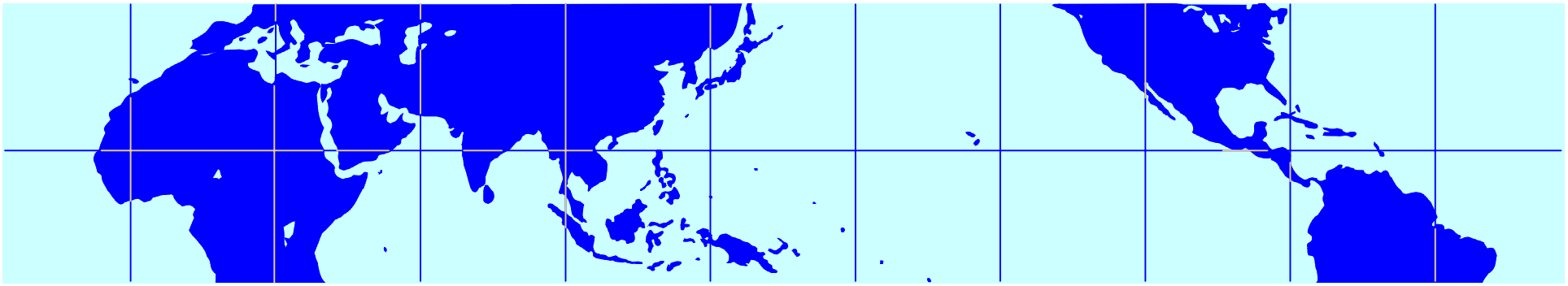

380th Regular Meeting for Briefing Research Reports

Evaluation of the New Electricity Industry System

-Centered on a Comparison with the European and American Systems-

April 11, 2003

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Objective

- On February 18 of this year, a "Desirable Future Framework for the Electricity Industry System (draft)"("Report") covering a new framework for the electricity industry was agreed to at the 14th Electricity Industry Committee, and a report was submitted to the Minister of the Economy, Trade and Industry. Then, in March of this same year, a draft amendment to the Electricity Utility Industry Law based on this proposal was introduced to the National Assembly.
- Having been committed to "determining the ideal electricity industry system for the future, in the aim of structuring a fair and effective system capable of efficiently achieving a stable electricity supply that would serve as the base for Japan's economic and activities and the livelihoods of its people", the Electricity Industry Committee debated a new design for the system.
- The debates on this present system reform concern the realization of a system intended to reconcile issues of public interest with the dual objectives of (1) rectification of relatively high electricity charges compared with other countries and (2) the designing of a system that compares favorably internationally.
- Then, an attempt will be made to evaluate how the framework of the new system indicated in this report measures up to the above objectives in (2), based on the current situation in the Europe and America.

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- **1. Current state of progress in deregulation**
- **2. “Report” outline**
- **3. Current situation in Europe and America**
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- **4. “Report” evaluation**
- **5. Summary and Outlook for the Future**

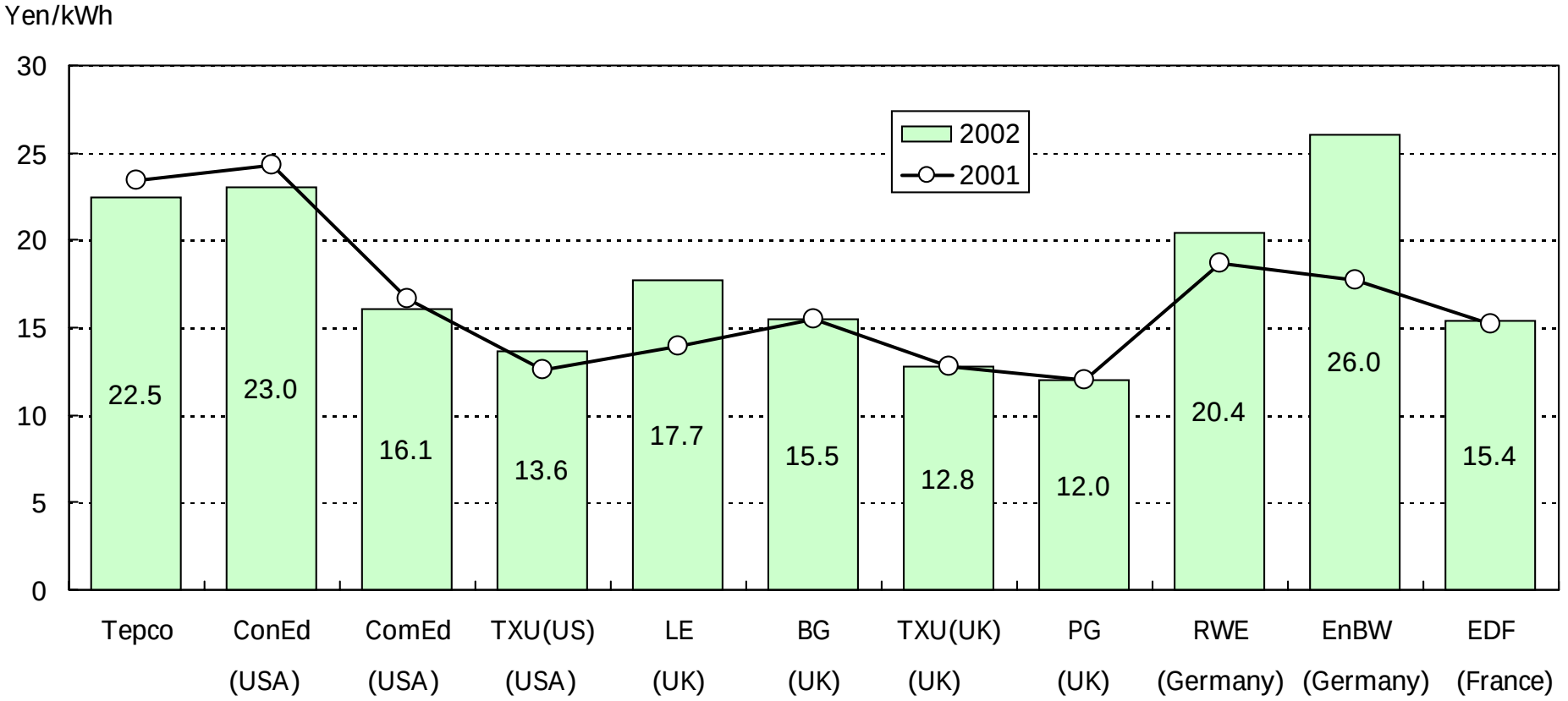
1. Current State of Progress in Deregulation

Main Points

- Deregulation up to now
  - The 1995 amendment to the Electricity Utility Industry Law introduced the IPP (independent power producer) and also introduced the principle of competition in the wholesale power generation sector.
  - The 1999 amendment to the Electricity Utility Industry Law brought about retail market opening for special high voltage users as of March 2000.
- Effects of the 1999 revision of the Electricity Utility Industry Law
  - Though the market share for new entrants (PPS) in January 2003 was a mere 0.87%, a lively competition has been realized primarily for service in the major metropolitan areas.
  - Generation Capacity for PPS are expected to grow steadily over the medium and long term.
  - The efficiency of the General Power Utilities (GPUs) should also progress and the benefits of deregulation will be passed on in the form of lower charges in regulated sectors as well.

1. Current State of Progress in Deregulation

Disparity in domestic and foreign prices: Electricity (home use)



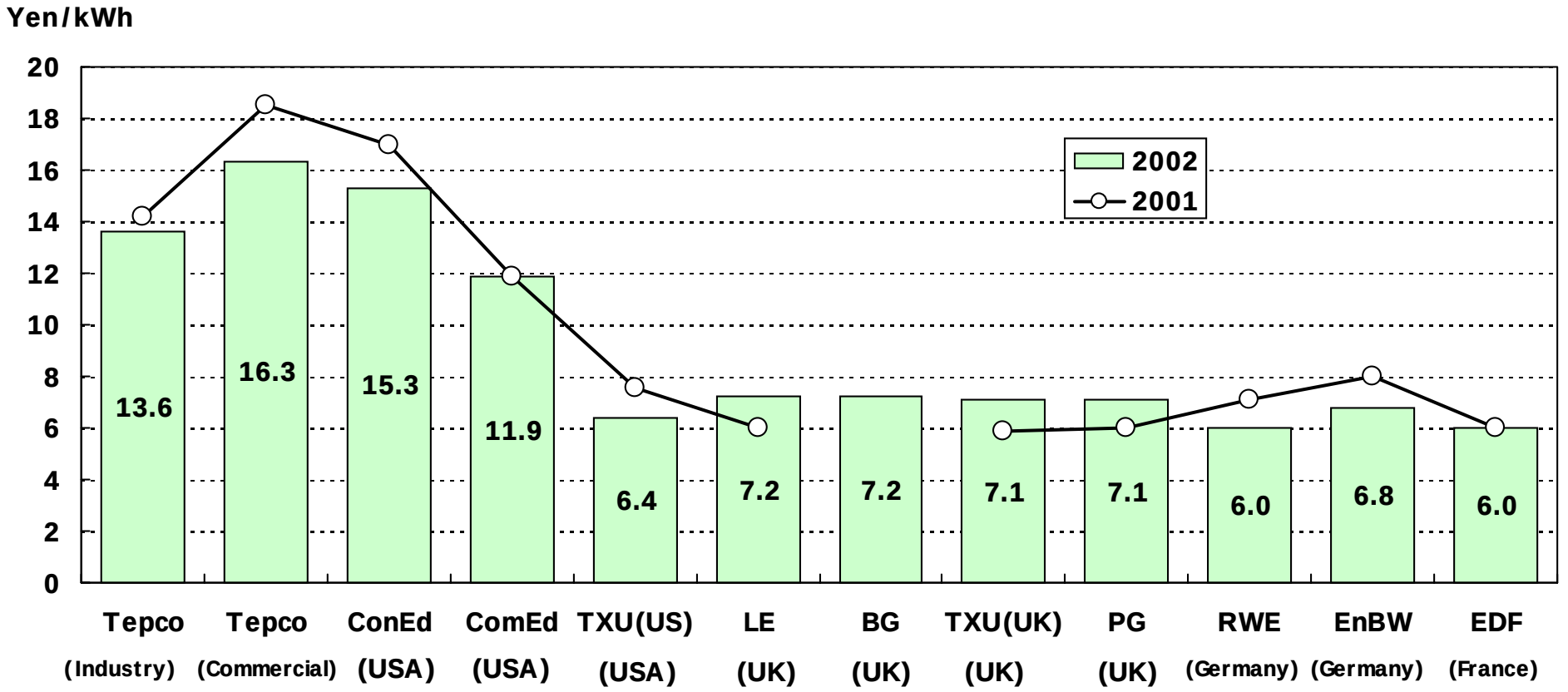
Note 1: The abbreviations in the graph are as follows. Con Ed: Consolidated Edison (state of New York), Com Ed: Commonwealth Edison (state of Illinois), TXU (US): Texas Utilities (state of Texas), LE: London Electricity, BG: British Gas, TXU (UK): TXU Energie, PG: PowerGen

Note 2: The charges of the respective companies in 2001 were evaluated at the exchange rate used in the 2002 model.

Source: IEEJ

1. Current State of Progress in Deregulation

Disparity in domestic and foreign prices: Electricity (large scale use)



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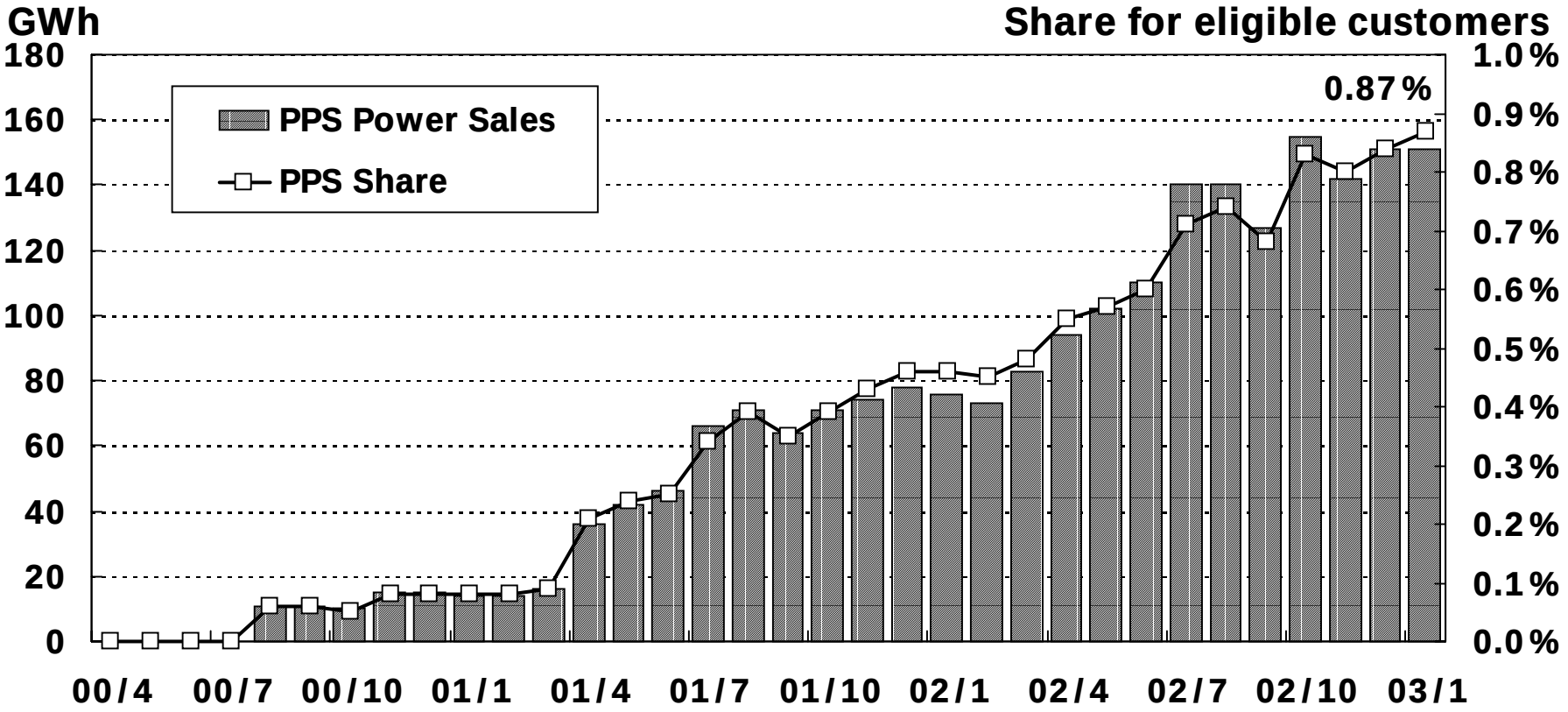
Source: IEEJ

1. Current State of Progress in Deregulation

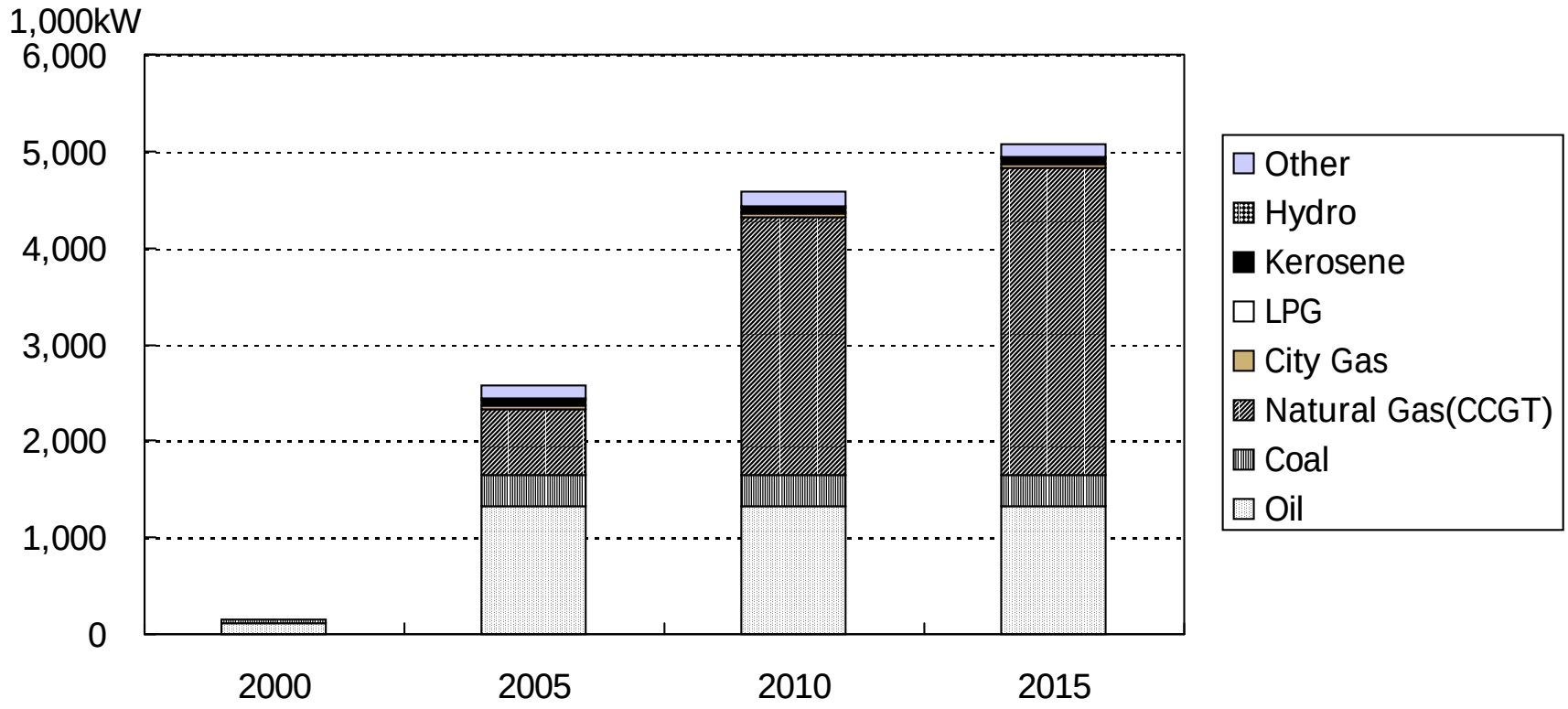
Trends for new entrants (1)



- **Though the number of users acquired by PPS in 2001 also increased, they only accounted for 0.87% of the users subject to deregulation in January of 2003.**

2. Current State of Progress in Deregulation

Trends for new entrants (2)



- Even on the basis of the current plan, the projected generation capacity of PPS in 2010 is expected to reach 4.58GW

2. “Report” Outline(1)

- February 18, 2003, a “Desirable Future Framework for the Electricity Industry System (draft)”(Report) covering a new framework for the electricity industry was agreed to at the 14th Electricity Industry Committee, and a report was submitted to the Minister of the Economy, Trade and Industry. Then, in March of this same year, a draft amendment to the Electricity Utility Industry Law based on this proposal was introduced to the National Assembly.
- Main points of the Report
  - Elimination of the rate pancaking problem (= abolishment of transfer charge)
  - Establishment of Neutral System Organization (NSO) and Power Exchange
  - Non-adoption of structural regulations which GPUs have obliged to separate into transmission sector and generation sector (unbundling)
  - Step-by-step approach for retail market opening (clarification of the schedule)
  - (Redefinition of Nuclear sector handling methods)
- It is characterized by the selection of a steady and phased deregulation system harmonized with the actual situation in Japan and the strong spelling out of a concept of the “creation of a single nationwide market.”

2. “Report” Outline (2)

- Elimination of the rate pancaking problem (= abolishment of transfer charge)
  - It has been decided to abolish the transfer charges that are charged whenever supply areas are straddled, which have tended to obstruct competition between GPUs, the use of wide area supply capability and the expansion of user choices. In response to this, transmission charge will be integrated into the connection charge and a so-called postal stamp system for each demand region will ensue. In conjunction with the abolishment of the transfer charge, measures for settlement between GPUs are to be introduced and the reliable collection of costs is to be guarantied.
- Establishment of Neutral System Organization (NSO) and Power Exchange
  - Neutral System Organization play an important role. In relation to the utilization of the network, that serves as a common infrastructure, they establish the rules for (1) the formation of facilities, (2) system access, (3) system operation, and (4) the disclosure of information, and they provide supervisory and dispute handling (mediation and arbitration) services. In addition, they make public information on Available Transmission Capacity (ATC) on interconnection lines, provide a point for coordinating central electrical supply communication functions and the planning for providing of interconnection lines between areas, evaluate supply reliability, produce and publicize various statistics and undertake investigation and research relating to bulk power systems.
  - Moreover, it has been decided to organize an Power Exchange on a national scale made up of day-ahead market and forward markets, so as to promote the utilization of power sources over a wide area. Assuring a certain transaction volume in the initial stages of the founding of the exchange is an issue of concern. Nonetheless, though GPUs will not be compulsorily required to commit their generation productions, concepts are to be made public, whereby the power companies will initially contribute voluntarily.
- Non-adoption of structural regulations, such as the separation of transmission sector and generation sector (unbundling)
  - With the objective of maintaining supply reliability, considering the geographic and equipment requirements peculiar to Japan, it has been decided at this time not to impose structural regulations, such as the separation of power transmission sector and generation sector (unbundling) on vertically integrated GPUs.
  - Instead three Conduct Regulations will be reliably guarantied: (1) the information firewall, (2) the prohibition of cross subsidizing, and (3) the prohibition of discrimination. This is to be done by guaranties provided under the laws and by setting up an after-the-fact government checking function.

2. “Report” Outline (3)

- Step-by-step approach for retail market opening (schedule clarification)
  - A schedule has been made known indicating retail market opening for 500 kW and above (approximately 40%) in 2004, for 50 kW and above (approximately 63%) in 2005 and the start of discussions for full retail market opening from 2007. Rather then a sudden deregulation, as has been seen in some foreign countries, it has been decided to adopt a phased approach that while laying groundwork, such as the establishment of Neutral System Organization (NSO) and Power Exchange.
- (Positioning of nuclear power and coordination with the market)
  - It has been decided to proceed in the following manner. “A system will be set up to analyze and evaluate factors, such as the cost structure encompassing the back-end operations in general and the profitability of nuclear power generation as a whole. Based on the results, arrangements will be made, for example as to the appropriate apportionment of roles between the government and private sectors, and coordination with the existing system. A study will then be made, including necessity as well, as to the orientation for specific systems and measures, such as economic measures, with a target of the year 2004.” This report is to be ‘finished,’ at the stage where this study is completed.

3. Current situation in Europe and America

- **Situation in the United States**
  - Standard Market Design
  - RTO and ISO establishment trends
  - Comparison of the PJM ISO and the ERCOT ISO
- **Situation in Europe**
  - Coordination process under the Florence Forum
    - Rate Pancaking problem
    - Congestion management
  - Agreements at the Cabinet Council in November 2003

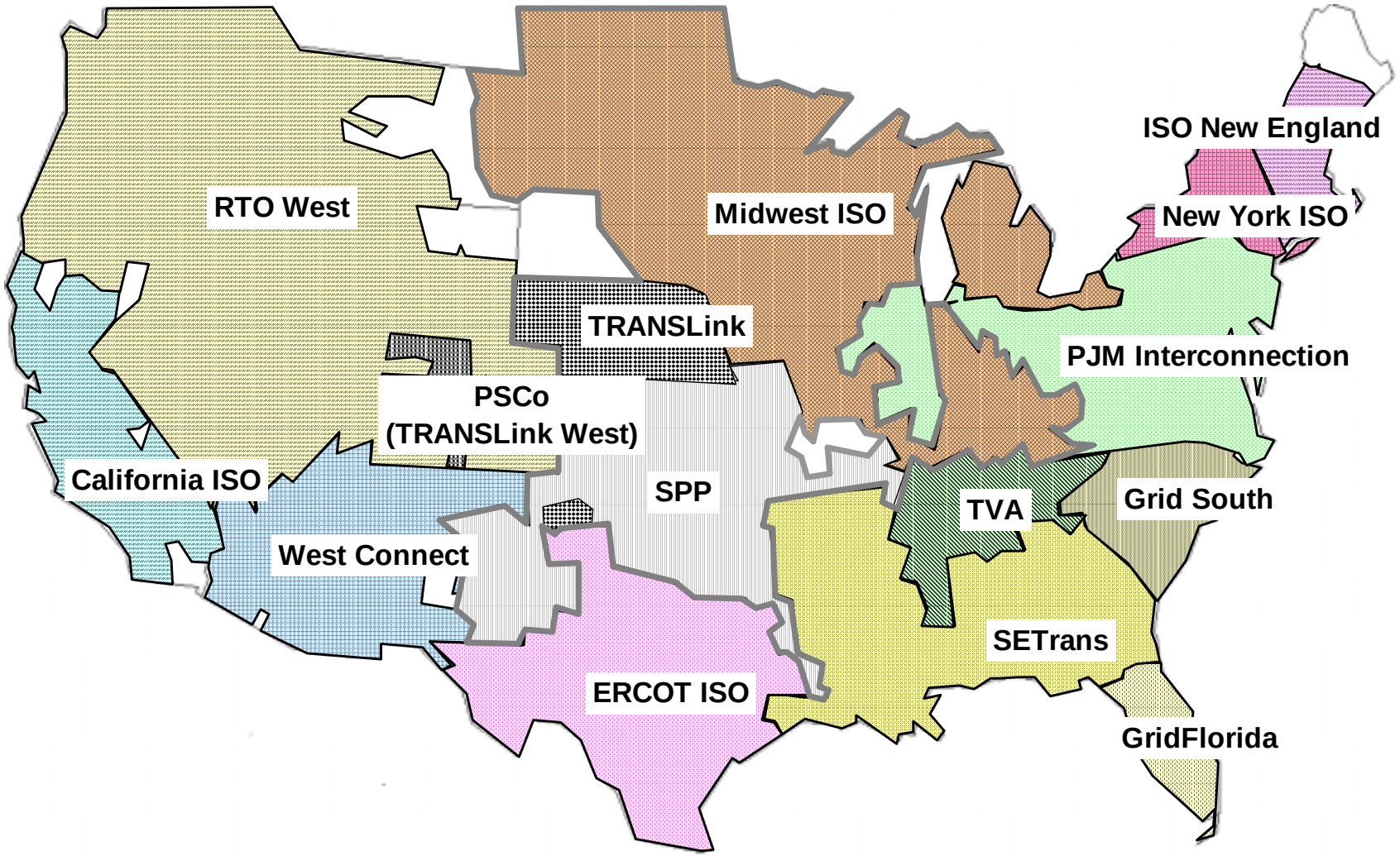
3. Situation in Europe and America

(1)Situation in the United States (a) - Outline

- In July of 2002, the FERC proposed a “standardized” framework for the wholesale power market and the transmission sector, referred to as the Standard Market Design.
  - In the backdrop of the California power crisis and the Enron collapse, a comprehensive framework was proposed for the wholesale power market and the transmission sector
  - It resembles the market framework operated by the PJM ISO. (establishment of day-ahead market and real-time markets, application of LMP (locational marginal pricing) system, introduction of financial transmission rights, etc.)
  - Characterized by the instigation by state regulatory agencies of participation in this process
  - Initially, comments were to be submitted by the end of October 2002 and put into operation by December, but the plan appears to be behind schedule
- Legal backing for the NERC standards
  - Movement to give legal binding force to the reliability standards under NERC (the North American Energy Reliability Council) within a comprehensive energy bill.
- Because the Texas state system is outside FERC jurisdiction, an original deregulation was selected. A decentralized system at opposite poles from the PJM ISO was adopted. Attention has increasingly been drawn to the realization of the fruits of steady deregulation.

3. Situation in Europe and America

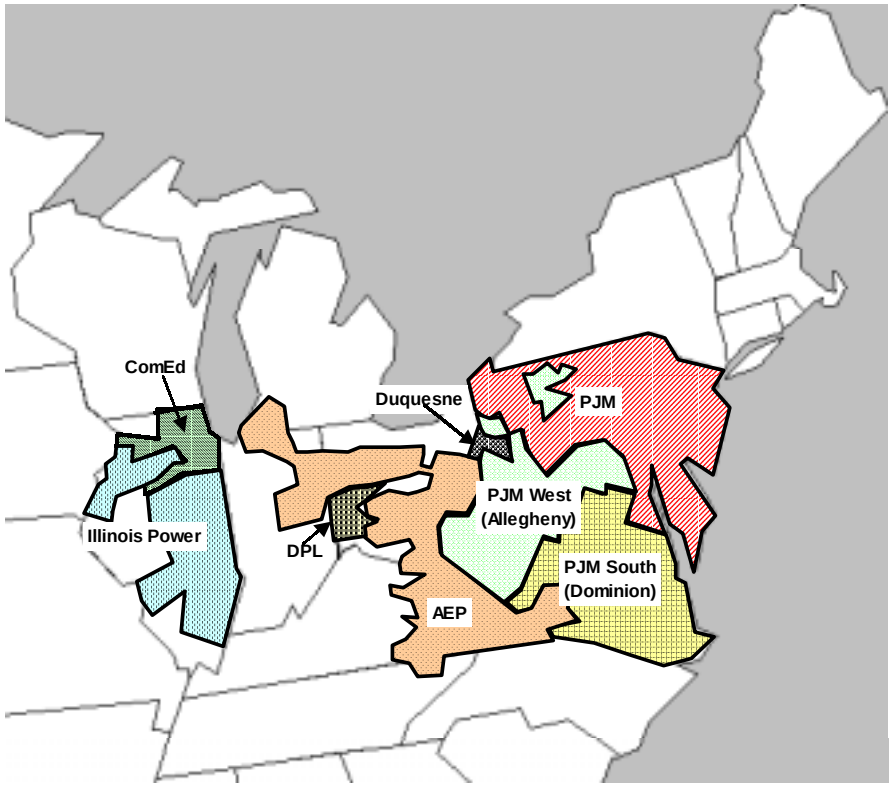
(1)Situation in the United States (b) - RTO and ISO establishment trends



3. Situation in Europe and America

(1) Situation in the United States (c) - Characteristics of the PJM system

- PJM ISO, a non-profit system operation company, operates the power transmission system primarily in the states of Pennsylvania, New Jersey and Maryland. It is also renowned for the fact that it became the model for the standard market design (SMD) advocated by the FERC. It is anticipated that AEP and Com Ed will participate and that a common market will be formed with Midwest ISO.
- It is characterized by a "centralized type" system operation
  - The market participants are obligated to undertake transactions for electric power through day-ahead market and real-time market. (The majority, however, are covered by bilateral contracts.)
  - Retail operators are obligated to secure power generation equipment in advance.



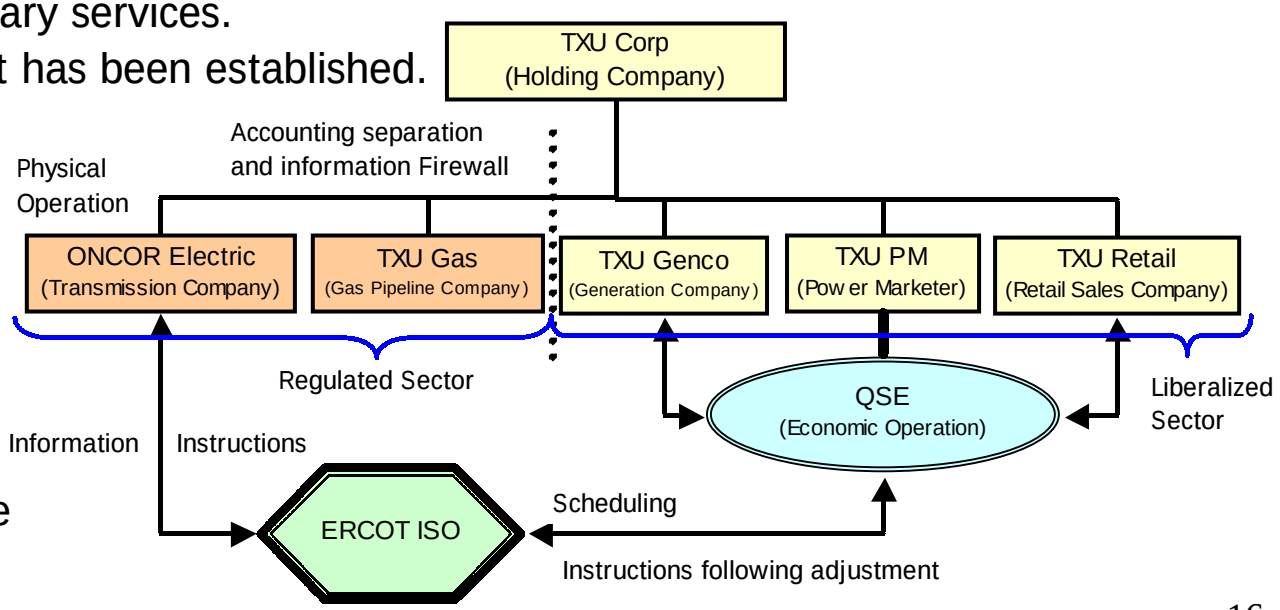
Note: AEP:American Electric Power,DPL:Dayton Power & Light Company, ComEd:Commonwealth Edison(Exelon)

- The ISO is a system that plays a central role in the system operation.

3. Situation in Europe and America

(1) Situation in the United States (d) - Characteristics of Texas system

- ERCOT ISO was an organization that coordinated the assurance of supply reliability for the Texas system. Its reorganization was sparked by the deregulation in the state of Texas, and it was converted into an agency operating under an autonomous system.
- It is characterized by a "decentralized" system operation.
  - The role of the ISO lies primarily in the functions of schedule coordination for the day-ahead point in time and the conveying of information.
  - The schedule coordinator, known as QSE, assumes a central role, including the procurement of ancillary services.
  - No day-ahead market has been established.
- The ISO only assumes a complementary role in the system operation.
- However, the physical and economic operations at existing power companies are also being unbundled and the vertical supply type organization is changing considerably.



3. Situation in Europe and America

(2) Situation in Europe (a) - Outline

- In Europe, coordination between the respective countries and interested parties is under way, with the aim of the formation of a unified ‘ internal electricity market’ within the framework of the ‘EU’.
- Florence Regulatory Forum
  - Discussions on important issues are held at this forum, through the participation of the regulatory bodies of the various countries and groups of interested parties (including the Association of Electrical Energy Transmission Operators, the Association of Electrical Energy Distribution Operators, the Association of Business Traders, and Customer representatives). (It has been held nine times up to now)
  - Cross-border trade mechanisms and congestion management have been the leading topics in the past.
    - **CBT mechanism**: Unification of export fees at the same amount as of March 2002. This is intended ultimately to lead to the abolishment of all such fees.
    - **Congestion management**: An agreement was reached at the 6th Forum (November 2000) on guidelines for congestion management. Fundamentally the orientation is towards the introduction of market principles to eliminate the congestion of cross-border linked lines.
- Agreements of the Cabinet Council
  - Scope of retail market opening: Non-residential categories will be opened by July 2004, with full opening by July 2007.
  - Management separation or legal separation will be required for the transmission sector and the distribution sector.

3. Situation in Europe and America

(2) Situation in Europe (b) - CBT Mechanism

- 2003 mechanism
  - It will be unified by assessing an export charge of 0.5 euros/ MWh on the planned volume of exporters. (A reduction was realized from the 1.0 euro/ MWh under the 2002 mechanism)
  - A standard model referred to as a ‘horizontal network’ has been structured, enabling the respective countries to uniformly identify the expenses related to the transmission facilities required for transit load.
  - The difference between the export charge revenue and the costs identified in the above model are collected by the respective countries through regular transmission charges.
- They will unify the transmission charge system of each country in phases, and ultimately abolish the above export charges, with the intent of eliminating the ‘rate pancaking problem’ .

3. Situation in Europe and America

(2) Situation in Europe (c) - Congestion management

- 'Guidelines for Congestion Management' were agreed upon at the 6th Florence Regulatory Forum held in 2000.
  - General principle: The congestion management method must provide the appropriate incentives for efficient grid use and optimum power source location, and must satisfy the principles of non-discrimination and transparency.
  - It recommended congestion management methods (auctions, etc.) that would provide appropriate price signals to market participants and TSOs (transmission system operators) without granting special treatment for long term contracts at the time of contract renewal.
- At the present time, on a simple average basis, as much as 77% of the individual items in the above guidelines have been achieved. (9th Forum "Status Report on the Electrical Energy Transmission Congestion within the EU Region")
  - However, the power transmission system of continental Europe is a mesh configuration, making cooperation among the TSOs of the various countries indispensable, and there are also numerous pending issues.

3. Situation in Europe and America

(2) Situation in Europe (d) - establishment of Power Exchange

- By and large, there is one exchange per country, with the European Energy Exchange (EEX) in Germany, Powernext in France, Omel in Spain, Nord Pool in Northern Europe (Norway, Sweden, Finland and Denmark), and Amsterdam Power Exchange (APX) in Netherland.
- Prices as well have largely formed each countries. (The Nord Pool price zone has for the most part been formed on a country by country basis.)

4. “Report” Evaluation

- We would like to extract the themes for the evaluation from (1) the creation of a single nationwide market, (2) the establishment of Neutral System Organization and (3) the establishment of Power Exchange, which represent the three underpinnings of the present system reform.

4. “Report” Evaluation

(1)Evaluation of the creation of a single nationwide market and its problems

- The abolishment of transfer charges and the establishment of a wholesale Power Exchange have made evident the new orientation from regional markets towards the creation of a single nationwide market. As a result, consumer choices should expand greatly and competition should evolve to a nationwide scale.
- Though the U.S. and Europe have made a particular effort to “eliminate the pancake problem,” Japan has merited attention as a vanguard example for achieving its elimination.
  - “They will seek to use the abolishment of supply transfer charges to resolve the questions of recovery of costs, settlements between regions, and location in remote areas and will watch how the situation progresses following the abolishment, and if major problems arise, they will immediately reassess the abolishment.”
- However, since linked equipment is weak in terms of physical infrastructure (interconnection facilities), and a long-term build-up will be required, the structuring of a mechanism “to provide compensation commensurate with the abolished transfer charges” will be indispensable. Debate is now being called for in Europe and America on how the compensation money will be calculated, for which adequate studies will be required.

4. “Report” Evaluation

(2) Evaluation associated with the establishment of Neutral System Organization and their problems (a)

- The Neutral System Organization (NSO) will establish the following rules relating to the use of networks, which are common infrastructures, and will provide supervisory and dispute handling (mediation and arbitration) services.
  - (a) Facilities formation (rules for formulating network facilities plans)
  - (b) System access (generator side access rules and customer side access rules)
  - (c) System operation (rules for assuring sufficient capacity during system operation, rules for formulating operating plans for network facilities, rules for load-dispatch instructions, and rules for interconnection line operation)
  - (d) Disclosure of information.
- In addition, as institutions they assume the important roles of making public information on Available Transmission Capacity (ATC) on interconnection lines, providing a point for coordinating central electrical supply communication functions and the planning for providing of interconnection facilities, evaluating reliability, producing and publicizing various statistics, and undertaking investigation and research relating to Grid systems.
- There is no example of a similar-type nationwide institution having been established in Europe or America, making this a system unique to Japan.

4. “Report” Evaluation

(2) Evaluation associated with the establishment of Neutral System Organization and their problems (b)

- **Governance**
  - Neutral System Organization (NSO) will play a significant role as bodies for laying down and supervising requirements and rules relating to the use of networks, which are common infrastructures,
  - They are made up of “Board” and “special committees” established within the Neutral System Organization (NSO) as well as the representatives of the interested parties, and inevitably the ‘scope of the interested parties,’ the ‘distribution ratio of seats,’ and the ‘ selection method’ have a significant impact on the decision making process.
  - In Europe and America as well, the means of participation of interested parties in organizations requiring neutrality vary, and it is dangerous to think that a framework, once determined, will be the ultimate outcome.
  - It is important to establish a way for interested parties to participate (Board and special committees). At the same time, how the respective groups of interested parties will form arguments is also an important consideration.
    - What is required is an organization for shaping an agreement among the respective the PPS, self-producers and wholesale electric utilities.
  - Over the medium and long term, an important issue will be the training of independent specialists capable of holding their own in specialized discussions.

4. “Report” Evaluation

(2) Evaluation associated with the establishment of Neutral System Organization and their problems (c)

- **Guarantee of enforcement to Rules relating to reliability standard**
  - The regulations providing for the established Neutral System Organization (NSO) are set up to guarantee their observation by a ‘system of self-regulation.’
  - In both Europe and America and the assurance of legal force for the rules relating to reliability standard is a major issue. At present, all their various countries have adopted a ‘system of self-regulation.’ (The enactment of a law to legally guaranty legal force is currently under deliberation in the United States.)
  - It is essential to the process of enactment of rules to be observed by market participants under the ‘system of self-regulation’ that the view of each interested party be expressed and that a thorough debate be conducted.
  - The governance of the Neutral System Organization (NSO) is also important from the perspective of legal enforcement to rules relating to reliability standard.

4. “Report” Evaluation

Reference: State of governance in foreign countries (1)

- Situation in the United States
  - SMD: It is required in the standard market design (SMD) currently advocated by the FERC that the director of the Independent Transmission Providers (ITP) be an independent person who is without interests, including in the monetary aspect, from among the market participants.
  - PJM ISO: Since it first became a corporation in 1997, it has required that to become a member of the ‘independent committee,’ which is the final decision making body, one must be an independent person who is without interests, including in the monetary aspect, from among the market participants.
  - ERCOT ISO: The Board of Directors, which is the final decision making body, has traditionally been composed of representatives of the interested parties, however, it has been increasing the proportion of ‘independent persons’ who are without interests, including in the monetary aspect, from among the market participants.
  - NERC: It is in the process of providing a legal positioning (granting legal force to the reliability standards) to the organization which has traditionally been an autonomous industry association and will limit membership in the Board of Trustees, the final decision making body, to ’independent persons’ person who are without interests, including in the monetary aspect, from among the market participants.
  - There is a trend towards limiting the members of the final decision making body to ‘independent persons.’ Interested persons will have the role of providing the facts for making decisions to the independent persons, who will do the decision-making, subsequent to a discussion process.

4. “Report” Evaluation

Reference: State of governance in foreign countries (2)

- Situation in Europe
  - As they have been guaranteeing neutrality by unbundling monopolistic transmission companies and by supervision by autonomous regulatory agencies, not too much has been heard with regard to governance.
    - In a Cabinet meeting in 2002, it was decided to enforce compulsory management unbundling and legal unbundling of the energy transmission and distribution groups. (management unbundling: assurance of independence in the decision making aspect)
  - On the other hand, in the present situation, the Europe-wide Florence Regulatory Forum is functioning as a decision making process among interested parties.
  - At present, the European commission decide on the participants to the Forum and doubts remain as to whether the views of the various interested parties are being reflected.
    - Unlike the national scale of large and small countries, it is necessary to form a consensus in conditions where there are diverse interested parties, which makes for a very difficult decision making process.
    - The governance also varies in each group of interested parties that participates in the forum and the problem also remains as to whether an overall balance is maintained.

4. “Report” Evaluation

(3) Evaluation associated with the establishment of Power Exchange and its problems (a)

- Significant advances have been made in establishing Power Exchange on a nationwide scale with an eye to the ‘creation of a single nationwide market.’
- The proper approach to public participation
  - It has been agreed that it will be established as a purely ‘private exchange’ and that its neutrality will be secured though the organizational configuration of “an intermediate corporation”.
  - However, if we consider that establishment of multiple exchanges is unrealistic and the small scale of the PPS market share, this Power Exchange will need to have a fixed public character ; also it may be desirable for the organizational and operating rules of the exchange to be determined through a public discussion forum to a certain degree.
  - Up to what stage of content would it should be determined in a public forum?
- At the minimum, it will likely be necessary to hold discussions in a public forum up to the stage of the outline of the organizational configuration and the operating rules.

4. “Report” Evaluation

(3) Evaluation associated with the establishment of Power Exchange and its problems (b)

- Nature of the power provided and supervisory system
  - In a market it is desirable that transactions be done freely; forcing transactions for the concerned buying and the selling could distort the formation of the market. Moreover, there is concern that market power force will be employed when transaction volume is low and thus the possibility remains that no valid price index will be formed.
  - Hence, at present there is no compulsory obligation on the GPUs to provide power, though the GPUs were supposed to make known their thinking as to the power that would initially be provided by them voluntarily. An operation that does not distort the trading or prices in the market is necessary for this initial voluntary supply. Thus, whether the market was operating normally and how to achieve a supervisory structure in conditions of thin public participation become issues of concern.
  - Under such conditions an emphasis ought be placed on a system that executes the supervision and reporting within the exchange; however, there is room for study in the future, including the best approach for public participation.
- It will be important to have a system that provides supervision and reporting within the exchange.

4. “Report” Evaluation

Reference: Positioning of electric power exchanges in foreign countries

- Various legal positionings of exchanges handling spot transactions (prior-day transactions)
  - (1) Type conforming to the Electricity Industry Act: Nord Pool (Northern Europe
    - This exchange was established in accordance with international electric power trading monopoly right of Statnett, a Norwegian state-owned transmission company.
  - (2) Type conforming to the Financial and Credit Law: Powernext (France), European Energy Exchange (Germany), etc.
    - Day-ahead trade is considered to be ‘forward trade’ and was instituted pursuant to the Money and Credit Act. They are also subject to regulation by financial authorities.
  - (3) Private type: APX (U.S.A.)
    - They were instituted as a configuration for contra transactions. They are positioned as brokers.
- In the background of the diverse legal frameworks of exchanges, there are a variety of both competencies and supervisory methods available to regulatory authorities. The exchange that is slated to be established in Japan will be the type mentioned in item (3).

4. “Report” Evaluation

(4) Scope of retail deregulation and unbundling

- Scope of retail market opening
  - There are various examples in the different countries and regions of Europe and America. There are for example those that have completely deregulated all at once and those that are expanding the scope of deregulation in phases, commensurate with the actual state of competition.
  - Viewed from the examples of such foreign countries, there is concern that an easy expansion of the scope of retail market opening, while competitive conditions are still not right, may cause competitive harm to small users.
  - It could thus be said that a sound approach would be to decide on the expansion of the scope of retail market opening in phases, while giving consideration to the time for the establishment of Neutral System Organization (NSO) and Power Exchange.
- Non-adoption of structural regulations such as the separation of generation sector and transmission sector (unbundling)
  - In European and American countries, a variety of methods have been adopted, (ownership unbundling, legal unbundling, management unbundling, etc.) aimed at increasing the independence of the transmission sector from other business activates. With the exception of Japan, there are few countries that have continued with an integrated system even following deregulation.
  - Nevertheless, structural regulations (unbundling), such as the separation of generation sector and transmission sector at existing GPUs, were not adopted. This was an appropriate choice from the viewpoint of stable supply, as these power companies were expected to assume almost the entire supply of electric power of regions where they continued to maintain regulated areas.
  - Instead it was decided to reinforce the adopted behavioral regulations (1. information firewall, 2. the prohibition of mutual internal assistance, and 3. the prohibition of discriminatory treatment); however, how the regulatory authorities respond to this will be important.

5. Summary and Outlook for the Future

(1) Remaining issues and outlook

- Medium-term issues
  - Study by detailed system working group, in anticipation of the draft amendment to the Electricity Utility Industry Law being passed by the National Assembly.
  - Positioning of nuclear power and coordination with the market (study by the end of 2004)
    - Whether or not it will impact the present framework
  - Commencement of discussions on full retail market opening from 2007.
    - Full retail market opening will result in a considerable deterioration of the concept of supply obligation, and there are also many aspects that cannot grasped as an extension of the old electric industry framework that must be adequately studied.
  - Relationship with global environmental problems.
- Long-term issues
  - Formation of a network infrastructure suited to the “creation of a single nationwide market.”
  - Assurance of supply reliability.

5. Summary and Outlook for the Future

(2) Positioning of nuclear power and coordination with the market

- It has been decided to proceed in the following manner. “A system will be set up to analyze and evaluate factors such as the cost structure encompassing the back-end operations in general and the profitability of nuclear power generation as a whole. Based on the results, arrangements will be made, for example as to the appropriate apportionment of roles between the government and private sectors, and coordination with the existing system. A study will then be made, including as to necessary, on the orientation for specific systems and measures, such as economic measures, with a target of the year 2004.”
- Steady promotion and coordination of the deregulation of nuclear power generation, which plays an important role in Japan’s energy policy
  - Energy security
  - Global environmental problems

5. Summary and Outlook for the Future

(3) "Formation of a single nationwide market" and network infrastructure

- How will the "creation of a single nationwide market" be reconciled with the design ideology of the currently formed network infrastructure, while giving important consideration to "stable regional supply"?
  - In the United States the development of large scale RTO has resulted in a shifting of the burden of the cost for wide area networks from an individual to a general burden.
  - Though the aspect of the individual burden being borne by each country remains, there has been a push by the regulatory agencies of each country for a reinforcement of interconnection facilities at the stage of approval of plans for investment in 'monopolistic transmission companies.
- The formation of consensus in Neutral System Organization (NSO) will be an issue.

5. Summary and Outlook for the Future

(2) Comparison between the countries of Europe and America

		EU Countries	United States	Japan
Degree of market openness		● Average 75% (Full deregulation: Austria, Finland, Germany, Sweden and England) ◆ In November 2002 the Cabinet Council agreed to deregulation with the exception of the home sector by July 2004 and full deregulation by July 2007.	● Varies from state to state (Full deregulation in 17 states. Over half of the Northeastern region.) ● There is no uniform orientation for the United States as a whole.	● 2000: Special high voltage users (26%) ● 2004: High voltage over 500 kW (40%) ● 2005: High voltage over 50 kW (just over 60%)
State of unbundling of the transmission sector		● Management unbundling: France and Luxembourg ● Legal unbundling: Austria, Belgium, Denmark, Germany and Portugal ● Ownership unbundling: Finland, Holland, Spain, Sweden, Norway and England ◆ In November 2002 the Cabinet Council agreed to proceed in the direction of requiring management unbundling and legal unbundling.	● The FERC has called for the introduction of a wide area RTO (regional transmission organization). The pancake problem is eliminated within the RTO, because it emphasizes unity in the regional divisions of the RTO. ● Up to now, the Midwest ISO and PJM ISO have received approval as RTOs. ◆ In Texas, where the FERC jurisdiction does not reach, an ISO with a more lenient configuration has been adopted (ERCOT ISO).	● Reinforcement of 'accounting separation,' 'information cut-off' and 'prohibition of special treatment'
Pancake problem		● From April 2002, a fund will be established to compensate for the transit load, standardized on amount equivalent to the export charge. The export charges as well will ultimately move in the direction of abolishment.		● Shift to a 'postal stamp system' for each demand area as a result of the abolition of transfer fees.
Power Exchange	Status	● Established by Netherlands and, England&Wales, Spain, Germany, France, Northern Europe (Norway, Sweden, Finland and Denmark)	● The FERC requires the structuring of a day-ahead market and a real-time market within the standard market design. ● At present, energy markets have been set up in the PJM ISO, the New York ISO and the ISO New England.	● Planned establishment of a private electric power exchange in 2005 (prior-day market and forward delivery market)
	Price mechanism	● A simple pricing system will be adopted in the majority of the countries that make the 'countries' into a single area.	● The FERC requires the introduction of LMP (locational marginal pricing) as a price setting and congestion management system. ● At present, the PJM ISO and the New York ISO have adopted the LMP system. ◆ Though no day-ahead energy market has been established at the Texas ERCOT ISO, a congestion management between zones and within zones based on a real-time market is being implemented.	● Prior-day market: Single price (before congestion) ● Forward delivery market: Continuous session system
Congestion management (Interconnection)		● Continental Europe: The examples of adoption of a power transmission rights auction will increase. ● Northern Europe: Market splitting method		● When congestion occurs in the linked part in the prior-day market, the congestion is eliminated by the market splitting method.