

Results of Winter Trial of Demand Response Service for Households

Reduced a total of more than 230,000 kWh through meticulous demand response by area

SB Power Corp. (Head Office: Minato-ku, Tokyo; President and CEO: Akihiko Nakano; hereinafter "SB Power"), a subsidiary of SoftBank Corp. and an electricity retailer, hereby announces the result of a winter trial of Demand Response Service for households (hereinafter "DR Service"). It was conducted from December 1, 2020, utilizing 30-minute electric power data (C-route data*) obtained from each power transmission/distribution business operator and demand forecasting technology based on SB Power's proprietary artificial intelligence (AI). SB Power's DR Service utilizes a smartphone app dedicated for use with SB Power that was developed independently, and it offers PayPay* gift cards according to the electricity-saving effect.

*C-route: One of the routes to send data measured by a smart meter. The data is sent from a power transmission/distribution business operator to an electricity retailer.

*PayPay: A Japanese company that develops and provides services for electronic payments such as mobile payments.

■ Overview of DR Service Winter Trial

Trial period: From December 1, 2020 to March 31, 2020

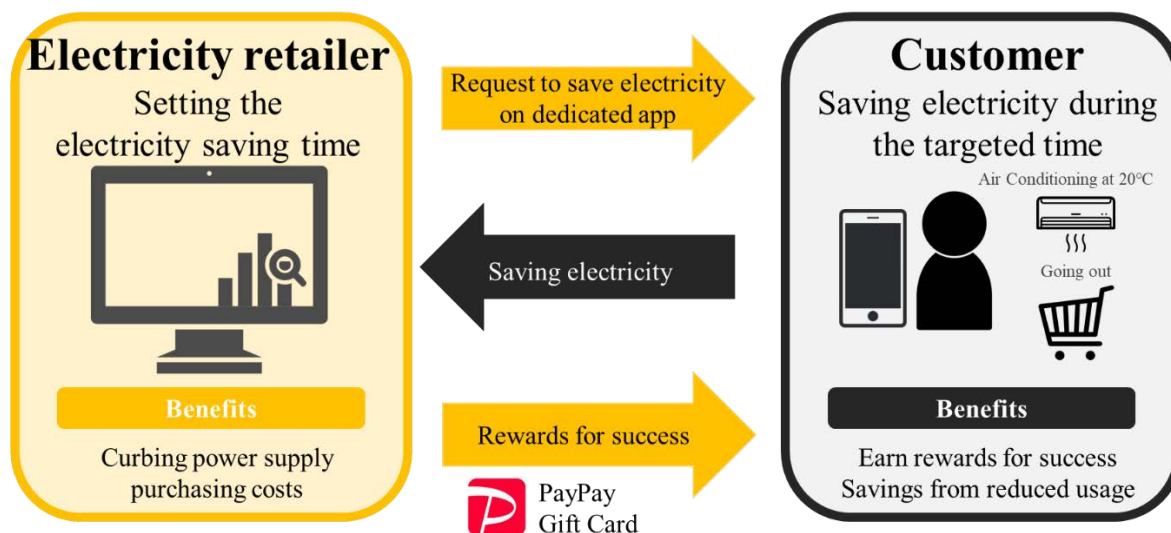
Trial scale: Approximately 32,000 households

Trial target: Customers subscribing to the Electricity Plan with SB Power

Trial areas: Divided into 9 areas

(Hokkaido, Tohoku, Tokyo, Chubu, Kansai, Chugoku, Shikoku, Kyushu, Okinawa)

[Mechanism of SB Power's DR Service]



■ Results of DR Service Winter Trial

In the winter trial, the DR Service was provided to approximately 32,000 households (see Figure 1), about eight times the number of customers in the summer trial^{*1}, in nine areas (Hokkaido, Tohoku, Tokyo, Chubu, Kansai, Chugoku, Shikoku, Kyushu, and Okinawa) that subscribe to “SoftBank Denki.” Implementing the behavior-inducing DR request, which does not use control devices, 75.0% of the approximately 32,000 households eligible for DR Service participated in the DR Service at least once during a total of 393 DR requests (71 days, 783 30-minute time frames in total). In addition, the ratio of total number of customers who participated in the DR Service to total number of customers covered by the 393 DR requests was 44.3%. As a result, a total of 233,237 kWh of electricity consumption was reduced during the winter trial period, 7.9 times more than the total reduction during the summer trial period (see Figure 2).

Figure 1: Scale of DR Service trials

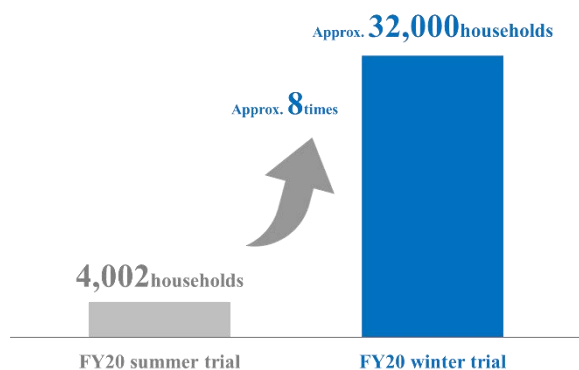
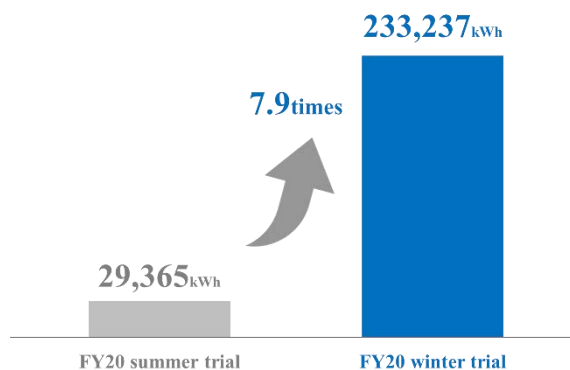


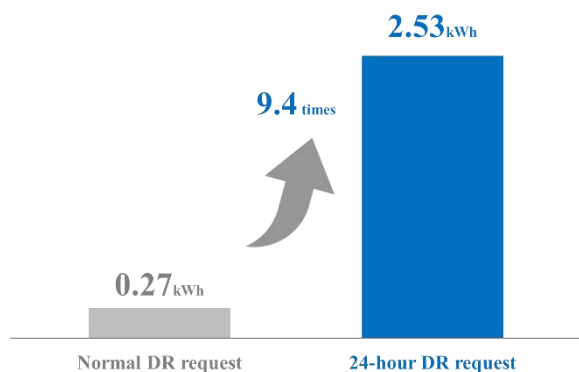
Figure 2: Total reduction due to DR Service



※1 For details of the summer trial results, please see the press release dated October 27, 2020 (https://www.sbpower.co.jp/news/pdf/20201027_01.pdf)

During the tight power supply that occurred nationwide last winter, we requested 24-hour continuous day-long power saving through our DR Service, and reduced power consumption by 9.4 times, or an average of 2.53 kWh per household per day, compared to other days (see Figure 3).

Figure 3: Change in average daily reduction per household due to the issuance of 24-hour DR Service request



■ Benefits of DR Service

Along with these results, these were the following benefits for customers and SB Power (the electricity retailer).

Benefits to Customers

SB Power has developed a dedicated smartphone app that allows customers to easily participate in electricity-saving and earn electricity-saving points according to how much electricity they save. In addition, the reduction of power consumption by saving electricity will lead to savings on electricity bills, making it an easy and economical way to save electricity. Participating customers saved on their electricity bills by cutting their electricity consumption by a total of 233,237 kWh and earned electricity-saving points worth 2,650,954 yen in total.

Benefits to SB Power

SB Power will schedule electricity-saving time in advance*2 and customers will be able to reduce their electricity consumption in a specified time zone by saving electricity for the scheduled time. To respond to the wholesale electricity market and a system reform, SB Power's DR Service is designed to change the notice time for an electricity-saving request as well as the service application deadline. By changing the conditions to suit each purpose, therefore, the results, shown in the table below, were obtained for the summer and winter periods. With an eye on full-scale operation of DR Service, the winter trial requested electricity savings through the DR Service, mainly aimed at reducing the amount of electricity procurement at spot market spikes and preventing a shortage imbalance.

[DR Service results by summer/winter for the purpose of responding to the wholesale electricity market and system reform]

Item	Reduce procurement volume when spot market prices spike		Prevent shortage imbalance from occurring		Reduce capacity contribution burden*3	
	Summer	Winter	Summer	Winter	Summer	Winter
Notice time for an electricity-saving request	Two days prior to an electricity-saving day		At or after 10:30 on a day immediately preceding an electricity-saving day		Not specified	
Application deadline	No later than 9:00 on the day immediately preceding an electricity-saving day*4		No later than two hours prior to an electricity-saving time*5		Not specified	
Number of times of electricity-saving (days)	82 times (53 days)	92 times (14 days)	83 times (54 days)	287 times (54 days)	175 times (72 days)	393 times (71 days)
Average participation rate per request issuance	52.5%	43.3%	59.1%	45.3%	54.3%	44.3%
Average saving volume per participant*6	0.058 kWh/household for 30 minutes*7	0.041 kWh/household for 30 minutes*7	0.058 kWh/household for 30 minutes*7	0.074 kWh/household for 30 minutes*7	0.133 kW/household for 60 minutes*8	0.132 kW/household for 60 minutes*8

※2 Uses a patent technology (Japanese Patent Application No. 2018-138870, Demand Response Management System that includes Scheduling Function) from ENCORED JAPAN Inc., a subsidiary of Softbank Corp.

※3 Capacity contributions are created from each electricity retailer in order to secure a sufficient supply capacity for the entire country (by newly installing/replacing power supplies). Each electricity retailer's contribution is allocated according to their supplying rate in area peak demand.

※4 It is assumed that the savable volume via DR Service is estimated no later than the bidding deadline on the spot market.

※5 It is assumed that the savable volume via DR Service is estimated no later than gate closure.

※6 State the average saving volume achieved by electricity-saving participants, including those who have not achieved sufficient electricity-saving (those who have failed to reach a target for electricity-saving volume)

※7 State the average saving volume per 30 minutes in "kWh" as adjusted for market transaction units.

※8 Power consumption per hour "kW" is given in accordance with the calculation of burden of capacity contribution.

Feasibility of DR Service based on the trial results

- **There is potential in winter as well to save electricity consumption during specific hours by using behavior-inducing DR Service.**
- **In addition to reducing power consumption with a DR request during a specific time zone, there is potential for reducing a certain amount of electricity consumption even when a DR request is made over long periods of time, such as 24 hours, during times of continuous supply and demand shortages.**
- **Since the participation rate and the amount of reduction will increase/decrease depending on the timing and frequency of issuing the DR Service request, there is potential for a further reduction in electricity consumption by setting an appropriate timing, frequency, and other conditions for issuing a request.**

■ Future Initiatives

The winter trial results showed that the behavior-inducing DR Service using C-route data is effective in all nine areas where “SoftBank Denki” is provided during the high demand periods of summer and winter. However, in order to use DR Service to reduce the procurement volume in times of a spot market spike and prevent a shortage imbalance, the average reduction per participating household per area and per issuance of request must be accurately predicted. SB Power will continue to accumulate data on the actual amount of reduction in each area throughout the year in order to verify the methods of maximizing reduction more effectively, and it will work toward achieving behavior-inducing DR Service that induces effective results.

In addition, SB Power will further improve its smartphone app service by proactively distributing information that contribute to energy saving (shown below) and repeating customer feedback on our service (use of questionnaire function via its smartphone app), and it will promote interactive communication with customers using its smartphone app, including DR Service.

- (1) Provide information to promote electricity shifting during times of surplus in the supply of solar power (load-increasing/shifting DR, etc.)
- (2) Push notification of electricity-saving advice on successful DR Service for each household
- (3) Consolidate content related to energy saving and provide easy-to-understand information utilizing the customizing capability of its smartphone app
- (4) Enhancement of communication functions with customers through its smartphone app (5-scale rating by customers, questionnaire function, chat function for easy inquiries, etc.)

Striving to provide energy-saving and environmentally friendly services, SB Power will continue to promote the development of the most familiar and affordable energy services. It will do this by utilizing the latest smartphone services and content and AI-based big data analysis technology of SoftBank Corp. and its group companies in the electric power retail business.

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[For inquiries from electricity retailers regarding DR Service]

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