

# **Report on the Second Market Study on Electric Vehicle (EV) Charging Services**

## **Study on Local Government Initiatives and Cross-network Roaming among Service Providers**

**May, 2023**



**公正取引委員会**  
Japan Fair Trade Commission

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## 1. Background and Purpose

Japan aims to achieve carbon neutrality<sup>1</sup> by 2050, and the "Basic Policy for Economic and Fiscal Management and Reform 2023<sup>2</sup>" (approved by Cabinet Decision of June 16, 2023) states, "To achieve carbon neutrality by 2050, Japan will boldly accelerate GX investment while making the most of its technological strength, which is supposed to create new demand and markets in the areas of energy security and decarbonization, and to lead to the enhancement of industrial competitiveness and economic growth of the Japanese economy". As part of this basic policy, the Government "will support ... the development of charging and hydrogen fueling infrastructure, ... towards a target of 100% of new passenger vehicle sales being for vehicles that are electrically driven<sup>3</sup> ... by 2035."

In light of the above-mentioned government targets, the market for electric vehicle (hereinafter referred to as the "EV") charging services is expected to grow rapidly, and the market environment is also expected to change significantly in the near future. In this context, the Japan Fair Trade Commission (hereinafter referred to as the "JFTC") released a market study report on July 13, 2023 (hereinafter referred to as the "2023 Report"), targeting EV charging services on the expressways, with the aim of assisting the realization of a green society. In the 2023 Report, the JFTC made recommendations from the perspective of enhancing the vitality of businesses, increasing utility for consumers, and stimulating innovation by boosting the market mechanism function, i.e., promoting the efficient use of resources through fair and free competition.

Subsequently, the "Guidelines for Promoting the Development of EV Charging Infrastructure" (hereinafter simply referred to as the "Guidelines") were formulated by the Ministry of Economy, Trade and Industry (hereinafter referred to as the "METI") on October 18 of the same year, which articulated that "Japan aims to develop a society with EV charging infrastructure that is highly convenient and sustainable, on par with the rest of the world, comprehensively taking into account the three principles of "improving user convenience," "making EV charging businesses more independent and sophisticated", and "reducing burdens on society as a whole." Considering, particularly, the second principle of "making EV charging businesses more independent and sophisticated," it is believed that the development of EV charging infrastructure in Japan is proceeding with consideration of the market mechanism.

The JFTC believes that it remains important to promote the market mechanism function in the development of EV charging infrastructure and to support the realization of green society from the perspective of competition policy; accordingly, since the publication of the 2023 Report, the JFTC has continued to conduct a market study on EV charging services, including

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<sup>1</sup> This refers to the status in which the balance is maintained between the amount of greenhouse gas emitted as a result of human activities and the amount of greenhouse gas absorbed through conservation and enhancement of absorption (Article 2-2 of the Law on Promotion of Global Warming Countermeasures (Law No. 117 of 1998)).

<sup>2</sup> <https://www5.cao.go.jp/keizai1/basicpolicies-e.html>

<sup>3</sup> Refers to electric vehicles, fuel cell vehicles, plug-in hybrid vehicles and hybrid vehicles.

on off-expressways, and has now compiled and published the results of the study.

## 2. Subject and Methods

### 2.1 Study Subject

Many local governments are expected to play an active role in achieving carbon neutrality, as many of them have declared themselves to be a Zero Carbon City<sup>4</sup>. In addition, the Guidelines also refer to local governments as the organizations that develop EV charging infrastructure, and in fact there are examples of local governments installing EV chargers on their property and public roads and making them available to the public; thus, the initiatives of the local governments got the subject of this study.

Additionally, given that the cooperation mentioned in the 2023 Report regarding Cross-network Roaming of EV charging services provided by different EV Charging Service Providers (described in detail in Section 3 below) is expected to encourage new entry, the JFTC decided to examine transactions as well among EV Charger Installers, EV Charging Service Providers and Network Providers (described in detail in Section 3 below) in relation to this cooperation.

### 2.2 Study Methods

#### 2.2.1 Hearing Survey

The JFTC conducted hearings with the following 22 organizations in total from September 2023 to April 2024.

- a) Local governments; 4 organizations
- b) EV Charger Installers, EV Charging Service Providers and Network Providers; 18 companies

#### 2.2.2 Questionnaire Survey

The JFTC conducted a questionnaire survey among local governments (prefectures and municipalities) (1,803 organizations in total) from October 4 to November 17, 2023, and received responses from 1,143 organizations (63.4% response rate).

### 2.3 Exchange of Opinion with Foreign Authorities

Regarding the EV charging service, foreign authorities have conducted market studies, etc., and the JFTC has referred to their discussion or consideration; to this end, the JFTC has exchanged views with the Competition and Consumer Commission of Singapore, which

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<sup>4</sup> [https://www.env.go.jp/en/earth/cc/2050\\_zero\\_carbon\\_cities\\_in\\_japan.html](https://www.env.go.jp/en/earth/cc/2050_zero_carbon_cities_in_japan.html)



advised<sup>5</sup> other government agencies on the competitive environment for EV charging infrastructure, and the National Electric Vehicle Centre<sup>6</sup>, which coordinates among government agencies responsible for EV-related policies in Singapore.

### 3. Category of EV Charging Service and Summary of Transactions Relevant to the Services

#### 3.1 Category of EV Charging Service

##### 3.1.1 Classification by Charging Type according to Charging Scenario

Firstly, basic charging refers to the style, in which EV users easily perform basic charging with EV chargers installed in the places where they spend most of their time on a daily basis (e.g., their homes). Secondly, destination charging refers to the style, in which refueling is done while at the destination with EV chargers installed at the destination. Thirdly, en-route charging refers to the style, in which the vehicle is recharged during the course of the travel.

Below are specific examples<sup>7</sup> of each, and some EV Charging Service Providers specialize in one form of charging or the other.

- a) Basic charging: charging at houses, apartments, monthly parking lots, etc.
- b) Destination charging: at shopping malls, hotels, etc.
- c) En-route charging: at Expressway SA/PAs, rest stops off-Expressways, convenience stores, etc.

##### 3.1.2 Category according to Charging Methods

In terms of charging methods, there are the following two:

- a) Normal charging: charging with EV chargers supplying AC voltage received to EVs (normal chargers), and
- b) Rapid charging: charging with EV chargers converting the received AC voltage into DC voltage and supplying it to EVs (rapid chargers).

EV users can charge EVs faster with rapid chargers than with normal chargers; therefore, rapid chargers are commonly installed for destination and en-route charging.

In terms of full power, the standard effective full power per single normal charger is less than 10kW (mostly 3kW~6kW), and that of rapid charger is 10kW and more<sup>8</sup>; the higher the effective full power per single charger is, the faster EV users can charge their EVs.

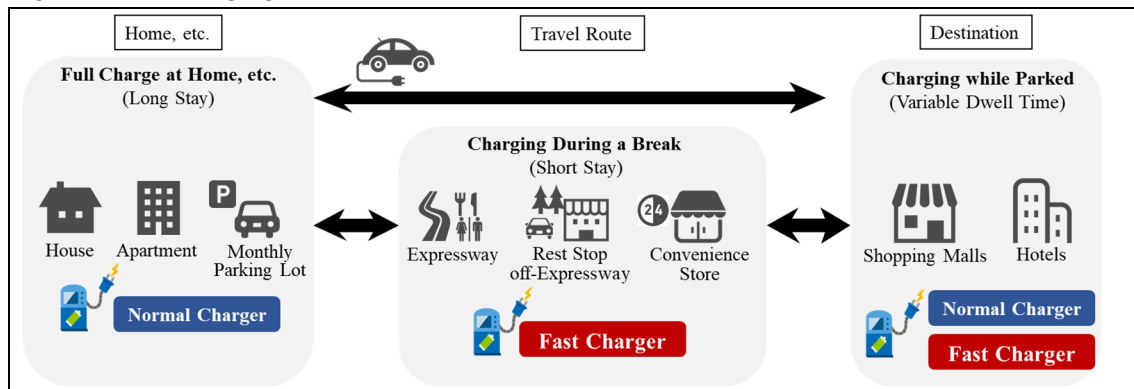
<sup>5</sup> Advice to URA on the development of a more competitive environment for the deployment of electric vehicle ("EV") charging infrastructure, <https://www.cccs.gov.sg/approach-cccs/for-government-agencies/cccs-past-advice/advice-to-ura-on-the-development-of-a-more-competitive-environment-for-the-deployment-of-electric-vehicle-charging-infrastructure>

<sup>6</sup> It is an organization directly under the Land Transport Authority, with secondments from the Energy Market Authority, the Economic Development Board, the Building and Construction Authority and others.

<sup>7</sup> This refers to the sorting method of the METI.

<sup>8</sup> This refers to the sorting method of the METI.

Figure 1: EV Charging Classification



Source: 2023 Report

### 3.2 Overview of EV Charging Service Providers and Their Service Delivery Models

In this report, EV Charger Installers, EV Charging Service Providers, and Network Providers and their respective service delivery modes are as follows.

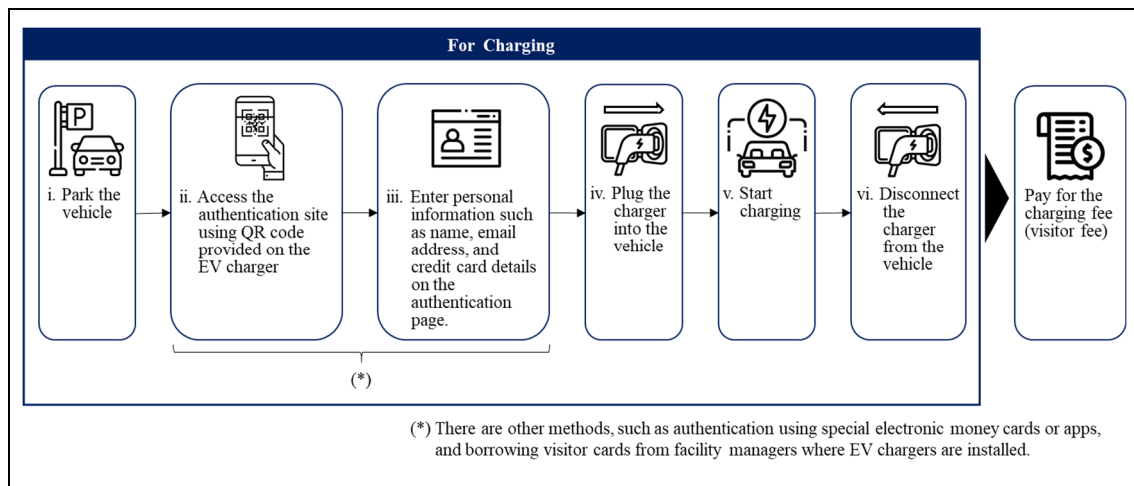
#### a) EV Charger Installers

EV Charger Installers are companies that install EV chargers with their own funds and bear their operating costs. Some EV Charger Installers provide EV charging services using EV chargers they have installed themselves; i.e. they are sometimes EV Charging Service Providers at the same time.

Furthermore, EV Charger Installers provide access to the EV chargers they have installed, to some companies that wish to provide EV charging service; in return, EV Charger Installers collect an access fee from these companies.

In addition, EV Charger Installers collect a charging fee directly from EV users who are not members of EV Charging Service Providers (described in 3-2 b) below); this fee is referred to as a visitor fee. The major ways in which EV users can use EV chargers as a visitor are shown in Figure 2.

Figure 2: How to Use an EV Charger as a “Visitor”



Source: Compiled by the JFTC based on various published materials

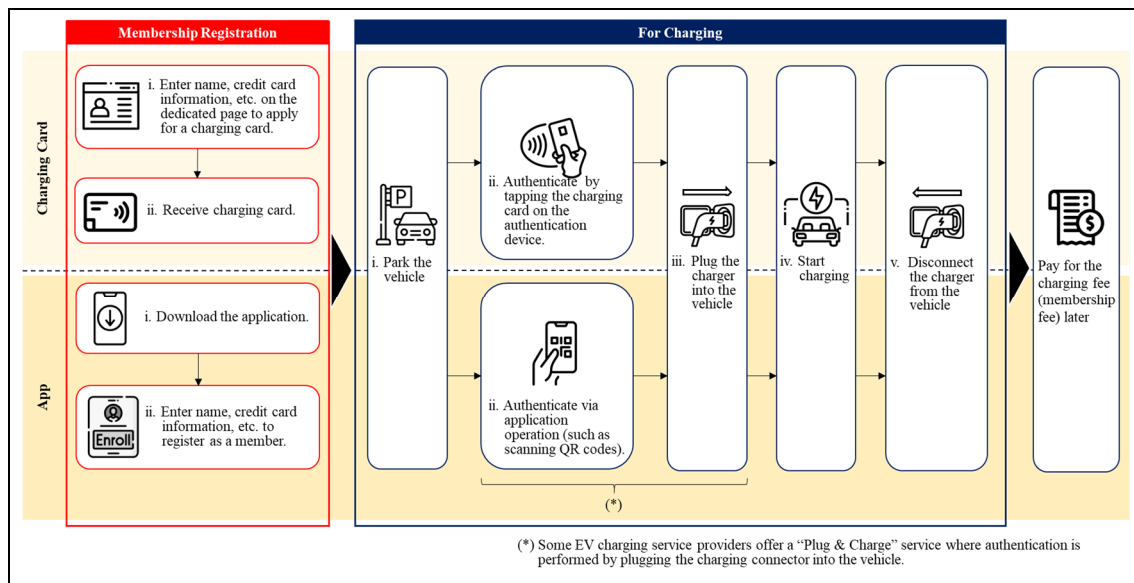
Major EV Charger Installers that install normal chargers include the following companies: ENECHANGE Ltd., Terra Charge Corporation, PLUGO Inc., Ubiden Inc., automobile manufacturers, local governments, etc. Major EV Charger Installers that install rapid chargers include the following companies: e-Mobility Power Corporation, Inc. (hereinafter referred to as “eMP”), ENEOS Corporation, Terra Charge Corporation, PLUGO Inc., automobile manufacturers, shopping malls, hotels, etc. Generally speaking, the barriers to entry for the installation of rapid chargers are higher than those for normal chargers due to the price of the chargers themselves and the operating costs such as the electricity fee; however, it has recently been observed that some companies such as Ubiden, Inc. that had installed normal chargers have started to install rapid chargers as well, and new entrants such as Power-X Inc. and DMM.com LLC are also installing rapid chargers.

#### b) EV Charging Service Providers

EV Charging Service Providers are companies that provide EV charging services to EV users based on EV chargers, primarily through membership.

The methods for members to use EV chargers differ among EV Charging Service Providers; for instance, some provide access to the EV charger by issuing cards to members to authenticate their use of the EV charger, while others provide access to the EV charger by authenticating their use with a QR code read by an app provided on a smartphone. The major ways in which EV users can access EV chargers as a member are shown in Figure 3.

Figure 3: How to Use an EV Charger as a “Member”

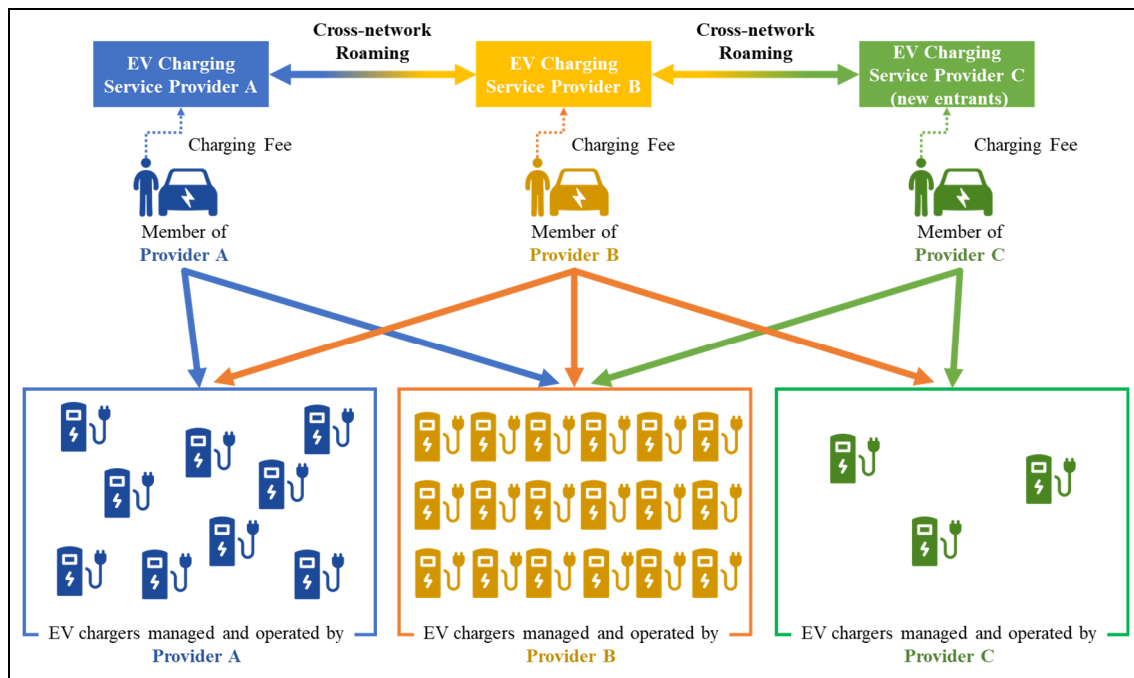


Source: Compiled by the JFTC based on various published materials

The fee structures for charging fees collected from EV users vary among EV Charging Service Providers, including whether they collect a fixed monthly membership fee, a fee based on charging time, or a fee based on the amount of electricity used for charging. Some EV Charging Service Providers also offer additional value with features such as reservation capabilities.

In some cases, EV Charging Service Providers cooperate with other EV Charging Service Providers to allow their own members to use EV chargers used by other EV Charging Service Providers under the same conditions as when using their own EV chargers. In particular, both cooperating companies may make available the EV chargers used by the other company in the cooperation under the same conditions as for the use of their own EV chargers (hereinafter referred to as "Cross-network Roaming"); an example of how EV chargers would be used in the case of Cross-network Roaming is shown in Figure 4.

Figure 4: Example of How to Use EV Chargers in Cases of Cross-network Roaming



Source: Compiled by the JFTC based on various published materials

As a major EV Charging Service Provider using the access to normal chargers, there are the following companies: eMP, ENECHANGE Ltd., Terra Charge Corporation, PLUGO Inc., Ubiden Inc., automobile manufactures. As a major EV Charging Service Provider using the access to rapid chargers, there are the following companies: eMP, ENEOS Corporation, Terra Charge Corporation, PLUGO Inc., automobile manufactures, etc.

#### c) Network Providers

Network Providers are companies that provide (i) “EV charger management systems” for power management and log management necessary for charging fee collection, to EV Charger Installers, and (ii) “member management systems” for managing their members, to EV Charging Service Providers; such systems are necessary for checking EV charger power information, etc., and smooth member verification and billing.

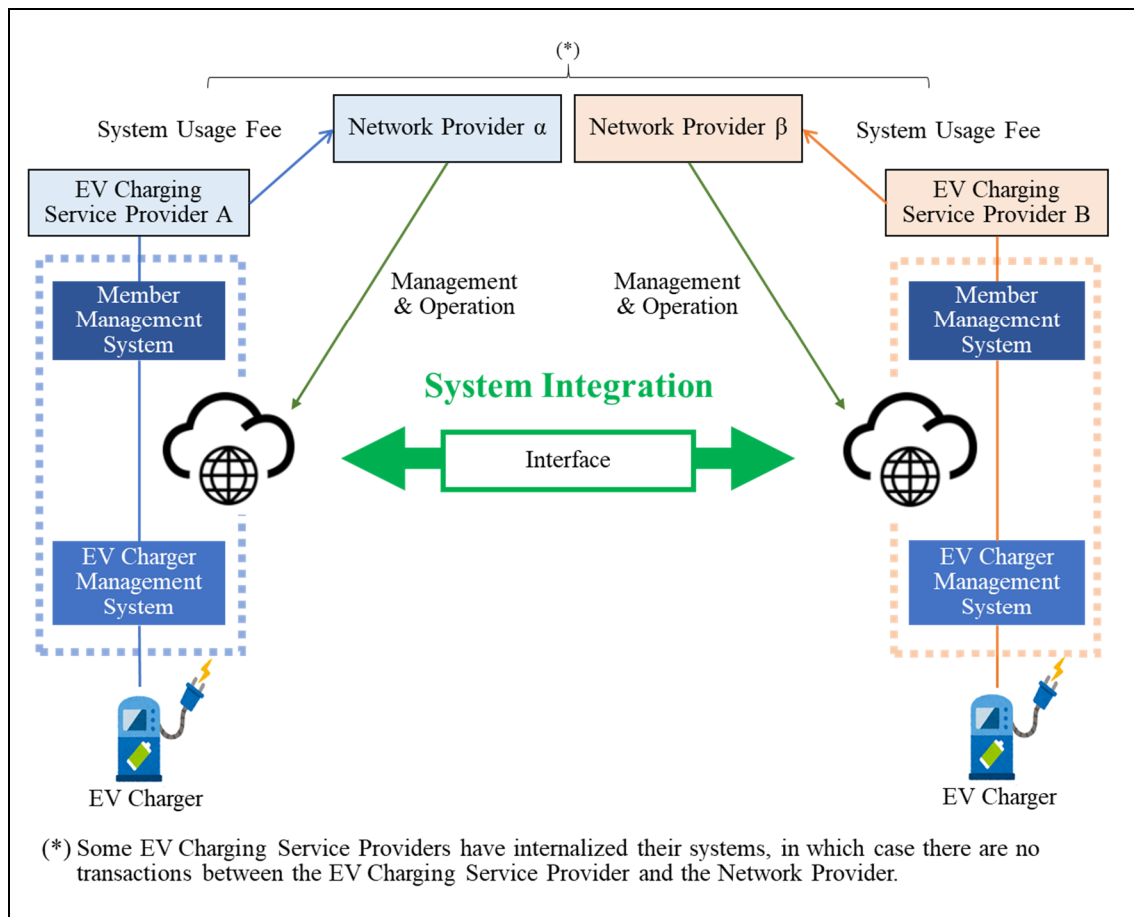
Regarding the fee paid by EV Charger Installers and EV Charging Service Providers to Network Providers, there is a variety of fee structures (e.g., basic monthly fee and pay-per-use fee) among Network Providers.

Major Network Providers include the following companies: Enegate Co., Ltd., TOYOTA Connected Corporation, NEC Corporation, BIPROGY Inc. etc.

It is noted that in some cases, EV Charger Installers and EV Charging Service Providers may perform their businesses as a Network Provider at the same time.

Furthermore, "EV charger management systems" and "member management systems" may be constructed by each Network Provider according to its proprietary standards. On the other hand, overseas, in order to facilitate smooth interoperability and achieve common communication between systems built by different Network Providers for purposes such as seamless Cross-network Roaming, unified standards are established for information transmission methods and connection protocols between different models (hereinafter referred to as "standard specifications"); a concrete example is the OCPI (Open Charge Point Interface<sup>9</sup>), which serves as an international standard interface for communication between "EV charger management systems" and "member management systems"; an example of the interrelationships between systems in cases where Cross-network Roaming is implemented is shown in Figure 5<sup>10</sup>.

Figure 5: Example of System Interactions in Cases of Cross-network Roaming



Source: Compiled by the JFTC from the results of the hearings with each company

<sup>9</sup> OCPI is developed by the EVRoaming Foundation, based in the Netherlands.

<sup>10</sup> When Cross-network Roaming is implemented, there are various methods for connecting the systems of different companies. These methods include linking the "EV charger management systems" of company A and company B, linking the "member management system" of company A with the "EV charger management system" of company B, etc.

#### 4. Current Status of EV Charging Service Transactions and Viewpoints from Competition Policy

##### 4.1 Local Government Initiatives for EV Charging Services

##### 4.1-1 Implementation of Competitive Bidding

##### 4.1-1.1 Current Status and Questionnaire Results

1,143 organizations responded to the survey; of these, the number of local governments<sup>[1]</sup> that responded that they selected the installation provider<sup>[2]</sup> when installing<sup>[3]</sup> EV chargers on their property and public roads, etc.<sup>[4]</sup> for public use is 103. Of these, the number of local governments that selected installation providers from multiple companies for at least one EV charger (answering "A," "B," or "C" in Figure 6) was 47, representing only 45.6%; concerning the residue, the number of local governments that responded that they had not selected installation providers from multiple companies so far (not selecting "A," "B," or "C" in Figure 6 and responded "E" or "Other") is 56, representing 54.4% of the 103.

The specific responses regarding the installation provider selection methods are shown in Figure 6.

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<sup>11</sup> This study intends to focus on competition among EV Charging Service Providers, so it limits its scope to "local governments" which do not own the EV chargers. This allows the study to focus on cases where EV Charging Service Providers are free to set important transaction terms such as charging fees. The same applies in section 4.1-1 below.

<sup>12</sup> This study intends to focus on local government initiatives, so it excludes cases where local governments subcontract the installation or operation of EV chargers to other organizations. This allows the study to focus on cases where local governments directly select EV Charging Service Providers. The same applies in section 4.1-1 below.

<sup>13</sup> Including cases where negotiations are already underway with specific companies for installation, even though the chargers have not been installed yet.

<sup>14</sup> Includes facilities managed by local governments to some extent, such as roadside stations, prefectural or municipal swimming pools, and prefectural or municipal parks. The same applies hereinafter.

Figure 6: Selection Methods when Local Governments Select Installation Providers

Response Content (Multiple Responses Allowed)	Number of Valid Responses	Percent
A: Select from multiple bids in competitive bidding (general competitive bidding, planning competitive bidding, designated competitive bidding, or open designated competitive bidding; the same applies hereinafter.).	22	21.4%
B: Selection of a single company from the results of competitive bidding	4	3.9%
C: Private contract based on comparative estimates (including partnerships, agreements, and relationships other than contracts; the same applies hereinafter.)	22	21.4%
D: Private contract without request for quotation	31	30.1%
Other (*1)	35	34.0%
Total	114 (*2)	- (*3)

(\*1) For example, the following responses were given:

- Permitted installation based on company's request for administrative use of property.
- Transferred equipment to EV Charging Service Provider during the course of the project.
- Under consideration or negotiation with installation provider regarding selection methods, etc.

(\*2) Total number of responses for options A through E and "Other" from the 103 local governments that responded that local governments select installation companies.

(\*3) Since multiple responses were allowed, the total percentage may exceed 100%, with the denominator being the number of responding local governments (103).

Furthermore, of the 102 local governments that responded regarding their plans for selecting installation providers when replacing existing EV chargers, the number of local governments that plan to select from multiple companies (the sum of responses A and B in Figure 7) is 21, representing only 20.6%; concerning the residue, the number of local governments that have not decided to select from multiple companies (the sum of responses C, D, E, and F in Figure 7) is 81, representing 79.4% of the 102.

The specific responses regarding the installation provider selection method for EV charger replacement are shown in Figure 7.



Figure 7: Planned Selection Method for Installation Providers when Replacing EV Chargers

Response Content	Number of Valid Responses	Percent
A. Competitive bidding	17	16.7%
B. Private contract based on comparative estimates	4	3.9%
C. Private contract with the previously selected company without obtaining quotations	2	2.0%
D. Private contract with the newly selected company without obtaining quotations	0	0%
E. Undecided	72	70.6%
F. Other (*)	7	6.9%
Total	102	100%

(\*) For example, the following responses were given:

- Selection methods vary by amount.
- Installed through pilot project and future policy undecided.
- Suggested for free extension by EV Charging Service Providers.

In addition, of the 101 local governments that responded to the question of how to select installation providers when installing EV chargers for public use at new sites, the number of local governments that plan to select from multiple companies (the sum of responses A and B in Figure 8) is 23, representing 22.8%; concerning the residue, the number of local governments that have not decided to select from multiple companies (the sum of responses C, D, E and F in Figure 8) is 78, representing 77.2%.

The specific responses regarding the selection method for installation providers when installing EV chargers for public use in new locations are shown in Figure 8.

Figure 8: Planned Selection Method for Installation Providers when Installing EV Chargers for Public use at New Locations

Response Content	Number of Valid Responses	Percent
A. Selection through competitive bidding	20	19.8%
B. Private contract based on comparative estimates	3	3.0%
C. Private contract with the previously selected company without obtaining quotations	3	3.0%
D. Private contract with the newly selected company without obtaining quotations	0	0%
E. Undecided	70	69.3%
F. Other (*)	5	5.0%
Total	101	100%

(\*) For example, the following response was given:

- The selection methods vary depending on the amount.

Additionally, 290 local governments responded that they were considering installing EV chargers and opening to the public in the future.

Furthermore, as a result of pilot projects<sup>[15]</sup> conducted by some local governments regarding the installation of EV chargers on public roads, it has become apparent that there is relatively high demand<sup>[16]</sup> for EV charging on public roads. Given, for instance, that Ministry of Land, Infrastructure, Transport and Tourism has formulated and published the "Guidelines for Installation of Charging Equipment for Electric Vehicles on Roads<sup>[17]</sup> (provisional translation)" as a reference for the necessary road occupancy permit applications for roadside installation of fast chargers, it is expected that installation on public roads will become more active in the future. In fact, some local governments has conducted open invitation for proposals<sup>[18]</sup> from companies to install and operate EV chargers on public roads.

<sup>15</sup> "The Project for Installation of EV Chargers on Public Roads (provisional translation)", [https://www.city.yokohama.lg.jp/kurashi/machizukuri-kankyo/ondanka/etc/jisedai\\_car/ev20210608.html](https://www.city.yokohama.lg.jp/kurashi/machizukuri-kankyo/ondanka/etc/jisedai_car/ev20210608.html)

<sup>16</sup> The average monthly usage of a single fast charger in the entire charging network operated by eMP is 76.1 times (with an average charging time of 25.8 minutes), <https://www.e-mobipower.co.jp/documents/>. In contrast, according to footnote 15, the average monthly usage of a single fast charger installed on public roads in Aoba-ku during the demonstration experiment is about 100 to 150 times (with an average charging time of about 30 minutes), [https://www.city.yokohama.lg.jp/kurashi/machizukuri-kankyo/ondanka/etc/jisedai\\_car/ev20210608.files/0016\\_20240430.pdf](https://www.city.yokohama.lg.jp/kurashi/machizukuri-kankyo/ondanka/etc/jisedai_car/ev20210608.files/0016_20240430.pdf)

<sup>17</sup> Announcement of the "Guidelines for Installation of Charging Equipment for Electric Vehicles on Roads" (May 12, 2023), [https://www.mlit.go.jp/report/press/road01\\_hh\\_001667.html](https://www.mlit.go.jp/report/press/road01_hh_001667.html)

<sup>18</sup> "First in Japan! We are soliciting proposals for business ventures to install EV charging stations on public roads to expand the EV charging infrastructure in Yokohama City. (provisional translation)" (November 10, 2023), <https://www.city.yokohama.lg.jp/city-info/koho-kocho/press/green/2023/koudou.html>

#### 4.1-1.2 Hearing Results

In hearing, the following statement was made by one local government:

- "One particular company came forward and the decision to implement their offering was based on the fact that it was free to install, which was a key factor in selecting the companies. As a result, we did not solicit estimates from multiple companies other than this one. When installation is free, the idea of implementing bidding or proposal methods doesn't come easily. When there is no cost involved, it becomes difficult to assess the merits except price, which makes it difficult to determine how to differentiate companies.

On the other hand, the following statement was made by another local government:

- "We select installation providers through open bidding. Even if a company offers to install EV chargers at no cost and provide all maintenance, we still have to consider, among other things, the risk that the company will withdraw; therefore, as a local government, we cannot simply jump at company proposals. In addition, we believe that entering into private contracts without a clear rationale would make it difficult for us to fulfill our accountability to citizens and Council. We are committed to transparency and accountability in our selection process. Also, we are committed to establishing criteria for the open bidding that also take into account the user-friendliness since the differences in service among companies are not solely based on price.

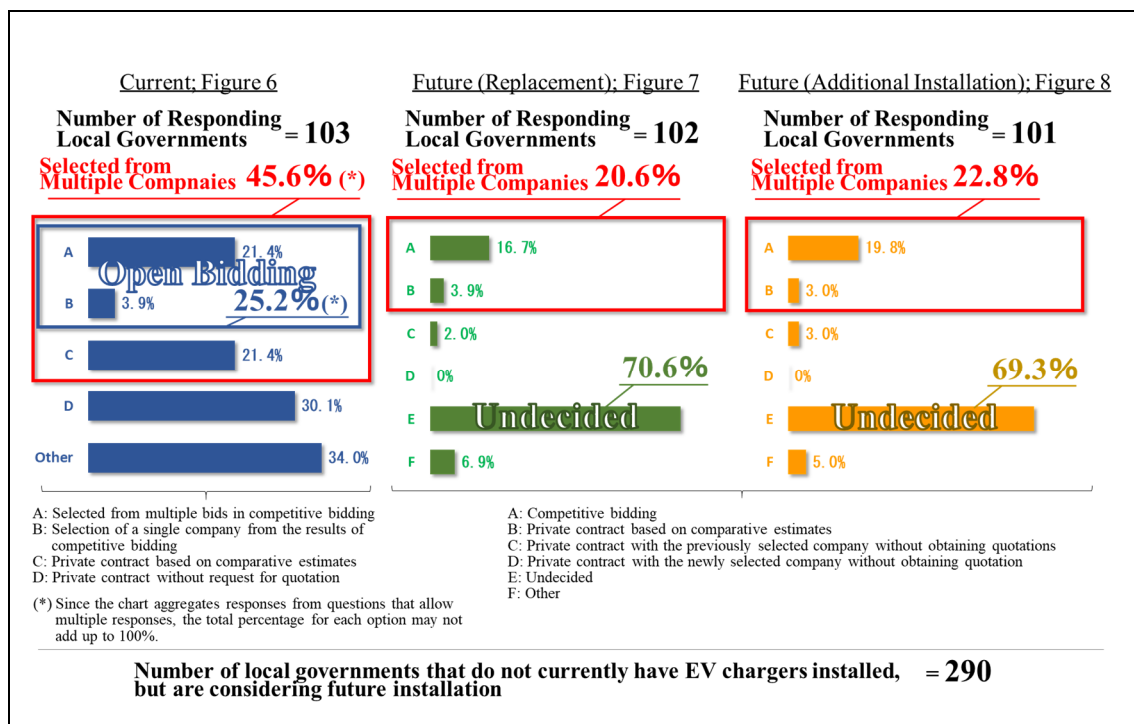
When it comes to selecting companies for installation on public roads, some local governments explained the followings:

- The installation of EV chargers on public roads is relatively rare nationwide. Running this as a social experiment requires coordination with stakeholders, various validations, and ensuring reliable construction and operation; therefore, selecting experienced companies was essential. In such a situation as where there are now new entrants in the EV charging business, it would be desirable to prepare an environment in which we can conduct open bidding for companies to implement widespread installations on public roads.
- When we first began installing EV chargers on public roads, we used the Public-Private Partnership Platforms to solicit proposals; it was only eMP that submitted the proposal. Currently, with the emergence of multiple companies of EV charging services with fast chargers, we have selected companies through open bidding for the upcoming installations on public roads.

#### 4.1-1.3 Viewpoints from the Competition Policy

In general, when a local government procures a particular product or service without conducting an open bidding process to make a selection from among a number of companies, there are likely to be competition concerns in light of the lack of the competitive effects, such as lower prices and improved quality, that competition would bring about ; hence, this could potentially undermine the interests of the residents of that local government.

Figure 9: How to Select Installation Providers (Survey Summary)



In the market for EV charging services, only 45.6% of the 103 local governments that responded that they selected installation providers to install EV chargers on their property and public roads, etc. for public use reported that they selected installation providers from multiple companies; this suggests a potential risk of harming residents' interests, as no competition means no expectation of the improvement in the quality of EV charging services provided to residents (such as charging speed, different pricing structures, authentication methods, etc.). Besides, given the increasing presence of multiple companies of EV charging services in the market, it would be desirable from the perspective of maximizing the benefits of competition to conduct open bidding processes that allow more companies to participate; however, only 25.2% of the local governments reported that they conducted such open bidding.

As regards this, local governments installed EV chargers for public use prior to the

policy decision on "Carbon Neutrality by 2050", namely, at a time when the number of potential installation providers was limited; it is fair to say that these local governments' initiatives have made some contributions to the installation of EV chargers and the promotion of EV adoption in Japan, regardless of whether they conducted open bidding and selected installation providers from among several companies. Nonetheless, particularly for installations on public roads, while it may not have been practical to select installation providers from multiple companies when installations began, the situation has evolved, that being, currently, multiple companies are offering EV charging services; and yet, the proportion of local government planning to select installation providers from multiple companies when replacing existing EV chargers or installing new EV chargers remains low. Specifically, of the 102 local governments that responded regarding their plans for selecting installation providers when replacing existing EV chargers, only 20.6% indicated plans to select companies from multiple companies; similarly, of the 101 local governments that responded regarding their plans for selecting installation providers when installing new EV chargers, only 22.8% indicated plans to select companies from multiple companies. Given that 290 local governments responded that they are considering installing EV chargers for public use in the future, it is expected that local governments will continue to be proactive in this regard; however, these low proportion of local governments planning to select installation providers from multiple companies suggests that competition may not be actively encouraged. Without competition, there is a risk that innovative services driven by company ingenuity will not emerge; hence, this situation could, for instance, impede the timely replacement of EV chargers with higher power capabilities, and stifle innovation in EV charger technology, potentially compromising the interests of EV users, including residents.

Incidentally, it is noted that some local governments may not expect to go through the open bidding process when approached for free EV charger installation; however, if a decision is made to award the installation contract to a company based solely on the price aspect of the no-cost offer, it could result in a decision based on insufficient information, as other factors besides price may not be adequately assessed. In addition, limiting competition other than price may prevent companies from innovating to offer a variety of services, potentially depriving residents using EV chargers of a variety of service offerings. Furthermore, there are local governments that currently conduct open bidding, regardless of whether the installation is offered for free or not. Concerning public road installations, with significant demand for EV charging is expected, the process may be perceived as cumbersome and require a certain level of business experience, making public road installations attractive to installation providers; however, some local governments do choose to select installation providers through open bidding. In light of these, even in cases where free EV charger installation is proposed, or for installations on public roads, open

bidding to select installation providers from multiple companies is considered a practical option.

Based on the above considerations, in order to ensure lower prices and higher quality through competition and to protect the interests of EV users, including residents, local governments should in the future select installation providers from several companies for new installations or replacements of EV chargers, regardless of whether free or not, and of the installation location; in particular, it is desirable from a competition policy perspective to conduct open bidding processes that allow a greater number of companies to participate in order to maximize the benefits of competition. In doing so, it is important for local governments to give thought to EV usage in the vicinity of the installation sites (e.g., distance traveled per charge) and to assess by themselves charging needs; it is desirable, from the viewpoint of competition policy, for local governments to, with these in their mind, consider such factors except price as user-friendliness (also, the following factors related to sustainable delivery of service may be relevant: (i) whether companies have plans to make EV chargers more attractive to EV users, or increase utilization rate, (ii) the availability of low electricity rates, (iii) contract terms and renewals, etc.), when setting the terms for open bidding, with the object of refraining from depriving companies of the opportunity of innovating to offer a variety of services. By incorporating these considerations, local governments can ensure that the experience of inexpensive and high-quality EV charging services is extended to EV users, including residents; which will promote the widespread perception that charging can be easily done without stress, thereby encouraging EV adoption.

#### 4.1-2 Pricing for EV Charging Service

##### 4.1-2.1 Current Status and Questionnaire Results

Local governments are installing EV chargers by themselves or having them installed by companies on their property, such as city offices and public roads.; some local governments offer these EV chargers for free or for a fee that does not cover operating costs<sup>19</sup>. According to responses from local governments to a survey, of 706<sup>20</sup> EV chargers of which the local government sets the fees for use, 556 EV chargers (78.8%<sup>21</sup>) are made available with fee settings that do not cover operating costs (or for free). The reason often given for this is to promote the widespread adoption of EVs by setting user fees at affordable levels (or offering for free).

Some of the EV chargers made available for free or at rates that do not cover

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<sup>19</sup> Electricity costs and management fees paid to companies (or borne by the local government if self-managed).

<sup>20</sup> The number of plugs. The same applies in 4.1-2 below.

<sup>21</sup> Of these, there are 422 units of EV chargers (59.8% of the total) that are freely accessible, and 134 units (19.0% of the total) with fee settings that are unable to cover operating costs.

operating costs, are installed in densely populated urban areas or in cities where EV adoption is progressing; in some cases, these chargers are located near installed chargers by private companies; meanwhile, some local governments have converted their previously free EV chargers to paid ones<sup>22</sup> in response to the increasing availability of paid EV chargers installed by companies providing EV charging services.

#### 4.1-2.2 Hearing Results

In the hearings, the following statements were made by EV Charging Service Providers.

- It is perceived that it is undesirable for local governments to provide free access where use is expected from the viewpoint of unfair pressure on private companies. We urge that this situation be rectified.
- From the perspective of EV Charging Service Providers, if free access is provided, alternative means of collecting fees are necessary to cover expenses such as personnel costs; otherwise, the service cannot be sustained.
- There have been cases where local governments have installed and provided EV chargers free of charge as a service to their residents; however, since these services are provided free of charge without covering costs such as electricity costs and system development fees, it cannot be said that they are sustainable as EV charging service businesses. Therefore, while the widespread adoption of EVs is expected in the future, there are also concerns about the viability of the EV charging service market itself, as it may not be financially sustainable in the long term.

#### 4.1-2.3 Viewpoints from the Competition Policy

In general, price competition resulting from efforts to improve efficiency is a core component of competition on the merits that competition policy seeks to maintain and promote; thus, price competition itself is not considered unfair from a competition policy perspective. Nonetheless, when local governments provide goods or services without regard to profitability in competition with private companies, this can create problems from a competition policy perspective; this is because such actions can force incumbent businesses, as well as new entrants, to incur losses as they struggle to compete with unprofitable prices. In addition, such actions by local governments can hinder the formation of market prices for the goods or services in question, making it difficult for private companies to predict profitability and potentially reducing their willingness to enter the market; this may ultimately impede the formation of a sustainable market, which is a concern from a competition policy perspective.

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<sup>22</sup> <https://www.metro.tokyo.lg.jp/tosei/hodohappyo/press/2023/08/15/03.html>  
<https://www.pref.tottori.lg.jp/292150.htm>

In the market for EV charging services, instances of no other than local governments disregarding profitability in their pricing strategies are observed, which can potentially affect both incumbent companies and new entrants, and hinder the formation of a sustainable market, leading to a shortage of EV charger installation providers, thereby hindering the development of EV charging infrastructure.

At the same time, however, there is some rationale for implementing affordable pricing strategies to encourage the widespread adoption of EVs as part of a public policy initiative. Additionally, in areas where demand is insufficient and private installation of EV chargers cannot be expected, there may not be a competition issue in the EV charging service industry even if local governments install and provide EV chargers free of charge, for there would be no competition between local governments and private sector companies in such cases.

Nonetheless, in situations where the penetration of EVs has reached a certain level and demand is anticipated, leading to the presence of private sector EV Charging Service Providers, thereby creating a competitive relationship between local governments and private companies, it is observed that some local governments are providing EV chargers free of charge<sup>23</sup>. In response to this situation, concerns have been raised by private companies and, indeed, some local governments have started to charge for EV chargers that were previously provided free of charge, given the increasing availability of paid EV chargers installed by private sector EV Charging Service Providers; in the light of these, such local government disregard for profitability through free charging may pose a risk not only to incumbent companies, but also to potential new entrants, and may hinder the formation of a sustainable market.

Therefore, in locations where demand for EV charging services is expected and where private companies are already offering such services, it is desirable from a competition policy perspective for local governments to consider and set EV charging fees based on profitability; this approach is expected to promote the healthy development of EV charging infrastructure.

## 4.2 Cross-network Roaming among EV Charging Service Providers

### 4.2.1 Current Status

Cross-network Roaming has been observed among automobile manufacturers that provide EV charging services as part of their efforts to promote EVs; however, Cross-network Roaming among EV Charging Service Providers that focus on providing EV charging services themselves has not been observed<sup>24</sup>.

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<sup>23</sup> In addition to areas with high EV adoption rates and densely populated areas, this includes locations where there is expected to be high demand for destination charging, such as tourist destinations, as well as locations where there is expected to be high demand for en-route charging, such as rest stops off-Expressways.

<sup>24</sup> As of May 21, 2024.



In addition, there are no EV Charging Service Providers that implement Cross-network Roaming using interfaces open to the public. As regards this, some EV Charging Service Providers in Japan use OCPI, which is standard specifications abroad, for their system development; however, OCPI is not mandated as standard specifications in Japan.

#### 4.2.2 Hearing Results

##### a) From EV Charger Installers and EV Charging Service Providers

In the hearings, the following statements were made by the EV Charger Installers and EV Charging Service Providers:

##### (i) The Importance of Cross-network Roaming

- The importance of Cross-network Roaming lies in its potential to address the current lack of installed EV chargers among companies. When members of other EV charging services use their own EV charger, the company receives a fee from the other company. If this fee is sufficient to cover the variable costs associated with the EV charger, then increasing the utilization rate of the EV charger through Cross-network Roaming is beneficial. [From EV Charger Installers and EV Charging Service Providers]
- The introduction of Cross-network Roaming is expected to increase the utilization rate of EV chargers and improve profitability. At present, it is difficult to maintain the business without subsidies. [From EV Charger Installers and EV Charging Service Providers]
- For new entrants, Cross-network Roaming offers the advantage of being able to get access to a large number of EV chargers for their own service terms right from the start. [From EV Charger Installers and EV Charging Service Providers]
- We lack strength in destination charging, such as accommodation facilities. So, Cross-network Roaming could be considered if there are new entrants who mainly own standard destination charging devices; specifically, by complementing each other's shortcomings between our en-route charging and the partner's destination charging, this partnership can work together effectively. [From EV Charging Service Providers]
- Even if there is competition in the placement of EV chargers, it is believed that by promoting extensive Cross-network Roaming with negotiation about the ability to set the price each other, monopolistic pricing of EV charging services won't occur even in limited "monopoly" areas. The pursuit of Cross-network Roaming through standards such as OCPI could be a means to achieve this. [From EV Charging Service Providers]

## (ii) Settlement Terms

- Not currently implemented, but if Cross-network Roaming is to be pursued in the future, it would require individual contracts between connecting parties. In addition, coordination between companies would be required to adjust electricity costs and other cost allocations. [From EV Charger Installers and EV Charging Service Providers]
- According to overseas companies, when it comes to Cross-network Roaming, negotiations with other EV Charging Service Providers revolve primarily around settlement terms which involve determining how much and in what form the connecting party which installed the EV charger used will be paid when members of its other party's service use the charger. [From EV Charger Installers and EV Charging Service Providers]
- If Company A has 100 EV chargers and Company B has 10,000 EV chargers, it's not fair to say that Company A and Company B are equivalent. Therefore, whether they ultimately engage in Cross-network Roaming would likely depend on the economic rationality of such cooperation. [From EV Charger Installers and EV Charging Service Providers]
- Many companies are likely to be positive about Cross-network Roaming, but it is acknowledged that they haven't expressed this openly. We share with some other EV Charging Service Providers an idea that it is better to have opportunity of discussions on Cross-network Roaming. While technical requirements such as interfaces are being considered, specific settlement terms have not been fully addressed under the current limited deployment of EV charging infrastructure. We recognize that we need to seriously consider Cross-network Roaming, including settlement terms, and discuss the framework and mechanism of such cooperation, including technical requirements and settlement terms. [From EV Charger Installers and EV Charging Service Providers]

## (iii) Standard Specifications, etc.

- It is desirable for the world to evolve to a state where, with the widespread adoption of OCPI, various tasks become possible with a single authentication method, whether through an app or a card, thereby improving the user experience. [From EV Charger Installers and EV Charging Service Providers]
- The difference between Cross-network Roaming via OCPI and Cross-network Roaming via other interfaces is whether the specifications are open or whether they are based on proprietary protocols with non-disclosure agreements, and the degree of openness is the main difference. While it's not clear which approach is superior or which has lower development costs, in general, openness leads to

lower development costs and results in superior solutions. [From EV Charger Installers and EV Charging Service Providers]

- When connecting through proprietary interfaces, development is required for each connection, whereas with OCPI, it is possible to connect to multiple companies with just one development effort. Considering that proprietary interface development costs can run into tens of millions of yen, the cost advantage of OCPI increases as the number of connections increases. [From EV Charger Installers and EV Charging Service Providers]
- OCPI is considered the international standard interface for the communication regarding EV charging service. [From EV Charger Installers and EV Charging Service Providers]
- While other standards exist in China and other regions, since OCPI was developed in Europe, in which countries are interconnected across the continent and there are opportunities for cross-border charging, OCPI may have spread globally. [From EV Charger Installers and EV Charging Service Providers]
- The reason for communicating with our proprietary protocol is that the functions operated by our company are not specified in OCPI. In the future, we intend to cooperate with other companies through Cross-network Roaming in accordance with OCPI, although it is necessary to handle this particular functionality, with our proprietary protocol. [From EV Charger Installers and EV Charging Service Providers]
- While we have a positive view of on Cross-network Roaming, there is some discomfort with the premise that such collaboration requires the use of OCPI. Our understanding is that OCPI is a standard developed by a private organization and commonly used in Europe, but that it is not officially recognized as a standard. We have already established an environment for roaming with other companies' EV chargers using our proprietary interface, and we do not require OCPI for Cross-network Roaming. In the first place, it is questionable whether OCPI even qualifies as an "international standard". [From EV Charger Installers and EV Charging Service Providers]
- Since OCPI wouldn't be meaningful if only one company supported it, we are considering holding study sessions on OCPI and discussing it among various companies to further explore its implementation. [From EV Charger Installers and EV Charging Service Providers]
- We are not yet OCPI compliant. It is challenging to make decisions solely within our company, so we are reviewing our approach while monitoring international trends and external environments. [From EV Charger Installers and EV Charging Service Providers]

## b) From Network Provider

In the hearings, the following statements were made by the Network Providers:

- The EV charging service industry benefits from network externalities<sup>25</sup>, so it would be advantageous for new entrants if existing EV chargers could be accessed by their own members through Cross-network Roaming. At the same time, however, this may not be welcomed by companies who have already invested in the installation of EV chargers. Having said that, given the existence of network externalities, the absence of Cross-network Roaming could lead to a monopoly for incumbent companies.
- The advantage of standard interfaces for Network Providers is that they do not have to design a protocol every time connecting is made, which leads to development efficiencies in terms of workload.
- Rather than driving standardization of specifications and interfaces with OCPI, it is more important to align the actual content of the data being communicated in Cross-network Roaming. Ideally, it would be preferable to harmonize both interfaces and data content at the same time. Data content can vary depending on factors such as whether time is measured in minutes or seconds, or how decimals are handled in kW/h. Even with Cross-network Roaming, handling such differences in data content during settlement can result in one party losing while the other gains. In addition, there may be cases where hardware limitations result in differences in the content of the data that can be transmitted.
- Competition among different interfaces is possible, but our company and others have not defined the boundaries between collaborative and competitive areas. Therefore, as standardization efforts move forward, it will be necessary to redefine these areas among stakeholders.

## 4.2.3 Viewpoints from the Competition Policy

In general, when business is conducted solely by incumbent companies without new entry, it becomes difficult for diverse services to emerge through the ingenuity of companies, whilst encouraging new entrants promotes competition, which is expected to lead to increased opportunities for consumers to enjoy inexpensive and high-quality services. Therefore, encouraging new entrants is desirable from a competition policy perspective.

In the market for EV charging services, , as a result of ambitious new entry, there is intense competition to secure locations with high demand for EV charging, which are

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<sup>25</sup> The phenomenon whereby the utility that each user derives from a particular good increases as the number of users of that good increases.

attractive to EV users, as an EV charger installation site; thus, “Location placement” can be considered a key competitive tool in this market. As regards this, it is difficult for new entrants to secure a sufficient number of EV chargers from the outset; however, through Cross-network Roaming with other EV Charging Service Providers, especially those that have locations with a high expected demand for EV charging, new entrants can secure a sufficient number of EV chargers for their members to use from the outset, thus effectively attracting EV users. Therefore, the promotion of Cross-network Roaming is expected to facilitate new entry and enable smooth business expansion for new entrants. Furthermore, even in places where only certain EV Charging Service Providers have installed EV chargers, making multiple EV charging services available through Cross-network Roaming is expected to prevent disadvantages such as the inability to enjoy inexpensive and high-quality services. In addition, by allowing EV users to access a wide range of EV chargers without having to subscribe to multiple membership services, the perception that charging is easily done without stress is expected to spread, thereby promoting the adoption of EVs.

In this regard, there are concerns about "free riding", whereby EV Charging Service Providers may refrain from installing their own EV chargers and instead rely on shared facilities installed by other EV Charging Service Providers, to provide EV charging services without incurring installation costs. This could potentially reduce the incentive to independently install EV chargers and reduce competition to acquire sites with expected demand. Nonetheless, in the EV charging service market, the viability of businesses is often dependent on subsidies, and even in locations with anticipated demand, it is expected to be necessary to increase the operational efficiency of EV chargers through Cross-network Roaming so as to improve business viability; thus, it is not necessarily expected that Cross-network Roaming will significantly reduce the incentive to install EV chargers. It is considered that for incumbent companies with EV chargers installed in low-demand areas, the prospect of improving the utilization rate by allowing their chargers to be used by members of other EV Charging Service Providers through Cross-network Roaming is seen as beneficial; accordingly, positive views of Cross-network Roaming by incumbent companies have been observed. In addition, the development of EV charging infrastructure is ongoing, which has had some incumbent companies consider Cross-network Roaming with new entrants whose EV chargers can complement theirs. In such an evolving EV charging service market, where commercial viability is not always guaranteed, the sharing of certain facilities is considered essential to lay the foundation for a competitive environment. Additionally, competition is expected to continue through the provision of additional value with features such as reservation functions. Furthermore, it is unlikely that investment incentives for the installation of EV chargers would be undermined if fair conditions are established under which EV Charging Service Providers can generate

revenue when members of other EV Charging Service Providers use their EV chargers. It is noted, from the perspective of encouraging new entry, that in establishing such terms and conditions, the parties involved should engage in sufficient discussion to ensure that fair terms and conditions<sup>26</sup> are established that do not significantly disadvantage any party.

Therefore, in the market for EV charging services, it is desirable from a competition policy perspective to promote Cross-network Roaming under fair conditions established through sufficient discussion among the parties involved. Concerning this regard, thus, it is desirable for local government to proactively encourage selected EV Charger Installers to engage<sup>27</sup> in Cross-network Roaming when deciding on the installation of EV chargers in such a place as public roads where a high demand for EV charging is expected, in light of the fact that local governments are expected to play an active role in achieving carbon neutrality.

In addition, it is considered desirable to minimize technical barriers to the promotion of Cross-network Roaming; however, there is currently no common understanding of standard interfaces, resulting in the need to adapt to different interfaces each time Cross-network Roaming is performed, leading to increased costs and an inefficient situation.

Regarding this point, there is a view that OCPI is the international interface standard and that the development of EV charging infrastructure should be promoted using OCPI as the standard interface; however, there are also suggestions that indicate the possibility of other interfaces besides OCPI becoming the standard interface. Additionally, there are comments advocating standardization of the data content used for Cross-network Roaming, as well as comments that it is difficult to determine the necessity for compliance with standards on one's own.

In light of the above, it would be desirable for the METI, as the relevant ministry, to provide a platform for stakeholders to discuss which interface should be established as the standard interface in Japan and other relevant issues related to facilitating Cross-network Roaming in the future.

## 5. Future Initiatives of the JFTC

In this study, the JFTC conducted a hearing with local governments and related companies on EV charging services, as well as a questionnaire survey among local governments, and clarified its views on competition policy.

The JFTC will make proposals presented in this report to the METI and the local governments; this is expected to encourage the aforementioned organizations and related

<sup>26</sup> It is expected, for instance, that the EV Charging Service Provider that owns the EV chargers used in the Cross-network Roaming would, at a minimum, recover the costs of electricity, system usage fees, etc. associated with such usage. In addition, any profits from such use could be shared among the parties of Cross-network Roaming.

<sup>27</sup> For instance, the open bidding process could take into account the establishment of Cross-network Roaming with other EV Charging Service Providers, as an additional evaluation criterion in the process.

companies to consider specific measures and take voluntary actions, leading to promoting fair and free competition in EV charging services.

[End of Text]