Organisation de Coopération et de Développement Économiques
Organisation for Economic Co-operation and Development

10-Feb-2010

English - Or. English

DIRECTORATE FOR FINANCIAL AND ENTERPRISE AFFAIRS
COMPETITION COMMITTEE

DAF/COMP/WP2/WD(2010)5
For Official Use

Working Party No. 2 on Competition and Regulation

ELECTRICITY: RENEWABLES AND SMART GRIDS

-- Japan --

15 February 2010

The attached document is submitted to Working Party No. 2 of the Competition Committee FOR DISCUSSION under item III of the agenda at its forthcoming meeting on 15 February 2010.

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JT03278386

English - Or. English

1. Renewable sources of electricity

1.1 Wholesale pricing

1.1.1 Prices offered for electricity generated by renewables are sometimes regulated. How often are the prices regulated? Are there different prices for small-scale production and large-scale production?

1. The Ministry of Economy, Trade and Industry (METI) launched the "New Purchase System for Solar Power-Generated Electricity" (feed-in tariff, FIT) in November 2009. Under this system, electricity utilities are obliged to purchase excess electricity generated by photovoltaic power generation system (covering systems with a capacity of less than 500kW) remaining after self consumption at a purchase price roughly twice the conventional rates. Also, expenses associated with power purchase are paid by all electricity customers. Specifically, obligation fees named "Solar Power Surcharge" are added on electricity charges in proportion to the volume of electricity consumption.

2. METI revises the FIT purchase price every year. Also, wholesale prices for portions that exceed a specified scale and period are determined, regardless of the type of power resource, in accordance with the Electricity Business Act. All rates other than the above are unregulated and set by the market.

3. In addition, Japan Electric Power Exchange (JEPX) started the Wholesaling of Green Electricity, etc. in November 2008 on a trial basis.

1.1.2 How are the prices set for small-scale and large-scale producers?

4. In fiscal 2009, METI set aside a budget of approx. 112.7 billion yen for the introduction of photovoltaic, wind and biomass power generation, heat utilization and other renewables. (Breakdown: Beginning of fiscal 2009: 70.8 billion yen/After supplementation in fiscal 2009 (after returns): 41.9 billion yen)

1.1.3 How large is the subsidy for different forms of renewable production, if there is any subsidy? Are there any competitive distortions that have been alleged as a result of renewable pricing policies?

5. We are not aware of any discussion to that effect.

1.1.4 How common is flexible, time-of-day pricing to electricity customers?

6. All electricity utilities offer a range of time-of-day rate options for daytime, nighttime, etc. for both large-scale and small-scale customers.

1.1.5 How do you induce customers to use more expensive energy sources? How do you change consumer incentives?

7. The system does not offer incentives for electricity customers that would favor power suppliers with a greater capacity to utilize renewable energies.

8. On the other hand, Japan employs the Renewable Portfolio Standard (RPS) system, which mandates electricity utilities to use a specified amount of electricity from renewable energies.

1.1.6 Can types of meters and access to data change incentives?

9. Electricity utilities are required to use a meter that has passed the official examination in accordance with Measurement Act. The government, however, sets no regulation on the type of meters to be employed.

1.2 Investment

1.2.1 If wholesale prices for renewable energy yield an excessively high return on investment, they may lead to excessive investment in renewable technologies generally or distributed energy in particular. Is there any evidence of excessive investment and distortion in production arising from such investment?

10. We are not aware of any evidence to that effect.

1.2.2 How do you encourage investment in renewable energy due to lack of assurance of transmission and, similarly, encourage investment in transmission absent renewable generators? Is investment to extend or build transmission mandated?

11. N/A.

1.2.3 Who pays for new transmission?

12. Regarding the extension or development of transmission facilities, electricity utilities in charge of management of transmission/distribution networks in the area in question examine possibilities for system reinforcement if and when they are not able to sustain supply reliability. While investment to extend or develop transmission facilities is not mandatory, electricity utilities are under the obligation to ensure stable supply of electricity. In the case of new transmission facilities, the party who builds a new power generation facility pays all the cost.

1.3 Output plans and minimum purchases

1.3.1 What are the current output requirements for renewable energy sources?

13. At present, there are no requirements on output of renewable energy based power generation.

1.3.2 What sources are classified as "renewable".

14. "Renewable energy sources" are defined in enforcement ordinance of the Act on the Promotion of the Use of Nonfossil Energy Sources and Effective Use of Fossil Energy Materials by Energy Suppliers (Act No. 222 of August 27, 2009) as follows (Renewable energy sources):

- Photovoltaics
- Wind
- Hydro
- Geothermal
- Solar heat
- Atmospheric and other heat sources in nature (excluding geothermal and solar heat)

- Biomass (organic matter derived from plants and animals that can be utilized as energy sources (excluding crude oil, petroleum gas, flammable natural gas, coal and coal-derived fuels (including byproducts obtained in coal production that are used for combustion)))

1.3.3 Do government or operators have plans to increase renewable generation in the future? If so, what are these plans?

15. In its manifesto, the Democratic Party of Japan (DPJ), the current party in power, sets as one of its targets: "Increase the ratio of renewable energy to total primary energy supply to around 10 percent by 2020."

1.3.4 Are there minimum purchase/output requirements for renewables? How are these put into operation?

16. In Japan, the Act on Special Measures concerning New Energy Use by Electricity Utilities (RPS Act), promulgated in 2002, mandates electricity utilities to use, at a minimum, a specified amount of electricity from new energy or other renewables. Under the RPS Act, the government sets, every four years, the "usage target" for eight years and allots the obligation amount according to the volume of electricity supplied by the respective utility. The "usage target" is determined after comprehensively examining the trends of energy, global environmental problems and other factors, status of new energy introduction, moves in the development of new energy technology, prospects for cost reduction, volume of feasible introduction and international progress in the field.

17. For new and other renewable energies mandated under the RPS Act, which entail high power generation cost, the eventual cost burden is passed on to customers in the form of electricity cost while electricity utilities make an effort to streamline their acquisition operations.

1.3.5 Who has the responsibility for adopting renewable sources (the system operator, independent distribution companies, etc.)?

18. The government operates the RPS system to promote the introduction of renewable energy. Private operators are looking to expand the utilization of renewable energies including wind power generation under this system.

1.3.6 How do minimum purchase plans tie into transmission capacity?

19. At this time, introduction obligations under the RPS Act are not determined in combination with transmission capacity.

1.3.7 Is there a mechanism for trading renewable energy credits? If so, how does that function?

20. In Japan, the "Act on Special Measures concerning New Energy Use by Electricity Utilities" (RPS Act), promulgated in 2002, mandates electricity utilities to use, at a minimum, a specified amount of electricity from new energy and other renewables. The obligated parties under the RPS Act may seek to meet their obligations by purchasing "Renewable Energy Certificates (New Energy Certificates)" from other utilities, in addition to conducting new energy based power generation or purchasing new energy-based electricity.

21. The "Renewable Energy Certificates" are equivalent to their value in new energy, etc. that can be traded among utilities apart from electricity.

22. Also, the private sector has a mechanism called "Green Power Certification System." Under this system, electricity generated by photovoltaic, wind, hydro, geothermal and biomass power (green power) is split into electricity and "added environmental value" and added environmental values are converted into a certificate that can be traded. By purchasing the certificates, electricity customers can assume that the power they use is green.

1.4 Connection to the grid

1.4.1 Are connection rules for renewable electricity suppliers clear and transparent? How long do renewable generators need to wait to get connected?

23. Rules for system interconnection (http://www.escj.or.jp/English/index.html) are clear and highly transparent. In principle, electricity utilities in charge of management of transmission/distribution networks in the area in question conduct an interconnection examination and inform the interconnection applicant of the result of the examination within three months.

1.4.2 On what basis are connection costs calculated and allocated?

24. The constructions cost of power supply lines is calculated according to the "Ministerial Ordinance on Coverage of Payment for Power Supply Lines" and paid by the power producer.

1.4.3 Do incumbent generators have incentives to limit transmission capacity of renewable generators? If so, how can these incentives be changed?

25. In the case of wind power generation, electricity utilities in charge of management of transmission/distribution networks in the area in question limit the volume of power generated from wind in the interconnection due to the difficulty of adjusting supply and demand to variable output prevalent in wind power generation.

26. Electricity utilities in charge of management of transmission/distribution networks in the area in question do not impose any limit on hydro- and geothermal generated power in the interconnection.

1.5 Dispatch in response to demand

1.5.1 A commonly cited challenge with renewable generation is that production often depends on external forces that cannot be controlled by the operator. For example, wind power depends on the presence of appropriate atmospheric conditions. What efforts are being made to increase the ability to dispatch renewable energy resources in response to demand?

27. Examinations are underway by governmental study groups and public-private councils on the construction of "smart grids," a system of power transmission/distribution that can help promote effective supply-demand balance using telecommunications technology and realize stable power supply. Its implementation in the form of demonstration projects is currently being planned.

28. Also underway are demonstration projects to install storage batteries at wind power generation facilities and to level the unstable output of photovoltaic power generation, as well as development of technology for improved storage battery performance, among others.

1.5.2 How common are contracts that allow the electricity network operator to temporarily "shut down" small-scale or large-scale electricity users at peak periods, helping it to adapt to the potentially limited ability of renewable generation to provide electricity?

29. Electricity utilities adopt a contract with some large-scale customers in which low electricity rates are applied on condition that power supply is suspended at times of peak demand. The purpose of the contract, however, is not to support the introduction of renewable energy but to ensure stable power supply.

1.5.3 How common is flexible pricing that can change on a daily and hourly basis?

30. All electricity utilities provide time-of-day rate options for peak shifts and peak cuts by employing a meter that combines the meter with clock. The default is normal rates but customers may select time-of-day option.

1.6 Vertical and horizontal issues

1.6.1 Do generating companies own both renewable and non-renewable plants? Can such generators create bundles of renewable and non-renewable plant output?

31. Many electricity utilities own power plants based on renewable energy and non renewable energy. Also, these utilities supply electricity by making good use of renewable and non renewable energies in a combined manner, partly to deal with the enhanced need to respond to global warming.

32. For fulfilment of the obligations of the RPS system, electricity utilities accept supply from new power suppliers. The Japan Fair Trade Commission and METI have compiled 'Guidelines for Proper Power Electric Trade,' which is not only for the renewable energy trade, to secure proper trade in electricity market, and by this guideline the government has been keeping the new supplier not to be eliminated from the market.

33. Additionally, under the "New Purchase System for Solar Power-Generated Electricity," which started in November 2009, electricity utilities are mandated to purchase excess electricity generated by photovoltaic power generation systems remaining after self consumption at a purchase price roughly twice the conventional rates. This purchase obligation is assumed by general electricity utilities stipulated in the Electricity Business Act.

1.6.2 Are some electricity companies able to exercise monopsony power in the purchase of renewable electricity? Can such purchasers foreclose new producers to the benefit to their own generation?

34. N/A.

2. Smart grid

35. (NOTE: not all countries have experience with smart grids. If your country has no smart grid experience, please respond to renewables questions (above) and respond to questions below only as seems appropriate.)

2.1 Status of adoption and demand response

2.1.1 What is the status of smart grid adoption in your country? Are large customers (e.g., factories) tied in to a peak-demand response system?

36. In Japan, as the result of continuing efforts to build advanced transmission/distribution networks by utilizing information technology to date, the ratio of automation of the networks is higher than other jurisdictions, thus, the reliability on electricity supply has been kept in high level. Also, electricity utilities adopt a contract with some large-scale customers in which low electricity rates are applied on condition that power supply is suspended at times of peak demand.

2.1.2 What is the extent of "smart metering" whereby customers can see and respond to real time to price changes? What evidence exists of their potential effects in your jurisdiction?

37. Although there is no set definition of "smart metering," the Japanese government's Council for Regulatory Reform has drafted a proposal, which seeks to "pursue the reform of all mechanisms triggered by the introduction of smart metering beyond mere computerization of electricity measurement and sophistication of functions; for example, the system of two-way communications among meter operators that is generated as a consequence, improved operations at electricity utilities and diversification of customer services." The government currently provides support to demonstration tests on energy conservation and load leveling effects realized through the implementation of real-time billing programs.

2.1.3 How do you ensure that customers would benefit from reducing their demand?

38. Customers enjoy the benefits of reducing their demand in the form of lower electricity bills.

2.1.4 Who receives the monetary benefit of system cost reductions from demand reductions?

39. Parts of the monetary benefit of system cost reduction are fed back to customers in the form of lower electricity unit rates.

2.1.5 How do you choose a benchmark for measuring demand "reduction"?

40. Retail companies (electricity utilities) employ their respective techniques to estimate demand fluctuations and load leveling effects.

2.1.6 Is demand response a product that can be sold in competition with wholesale electricity? Can small demand responses be "aggregated" and "sold" back into the wholesale marketplace by any entities other than traditional utility suppliers?

41. In Japan, the nature of demand response is recognized as being different from that of wholesale electricity. For this reason, competition with wholesale electricity or sale on the wholesale market is not taken into assumption.

2.2 Standards

How are standards being determined for smart-grid elements? Are there any competition policy issuess that have surfaced for such standards? Would incumbents have an interest to ensure standards do not promote increased competition? Is there a risk that standards or devices are being devised in an inflexible way that will prevent future adaptation of the network to new standards, technologies and competitors to existing utilities?

42. International standards for smart-grid elements are, as in other technologies, determined by discussions among stakeholders, where related parties are convened to discuss and formulate standards. These processes are undertaken by international standardization agencies such as International Standardization Organization (ISO) and International Electrotechnical Commission (IEC) in the global setting, by forums attended by businesses in the respective technology fields in the private sector, and by governmental institutions in the case of national standards. In this regard, problems associated with competitive policy are judged based on 'Guidelines on Standardization and Patent Pool Arrangements' (June 2005 Japan Fair Trade Commission).[1]

43. Conducts pose the regal issues with the Antimonopoly Act (AMA) in the 'Guidelines on Standardization and Patent Pool Arrangements'

44. Although the standardization of specifications determines the functions or performances of the products with specifications, by accepting compatibility among the new products it enables speedy commercialization and expansion of demand and this contributes to greater consumer convenience. As such, standardization of specifications by competitors is not assumed to pose legal issues with the AMA.

45. However if the activity restricts competition in related markets or threatens to impede fair competition with restrictions as follows it poses the regal issues with the AMA.

- Restrict prices of new products with specifications

  Competitors in the activity jointly fix prices, quota outputs, limit marketing activities etc of their new products with specifications. (Unreasonable restraint of trade, etc)

- Restrict development of alternative specifications

  Competitors in the activity mutually restrict, without due cause, the development alternative specifications or adopt alternative specifications to produce and distribute products with them.(Note 4) (Unreasonable restraint of trade, dealing on restrictive terms etc)

- Unreasonably extend the scope of specifications

  Competitors in the activity jointly extend the scope of specifications when doing so is not necessary to ensure compatibility among their products, but only to mutually restrict competition in developing new products. (Unreasonable restraint of trade, etc)

- Unreasonably exclude technical proposals from competitors

[1] http://www.jftc.go.jp/e-page/legislation/ama/Patent_Pool.pdf.

Competitors deliberately, without due cause, prevent technical proposals by a specific competitor from being adopted in the development or improvement of the technologies for specifications.(Private monopolization, discriminatory treatment in a concerted activity, etc)

- Exclusion of competitors from the activities

  Competitors deliberately exclude specific competitors from the activity in a case in which the competitors are largely not involved in developing and distributing the products with the specifications and do not participate in the activity, and are at risk of being excluded from the market. (Private monopolization, etc)

2.3 Ownership

Who owns smart-grid elements (e.g. smart meters)? The customer? Electricity distribution network operator? Electricity retailer? If a customer switches from one provider of electricity to another, must equipment be changed?

46. In Japan, electricity utilities serve as both electricity network operators and retailers. Electricity utilities own transmission/distribution networks including smart grids (No comment on the latter part of the question).

2.4 Monopsony buyer

Are there monopsony (single buyer) issues for the purchase of customer-generated electricity? For example, a system operator may have no regulations over how it sets prices for on-demand electricity produced through distributed generation. Have any rules been developed for such purchases? If not, how might monoposony power issues be resolved? Does the wholesale market structure eliminate or reduce the benefits of real-time pricing?

47. Electricity generated by customers can be sold to PPS (power producer and supplier), etc. in addition to general electricity utilities. However, general electricity utilities are under an obligation to purchase excess electricity generated by photovoltaic power generation systems installed at ordinary households, etc. in accordance with FIT (feed-in tariff). Large-scale power producers may also sell their electricity to JEPX.

48. The government does not impose any regulation on selling price of electricity (unless it meets certain requirements in period/scale to be regarded as wholesale supply). Electricity utilities are under an obligation to purchase excess electricity generated by PV facilities at a uniform price in accordance with FIT. The government reviews the tariff price every year for the year in which the facility was installed.

49. Regarding selling price of electricity in the unregulated wholesale market, it is possible to set variable prices for different time-of-day.