeholders. We also formulated internal disclosure regulations for IR information and instituted a basic policy to actively disclose information in a fair and transparent manner based on the intentions of the Corporate Governance Code.

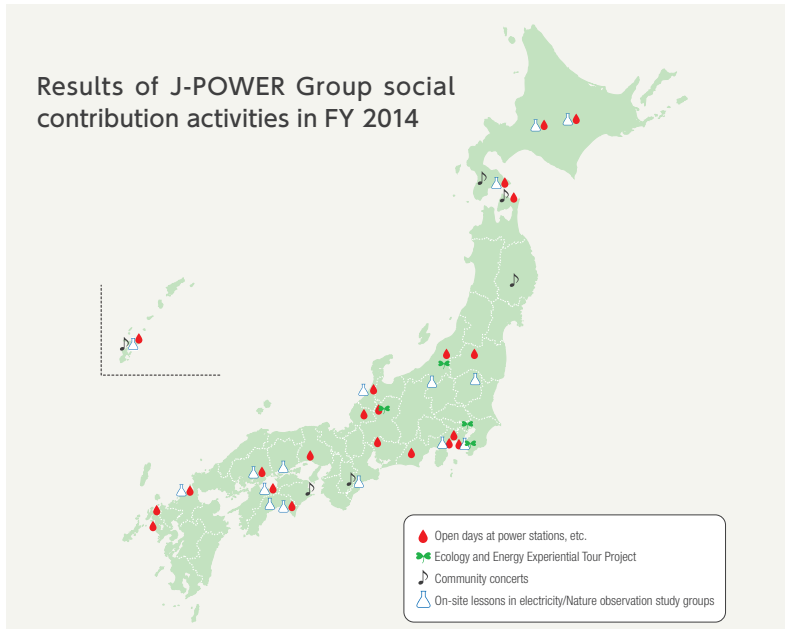
J-POWER established the Disclosure Committee, chaired by the president, to investigate and set up a system for disclosing IR information and also to examine and make judgments on information that ought to be disclosed with the aim of establishing a reputation in the market and gaining the trust of society.

## Contribution to the Community and Society

### J-POWER Group Approach to Social Contribution Activities

“We pursue harmony with the environment, and thrive in the trust of communities where we live and work. We regard profits as the source of our growth, and share the fruits with the society.” Under this corporate philosophy, the J-POWER Group has long engaged in social contribution activities as a member of society to help society develop soundly and sustainably. Our activities largely fall into two categories: community involvement and harmonizing energy supply with the environment.

The J-POWER Group places high value on open communication with local community members and people working to harmonize energy supply with the environment and on sharing knowledge and learning with one another. We will steadily engage in activities on this basis as well as support the volunteer activities of our employees.



#### Okinawa

##### Power Station Tours

In the J-POWER Group Ishikawa district, power station tours are conducted at the Ishikawa Coal Thermal Power Station and the Okinawa Yanbaru Seawater Pumped Storage Power Station in conjunction with Science and Technology Week. By conducting facility tours at these and other power stations, we are deepening understanding of the J-POWER Group's business and enhancing our social presence as a member of the community through contact between station employees and local residents.



A J-POWER employee explains the roles of the central control room

#### Aichi

##### Local Cleanup Program

An ongoing local cleanup program is conducted in the J-POWER Group Kasugai district. J-POWER employees meticulously pick up even small items of rubbish that have been discarded along the roads in the vicinity of the Nagoya Power Administration Office.

Similar cleanup activities are conducted at many other power stations and business sites with a sense of gratitude, maintaining programs that can be conducted as a member of the local community.



Employees carefully sort collected waste while encouraging one another

#### Nara

##### Community concerts

We hold concerts, primarily of classical music, performed by professional musicians around Japan, to convey our constant appreciation to everyone who lives in the areas where our power plants are located. More than 100 such concerts have been held since they began in 1992. In recent years, we have been holding many mini-concerts at schools and social welfare institutions.



A community concert performance



## Community Involvement

The corporate activities of the J-POWER Group are supported by power station personnel and other members of local communities. Business sites in each region strive to be good corporate citizens and a useful presence in the community and society so that each employee can be a valued resident of their community.

By conducting activities that are trusted and familiar to local residents, the J-POWER Group seeks to live in harmony with communities and grow with society.

### Hokkaido

#### “Water Circulation” Power Station Tours

The Katsurazawa Power Station in Hokkaido conducts “water circulation” power station tours of facilities related to local water sources. The tours are a popular annual event. There are few opportunities for contact with local residents, but these tours are used to maximum effect with the aim of increasing understanding of the J-POWER Group’s mission.



A J-POWER employee provides a detailed explanation to tour participants

### Kanagawa

#### Kanagawa Marathon Water Distribution Volunteers

The Kanagawa Marathon consists of a half-marathon and a 10 kilometers race in the Isogo Ward of Yokohama City. Businesses in the ward sponsor the start and finish lines and provide volunteers who distribute water to the runners. The Isogo Thermal Power Station is located on the course of the half-marathon, in which some 7,500 runners competed. The power station cooperated with the race in various ways including having station personnel distribute water to runners and cheer them on, and some employees even competed in the race.



Volunteers loosened the caps on as many of the 1,800 water bottles as possible

## Harmonizing Energy Supply with the Environment

In order for people to lead enriching lives, both energy, which supports enriching lives, and a better environment are needed. Leveraging environmental knowledge acquired through our business activities to date, we partner with people seeking to harmonize energy supply with the environment and conduct activities to raise awareness and develop technologies for energy and the environment in an effort to facilitate the sustainable development of Japan and the rest of the world.

### Public Relation Department

#### Ecology and Energy Café

The Ecology and Energy Café provides opportunities to consider how energy and the environment concern oneself in a casual but serious manner based on topics proposed by guests. It provides a forum to learn about ecology and energy related topics and to consider what needs to be done in the future and what individuals can do.



Discussions are conducted based on respect for the opinions of all individuals who participate in the café

## For the Benefit of Broader Society

The J-POWER Group undertakes social contribution initiatives not just for the benefit of local communities, but also for the benefit of broader society and each region of the world where it operates.

Described below are some of the measures taken to support the future generations that will create the society of tomorrow. In addition to these programs, we will continue cooperating with volunteer activities targeting disaster areas including areas struck by the Great East Japan Earthquake as well as children suffering from malnutrition in various parts of the world, providing work training at power plants in Asia and support to persons affected by flooding.

### Personnel Office

## Internships

J-POWER, JPHYTEC Co., Ltd., and Jpec Co., Ltd. offered summer internships to science students in graduate school, university, or technical college. The internships provide experience in certain operations at power stations and other facilities with the aim of helping the interns' studies and support them in making future occupation choices. In FY 2014, 31 interns from various areas of Japan took up the challenge of practical training in the maintenance and operation of electric power facilities.



On the final day, presentations were given at the J-POWER Headquarters regarding the results of training in each region

### Public Relation Department

## Experimental Learning Project for Ecology and Energy: Review Committee Incentive Prize Won

The Experimental Learning Project for Ecology and Energy won the review committee incentive prize of the 2014 Youth Hands-On Activity Promotion Corporate Awards sponsored by the Ministry of Education, Culture, Sports, Science and Technology. The award was received for a J-POWER Group program that targets elementary, junior high, and high school students from among the Experimental Learning Project for Ecology and Energy that seek to achieve harmony between energy and the environment.

The educational effects of hands-on activities are significant, and they are gathering attention as a means for providing training on ways for society to survive. We hope to continue learning about energy and the environment with the younger generation by making use of corporate assets towards the creation of a sustainable society.



### Voice

#### We Participated in the Experimental Learning Project for Ecology and Energy!

Ruika Suzuki developed a new awareness by participating in the hands-on project: "I participated in the hydropower version, and discovered new things about the connections between energy and the environment by conducting experiments." Tsuyoshi Noguchi said, "I had the opportunity to talk with various participants, J-POWER employees and staff members of cooperating organizations, broadening my perspectives," and also gained new awareness through these interactions. Fumimasa Suetsugu commented, "I gained new motivation learning that even students have high levels of interest in the environment and energy." Kozue Ashida, who is studying the environment education at university, said, "I was inspired by this program, which makes us aware that energy is something that concerns us." Liao Yi-chi said, "Thanks to this workshop, I was able to gather information on J-POWER's social contributions for my master's thesis."

All of the participants made worthwhile observations. The J-POWER Group will continue to conduct these types of programs in the future.



From the left: Kozue Ashida, Azabu University; Tsuyoshi Noguchi, Shibaura Institute of Technology; Ruika Suzuki, Waseda University; Fumimasa Suetsugu, Yokohama National University; Liao Yi-chi, Rikkyo University

\* The participants wearing white coats are Public Relation Department staff members

# Environmental Management

Based on its corporate principle of achieving harmony between energy and the environment, the J-POWER Group undertakes environmental a sustainable society. To carry this out, we undertake various measures pursuant to the J-POWER Group Environmental Management Vision, a statement management levels while maintaining strict compliance with laws, regulations, and agreements from the perspective of ensuring transparency and trust.

## Corporate Target and FY 2014 Results

The Action Programs for the J-POWER Group Environmental Management Vision define Corporate Targets\*, which are mid-term targets that the Group

\* In addition to Group-wide Corporate Targets, business divisions and affiliates formulate their own targets tailored to their operations.

	Item	Target		
Efforts Relating to Global Environmental Issues	Reducing CO <sub>2</sub> Emissions from Power Generation and Promoting Technological Development	As an electric utility, in addition to continuing to contribute to the Environmental Action Plan by the Japanese Electric Utility Industry, looking towards 2020 we are working to provide a stable supply of energy and reduce CO <sub>2</sub> emissions in Japan and overseas by promoting the following measures.		
		● Work to replace aging coal-fired power stations with new facilities with higher efficiency at the world's highest levels.		
		● Promote mixed combustion of biomass fuels in coal-fired power stations (Effective exploitation of untapped resources).		
		● Contribute to the reduction of CO <sub>2</sub> emissions and technology transfer on a global scale by promoting the overseas expansion of coal-fired power using J-POWER's advanced, high-efficiency power generation technologies, in particular in the Asian region.		
		● Promote the development of higher-efficiency oxygen-blown integrated coal gasification combined-cycle (IGCC) technology through the realization of the Osaki CoolGen Project.		
		● Advance research and development in the area of CO <sub>2</sub> capture and storage (CCS) technologies through the implementation of the EAGLE Project, the Osaki CoolGen Project, and the Callide Oxyfuel Combustion Project in Australia.		
		● In relation to the Ohma Nuclear Power Plant Plan, do our utmost to ensure the construction of a safe and trusted nuclear facility, always appropriately incorporating the necessary measures for the realization of enhanced safety based on serious consideration of the accident at the Fukushima Daiichi Nuclear Power Station and following government and other guidelines, at the same time maintaining the approval of residents of the region in which the station is located.		
		● Build new hydroelectric power facilities, expand, upgrade and replace existing facilities, and expand the use of hydroelectric power.		
		● Significantly expand domestic wind power facilities and advance research and development towards the realization of ocean-based wind power generation technologies.		
			● Work to develop new geothermal power sites in Japan.	
	Item	Target	Target base-year performance, etc.	FY 2013 performance
Efforts Relating to Local Environmental Issues	● Maintain/improve thermal efficiency of thermal power stations [HHV (higher heating value)]	Maintain current level [about 40%] (FY 2008 and each FY thereafter)	FY 2008 40.1% (Reference: LHV*=41.1%)	40.3% (Reference: LHV = 41.4%)
	● Reduce SF6 emissions; increase recovery rate during inspection and retirement of equipment	Inspection: at least 97%; Retirement: at least 99% (FY 2008 and each FY thereafter)	FY 2008 Inspection: 99% Retirement: 99%	Inspection: 99% Retirement: 99%
	● Reduce SOx emissions per unit of electric power generated (point of generation, thermal power stations)	Maintain current level [about 0.2 g/kWh] (FY 2008 and each FY thereafter)	FY 2008 0.20g/kWh	0.18 g/kWh
	● Reduce NOx emissions per unit of electric power generated (point of generation, thermal power stations)	Maintain current level [about 0.5 g/kWh] (FY 2008 and each FY thereafter)	FY 2008 0.50g/kWh	0.52 g/kWh
	● Increase recycling rate for industrial waste	Maintain current level [about 97%] (FY 2011 and each FY thereafter)	—	98%
Ensuring Transparency and Reliability	● Protection of the Water Environment	Consider protection of river and ocean environments in business activities (FY 2013 and each FY thereafter)	—	Practices of consideration for protection of river and ocean environments
	● Protect biological diversity	Consider the protection of biological diversity in relation to business activities (FY 2011 and each FY thereafter)	—	Efforts to Preserve Biodiversity
	● Improvement of Environmental Management Level	Continuous improvement of EMSs (FY 2008 and each FY thereafter)	—	Consistent use of PDCA cycle



management intended to achieve improvements in both environmental considerations and economic value so that it can contribute to the development of internal and external Group initiatives, and strive to enhance the disclosure of information relating to environmental programs and environmental

as a whole is expected to work towards. As shown below, all of the items included in the Corporate Targets for FY 2014 were achieved.

Main results for FY 2014

	<ul style="list-style-type: none"> <li>Construction work proceeded under the Takehara Thermal Power Station Replacement Project. Environmental impact assessment procedures for the Takasago Thermal Power Station Replacement Project were started.</li> <li>Mixed combustion according to target fuels was conducted at the Matsuura Thermal Power Station, Takehara Thermal Power Station and Takasago Thermal Power Station.</li> </ul>
	<ul style="list-style-type: none"> <li>Preparatory measures for construction work conducted for the Central Java Project in Indonesia.</li> </ul>
	<ul style="list-style-type: none"> <li>With regard to IGCC and CCS technology research and development, pre-combustion CO<sub>2</sub> separation and recovery technology trials were conducted under the EAGLE Project and power plant construction was conducted to perform trials of the Osaki CoolGen Project. In addition, oxygen combustion tests and CO<sub>2</sub> storage tests were conducted under the Callide Oxyfuel Combustion Project in Australia.</li> </ul>
	<ul style="list-style-type: none"> <li>Measures to enhance safety were investigated under the Ohma Nuclear Power Plant Plan, an application for review of compliance with the new regulatory standards was submitted, and efforts were made to obtain the understanding and trust of local residents.</li> </ul>
	<ul style="list-style-type: none"> <li>To expand the use of hydroelectric power, operation of the Isawa No. 1 Power Station was started. In addition, construction of the Kuttari Power Station continued and construction of the new Konokidani Power Station began.</li> </ul>
	<ul style="list-style-type: none"> <li>With regard to land-based wind power, construction in the Ohma region was started. Also, trials of offshore wind power were conducted near Kitakyushu (a joint project with NEDO) and other activities were conducted.</li> </ul>
	<ul style="list-style-type: none"> <li>Environmental impact assessment procedures regarding the Wasabizawa Geothermal Power Station were completed and other measures were taken towards the start of construction for development of a new domestic geothermal power plant site.</li> </ul>

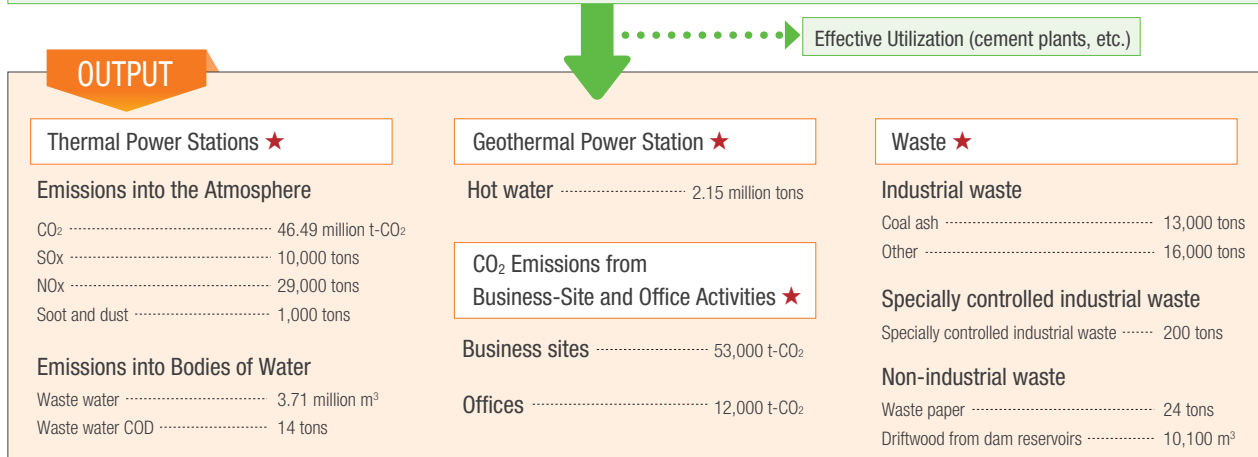
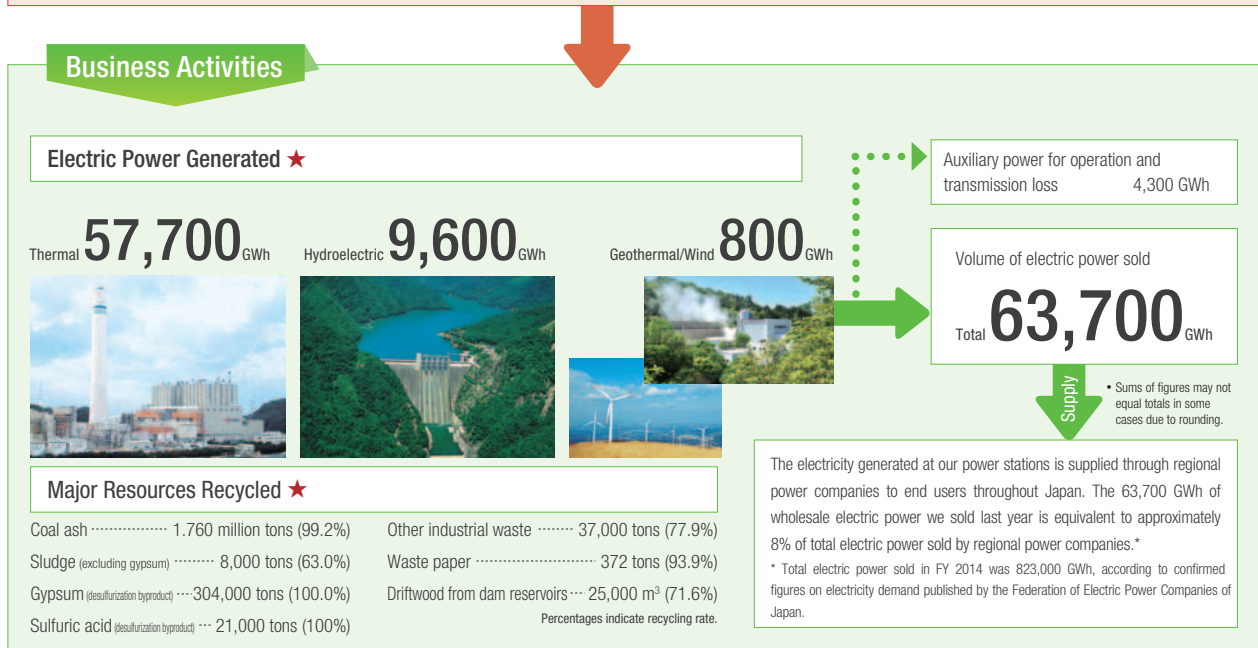
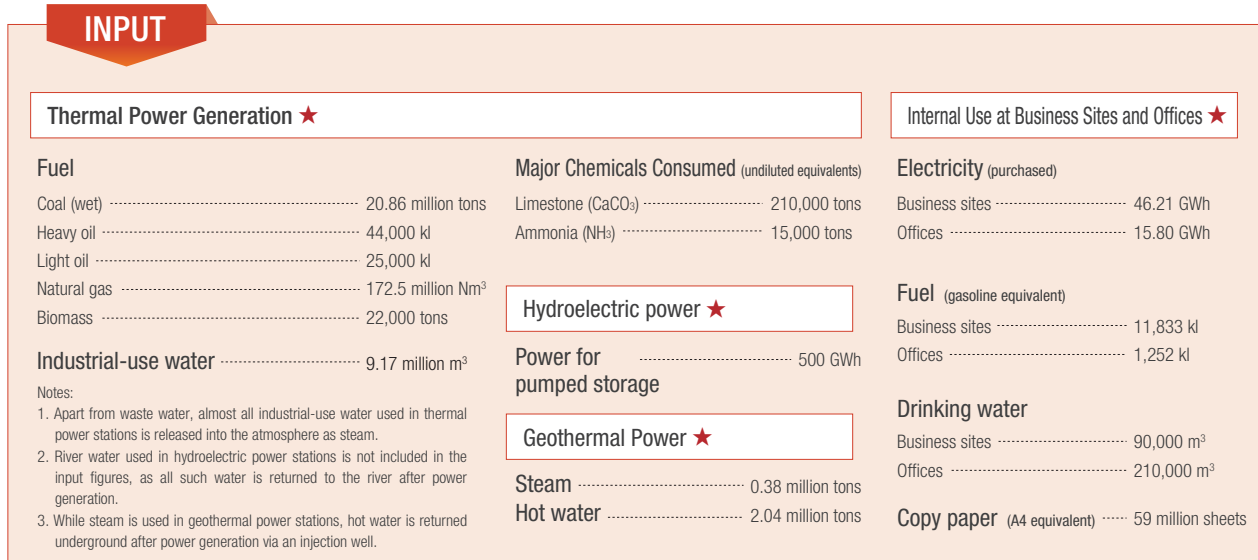
FY 2014 performance	Fiscal 2014 Evaluation and Next Steps	Page Reference
★ 40.2% (Reference: LHV = 41.3%)	<ul style="list-style-type: none"> <li>The J-POWER Group met its target, realizing a total thermal efficiency of 40.2% (HHV) for thermal power generation thanks to efforts to maintain high-efficiency operation in existing thermal power stations and to adopt high-efficiency technologies when upgrading facilities. We will continue working to maintain and improve energy efficiency in our thermal power stations.</li> </ul>	P52
★ Inspection: 99% Retirement: 99%	<ul style="list-style-type: none"> <li>The FY 2014 target was met, with a recovery rate of 99% during inspections and 99% at retirement, thanks to efforts to curb emissions during equipment inspection through careful and consistent recovery and reuse. We will continue to stress careful and consistent recovery and reuse to curb atmospheric emissions of SF<sub>6</sub> from gas insulation equipment.</li> </ul>	P51
★ 0.17g/kWh	<ul style="list-style-type: none"> <li>Efforts including the application of fuel control and the appropriate operation of flue gas desulfurization systems saw us curb our SO<sub>x</sub> emissions and achieve our target for emissions per unit of power generated. We will continue our efforts to curb emissions through good management practices.</li> </ul>	P30
★ 0.51g/kWh	<ul style="list-style-type: none"> <li>Efforts including the application of fuel control and the appropriate operation of flue gas denitrification systems saw us curb our NO<sub>x</sub> emissions and realize our emissions target per unit of power generated. We will continue our efforts to curb emissions through good management practices.</li> </ul>	P30
★ 99%	<ul style="list-style-type: none"> <li>We achieved our targets for the fiscal year through efforts to promote the recycling of coal ash and to reduce industrial waste generated by the maintenance and operation of power stations. We will go on working to maintain this level.</li> </ul>	P52
Practices of consideration for protection of river and ocean environments	<ul style="list-style-type: none"> <li>When operating power generation facilities that involve rivers, we implemented measures for protection of the river environment according to the conditions at each location, sedimentation control measures and measures to mitigate the long-term persistence of turbidity.</li> <li>When operating power generation facilities adjacent to the ocean, we exercised precise control over the discharge of wastewater in compliance with environmental protection agreements and other such arrangements.</li> </ul>	P32
Efforts to Preserve Biodiversity	<ul style="list-style-type: none"> <li>We showed consideration for the protection of ecosystems and the diversity of species in conducting our business activities and worked to protect rare animal and plant species and their habitats.</li> </ul>	P32
Consistent use of PDCA cycle	<ul style="list-style-type: none"> <li>Efforts were made to raise the level of environmental management through consistent implementation of the PDCA cycle. We will remain diligent in striving for continual improvement.</li> </ul>	P47

\*: LHV (lower heating value) estimated from actual HHV (higher heating value) using conversion coefficients supplied in the Agency of Natural Resources and Energy's Comprehensive Energy Statistics (FY 2004 edition).

# Business Activities and the Environment

The charts below detail the resource consumption and environmental load of the FY 2014 J-POWER Group operations within Japan.

Note: The scope of applicability will include J-POWER and its 25 consolidated domestic subsidiaries, such as electric power businesses and ancillary businesses related to electric power. The amounts attributed to consolidated subsidiaries are based on percentages corresponding to J-POWER's equity share.



## Environmental Accounting/Eco-Efficiency

### Environmental Accounting

To calculate the costs and benefits of the J-POWER Group's environmental conservation activities in FY 2014 in keeping with the nature of our business, we referred to the Environmental Accounting Guidelines 2005 issued by the Ministry of the Environment.

#### Environmental Conservation Cost and Benefit

Total costs for FY 2014 were approximately 40.9 billion yen, with pollution control costs for preventing contamination of the air, water, etc., accounting for about 37% of the total.

Category	Main measures and efforts	Cost
Pollution control	Air pollution control (desulfurization/denitrification, soot and dust treatment), water pollution control (wastewater treatment), etc.	15.3
Global environmental conservation	Measures to reduce greenhouse gas emissions (maintaining high-efficiency operation of coal-fired power stations, developing renewable and unutilized energy sources, maintenance costs for energy-saving equipment, emission control of greenhouse gases other than CO <sub>2</sub> )	2.0
Resource recycling	Waste reduction through reuse and recycling; treatment and disposal of waste	17.2
Management activities	Monitoring and measurement of environmental load, labor costs for environmental conservation organizations, costs for environmental education, etc.	1.6
Research and development	High-efficiency power generation, use of fuel cells, CO <sub>2</sub> capture and fixation, recycling of coal ash and gypsum, etc.	0.9
Social activities	Tree-planting, environmental advertising, environmental beautification, membership in environmental groups, preparation of sustainability report, etc.	1.5
International projects	Overseas cooperation projects for environmental conservation technologies	1.0
Other	Pollution load levy	1.4
Total		40.9

Note: Sums of figures may not equal totals in some cases due to rounding.

#### Environmental conservation benefit

Environmental conservation benefit	FY 2014
SOx emissions intensity (g/kWh)	0.17
NOx emissions intensity (g/kWh)	0.51
Soot and dust emissions intensity (g/kWh)	0.01
CO <sub>2</sub> emissions intensity (kg-CO <sub>2</sub> /kWh)	0.73
Average coal-fired power efficiency (%)	40.2
Coal ash recycling rate (%)	99.2
Industrial waste recycling rate (%)	99
Gypsum recycling rate (%)	100
Volume of driftwood recycled (1,000 m <sup>3</sup> )	25
Employees completing internal environmental auditor training	109
Sustainability report (copies published)	12,300
Overseas consulting projects (cumulative total)	349

Note: For detailed data, see pp. 51-52, Environment-Related Data.

When considering environmental load, the nature of our business requires that instead of tabulating total emissions, we assess the overall environmental conservation benefit of our conservation measures on the basis of emissions intensity, thermal efficiency, and reuse/recycling rate.

#### Economic Benefit

Efforts contributing to earnings and cost reductions were calculated to have had an economic benefit of approximately 11.7 billion yen.

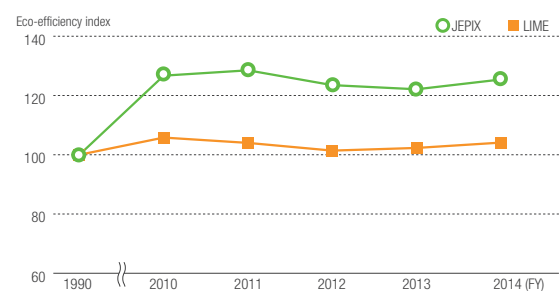
#### Economic Benefits

Category	Details	Benefit
Revenue	Sales of marketable commodities from coal ash, gypsum, and sulfuric acid	0.5
Cost reduction	Reduction in fuel costs due to improved coal-fired power efficiency (introduction of USC)	3.6
	Reduction in disposal costs due to coal ash, gypsum, and sulfuric acid recycling	7.6
Total		11.7

### Eco-Efficiency

J-POWER initiatives to date have been evaluated by the JEPIX<sup>\*1</sup> and LIME<sup>\*2</sup> methods. These two approaches assign different coefficients to environmental loads (coal, CO<sub>2</sub>, SOx, NOx, coal ash), and the resulting recent trends in eco-efficiency are as shown in the graph below.

#### Integrated Index of Eco-Efficiency (electric power sold per environmental load)



\* Note: Eco-efficiency: 100 = FY 1990 integrated index (electric power sold per environmental load).

#### \*1 JEPIX (Japan Environmental Policy Index)

An index that calculates a single score for overall environmental impact using the Ecopoints system, which assigns weights to more than 300 environmental pollutants according to their impact on water and air quality.

#### \*2 LIME (Life-cycle Impact assessment Method based on Endpoint modeling)

An integrated environmental impact assessment method that assigns weights to potentially harmful substances by scientifically analyzing their contribution to such environmental problems as global warming and destruction of the ozone layer and calculating their damage to human health, ecosystems, etc.

## Ensuring Transparency and Reliability

### Continual Improvement in Environmental Management

The J-POWER Group conducts environmental preservation activities in accordance with corporate principles, and the introduction of environmental management systems (EMS) at all J-POWER business sites was completed in 2002. The introduction of EMS at J-POWER subsidiaries and affiliates and at subsequently established business sites is also proceeding, and we are continuing our efforts to enhance environmental preservation measures.

#### Improvement of Environmental Management Level

On the basis of the J-POWER Group Environmental Action Guidelines, reviewed annually by management, each J-POWER Group draws up its own Environmental Action Plan. They periodically review and evaluate their initiatives and revise the measures to be taken, following the PDCA cycle.

### Raising Employee Awareness of Environmental Problems

The J-POWER Group puts efforts into environmental training for employees to deepen their awareness of environmental issues and instill a sense of personal responsibility.

#### In-House Environmental Training, FY 2014

Media	Type	Training category	Results	Main content for ensuring strict compliance with environmental laws and regulations
General	Environmental management in general	Environmental management briefing	Approximately 650 persons	Information regarding group environmental management initiatives and amendment of environmental laws and regulations
		Lecture presentations on the environment	Approximately 100 persons	An outside lecturer was invited to talk on the topic of "oceans"
	E-learning	E-learning on environmental laws and regulations	88.6%	Explanation of environmental laws and regulations that affect business
Advanced and specialized training	EMS implementation	Internal environmental auditor training	64 persons	Intended to foster auditors with the knowledge necessary to conduct internal audits under the EMS
		Follow-up training for internal environmental auditors	45 persons	Intended to foster human resources who can oversee audit teams conducting internal audits under the EMS
	Environmental laws and regulations	Skill enhancement training for waste-processing operations	65 persons	Explanation of the key points of the Waste Disposal Law
		Waste-processing risk assessment	Five locations	Checking provisions of agreements and manifests specified by law
		Training on environmental laws and regulations	171 persons	Explanation of environmental laws and regulations
	E-learning	EMS course	Continuously conducted	Basic knowledge on the EMS

#### Full Compliance with Laws, Regulations, Agreements, and other Rules

In order to reduce the impact on the surrounding environment due to business activities, we take appropriate steps to implement the laws, regulations, agreements, and other such rules applicable to our business activities and make them widely known. We are also engaged in ongoing efforts to improve our facilities and operations.

In order to dispose of waste properly, we take measures to maintain and improve the disposal capabilities of waste disposal operators and other personnel involved, and we employ waste disposal consulting firms to directly confirm the status of waste disposal by local organizations.

### Responding to Environmental Problems

We make every effort to prevent environmental problems before they occur. When problems arise that require emergency handling, however, we promptly take whatever measures are required to contain the damage and we notify the local agencies concerned as well as the J-POWER Headquarters Emergency Response Team and departments.

The J-POWER Headquarters Emergency Response Team promptly notifies top management and, in the interest of information disclosure, provides information on the emergency to the media and other interested parties for publication. We also devise measures to prevent recurrence of the problem.

Of the incidents impacting the environment that occurred within the J-POWER Group in FY 2014, one incident was reported by the mass media.

#### Status of Environmental Incidents

Location	Situation and Countermeasures
Konokidani River (a river that flows into the Kuzuryu Dam reservoir) Right Bank Woodland Path (Fukui Prefecture)	<p>Hydraulic oil leaked from heavy equipment during snow removal operations on the right bank woodland path of the Konokidani River, which flows into the Kuzuryu Dam reservoir, and an oil film was observed on the river.</p> <p>An oil fence was deployed on the river to prevent spread of the oil, snow contaminated with oil was collected, and absorbent mats were used to recover the oil.</p> <p>The leak occurred as a result of the breakage of a bolt that holds a hydraulic component on the heavy machinery. The breakage was not noticed and snow was removed into the river.</p> <p>To prevent recurrence of similar incidents, hydraulic mechanisms of heavy machinery are inspected before the start of work and heavy machinery guides carefully monitor the equipment.</p>

## Corporate Targets for FY 2015

### Efforts Relating to Global Environmental Issues

Item	Target
<ul style="list-style-type: none"> <li>Reducing CO<sub>2</sub> Emissions from Power Generation and Promoting Technological Development</li> </ul>	<p>As an electric utility, in addition to continuing to contribute to the Environmental Action Plan by the Japanese Electric Utility Industry, looking towards 2020 we are working to provide a stable supply of energy and reduce CO<sub>2</sub> emissions in Japan and overseas by promoting the following measures.</p> <ul style="list-style-type: none"> <li>We will replace aging coal-fired power stations with new facilities with higher efficiency at the world's highest levels.</li> <li>Promote mixed combustion of biomass fuels in coal-fired power stations (Effective exploitation of untapped resources).</li> <li>Contribute to the reduction of CO<sub>2</sub> emissions and technology transfer on a global scale by promoting the overseas expansion of coal-fired power using J-POWER's advanced, high-efficiency power generation technologies, in particular in the Asian region.</li> <li>Promote the development of higher-efficiency oxygen-blown integrated coal gasification combined-cycle (IGCC) technology through the implementation of the Osaki CoolGen Project. In addition, advance research and development regarding CO<sub>2</sub> capture and storage (CCS) technologies based on the result of the trial of the EAGLE Project and the Callide Oxyfuel Combustion Project in Australia.</li> <li>In relation to the Ohma Nuclear Power Plant Plan, respond appropriately to the review of compliance with the new regulatory standards, an application for which was submitted in December 2014. Do our utmost to ensure the construction of a safe and trusted nuclear facility, taking voluntary safety measures based on serious consideration of the accident at the Fukushima Daiichi Nuclear Power Station and obtaining the understanding of residents near the plant site.</li> <li>Build new hydroelectric power facilities, expand, upgrade and replace existing facilities, and expand the use of hydroelectric power.</li> <li>Significantly expand domestic wind power facilities and advance research and development towards the realization of ocean-based wind power generation technologies.</li> <li>Work to develop new geothermal power sites in Japan.</li> </ul>
<ul style="list-style-type: none"> <li>Maintain/improve thermal efficiency of thermal power stations [HHV (higher heating value)]</li> </ul>	Maintain current level [about 40%] (FY 2008 and each FY thereafter)
<ul style="list-style-type: none"> <li>Reduce SF<sub>6</sub> emissions; increase recovery rate during inspection and retirement of equipment</li> </ul>	Inspection: at least 97%; Retirement: at least 99% (FY 2008 and each FY thereafter)

### Efforts Relating to Local Environmental Issues

Item	Target
<ul style="list-style-type: none"> <li>Reduce SO<sub>x</sub> emissions per unit of electric power generated (point of generation, thermal power stations)</li> </ul>	Maintain current level [about 0.2 g/kWh] (FY 2008 and each FY thereafter)
<ul style="list-style-type: none"> <li>Reduce NO<sub>x</sub> emissions per unit of electric power generated (point of generation, thermal power stations)</li> </ul>	Maintain current level [about 0.5 g/kWh] (FY 2008 and each FY thereafter)
<ul style="list-style-type: none"> <li>Increase recycling rate for industrial waste</li> </ul>	Maintain current level [about 97%] (FY 2011 and each FY thereafter)
<ul style="list-style-type: none"> <li>Protect the water environment</li> </ul>	Consider the protection of the river and ocean environment in business activities (FY 2013 and each FY thereafter)
<ul style="list-style-type: none"> <li>Protect biological diversity</li> </ul>	Consider the protection of biological diversity in relation to business activities (FY 2011 and each FY thereafter)

### Ensuring Transparency and Reliability

Item	Target
<ul style="list-style-type: none"> <li>Improvement of Environmental Management Level</li> </ul>	Continuous improvement of EMSs (FY 2008 and each FY thereafter)



# FY 2015 J-POWER Group Environmental Action Guidelines

## 1 Efforts Relating to Global Environmental Issues

### Reducing CO<sub>2</sub> Emissions from Coal-fired Power

- Maintain high-efficiency operation at existing thermal power stations
- Promote biomass mixed combustion in existing thermal power stations
- Implementation of replacement plans for existing thermal power stations
  - The Takehara Thermal Power Station Units No. 1 and 2 and the Takasago Thermal Power Station Units No. 1 and 2 will be replaced with the newest USC plants, greatly increasing efficiency.
- Transfer high-efficiency coal-fired power generation technologies overseas and promote their diffusion
  - Contribute to the reduction of CO<sub>2</sub> emissions and technology transfer on a global scale by promoting the overseas expansion of coal-fired power using J-POWER's advanced, high-efficiency power generation technologies, in particular in the Asian region

### Conducting Research and Development of Next-generation Low-carbon Technologies

- Proceed with large-scale proving trials of oxygen-blown integrated coal gasification combined-cycle (IGCC)
  - Proceed with the Osaki CoolGen Project to develop high-efficiency IGCC generation technologies.
- Proceed with development of CO<sub>2</sub> capture and storage (CCS) technologies
  - Proceed with preparations for the second phase of the Osaki CoolGen Project in order to reflect the results of pre-combustion CO<sub>2</sub> capture technology from the Eagle Project.
  - Accumulate further technology and knowledge based on the oxygen combustion tests and CO<sub>2</sub> storage tests conducted under the Callide Oxyfuel Combustion Project in Australia.
- Proceed with research and development of ocean-based wind power generation technologies
  - We will promote proving trials of maritime wind power generation systems (in joint research with NEDO) in waters off Kitakyushu City.

### Expanding CO<sub>2</sub>-free Power Generation Facilities

- Work to realize the Ohma Nuclear Power Plant Plan, with safety as the top priority
  - In relation to the Ohma Nuclear Power Plant Plan, respond appropriately to the review of compliance with the new regulatory standards, an application for which was submitted in December 2014. Do our utmost to ensure the construction of a safe and trusted nuclear facility, taking voluntary safety measures based on serious consideration of the accident at the Fukushima Daiichi Nuclear Power Station and obtaining the understanding of residents near the plant site.
- Expand use of renewable energies
  - Maintain stable operation of existing hydroelectric, geothermal, wind power and recycle power stations.
  - Increase efficiency through upgrades of existing hydroelectric power facilities.
  - Proceed with new hydroelectric, geothermal and wind power developments. Proceed with development towards the significant expansion of power stations, particularly in the case of wind power.
  - Conduct development and support of renewable energy in emerging-market countries.

### Other

- Promote energy saving
  - Promote reduction of internal consumption rate at power stations.
  - Take the initiative in energy conservation in the offices throughout the Group in view of the current state of the power supply and demand situation.
    - Promote energy conservation measures in offices with consideration of criteria for judgment stipulated for businesses by the Energy Use Law.
    - Work to conserve energy at our Headquarters towards compliance with the Tokyo Metropolitan Ordinance on Environmental Protection.
  - Reduce environmental load by promoting increased efficiency when transporting raw materials, etc.
  - Reduce environmental load through measures including use of public transportation, increased operation efficiency of company vehicles, and promotion of eco driving.
  - Promote energy and resource-conserving measures in employees' households, such as use of the Household Eco-Account Book.
  - Support measures to promote the spread of energy conservation.
- Utilization and promotion of the offset credit mechanism
- Control release of GHGs other than CO<sub>2</sub>
  - Curtail emissions of greenhouse gases other than CO<sub>2</sub> such of SF<sub>6</sub> (sulfur hexafluoride), CFCs (chlorofluorocarbons), HCFCs (hydrochlorofluorocarbons), HFCs (hydrofluorocarbons) and N<sub>2</sub>O (nitrous oxide).

## 2 Efforts Relating to Local Environmental Issues

### Reduction of Environmental Load

- Continue to reduce emissions
  - Properly manage waste incineration and environmental equipment in order to control emissions of SO<sub>x</sub>, NO<sub>x</sub>, and soot.
  - Properly manage wastewater treatment facilities to control discharges of substances causing water pollution.
  - Properly manage facilities to prevent noise, vibration and odors.
  - Properly manage facilities to prevent pollution of soil and groundwater.
- Strengthen measures to prevent oil spills from equipment, etc. and be prepared so that emergencies can be dealt with in an appropriate and timely manner
- Design and introduce efficient and environmentally friendly station and equipment when constructing or renovating facilities

### Promotion of the 3Rs (Reduce, Reuse, and Recycle waste) and Proper Disposal of Waste

- Recycle and reuse recyclable resources and make efforts toward zero emission production
  - Promote reduction of waste from construction, upgrading and demolition work, and reuse and recycling of materials and equipment.
  - Work to reduce quantities used of water, chemicals, lubricating oil, etc.
  - Work to curb volume of office waste (copy paper, etc.) and promote reuse.
  - Rigorously collect and separate paper, bottles, cans, plastic and other waste, and promote reuse and recycling.
- Maintain and continue green purchasing efforts in line with the J-POWER Group Green Purchasing Guidelines
  - Maintain and continue green purchasing of office goods.
  - Maintain and continue the use low-pollution vehicles, etc.
- Properly maintain and manage landfill sites and implement closing procedures

### Management of Chemicals

- Fully comply with the Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof (PRTR Law)
  - Survey and manage the amounts of chemical substances subject to the PRTR Law that are emitted and transported, notify the appropriate authorities and publish this information.
- Take appropriate measures to deal with dioxins
  - Appropriately manage waste incinerators, and survey and report on exhaust gases and ash in accord with the Act on Special Measures concerning Countermeasures against Dioxin.
  - Observe the stipulations of the Waste Disposal and Public Cleansing Act and the Act on Special Measures concerning Countermeasures against Dioxin when waste incinerators are scrapped.
- Properly manage and dispose PCBs
  - Appropriately store and manage substances based on the stipulations of the Waste Disposal and Public Cleansing Act, the Law concerning Special Measures for Promotion of Proper Treatment of PCB Wastes, the Electricity Business Act, and the Fire Service Act.
  - Progressively treat waste products containing high concentrations of PCBs in accord with the J-POWER Group's Basic Policy for the Treatment of PCBs (based on the government's PCB Wide Area Treatment Plan).
  - Appropriately manage and store waste products containing trace amounts of PCBs, including wiping cloths, tools, etc. with PCBs adhering, until a scheme for the effective and rational treatment of such waste products comes into effect. (Appropriately manage and reduce the risk of PCB leakage in the case of devices still in use containing trace amounts of PCBs.)

- Strive to reduce volumes of hazardous chemicals handled
- Respond appropriately to asbestos-related issues
  - Adopt appropriate measures to prevent the dispersal of asbestos based on the J-POWER Group's Basic Policy concerning Asbestos, while systematically removing asbestos and replacing it with alternative substances.

### Measures to Protect the Natural Environment

- Take the natural environment and biodiversity into account in the various stages of business
  - Recognizing that the blessings of the natural environment support a rich and secure lifestyle, conduct surveys, measurements and assessments as necessary of the effect of business activities on the natural environment, and work to protect the natural environment and biological diversity at each stage of the business process, including the planning, design, construction and operation of power stations.
- Consideration for Aquatic Environments
  - In operating power generation facilities that are involved with rivers, we will steadily promote measures for protection of the river environment. These include the implementation of sedimentation control measures according to the conditions at each location and measures to mitigate long-term persistence of turbidity.
  - In operating power generation facilities that adjoin the ocean, we will implement precise control over the discharge of wastewater in compliance with environmental protection agreements and other such arrangements.
- Showing Consideration for Biodiversity
  - We will show consideration for the protection of ecosystems and the diversity of species in conducting our business activities, and we will strive to protect rare animal and plant species and their habitats.
- Implement forest conservation initiatives
  - Institute appropriate protections for company-owned forests based on the J-POWER Group Forest Protection Guidelines.
  - Promote the use of unexploited offcuts in forests.

### Environmental Conservation Initiatives in Overseas Projects

- Promote overseas transfer of environmental protection technologies
  - Promote transfer of environmental technologies for thermal and hydroelectric power stations.
- Incorporate environmentally friendly initiatives when formulating development plans and considering investment in projects, and ensure that those initiatives are carried out

### Implementation of Accurate Environmental Impact Assessments

- Conduct surveys, measurements and assessments of environmental impact of business activities on the basis of the applicable laws and regulations, reflect the results in the details of business activities, and consider environmental protection.

## 3 Ensuring Transparency and Reliability

### 1.Continual Improvement of Environmental Management (Greater Reliability)

#### Improvement of Environmental Management Level

- Continue to enhance operation of the environmental management system (EMS) at all J-POWER Group companies
  - Assess the actual status of environmental burden and set targets and formulate plans for the protection of the environment.
  - Systematically conduct internal environmental audits and periodically evaluate and improve details of environmental activities in order to meet targets.
  - Take measures to enhance check functions with the aim of maintaining and improving internal environmental audits.
  - Make improvements at business sites that have acquired ISO 14001 certification through their activities.
- Raise employee awareness of environmental issues
  - Systematically conduct education and training programs regarding environmental laws and regulations applicable to business activities.
  - Promote environmental education using e-learning, etc.
- Utilize environmental accounting and eco-efficiency indicators
- Request cooperation of business partners in environmental activities
- Strengthen risk management
  - Work to implement measures to prevent environmentally harmful incidents and ensure essential communication and appropriate responses in an emergency.

#### Full Compliance with Laws, Regulations, Agreements, and other Rules

- Identify applicable laws, regulations, agreements, and other rules, and work to raise awareness and ensure compliance
  - Accurately identify laws and regulations, agreements, etc. applicable to business activities, and work to respond effectively, educate employees, and ensure appropriate operation and verification.
- Fully comply with environment-related laws, regulations, agreements, and other rules
  - Make precise improvements to equipment and operations in order to prevent pollution of the surrounding environment.
  - Conduct risk diagnoses in relation to waste products and education programs for employees responsible for waste disposal in order to ensure appropriate disposal of waste. In addition, apply the J-POWER Group Guidelines for the Selection of Industrial Waste Disposal Contractors and expand use of electronic manifests.

### 2.Communication with Society (Greater Transparency)

#### Publication of Environmental Information

- Formulate environmental reports
  - Report on environmental measures taking into consideration such social requirements as environmental reporting guidelines for Sustainability Reports.
  - Work to increase reliability and transparency by having environmental data published in Sustainability Reports checked by third parties.

#### Increased Engagement in Environmental Communication

- Carry out environmental communication
  - Conduct publicity programs via website, internal Group publications, etc.
  - Conduct publicity programs targeting visitors to offices, PR centers, etc.
  - Communicate with experts and other third parties.
  - Receive external assessments such as environmental ratings.
  - Conduct environment-related social contribution activities such as providing support for environmental education.
- Carry out regional environmental conservation activities
  - Independently implement regional environmental protection activities.
  - Participate in clean-up events, beautification activities, tree planting events and similar activities organized by small cities, towns and villages, neighborhoods, etc.

## Environment-Related Data

The following data represent annual values or year-end values in each fiscal year. Unless specifically noted, includes data for Group companies<sup>\*1</sup>.

\*1 J-POWER and its 25 consolidated domestic subsidiaries, such as electric power businesses and ancillary businesses related to electric power. The amounts attributed to consolidated subsidiaries are based on percentages corresponding to J-POWER's equity share. For information on companies included in the statistics, see the list of main Group companies on page 1. Figures may not add up to totals because of rounding.

### Power Facilities (maximum output)

	Unit	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014
Hydroelectric	GW	8.56	8.56	8.56	8.56	8.56	8.57
Thermal	GW	8.79	8.79	8.79	8.79	8.85	8.27
Coal-fired	GW	8.55	8.55	8.55	8.55	8.51	7.93
Natural gas	GW	0.22	0.22	0.22	0.22	0.32	0.32
Geothermal	GW	0.02	0.02	0.02	0.02	0.02	0.02
Wind power	GW	0.27	0.35	0.35	0.35	0.38	0.40
Total	GW	17.61	17.69	17.69	17.69	17.78	17.24

### Electricity Output

	Unit	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014 ★
Hydroelectric	GWh	10,004	11,301	11,557	10,330	9,708	9,628
Thermal	GWh	50,742	58,511	58,522	59,303	59,456	57,706
Coal-fired	GWh	50,224	58,084	57,624	58,377	58,423	56,701
Natural gas	GWh	415	355	862	898	1,007	977
Geothermal	GWh	103	72	36	29	25	28
Wind power	GWh	393	458	590	620	638	733
Total	GWh	61,140	70,271	70,669	70,253	69,801	68,067

### Electric Power Sold

	Unit	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014 ★
Hydroelectric (excluding pumped storage)	GWh	9,214	10,267	10,318	9,033	8,760	9,029
Thermal	GWh	47,364	54,786	54,777	55,577	55,697	53,992
Coal-fired	GWh	46,887	54,388	53,946	54,722	54,730	53,058
Natural gas	GWh	383	327	803	836	952	916
Geothermal	GWh	94	71	28	19	15	18
Wind power	GWh	379	442	562	596	614	706
Total	GWh	56,957	65,495	65,657	65,206	65,071	63,726

### Fuel Consumption

	Unit	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014 ★
Coal (dry coal 28 MJ/kg equivalent)	million t	16.09	18.51	18.04	18.49	18.61	18.10
Use intensity (coal-fired)	t/GWh	343	340	338	338	340	341
Natural gas	million m <sup>3</sup> N	71	60	142	148	172	173
Heavy oil	million kl	0.04	0.04	0.04	0.05	0.06	0.04
Diesel	million kl	0.05	0.03	0.03	0.02	0.02	0.02

Note: Denominator for use intensity represents electric power sold by coal-fired power stations.

### Greenhouse Gas Emissions<sup>\*2</sup>

	Unit	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014 ★
CO <sub>2</sub> emissions (domestic and overseas power generation) <sup>*3</sup>	million t-CO <sub>2</sub>	46.52	52.54	52.24	54.09	56.33	55.77
CO <sub>2</sub> emission intensity	kg-CO <sub>2</sub> /kWh	0.66	0.67	0.67	0.67	0.68	0.67
CO <sub>2</sub> emissions (domestic power generation)	million t-CO <sub>2</sub>	40.88	47.01	46.77	47.56	47.84	46.49
CO <sub>2</sub> emission intensity	kg-CO <sub>2</sub> /kWh	0.72	0.72	0.71	0.73	0.74	0.73
SF <sub>6</sub> emissions	t	0.0	0.1	0.1	0.1	0.0	0.0
Handled	t	5.9	12.0	11.1	6.5	7.7	7.5
Recovery rate	%	99	99	99	99	99	99
HFC emissions <sup>*4</sup>	t	0.2	0.1	0.1	0.2	0.2	0.1
N <sub>2</sub> O emissions	t	1,610	1,650	1,660	1,362	1,553	1,576

\*2: CO<sub>2</sub> is calculated based on fuel combusted in conjunction with electric power generation.

Other greenhouse gases (PFC, CH<sub>4</sub>, and NF<sub>3</sub>) are effectively not emitted. Calculation of CO<sub>2</sub> emissions is performed in accordance with the Act on Promotion of Global Warming Countermeasures for both Japan and overseas.

\*3: This covers J-POWER and consolidated subsidiaries, such as electric power businesses and overseas businesses, as well as equity method affiliates (11 domestic and 31 overseas companies).

The portions attributed to consolidated subsidiaries and equity method affiliates are based on the percentage of J-POWER's equity share. For information on companies included in the statistics, see the list of main Group companies on page 1.

\*4: The same tabulation as for Usage of Specific CFCs was used.

Note: Denominators for emission intensity represent electric power sold.

## Average Thermal Efficiency of Coal-fired Power Stations (at generation point)

	Unit	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014 ★
Average thermal efficiency (at generation point) based on HHV	%	40.3	40.5	40.6	40.5	40.3	40.2

## Usage of Specified CFCs

		Unit	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014 ★
Specified CFCs	Stocked	t	1.0	1.0	1.0	1.0	1.0	1.0
	Consumed	t	0.0	0.0	0.0	0.0	0.0	0.0
Halons	Stocked	t	4.6	4.6	4.6	4.6	4.6	4.6
	Consumed	t	0.0	0.0	0.0	0.0	0.0	0.0
Other CFCs	Stocked	t	12.6	11.9	11.4	10.8	10.8	10.4
	Consumed	t	0.1	0.2	0.2	0.1	0.1	0.1
HFCs (CFC alternatives)	Stocked	t	11.3	12.0	12.0	12.9	13.3	14.4
	Consumed	t	0.2	0.1	0.1	0.2	0.2	0.1

SO<sub>x</sub>, NO<sub>x</sub>, and Soot and Dust Emissions

	Unit	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014 ★
SO <sub>x</sub> emissions	1,000 t	8.1	10.1	12.1	12.3	10.7	9.8
Intensity (thermal)	g/kWh	0.16	0.17	0.21	0.21	0.18	0.17
NO <sub>x</sub> emissions	1,000 t	22.3	28.0	28.5	30.3	31.1	29.1
Intensity (thermal)	g/kWh	0.44	0.48	0.48	0.51	0.52	0.51
Soot and dust emissions	1,000 t	0.6	0.8	0.7	0.8	0.8	0.8
Intensity (thermal)	g/kWh	0.01	0.01	0.01	0.01	0.01	0.01

• Soot and dust emissions are calculated from monthly measurements.

• Denominators for emissions represent the electricity output of thermal power stations (excluding geothermal stations).

## Industrial Waste Recycling

	Unit	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014 ★
Volume generated	million t	2.00	2.34	2.38	2.30	2.32	2.14
Volume recycled	million t	1.96	2.26	2.33	2.26	2.27	2.11
Recycle rate	%	98	97	98	98	98	99

## Coal-Ash and Gypsum Recycling

	Unit	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014 ★
Coal-ash created	1,000 t	1,669	1,936	1,957	1,900	1,928	1,773
Volume recycled	1,000 t	1,660	1,900	1,939	1,882	1,906	1,760
Recycle rate	%	99.4	98.1	99.0	99.0	98.9	99.2
Gypsum created	1,000 t	263	320	362	352	322	304
Recycle rate	%	100	100	99.8	99.9	100	100

## Office Power Consumption

	Unit	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014 ★
Power consumed by offices (company total)	GWh	21.06	21.39	19.40	19.48	19.04	19.51
Head office <sup>5</sup> power consumption	GWh	8.53	8.22	7.31	6.99	6.94	6.39
Lighting/power sockets	GWh	1.71	1.65	1.25	1.33	1.29	1.26

<sup>5</sup>: J-POWER head office building

• Figures have been adjusted in accordance with the expansion/contraction of the range of data available for compilation.

## Fuel Consumption in Offices (Gasoline Equivalent)

	Unit	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014 ★
Consumption	kl	1,345	1,289	1,299	1,290	1,293	1,252

• Corrected for expansion, contraction, etc. of the range of data available for compilation.

## Rate of Procurement of Recycled Copy Paper

	Unit	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014 ★
Copy paper <sup>6</sup> purchased	million sheets	57.17	56.77	58.77	61.50	61.79	58.53
Recycled copy paper <sup>6</sup> purchased	million sheets	56.79	56.38	58.14	61.25	61.45	57.85
Recycled copy paper <sup>6</sup> purchase rate	%	99	99	99	99	99	99

<sup>6</sup>: A4 paper-size equivalent

## Reference: Measures Addressing Global Climate Issues in the Electric Power Business

(Excerpted from a July 17, 2015 Federation of Electric Power Companies of Japan press release.)

### Establishment of an Action Plan for the Electricity Business for Achieving a Low-Carbon Society

The ten member companies of FEPC, together with J-Power, JAPC and 23 power producers and suppliers (PPSs) (hereinafter referred to as "the participating companies") have established a new voluntary framework for achieving a low-carbon society, and formulated the Action Plan for the Electricity Business for Achieving a Low-Carbon Society.

The participating companies have all positioned global warming as an important business challenge, and have been working on both the supply and demand sides of electricity, based on their own action plans for achieving a Low-Carbon Society.

Meanwhile, for the electricity industry to orchestrate collective action for achieving a low-carbon society and jointly tackle the expected changes in environment, the participating companies set up a study group in March 2015, and have considered specific plans.

With the announcement of the government's energy supply-demand outlook for FY 2030 and the draft GHG reduction target, the participating companies together decided to set a new target based on their integrated action plans, as described below.

#### Action Plan for the Electricity Industry to Achieve a Low-Carbon Society

- Reduce the user-end emission intensity to approximately 0.37 kg-CO<sub>2</sub>/kWh.
- Utilize the best available technology (BAT) affordable in new thermal power plants to secure a maximum reduction potential of approx. 11 million t-CO<sub>2</sub>.

Going forward, the participating companies will enhance their efforts to achieve a low-carbon society by steadily taking actions to achieve these targets, and following up on the progress each year.

### Outline of the Voluntary Framework

The ten member companies of FEPC, J-Power, The Japan Atomic Power Company (JAPC) and 23 power producers and suppliers (PPSs) have set up a voluntary framework, as described below, to take substantial corporate action based on the philosophy of the Keidanren's "Action Plan for Achieving a Low-Carbon Society" and the actions for reducing GHG emissions.

- As of the time of this announcement, the framework consists of the ten FEPC member companies, J-Power, JAPC and the 23 PPSs that have volunteered (together accounting for over 99% of all electricity sales). The framework will be open to companies that wish to join in the future.
- The target is to achieve the level (the emission intensity for FY 2030) required to fulfill the long-term energy supply-demand outlook indicated by the government.
- Efforts such as the utilization of BAT in new thermal power stations will be assessed quantitatively.
- The electricity industry will work collectively to achieve the target. The progress will be monitored each year, and reflected in the efforts the following year and beyond (promotion of the PDCA cycle), to increase the likelihood of meeting the target.
- The participating companies will continue to hold discussions to improve the effectiveness of the mechanism for achieving the goal.

## Action Plan for the Electricity Industry for Achieving a Low-Carbon Society

		Description
1. Targets of Domestic Corporate Activities for 2030	Target Action Plan	<p>To achieve an optimum energy mix which is in line with the S + 3E principle that seeks to achieve Energy security, Economic efficiency and Environmental conservation premised on Safety, the participating companies will continue their efforts to achieve a low-carbon society by working on both the supply and demand sides of electricity.</p> <p>In accordance with the government's long-term energy supply-demand outlook for FY 2030, the target was set to achieve a nationwide user-end emission intensity of approx. 0.37 kg-CO<sub>2</sub>/kWh in 2030.*1,*2</p> <p>For newly constructed thermal power plants, the best available technology (BAT) affordable to match the scale of the plant will be used to secure a maximum reduction potential of approx. 11 million t-CO<sub>2</sub>.*2,*3</p> <p>*1. The Target and Action Plan are based on the generation mix and electricity demand indicated in the long-term energy supply-demand outlook of the government, and assume that the outlook will be achieved by 2030 through the joint efforts of the government, the power companies, and the public.  *2. The Target and Action Plan will be revised as needed based on changes in the energy and environmental policies as well as technological development in Japan and other countries as the PDCA cycle advances.  *3. The maximum reduction potential representing the effect of introducing BAT in major power source developments from FY 2013 onwards compared to conventional technologies.</p>
	Grounds for the Target	<p>The efforts of the participating companies that are based on their respective forms of business will be orchestrated to achieve a low-carbon society.</p> <ul style="list-style-type: none"> <li>● Utilizing nuclear power premised on safety <ul style="list-style-type: none"> <li>• Implementing thorough safety measures based on the lessons learned and knowledge obtained from the Fukushima Daiichi accident, while improving safety voluntarily and continuously beyond the requirements of the regulation standards</li> <li>• Providing detailed explanations to the hosting communities and the people of Japan to gain their understanding, and operating the plants safely and stably once their safety has been confirmed and they have been restarted</li> </ul> </li> <li>● Utilizing renewable energies <ul style="list-style-type: none"> <li>• Utilizing hydropower, geothermal power, solar PV, wind and biomass</li> <li>• Developing technologies for addressing output fluctuations of renewable energies <ul style="list-style-type: none"> <li>— Studying measures to address output fluctuations of solar PV</li> <li>— Considering enhanced introduction of wind power using inter-area connection lines</li> </ul> </li> </ul> </li> <li>● Improving the efficiency of thermal power <ul style="list-style-type: none"> <li>• In developing thermal power, using the best available technology (BAT) affordable based on the scale of the plants</li> <li>• Maintaining and managing the thermal efficiency of existing plants at an appropriate level</li> </ul> </li> <li>● Providing energy-saving and CO<sub>2</sub>-reducing services to customers to contribute to a low-carbon society <ul style="list-style-type: none"> <li>• Providing energy-saving and CO<sub>2</sub>-reducing services in the electricity retail area needed by customers in a low-carbon society</li> </ul> </li> </ul>
2. Enhancing Alliances between Entities (Efforts through the expanded use of low-carbon products and services and employee training, and the reduction potential in 2030)		<p>Believing that CO<sub>2</sub> reduction and improvement of emission intensity in the electricity department cannot be achieved without the government's involvement in the energy policies, including nuclear and renewable energy policies, as well as a joint effort involving the power generation, transmission &amp; distribution and the retail departments and the customers who use electricity, the alliances between entities will be strengthened together with the efforts of the power companies themselves.</p> <ul style="list-style-type: none"> <li>● Contributing to CO<sub>2</sub> reduction by customers by promoting high-efficiency electric appliances and energy-saving and CO<sub>2</sub>-reduction activities, to enable customers to use electricity efficiently</li> <li>● Completing the introduction of smart meters as part of improving the environment for customers to use electricity more efficiently</li> </ul>
3. Promoting International Contribution (Efforts through the expansion of energy-saving technologies overseas for 2030, and the reduction potential overseas)		<p>Contributing to CO<sub>2</sub> reduction in other countries by expanding overseas the technologies and know-how of the power companies developed in Japan</p> <ul style="list-style-type: none"> <li>● Transferring and providing the electricity technologies of Japan to help decarbonize developing countries, through activities such as the diagnosis of coal thermal facilities and CO<sub>2</sub> emission reduction activities through the GSEP (Global Superior Energy Performance Partnership) activities</li> <li>● Advancing decarbonization on a global scale by developing and introducing advanced and feasible electricity technologies, taking into account the developments in international systems such as the Joint Crediting Mechanism (JCM)</li> </ul> <p>(Reference) The CO<sub>2</sub> reduction potential for coal thermal in the OECD countries and developing countries of Asia achieved by introducing high-efficiency plants and improvements in O&amp;M is a maximum of 900 million t-CO<sub>2</sub>/year.</p>
4. Development of Innovative Technologies (Medium- to long-term efforts)		<p>Continuously developing technologies that contribute to preserving the environment for both the supply and demand of electricity</p> <ul style="list-style-type: none"> <li>● Developing technologies for utilizing nuclear power</li> <li>● Thermal technologies such as A-USC, IGCC and CCS for reducing environmental burden</li> <li>● Responding to the introduction of large volumes of renewable energies (improving the load followability of thermal power plants, stabilizing the transmission and distribution systems, and introducing more biomass and geothermal power)</li> <li>● Developing technologies for the efficient use of energy</li> </ul>