

**Energy Management Demonstration with Panasonic in Anticipation of Further Spread of EVs
— Contributing to the stabilization of power supply and demand through
control of EV chargers, Ene-Farm, and other equipment —**

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Osaka Gas Co., Ltd.

Osaka Gas Marketing Co., Ltd.

Osaka Gas Marketing Co., Ltd. (President: Takeshi Morisaki; hereinafter, “Osaka Gas Marketing”), a subsidiary of Osaka Gas Co., Ltd. (President: Masataka Fujiwara; hereinafter, “Osaka Gas”), will launch a joint energy management demonstration with Panasonic Corporation’s Electric Works Company (President: Kiyoshi Otaki; hereinafter, “Panasonic”) by controlling electric vehicle (EV) chargers, Ene-Farm a fuel cell cogeneration system for residential use, and other equipment in August 2024.

In recent years, the need to suppress power output in line with the accelerating introduction of renewable energy and to request power saving in the event of a tight supply-demand balance has emerged as important social issues. The further spread of EVs in the future is likely to increase power demand. Proper combinations of distributed power sources owned by households, such as solar photovoltaic systems and Ene-Farm systems, are expected to help stabilize power supply and demand.

In the course of developing technologies and services that contribute to a low-carbon and decarbonized society, the Daigas Group has been working on demonstrations^{*1,2} to build a virtual power plant (VPP) and a microgrid utilizing Ene-Farm systems as energy resources, and a demand response service^{*3} for commercial and industrial customers by utilizing cogeneration systems and other equipment. Against the backdrop of the spread of EVs, the Daigas Group has also been working on projects that utilize EVs, such as alliances with EV-related companies^{*4} and the creation of a new rate menu for customers who own EVs.^{*5} In the course of manufacturing and selling many energy-related products, the Panasonic Group also focuses on realizing smart housing by offering IoT-enabled home appliances and home energy management systems (HEMS) that visualize energy and support the optimal control of equipment.

The two companies, which have been working to spread distributed power sources for households mainly through Ene-Farm systems, will conduct a demonstration to combine and control different types of household equipment, such as EV chargers, Ene-Farm systems, and electric home appliances, based on Osaka Gas Marketing’s expertise in energy services and Panasonic’s know-how regarding various energy-related products.

This demonstration will be conducted from August 2024 to March 2025 targeting households that own energy resources, including EV chargers. First, in preparation for the demonstration, Osaka Gas Marketing and Panasonic will collaborate to measure the power consumption in each house (Step 0, see figure below).^{*6} Based on the information, EV chargers and Ene-Farm systems will be remotely controlled to achieve optimal energy management in each house, such as suppressing the peak power and maximizing the self-consumption of power generated by solar photovoltaic systems (Step 1). The two companies will also be involved in energy management for all households that participate in the demonstration in anticipation of building a VPP. Demand response (DR)^{*7} will be performed to cope with surplus power and a tight supply-demand balance by controlling air conditioners in addition to EV chargers and Ene-Farm systems to stabilize the power supply and demand (Step 2).

Through the joint energy management demonstration with Panasonic, Osaka Gas Marketing will contribute to realizing a low-carbon and decarbonized society and study the possibility of creating new customer value and services by leveraging the obtained expertise.

Based on the Carbon Neutral Vision announced in January 2021 and Energy Transition 2030 announced in March 2023, the Daigas Group has been working on the development of technologies and services that contribute to a decarbonized society.

The Daigas Group will continue to promote the spread and expansion of energy networks that combine distributed power sources through the use of Ene-Farm and other distributed power sources, with the aim of helping to realize a sustainable society and becoming a corporate group that powers continuous advancement in customers' lives and businesses.

*1 About FY2024.3 Demonstration Project to Build a Virtual Power Plant (announced in June 2023)

https://www.osakaqas.co.jp/en/whatsnew/_icsFiles/afieldfile/2023/07/18/230626_2.pdf

*2 About FY2023.3 Energy Management Demonstration with Kobe City toward the Realization of a Decarbonized City (announced in March 2022)

https://www.osakaqas.co.jp/en/whatsnew/_icsFiles/afieldfile/2022/03/30/220325.pdf

*3: Daigas Group's service that helps stabilize the supply and demand on a grid by aggregating the power provided by customers in the event of a tight power supply-demand balance on the grid

*4 Alliances with NEXT-e Solutions Inc., which has technologies to control storage batteries, folofly Inc., an EV manufacturer, and other partners were announced before.

*5 "MY EV Plan," an electricity rate plan for customers who use EVs

*6 During the demonstration period other than Steps 1 and 2, energy demand and the status of use of equipment in each house will be measured to improve the demonstration accuracy.

*7 DR can be classified into two categories: downward DR to reduce (suppress) power demand and upward DR to increase (create) power demand.

1. Outline of the demonstration project

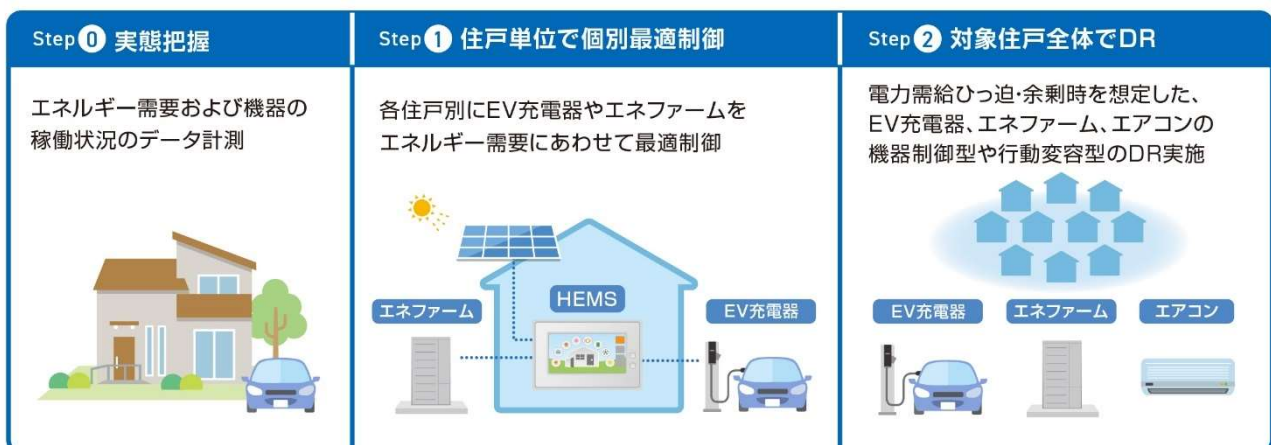
Demonstration period	August 2024 to March 2025 The demonstration period consists of the (1) control period in summer, (2) control period in the intermediate season, and (3) control period in winter, each of which spans six weeks. Control will be performed in the order of Steps 1 and 2. During the period other than the above control periods, energy demand and the status of use of equipment will be monitored as Step 0.
Demonstration target	Households (detached houses) that own EVs, EV chargers, and other energy resources
Energy resources	EVs/EV chargers, solar photovoltaic systems, and Ene-Farm residential fuel cell systems
Control targets	EV chargers, Ene-Farm residential fuel cell systems, and air conditioners
Major objectives of demonstration	1) Optimal control in each house: suppress the peak power of individual houses and maximize the self-consumption of power generated by solar photovoltaic systems 2) DR of an entire house: perform DR assuming surplus power or a tight supply-demand balance on the grid

2. Demonstration flow

Step 0: Collect data on energy demand and equipment operation status in target houses

Step 1: Perform individual optimal control for each house depending on energy demand in target houses

Step 2: Perform DR for all the target houses with the aim of stabilizing the supply and demand on the power grid



3. Conceptual image of control

