Document 1

July 20, 2012
Federation of Electric Power Companies in Japan
Japan Atomic Power Company

Establishment of the Nuclear Emergency Support Organization

The Federation of Electric Power Companies (FEPC) today decided to establish the Nuclear Emergency Support Organization by the end of FY 2015, in light of the lessons learned from the accident at the Fukushima Daiichi Nuclear Power Station. During FY 2012, FEPC plans to form a support system capable of providing diverse and advanced emergency response measures in the case of an accident.

This series of activities aims at further enhancement of safety on a voluntary and continuous basis, in addition to safety already enhanced by the emergency safety measures that have been implemented at the nuclear power plants in Japan.

The Nuclear Emergency Support Organization will be responsible for the integrated management and operation of materials and equipment. This will include remote-controlled robots that can be used in restoration efforts in high radiation dose rate environments, thus minimizing workers' exposure. The new organization will assist the relevant electric companies in reconnaissance on sites, measuring air dose rates, removing debris, and other tasks.

FEPC intends to arrange the support system without delay through the following three stages:

1. By the end of 2012, Japan Atomic Power Co. (JAPC) will take the initiative in purchasing the necessary robots, arranging transportation of the robots and associated equipment, and securing operators from the electric companies.
2. JAPC will organize a dedicated support team in Fukui prefecture which many nuclear power plants are located in and offers centralized access to all nuclear power plants nationwide. The dedicated support team will be responsible for the integrated management of emergency equipment and materials, including robots, and the training of operators from electric companies on an ongoing basis.
3. The electric power companies will discuss the desirable form of the support system for the future, including the organizational structure, in order to establish one or two bases of the Nuclear Emergency Support Organization in Japan in FY 2015. These bases s will be responsible for maintenance and management of emergency equipment and materials, including robots, and capable of providing diverse and advanced emergency response measures in collaboration with related organizations.

In addition to the emergency safety measures implemented at nuclear power plants thus far, the electric power companies are making a concerted effort to improve their facilities and operations as well as their organizational structures in order to achieve the world's highest level of safety. The electric power companies remain committed to restoring public trust, specifically with local residents, by taking all possible voluntary measures on an ongoing basis in order to further increase safety.

Attachment 1

Schdule for Establishing “Nuclear Emergency Support Organization”

1. By the end of 2012

・JAPC will take the initiative in procuring three robots as prioritized equipment by the end of 2012: two Packbots® for reconnaissance on the site (video shooting and radiation measurement) and one Warrior (removing rubble that interrupts reconnaissance) manufactured by iRobot.

・JAPC will arrange transportation of the robots and associated equipment and operators from the electric companies (about 6 operators at each plant, accounting for about 100 operators nationwide).

Packbot®

Warrior

2. By March 2013

・JAPC's dedicated team (about 8 members) will be launched in Fukui prefecture.

・Equipment and materials such as robots will be integrally managed and operators from electric companies will be continually trained (about 6 operators from each plant, accounting for about 100 nationwide).

・Upgrading and enhancing equipment and materials such as robots will be considered after the establishment.

3. By the end of FY 2015

・The whole electric power companies will specifically discuss the expectations to the Oragnization, including the organizational structure, number of personnel, equipment and materials to be deployed, by referring to experience in foreign cuntries such as France and Germany about their emergency response organizations so as to establish the Nuclear Emergency Support Organizations by the end of FY2015.

-Bases: one or two sites nationwide (including Fukui prefecture)

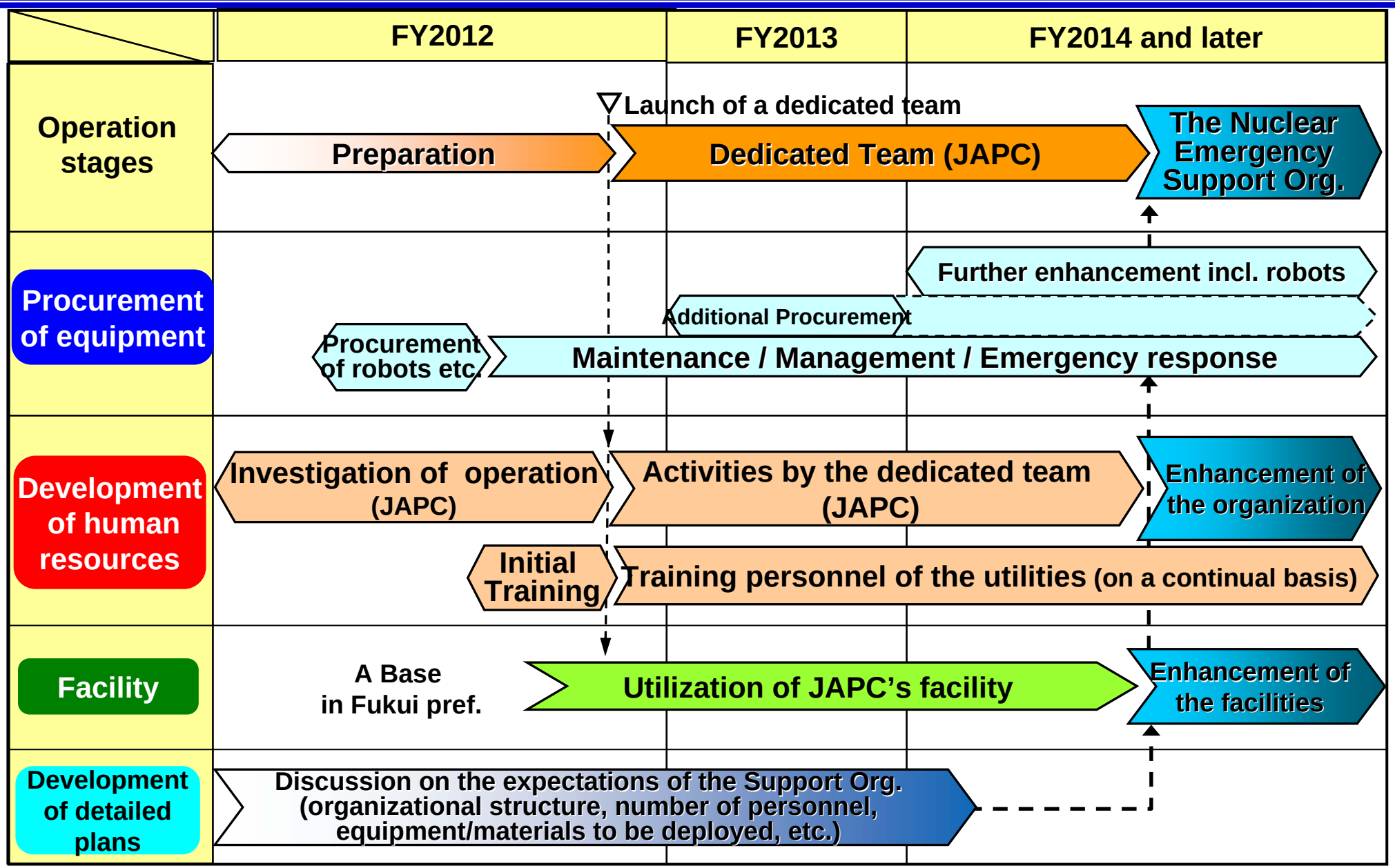
-Number of employees: about 20

-Facilities: Office building/training center, storage yard for equipment and materials, improvement/demonstration facility, training field, etc.

-Equipment and materials: reconnaissance robots, radiation measuring robots (on the ground and in the air), decontamination robots, remote-controlled heavy machinery (removing

rubbles), field command vehicles, transport vehicles, etc.

Schedule for Establishing “Nuclear Emergency Support Organization”



Outline of the Nuclear Emergency Support Organization

In the light of the lessons learned from the accident at Fukushima Daiichi NPS, FEPC is investigating an emergency response organization of world's highest level, which is capable of providing diverse and advanced support measures even in an environment under high radiation dose rates in an accident.

●Functions of the new organization

①To provide diverse and advanced emergency response measures by deploying necessary equipment and personnel immediately after the occurrence of emergency to support the relevant power company.

②To perform maintenance and management of equipment and materials including robots as well as continuous improvement and enhancement in collaboration with related organizations, and to systematically foster a workforce for operation.

●Structure (referring to the overseas examples)

Base: One or two locations nationwide (including Fukui prefecture)

Number of employees: approx. 20

Facilities: Office building/training center, storage house for equipment and materials, improvement/demonstration facility, training field, etc.

Equipment and materials: reconnaissance robots, radiation measuring robots (ground / air), decontamination robots, remote-controlled heavy machinery (removing debris), field command vehicles, transport vehicles, etc.)

●Time of establishment

By the end of FY2015.

The electric power companies will discuss the expectations for the organization, such as organizational structure, number of personnel, equipment and materials to be deployed.

Document 2

Basic Idea on Options for Energy and the Environment

July 20, 2012

The Federation of Electric Power Companies of Japan

Basic Idea on Options for Energy and the Environment

◆ We, the electric power companies of Japan, believe that our most important mission is to contribute to the economic development of our country as well as the maintenance and further improvement of the living standard of the Japanese people by ensuring a stable supply of low-cost electricity on the major premise of assured safety.

◆ In considering Japan's future energy mix, we believe it is essential that we aim simultaneously to ensure safety ("S") as well as energy security, environmental conservation, and economic efficiency ("3 Es") in light of the following factors:

- Japan, a nation with an energy self-sufficiency rate of only 4%, faces a variety of risks, including a sharp rise in crude oil prices and a dependence on procuring fossil fuels on limited regions.
- Regarding the prospects for highly anticipated renewable energy sources and energy conservation, uncertainties still exist regarding the degree to which renewable energy sources can be introduced; questions have also arisen regarding the technological and economic aspects of such a shift.
- Increasing energy costs might negatively affect consumers and result in the hollowing-out of industry.

◆ Therefore, we believe it is important to do the following:

- make optimum use of renewable energy sources by radically reducing costs through technological innovations, subject to their technical feasibility;
- achieve a balanced mix of coal, oil, and LNG based on factors such as cost, stability of fuel procurement, environmental friendliness, and load-following characteristics, considering the importance of fossil fuel (thermal power generation) as a backup power source for renewable energy; and
- continue to use nuclear power at a constant rate, together with the nuclear fuel cycle, on the major premise of ensuring safety, while seeking to promote harmony with the communities hosting nuclear facilities.

◆ Recently, the Energy and Environment Council proposed three energy strategy scenarios for the Japanese people to consider. However, we are of the opinion that these scenarios are highly problematic, in light of the following perspectives, among others:

・Although we, as electric power companies, will continue to make our best efforts to promote energy conservation and introduce renewable energy sources with a commitment to energy security and mitigation of global warming, we are doubtful of the feasibility of these options in light of their associated costs as well as technological and locational difficulties, as the assumptions made in all the scenarios exceed even those of the current highly ambitious Basic Energy Plan.

・With regard to the costs in particular, we believe detailed research is necessary in order to estimate the costs of strengthening the power grid to accommodate the large-scale introduction of photovoltaic power and wind power, in light of their unstable output and low energy density.

In the meantime, concerning the feed-in tariff system, we believe a review of the elements of the system including purchase price level is necessary in terms of reducing people's burden in order to encourage renewable energy power producers to do their utmost to reduce costs.

Note: According to these scenarios, energy consumption must be reduced by 20% (with electricity consumption being reduced by 10%) from the current level, while the rate of renewable energy penetration must be increased to a level between 25% and 35% from the current level of 10%.

・Although the economic model analysis forecasts a significant rise in electric power rates with a negative impact on the macro economy, resulting in a heavy financial burden on the Japanese people, no sufficient explanation has been provided, and thus the public does not understand the real situation. Therefore, further discussions are considered necessary.

Note: Residential electricity rates are estimated to roughly double from their current levels at the maximum by 2030, while real GDP is estimated to decline by 0.3 to 7.4% by 2030 relative to the status quo.

◆ In light of this situation, we believe each of the proposed scenarios would have a great impact on the economic growth of our country and the lives of the Japanese people; thus, many problems remain to be resolved. Moreover, we believe our country should never choose the "nuclear power 0%" scenario in consideration of the need to secure diverse energy sources.

◆ For these reasons, we believe the "nuclear power 20–25%" scenario is the minimum required if we must choose from the proposed scenarios on the major premise of ensuring safety.

In addition, because these scenarios include some uncertainties from a long-term perspective, we consider it important that the penetration of renewable energy, the status of the public financial burden, and the international situation be monitored and reviewed periodically so that appropriate modifications can be made when necessary.

Reference: Measures to Address Global Warming

◆ Recognizing the importance of preventing global warming as a global challenge, and the fact that the majority of greenhouse gas emissions originate from energy use, we need to respond actively in terms of both energy supply and demand .

◆ On the other hand, implementing measures against global warming, such as the large-scale introduction of renewable energy sources, presents significant costs as well as other challenges. Therefore, adequate research is required in order to determine policy based on cost, effects, feasibility, time axis, international fairness, and other issue**s**.

- The proposed scenarios entail many problems concerning technology and costs, including energy conservation and the large-scale introduction of renewable energy; therefore, it is necessary to consider the risks resulting from these uncertainties. Sufficient consideration must be given to the cost of stabilizing the electricity grid — a prerequisite for expanding the introduction of renewable energy — as well as to the time axis.
- Under the proposed scenarios, electricity rates are estimated to roughly double from their current levels at maximum by 2030, which would result in an increased financial burden for households and industry, leading to concerns that companies would move their manufacturing bases offshore.
- It is important to continue using coal as a principal fuel because it can be obtained at low cost and coal deposits are abundant in politically stable regions around the world. If we were to shift excessively from coal-fired thermal power to LNG-fired thermal power in the interests of reducing CO2 emissions alone, we would fail to secure diversity of power sources, resulting in a potential threat to the stability of the power supply in addition to rising energy costs.

◆ The volume of greenhouse gas emissions in 2020 has only been roughly estimated as a midpoint between 2010 and 2030 without sufficient consideration. Therefore, if we are to establish an intermediate goal for 2020, we need to set a realistic goal by examining the totality of individual initiatives for reducing greenhouse gas emissions.

(Attachment)　Three Scenarios for 2030
(Decision of the Energy and Environment Council on June 29, 2012)

◆ 0% Scenario

・Reduce the share of nuclear energy to 0% at the earliest possible time before 2030 and convert to an energy mix eventually comprising only renewable energy and fossil fuels.

• Impose strict regulations across a broad range of fields and dramatically shift the energy mix toward renewable energy, gas, and energy conservation, despite the heavier economic burden, in order to minimize dependence on fossil fuels and reduce CO2 emissions to a level comparable to those of other scenarios.

◆ 15% Scenario

• Steadily reduce dependence on nuclear energy to around 15% by 2030 and gradually reduce dependence on fossil fuels while reducing CO2 emissions.

• Utilize a mix of nuclear power, renewable energy, and fossil fuels and flexibly respond to various environmental changes, including those relevant to energy, in the global environmental situation and in technological innovation.

◆ 20–25% Scenario

• Maintain a level of dependence on nuclear energy while slowly reducing it to a 20–25% share by 2030.

• Lower the dependence on fossil fuels and reduce CO2 emissions in a more economically efficient manner.

• This scenario is premised on strong public confidence in nuclear energy and its administration.

	2010	0% Scenario		15% Scenario	20–25% Scenario
		Before additional measures	After additional measures		
Share of nuclear energy	26%	0% (▲25%)	0% (▲25%)	15% (▲10%)	20～25% (▲5～▲1%)
Share of renewable energy	10%	30% (+20%)	35% (+25%)	30% (+20%)	25～30% (+15～20%)
Share of fossil fuels	63%	70% (+5%)	65% (Current level)	55% (▲10%)	50% (▲15%)
Share of non-fossil energy resources	37%	30% (▲5%)	35% (Current level)	45% (+10%)	50% (+15%)
Electricity generated	1.1 trillion kWh	About 1 trillion kWh (down 10%)	About 1 trillion kWh (down 10%)	About 1 trillion kWh (down 10%)	About 1 trillion kWh (down 10%)
Final energy consumption	390 million kl	310 million kl (down 72 million kl)	300 million kl (down 85 million kl)	310 million kl (down 72 million kl)	310 million kl (down 72 million kl)
Greenhouse gas emissions (relative to 1990 level)	▲0.3%	▲16%	▲23%	▲23%	▲25%

* The share indicated represents the share of electric energy generated. Values in brackets indicate the change relative to 2010, before the Great East Japan Earthquake of 2011.

Source: Abstract of reference material provided at the 11th Meeting of the Energy and Environment Council

Document 3

Reference material from FEPC for the 8th Expert Committee on Electric Power System Reforms in the Coordination Subcommittee for Natural Resources and Energy held on July 13, 2012

Federation of Electric Power Companies

July 13, 2012

Our Views and Initiatives regarding Reforms to the Electric Power System

We expect that detailed review will be performed to examine and implement the measures currently being discussed by the Expert Committee on Electric Power System Reforms. The electric power companies are committed to applying their cumulative expertise and fully collaborating in the selection of an electric power system that best supports the interests of the people of Japan.

Before proceeding with a detailed review, we herein express our views on the main issues related to the electric power system reforms proposed by the Committee, as follows:

1. Measures to promote competition

○ With regard to the introduction of complete deregulation of the retail sector, we will broaden the options and diversify the scope of electricity rates aiming to contribute to the benefits of Japanese citizens.

○ With regard to the vitalization of the wholesale electricity market, including partial supply and continuous backup electricity, we will work as actively as possible on both the measures that can be taken immediately and those that can be taken when the tightness in supply-demand balance will be resolved.

The power companies will respond sincerely to the requests of customers and new market entrants, taking into account the circumstances of each power company, such as the status of nuclear power plant restarts, reserve capacity, and the role of each power source, including wholesale operators,

in managing supply and demand. Moreover, they will promptly take all actions that can be taken to encourage transactions in the exchange so that customers' benefit can eventually be promoted.

Typical measures

- Response to the formulation of partial supply guidelines
- Response to the review of rates for continuous backup electricity etc.
- Providing surplus power (power remaining after securing reserve capacity) to the market on a marginal cost basis
- Research to facilitate the supply of electricity to the market through electricity wholesalers to the extent that this does not affect supply-demand management

  Note: Each utility may determine which measures are required respectively.

○ Further, the near-real-time supply-demand market we are proposing will, when established, not only facilitate the control of supply capacity according to the demands of PPSs but will also help increase transaction volume through the active and economic utilization of electricity supplies via the exchange.

○ In principle, wholesale electricity transactions should be conducted according to the strategies of the respective power companies and based on market mechanisms, and each company will initially implement these measures on a voluntary basis. To monitor the status of these voluntary efforts, it may also be effective to have a neutral, independent organization monitor the bidding.

2. Neutralization and wide-area operation of the power grids

○ To promote competition, it is necessary to secure a fair and transparent competitive environment; thus, it is important to enhance wide-area operation of the electricity transmission and distribution networks and to further improvement in neutrality.

○ To address the main public challenges that emerged following the Great East Japan Earthquake — namely wide-area supply-demand control in the midst of large-scale supply shortages as well as increasing introduction of renewable energy sources — it is extremely important that a neutral independent organization be established that serves as a hub to ensure neutrality in each area and to secure a competitive environment and wide-area operation without delay. The electric utility industry will cooperate on detailed research so that such a neutral independent organization can be established in a timely manner.

○ Further, if the share of PPSs or power supply from outside the area will dramatically increases without revising the current operation system, stability and quality of electricity supply will probably be disturbed in each area by such problems as a shortage of power sources necessary for supply-demand management and frequency control. .

In order for outside the electric power companies to fairly share the burden of frequency control, the organizational structure should be revised and thus the roll of controlling frequency should be neutralized. We will also examine detailed functional and legal separation along with wide-area operation of the power grids..

○ The electric power companies will cooperate fully with the upcoming detailed study on the formulation of a new organizational structure, including the identification of issues and development of solutions. The following topics should be discussed in particular depth:

- First, it is necessary to clarify the assignment of roles and responsibilities to ensure a stable supply of electricity. Currently, the role of securing appropriate reserve capacity over both the short and long terms and making the final adjustment based on the real supply- demand balance in each area is assumed by the respective utilities. As a premise for system design, it is necessary to clarify who, including which PPSs, will assume this role.
- Second, in order to maintain stability of supply, it is important to design the demand-supply control and the grid control systems taking all possible measures which may be required

accompanying with the future growth of competition and introduction of renewable energy sources into account. These include what standards for reliability should be introduced (standards regarding the allocation of reserve capacity and the grid planning needed for maintaining supply stability); how to revise the supply-demand management mechanism such as reserve capacity and frequency control function (including demand restraint); and how the grid structure should be developed (tandem or meshed structure) when inter-area transmission lines are required to be reinforced..

When considering a new organizational structure, it is important, as described above, to compare and evaluate required costs and transition periods among options based on careful observations of the circumstances and conditions that constitute the foundation for designing the demand-supply control and the grid control systems, including the grid and inter-area transmission line structure and the progress of competition, in order to maintain the stability and quality of electricity supply.

○ Though we have never before experienced such a transition of the power supply and numerous issues remain to be considered, we will continuously be committed to devising solutions one by one and building up an electric power system that will simultaneously ensure a neutral competitive environment as well as stability of supply.