

Investors Meeting for Operating Segments

Power & Environmental Solution Division

ITOCHU Corporation

Wednesday, March 3, 2021



I am One with Infinite Missions

Overview of Power & Environmental Solution Division

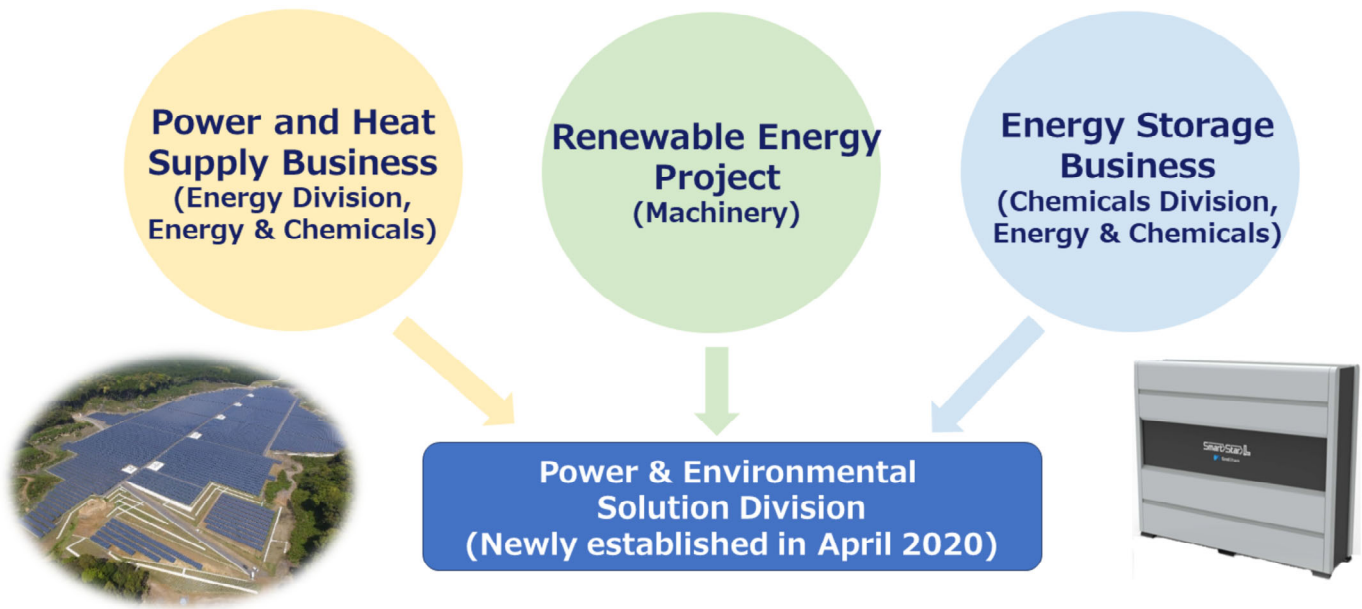
- Background for Establishing the New Division
- Organization and Personnel Structure
- Overview of Operations
- Synergy from Integrating the Division
- Vision for the Future

Future Growth Strategy

- Overview of Our Business Strategy
- ITOCHU's Next-Generation Power Business
 - Phase 1: The network ITOCHU has built
 - Phase 2: A virtuous cycle of the environment and economy
 - Phase 3: Realization of distributed power systems and diversification of business models

Overview of Power & Environmental Solution Division

- In order to become a leading company in the field of electric power, which has undergone great changes in recent years, ITOCHU established the Power & Environmental Solutions Division with the following 3 goals in mind.
 1. Integration of downstream contact points
 2. Strengthening cooperation with other industries
 3. Providing a wide range of power and battery solutions based on a market-oriented perspective



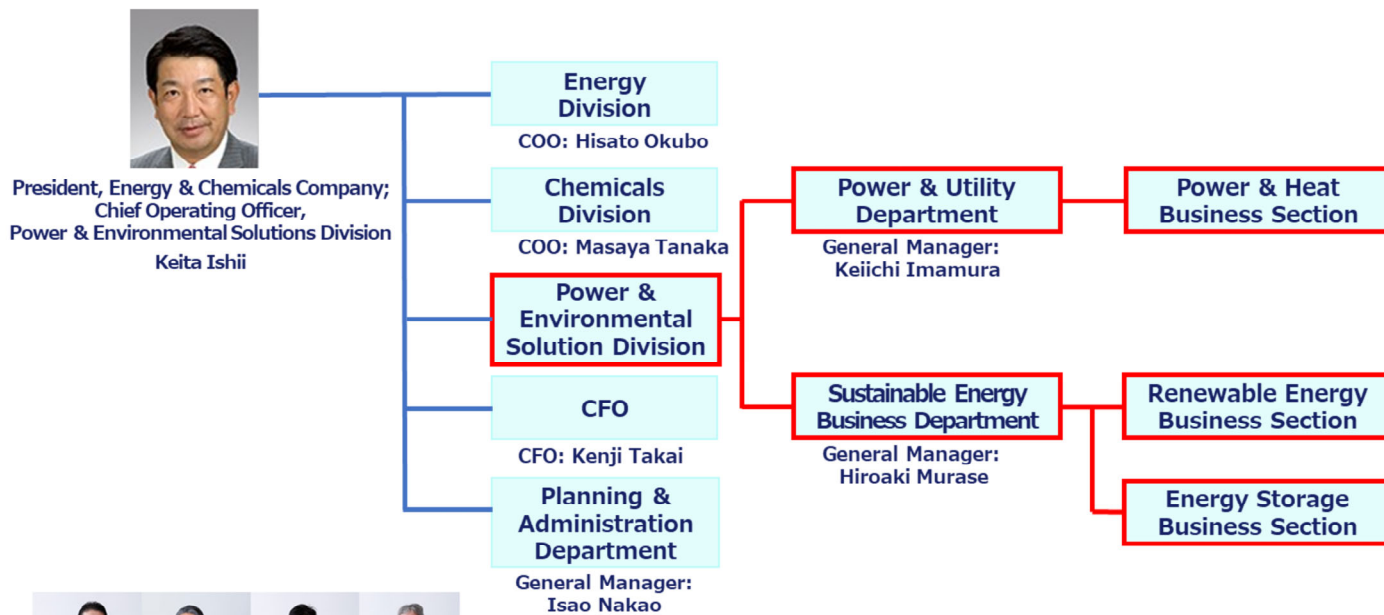
[President, Energy & Chemicals Company, Keita Ishii]

With the revision of the Electricity Business Act in 1995, the retail business of electricity was deregulated, and transmission and power generation were separated. We are moving toward the era of the carbon neutral environment. The power business is going through a major transformation.

To capture business opportunities in this area, ITOCHU has established a Power and Environmental Solution Division this fiscal year.

Discussions have been held separately on (1) enhancement of contact between renewable power generation and electricity users in the downstream, (2) providing a wide range of power and battery solutions based on the market-oriented perspective, and (3) pursuing potential cooperation with various industries and the power DX. Those are combined through the integration of the three sales departments that belonged to the Machinery Company and the Energy & Chemicals Company.

More specifically, the renewable energy power generation business that belonged to the Power Generation team of the Machinery Company, power trading that belonged to the Energy Division, and the energy storage business that belonged to the Chemicals Division were integrated and given a fresh start as an independent division.



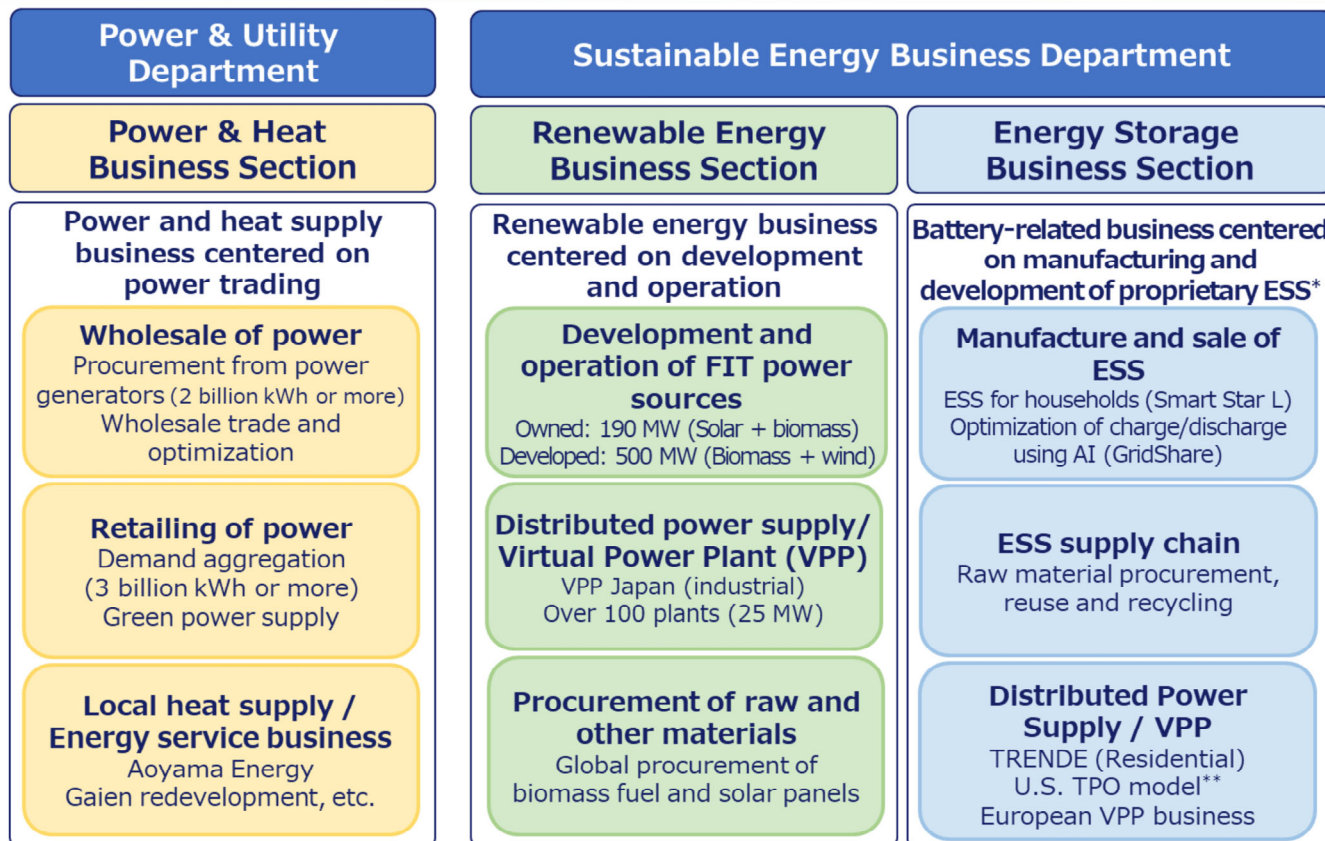
Number of employees (As of February, 2021)

Energy	Chemicals	Power & Environmental Solution	Total
153	224	49	426

In this new division, there are two departments and three sections.

As of February 2021, we have 49 selected personnel. To make sure that we can break away from the siloed organization, we made those 49 people move completely to this new division. As a President, I am also heading this division.

To realize a low-carbon society in Japan, we need to combine low-carbon power source, as well as reduced power consumption by consumers. We believe that the role of our division is very important.



*: Energy Storage System **: Third-party ownership model

First, with the Power & Heat Business Section, the major business is wholesale power trading, and it is also responsible for aggregating ITOCHU Group's power demand. At Aoyama Energy Service, which is a consolidated subsidiary, we provide heat supply. We are trying to expand our businesses with the combination of power and heat supply.

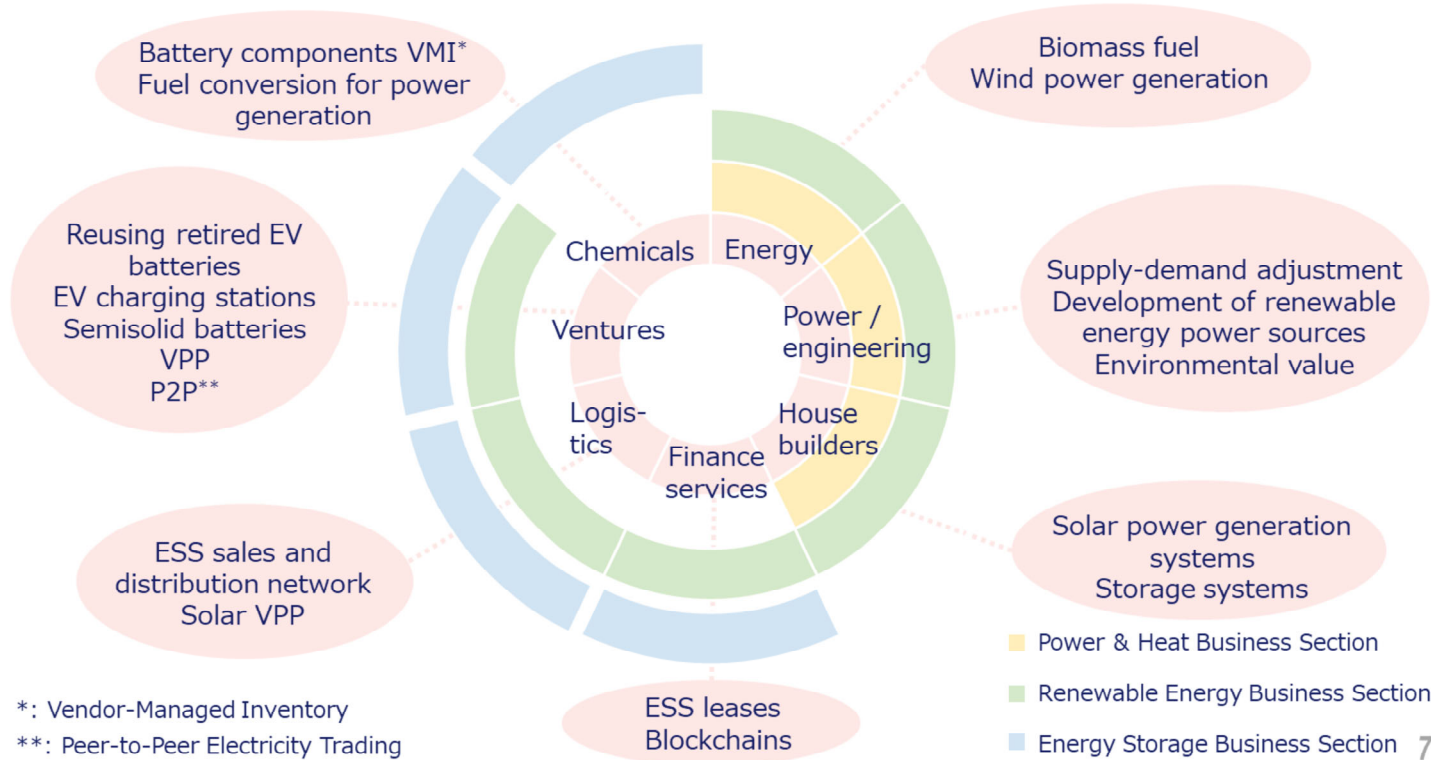
In the Renewable Energy Business Section, the main business is development and operation of renewable power sources, such as solar, biomass, and wind. Ichihara Biomass Power Plant started its commercial operation in December 2020, and we will be gradually realizing some of those renewable energy businesses that are planned now. We also focused upon the distributed power supply business. VPP Japan is currently expanding to distribute its solar power generation business using third-party rooftops. Further, we sell the biomass fuel to the biomass power generators.

In the Energy Storage Business Section, we are expanding our business mainly in manufacturing and sales of an AI-powered proprietary energy storage system. We also focused upon the reuse and recycle business of automotive batteries, trying to create a circular battery business in Japan and abroad. We also invested in 24M Technologies, Inc., which does the research and development of the semisolid lithium-ion batteries. We are making investments for the next-generation technologies.

Synergy from Integrating the Division



- The integration of the three sales departments has broken down the silos and made it possible to access a wider range of customers.
- Synergy between the efforts of each unit enabled new next-generation power generation proposals.



We have a certain level of core profit capabilities as we integrated departments which were already generating profits.

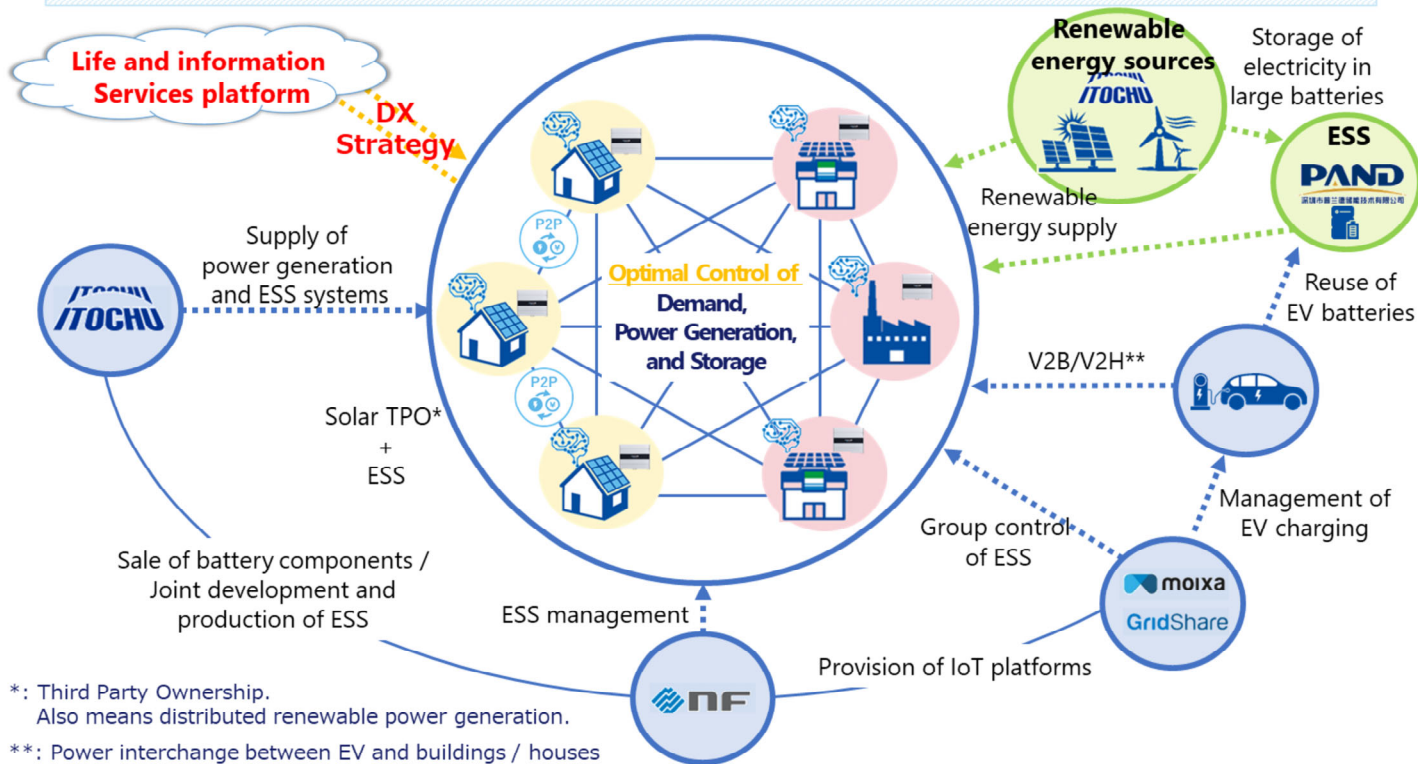
As a synergy effect, we are promoting the horizontal alignment with the customers, with whom we only had siloed relationships; namely, the major power companies, chemical companies, logistics companies, homemakers, energy companies, engineering companies, and financial services companies. We are now able to provide unique and comprehensive new proposals in the area of new energy to wide-ranging customers.

We will be able to make the new comprehensive and combined proposals to generate synergies to the partners that each team has developed. We are successful in creating an exciting innovation relationship.

Vision for the Future



- The shift to an interoperable power network will expand opportunities to provide power and environmental solutions from a market-oriented perspective.
- Our proprietary AI-powered storage systems will be the core for further growth.



We are seeing the expansion of the innovations happening in the downstream of the power industry. Our new division is trying to realize circular society. We believe the core of the growth is the AI-powered storage system.

Other companies are also enhancing the solution business surrounding the power industry, and they are reorganizing or creating new organization. We believe we have a uniqueness in our structure. While other companies start from the upstream, the power generation side, we formed multiple networks from the side of the users. The distributed renewable energy network to be connected to the upstream power sources and renewable energy, as we focus on market-oriented perspective.

We used to have a one-way power grid. With the development of the distributed power sources, such as solar, we are starting to see the transition to the multilateral two-way grids. By developing this strength, there will be a small and medium two-way power grids, where power consumption needs to be managed appropriately without waste within grids.

With the right management, it will be possible to control power consumption and peak power, and that is where the Energy Storage System, ESS, plays an important role, especially our own AI-powered storage system. With the ESS energy management on the consumption side, rapidly increasing electrification demand from the EVs and others, can be controlled and can alleviate excessive burden on the power generation side.

The division as a whole, is making preparations for future development including alignment with the renewable power grid and solar TPO, and identifying new environmental value, development of new-generation batteries, reuse and recycling of the batteries, as well as building the network to using the block-chain technology and connection with the EVs.

We believe building a power network in the downstream will not only have a power control effect, but can make people's lives more safe and secure through digitization and evolve into life service platform in the near future.

Realizing business transformation by shifting to a market-oriented perspective

Profit opportunities are shifting downstream

Profit sources are shifting from upstream to downstream. Breaking down the negative effects caused by silos is an urgent task. We will advance business model evolution and growth opportunity creation.

Enhancing our contribution to and engagement with the SDGs through business activities

*Sampo-yoshi** capitalism

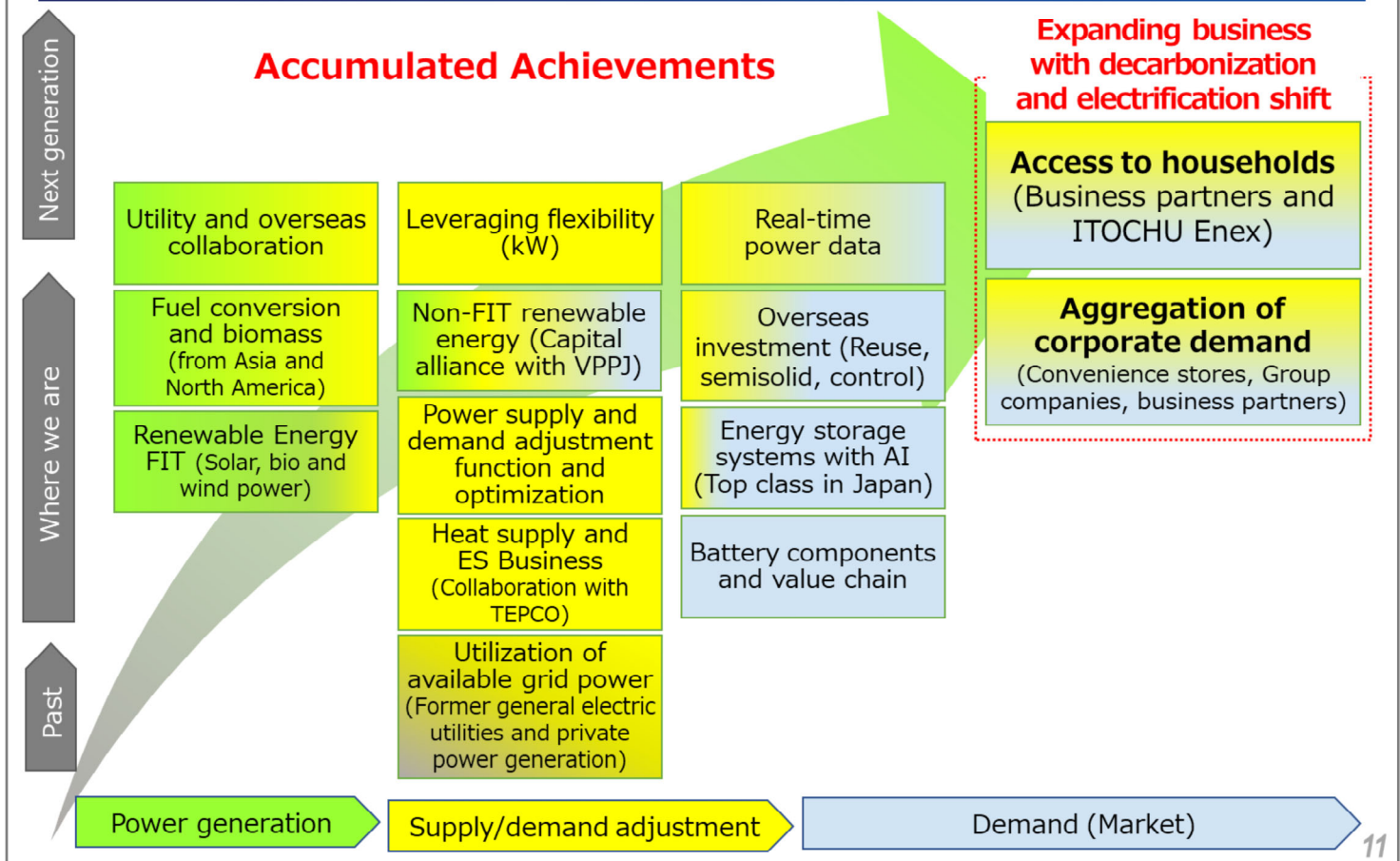
To realize a sustainable society, we embrace an approach to capitalism with greater emphasis on serving all stakeholders. Through our business activities, we will contribute to the achievement of SDGs in such ways as maintaining the foundations of everyday life and protecting the environment.

* "*Sampo-yoshi*" is our corporate mission and the management philosophy of the merchants of Ohmi (where ITOCHU was founded). This meaningful phrase emphasizes the importance of activities that are "good for the seller, good for the buyer, and good for society." *Sampo-yoshi* can be said to be the roots of today's idea of sustainability.

We will start the new three-year medium-term management plan for next fiscal year. As announced, basic policy for the plan includes realizing business transformation by shifting to a market-oriented perspective and enhancing our contribution to and engagement with the SDGs through business activities. The details of the plan will be announced at the business results briefing for this year. I believe our new division will be realizing those two basic policies. Our target is to become the new source of profit of ITOCHU.

Future Growth Strategy

Overview of Our Business Strategy



[General Manager of Power and Utility Department, Keiichi Imamura]

On this slide, we are showing the specific businesses and achievements. The vertical axis shows the time starting from the bottom; past, where we are, and next generation. The horizontal axis starts from the left, power generation, supply demand adjustment, and the users or downstream market.

By aggregating corporate demand, mainly in ITOCHU Group and business partners, we become large-scale users, and it can supplement the function of the major power companies based upon the market-oriented perspective. We handle more than 5 billion kilowatt hours per year.

For Households, through multiple business partners and affiliates, such as ITOCHU Enex, which has unique contact with customers, hundreds of thousands of accesses to users are already established, which can expand from now on. Also, we cooperate with the typical group in the heat supply and corporate energy service business. Bringing this business to abroad is also in sight.

In power generation sector, we own more than 600 megawatt assets, both existing and in development of the renewable FIT power sources, including solar, biomass, and wind. For the next generation, non-FIT PV model for self-consumption is offered through industries.

For renewable power generation as carbon-free biomass fuel trading, flexible function with multiple sources is provided. Toward the carbon neutral in 2050, we plan to capture the needs of mixed combustion from power generators and development of carbonized fuel.

In energy storage, we have global access to related companies with the battery materials business and AI-powered storage system.

We have invested overseas in reuse and next battery technology for the next generation. By utilizing real-time data, we are ready to start the next-generation model with TRENDE Inc., one of our investees, and others.

In corporate demand aggregation, we have already realized certain size in power trading. Through collaborating with multiple major and new partners, we will offer next-generation energy storage products, materials, and related services going forward.

We will listen to the voice of users one by one and work with partners on the supply side and hone product design and services with the unique improvements from supply/demand perspective. This positive cycle is, and continues to be, the key to our strategy.

<Future Growth Strategy>

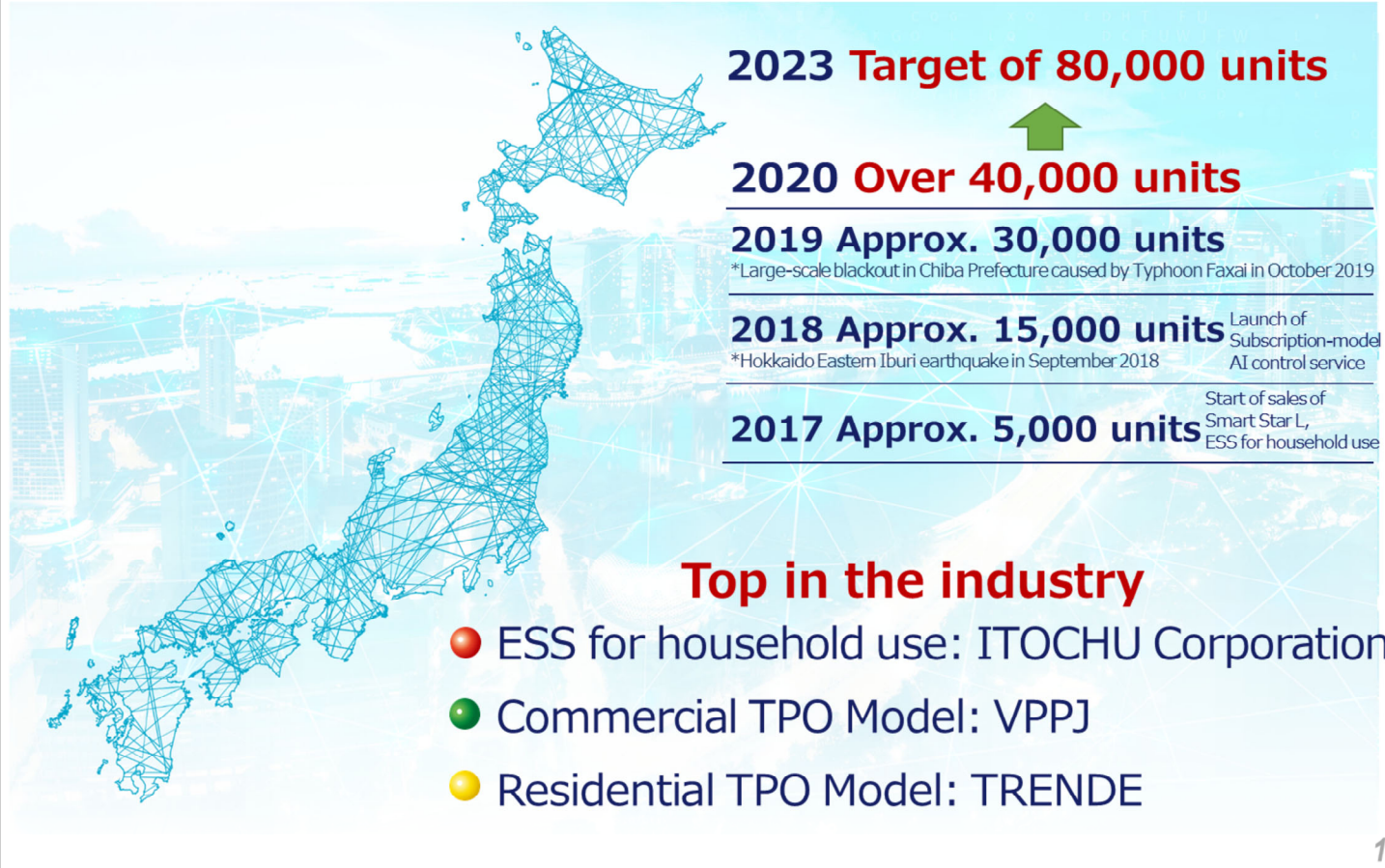
As mentioned in the government green strategy announced at the end of December last year, the key in realizing carbon neutral in 2050 is the combination of use of renewables in power generation and electrification on the user side.

As renewable power source and distributed resources increase, we need to deal with fluctuations due to the weather and uneven regional distribution.

The power transmission distribution side alone cannot fully handle this. Major power companies are struggling and making efforts to alleviate these burdens while supply/demand adjustment on the demand side, not just in terms of volume but flexibility in output and capability to provide it, is needed more than before. In our division, we will improve functions and skills, such as forecasting renewable power generation volume in balance unit price as well as trade risk management and demand response so that we can firmly connect distributed renewable resources of demand side to the grid and complement the grid-wide control together with the supply/demand adjustment function of demand side. We plan to expand our trading businesses further in these fields.

Users who are crucial are searching for answers amid rapid changes. We are receiving many more inquiries from them. As more options are needed, we have started to handle renewable-based electricity utilizing non-fossil fuel value in Japan. We will specifically respond to next generation needs and expanding demand from electrification.

This is a task that must be accomplished for many customers and stakeholders. As a trading company, we will not only be idealistic, but we will expand our businesses while securing profit and resources for growth. Based on the market-oriented perspective, we will propose specific solutions to manufacturers, corporate users in commercial area, households, former general electric utilities, and power generators.

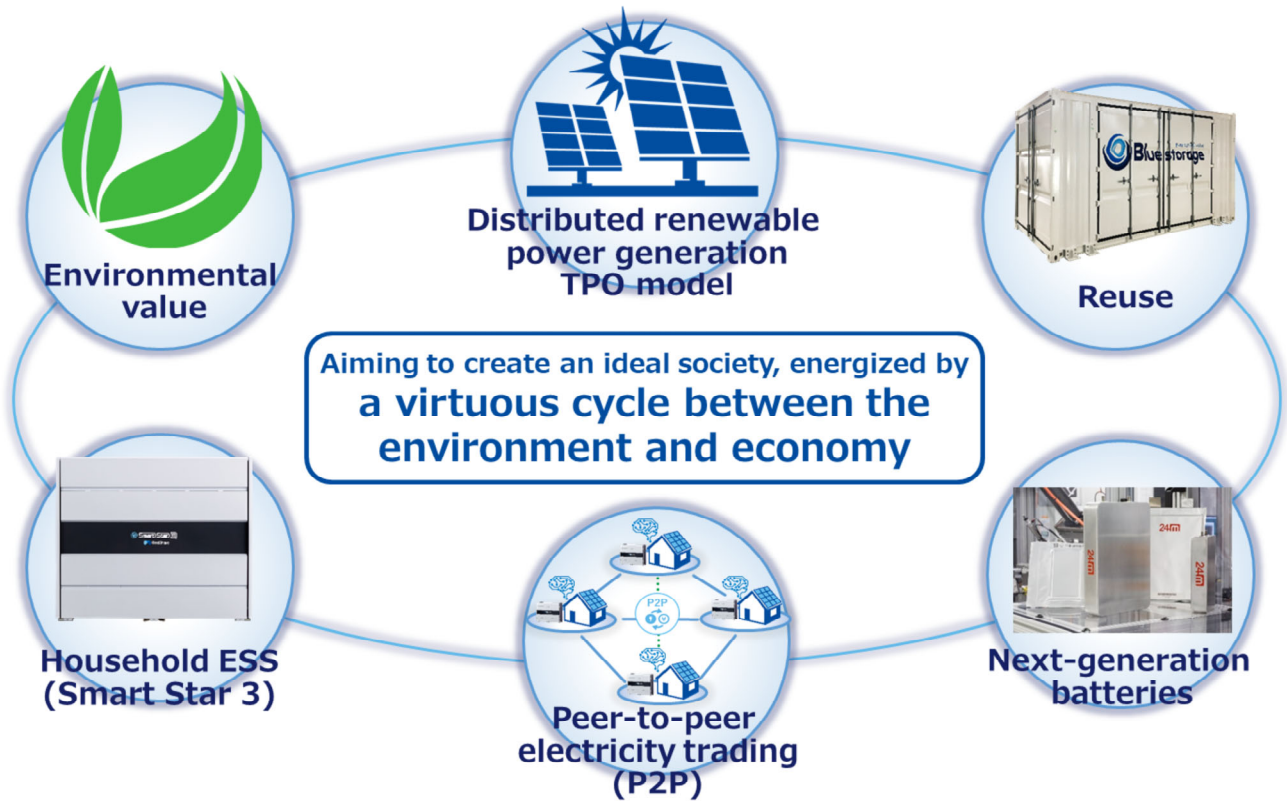


[General Manager of Sustainable Energy Business, Hiroaki Murase]
 This slide shows the nationwide distributed power network that we own.

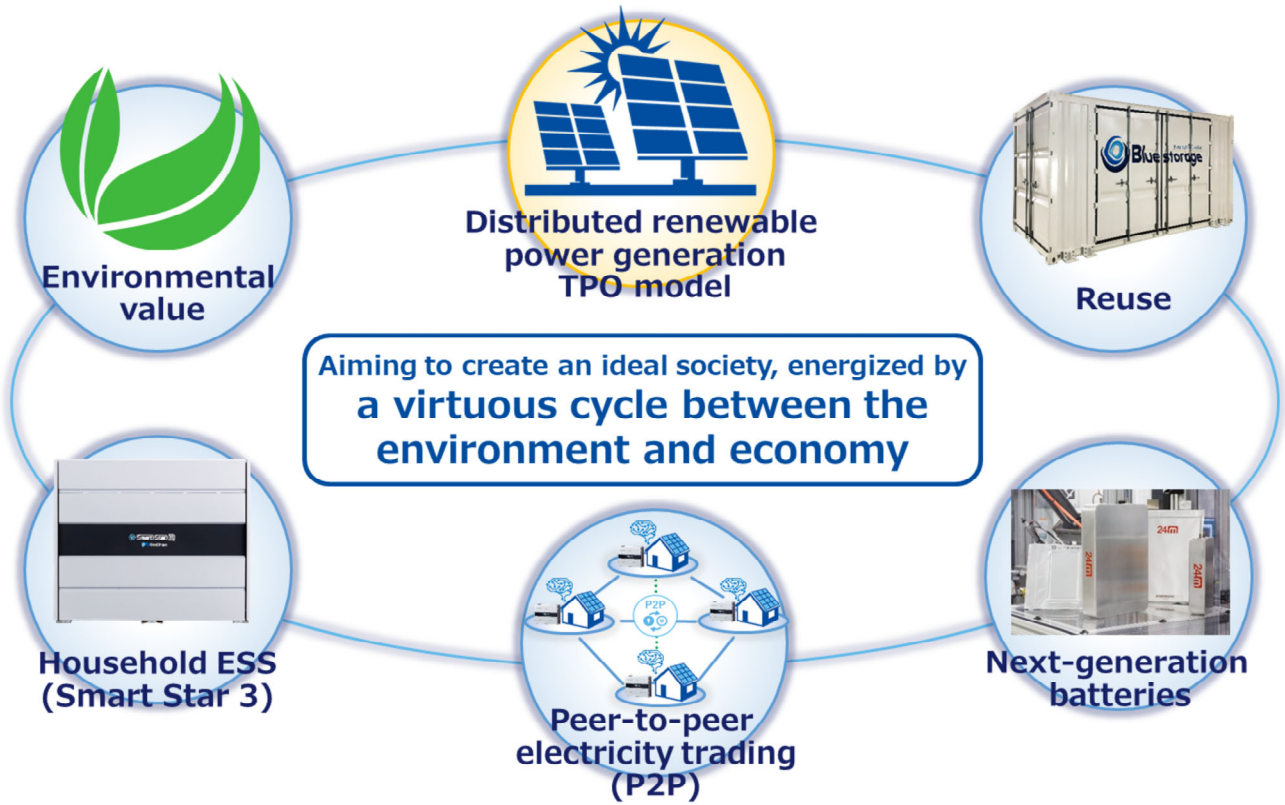
As for distributed solar power generation using third-party rooftops, our partner VPP Japan, Inc. has a leading market share in the commercial area, mainly in supermarkets and logistic warehouses. Another partner we have is TRENDE Inc., which has a leading market share in the household area. We are making steady progress in proceeding with the collaboration projects.

For the ESS for household use, NF Blossoms Technologies, a joint venture between NF HOLDINGS CORPORATION and ITOCHU, which develops and manufactures the Smart Star series. We have installed more than 40,000 units of them all over Japan by 2020.

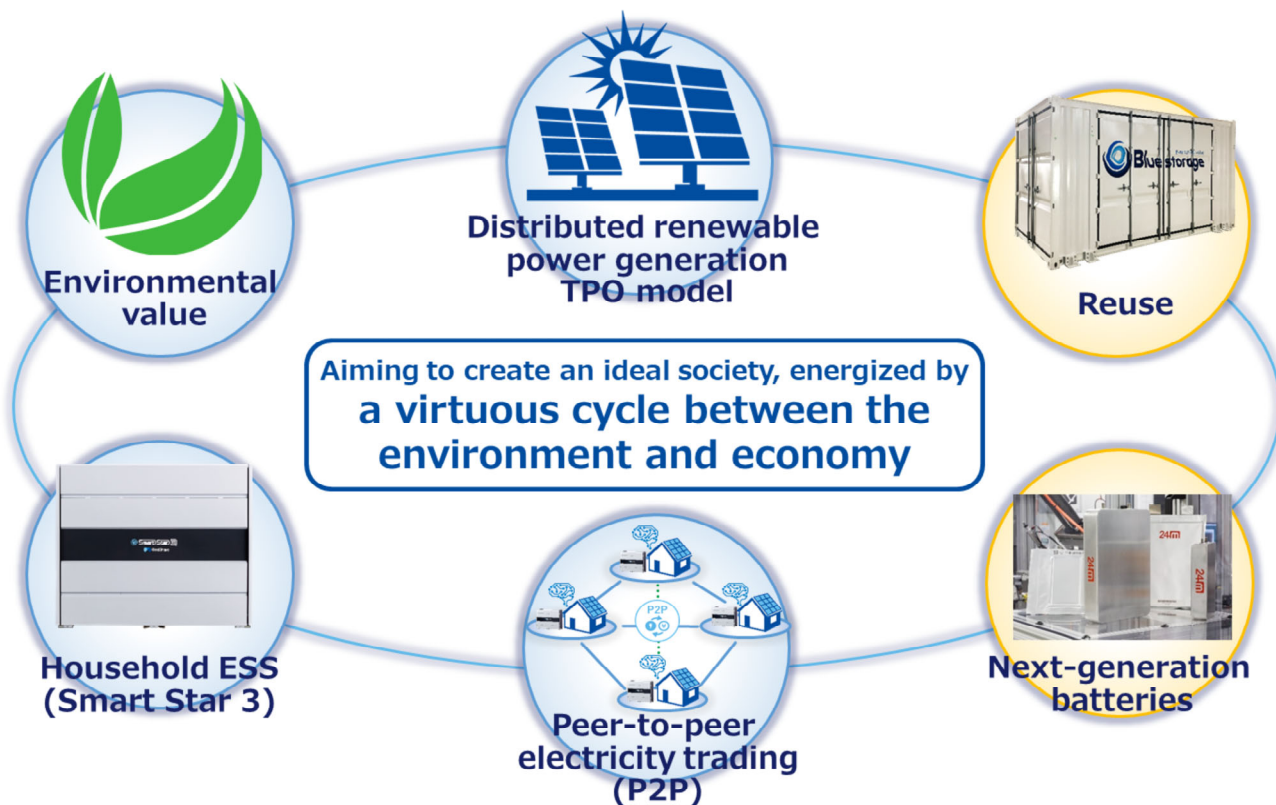
This ESS capture household power data every minute and AI-based software GridShare controls in an optimum manner. Based on our experiences and achievements in Japan, we are making preparation to apply this outside of Japan, including the United States.



Our goal is to create a society with a virtuous cycle between environment and economy. I would like to share with you the specific initiatives using six keywords.

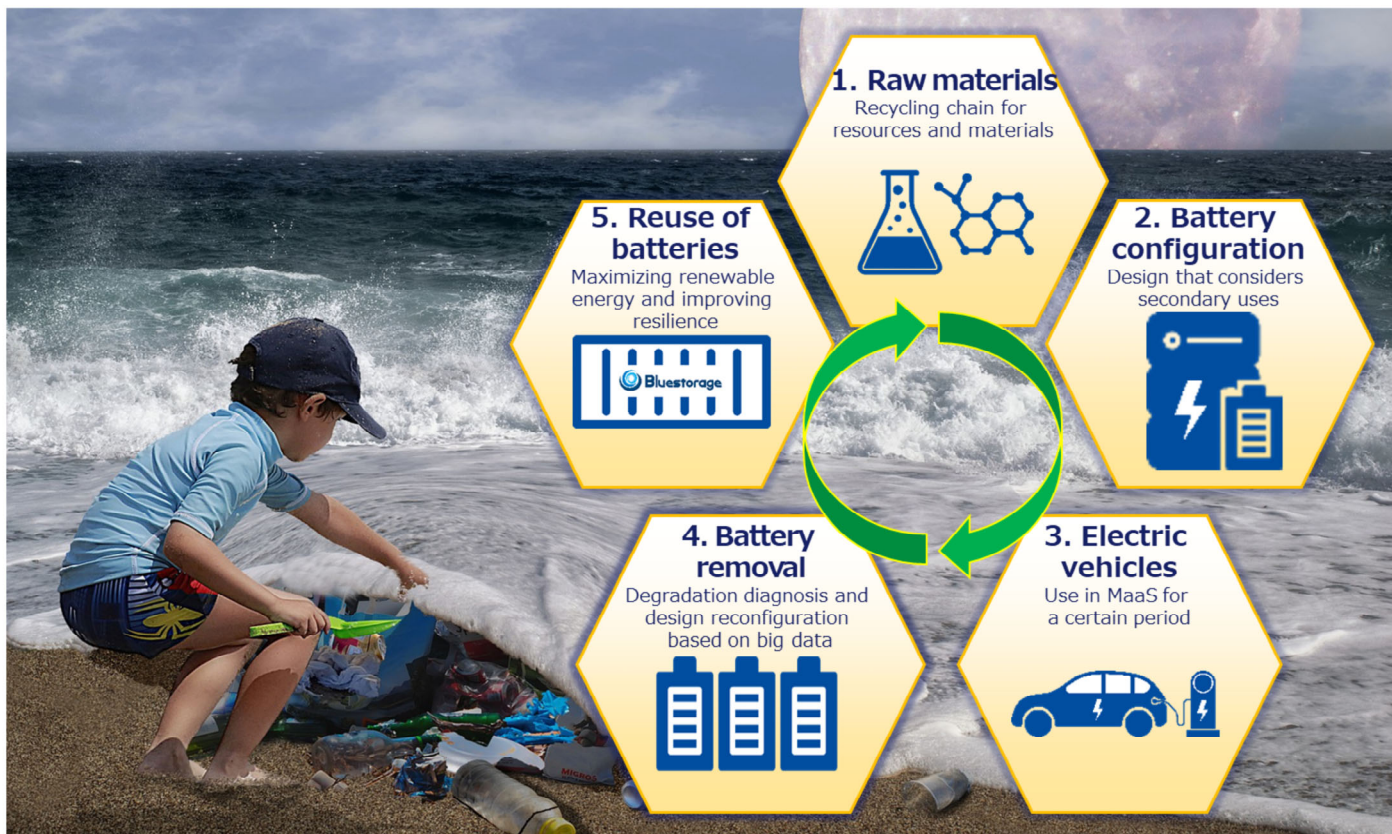


First, the distributed renewable power generation business.



The core of our energy storage business is lithium-ion batteries, surrounded by a whole chain or parts and material in sale of final products. EVs are becoming more widely available in Europe and China. The global sales of EVs and PHEVs in 2020 was 3.2 million. It is expected to increase to 4.6 million in 2021 and 12.8 million in 2025 as the growth will accelerate.

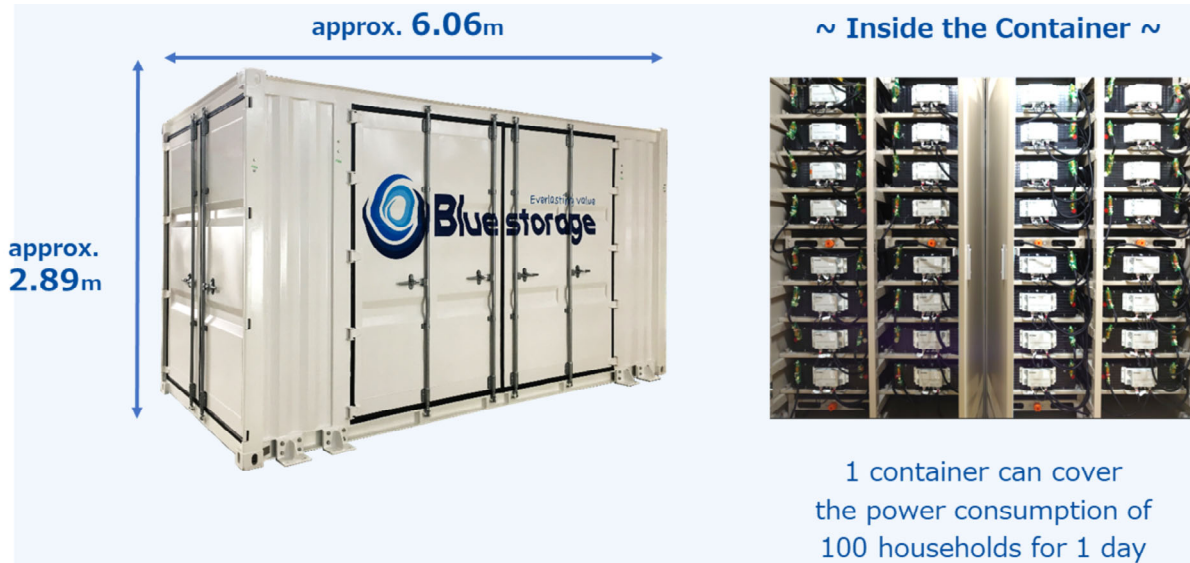
In promoting our energy storage business, the biggest risk is securing the lithium-ion batteries. In order to tackle this, we have taken two approaches since 2018: the reuse of automotive batteries to a stationary storage system and access to next-generation lithium-ion battery technology.



About the reuse and recycle business of batteries.

Based on our experience in the battery parts and materials business, we have studied how smoothly and cost competitively we can go through the battery renewable and reconfiguration of the batteries assembled and used for EVs for reuse.

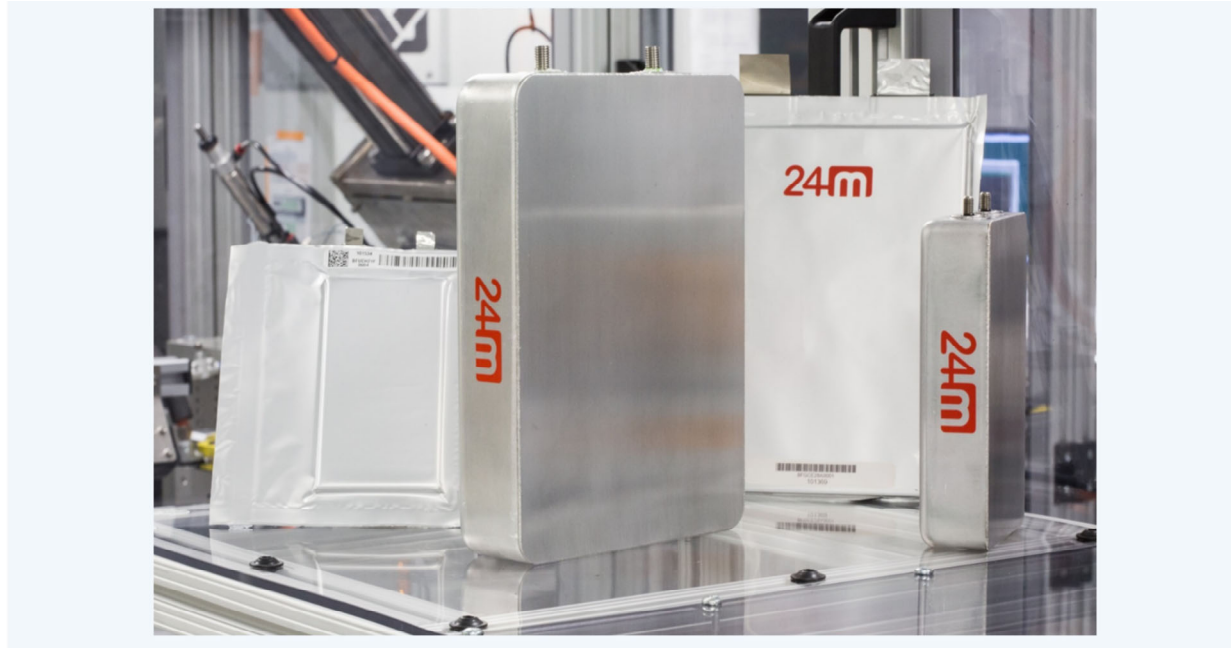
Furthermore, we will continue our efforts towards the completion of a true circular system by recovering as many components as possible, including rare metals, such as nickel and lithium from the used batteries and returning them to our chain of battery parts and materials.



Our capital and business alliance with Pand Power, which is the family company of BYD, started in 2019. There are three reasons behind this.

- 1) It enables us to obtain use history information of the batteries that are not disclosed by the car manufacturers, understand the health, and forecast the life of batteries precisely.
- 2) The shape of the automotive battery is rectangular, making reconfiguration easy. This will lead to improve space efficiency and better cost competitiveness.
- 3) We can estimate when those batteries can be reused since the application of those BYD batteries are mainly for buses and taxis. This will lead to high-quality and competitive and stable procurement.

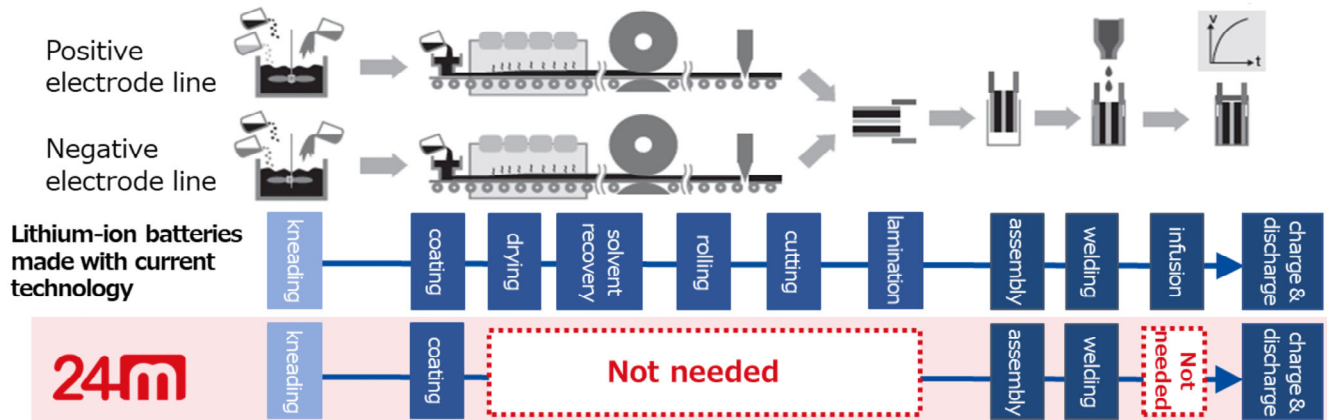
The photo here shows a first system of NF Corporation planned in Yamaguchi Prefecture that will start to operate in April 2021. One 20-foot container is about 1 megawatt hour. The batteries inside will be for five buses. Those buses were utilized as public transportation in Shenzhen from 2015 to 2020. By analyzing the status of the battery, we can reconfigure it for the next application. We are getting specific inquiries from customers in and outside of Japan.



In 2018, we invested in 24M, which is the MIT spin-off company, which manufactures the semisolid batteries.

Dramatic simplification of mass production processes

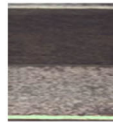
➔ **66% reduction** in capital investment compared to current processes



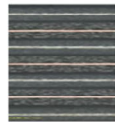
Reducing the number of components

➔ **25% reduction** in parts and materials costs compared to current processes

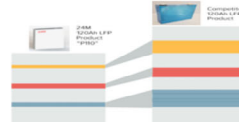
Cost structure



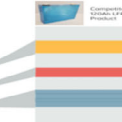
24M



current LiB



24M



current LiB

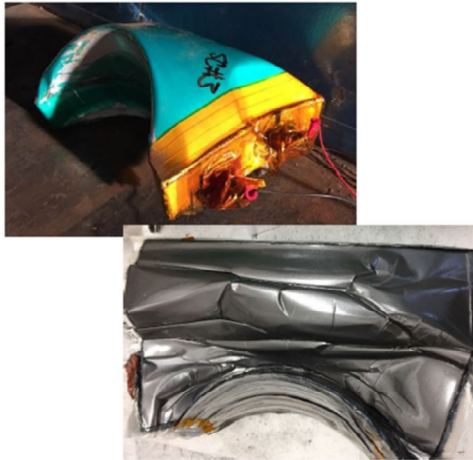
There are four major characteristics.

1) We redefined production process from scratch and significantly simplified production process. CapEx can be reduced to one-third of the conventional lithium-ion batteries. The space in plant can be reduced to one-tenth in battery sale production.

2) The reduction in parts and materials by 25%.

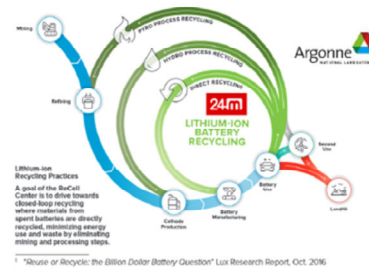
Those characteristics contribute significantly to the competitiveness of product.

Improved safety



- ◆ Characteristic crushing safety performance
- ◆ Excellent overcharge performance

Recyclability



- ◆ Recycling during the manufacturing process
- ◆ Recycling from final products

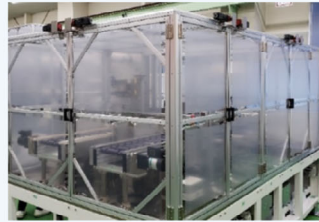
3) High safety. It does not use the liquid electrolyte, and it is sometimes called “clay-type battery”. As shown in the photo on the left, it can be deformed and secure the safety even when subjected to a strong impact.

4) High recyclability. By reducing the parts and materials, recyclability increase dramatically. The EU from now on will be setting the guidelines for the recyclability of the batteries. The 24M’s semisolid battery technology is superior in this respect.

- Mass production to be started in 2023



- Mass production to be started in 2021



- Pilot line production began in 2019
- Mass production to be started in 2021



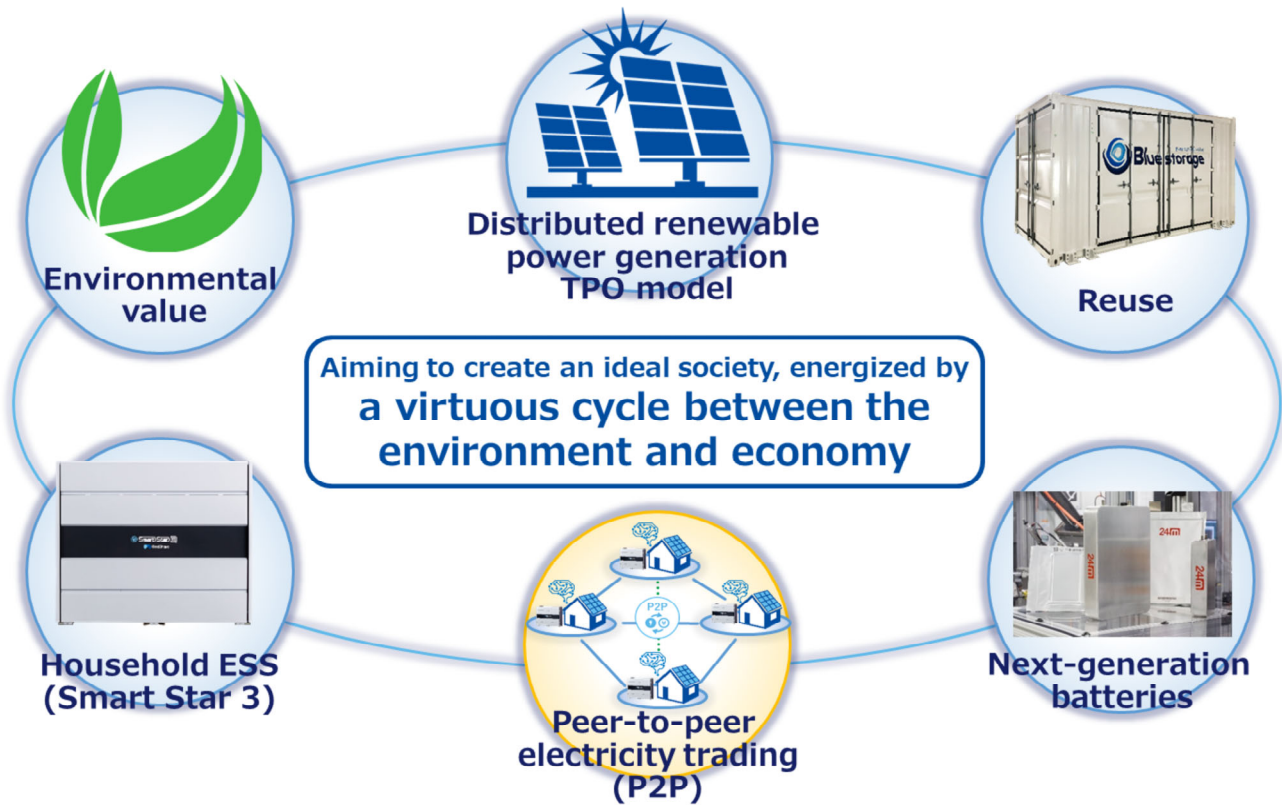
The biggest characteristic of this technology is that it is not in the research phase, but starting to become the mass production phase.

Kyocera, for example, will be soon starting the mass production.

GPSC, the power company of PTT Group in Thailand, will also start mass production this year.

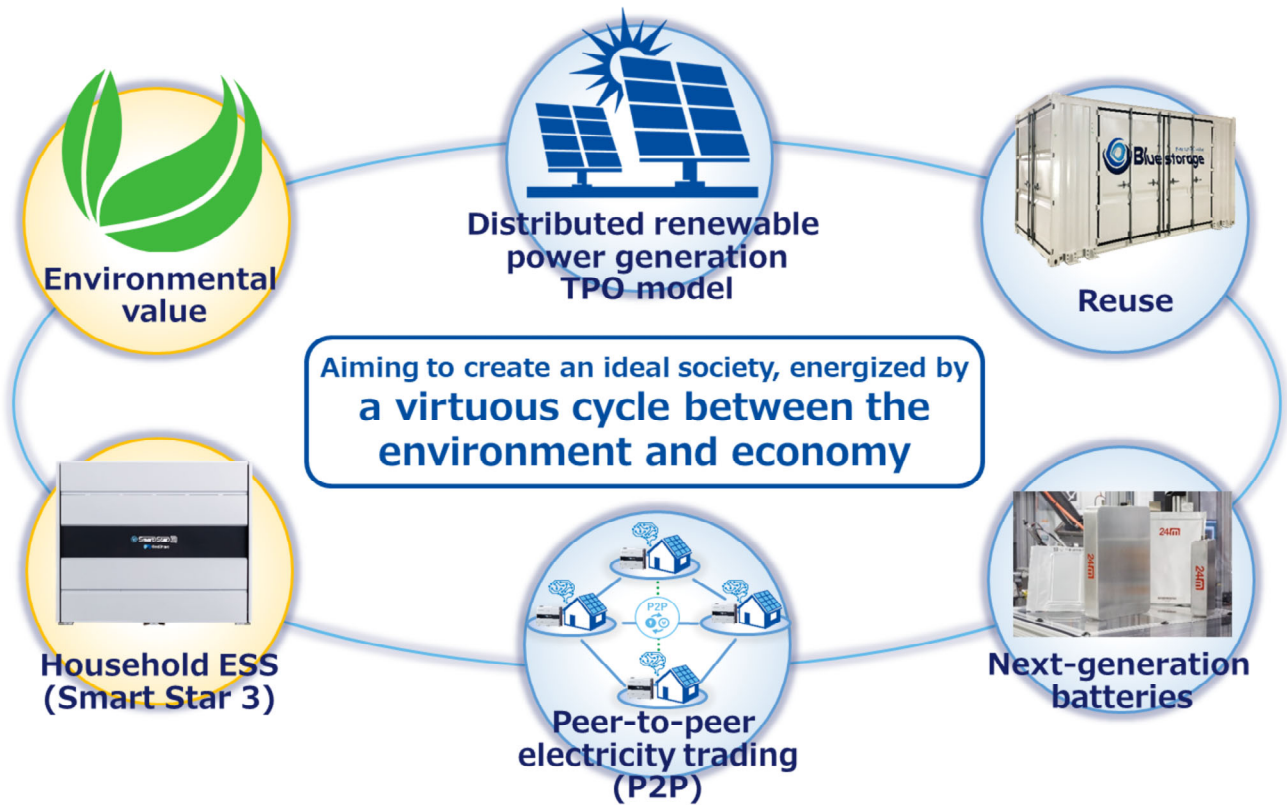
The Norwegian company, Freyr, also uses 24M technology and plans to start to manufacture batteries by utilizing hydropower generation in 2023.

There are multiple other companies which license the 24M technologies which are not mentioned here. A global network is being formed. We will look for licensees, supply parts and materials, procure batteries, and also use this technology for our own energy storage system.



In the society where distributed renewable power generation and energy storage systems are widely available for users, efficient use of green energy and maximization of economics become important. Therefore, peer-to-peer electricity trading using blockchain is drawing a lot of attention.

Capital tie-up with TRENDE started in 2020. Together with Toyota and Tokyo University, TRENDE conducted the demonstration of power trading for one year among 20 households. Results were very promising, generating economic advantages for all the households.



As Blockchain-based Peer-to-Peer Business is in sight, we are now adding the Smart Star 3 into the series of Smart Star products.

Industry-leading
high-capacity /
high-output

Grid sharing
(AI)

Environmental
value

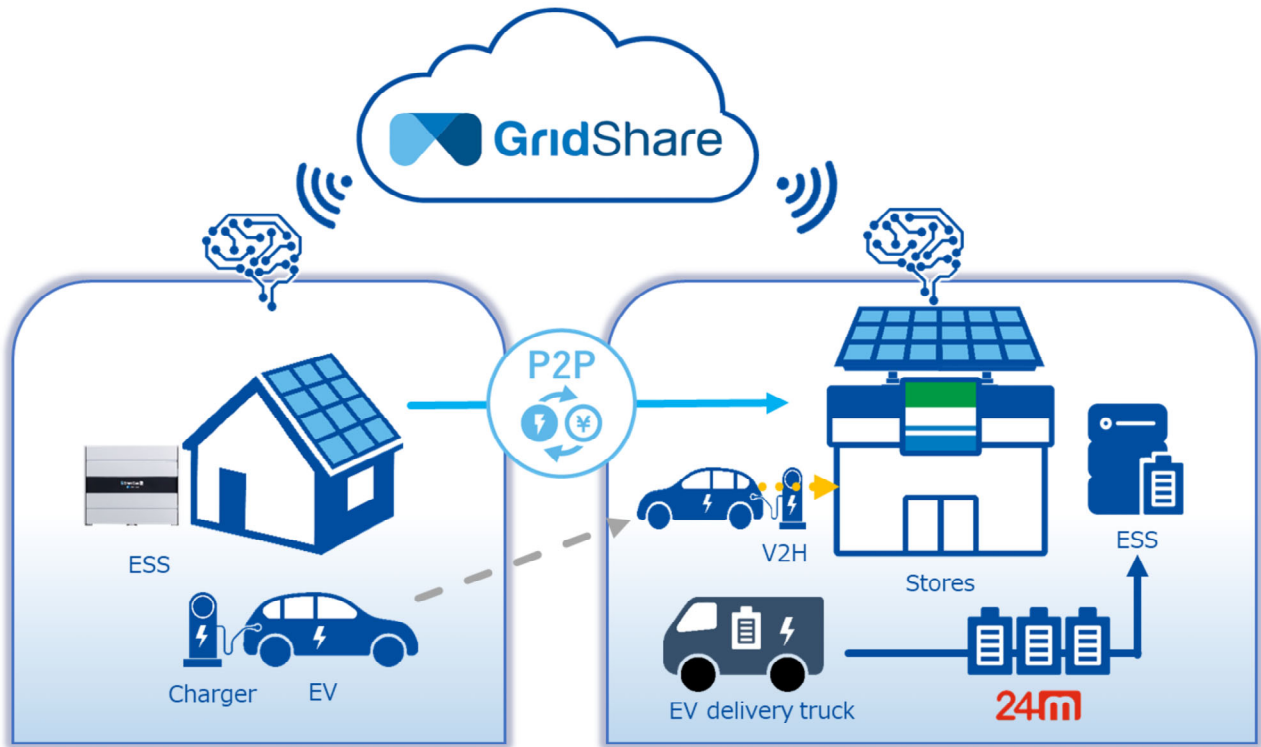
EV charging



This is the new model launched today (March 3). In addition to continuous function, the power outage function and AI control, which have been highly evaluated in the market, capacity and output are increased based on the market needs analysis.

Furthermore, we provide a platform to measure environmental value for the first time in the world for the household and to convert it into points.

It also has a charging function to EVs, which is expected to penetrate also in Japan. This will make the electricity supplied to EVs greener.



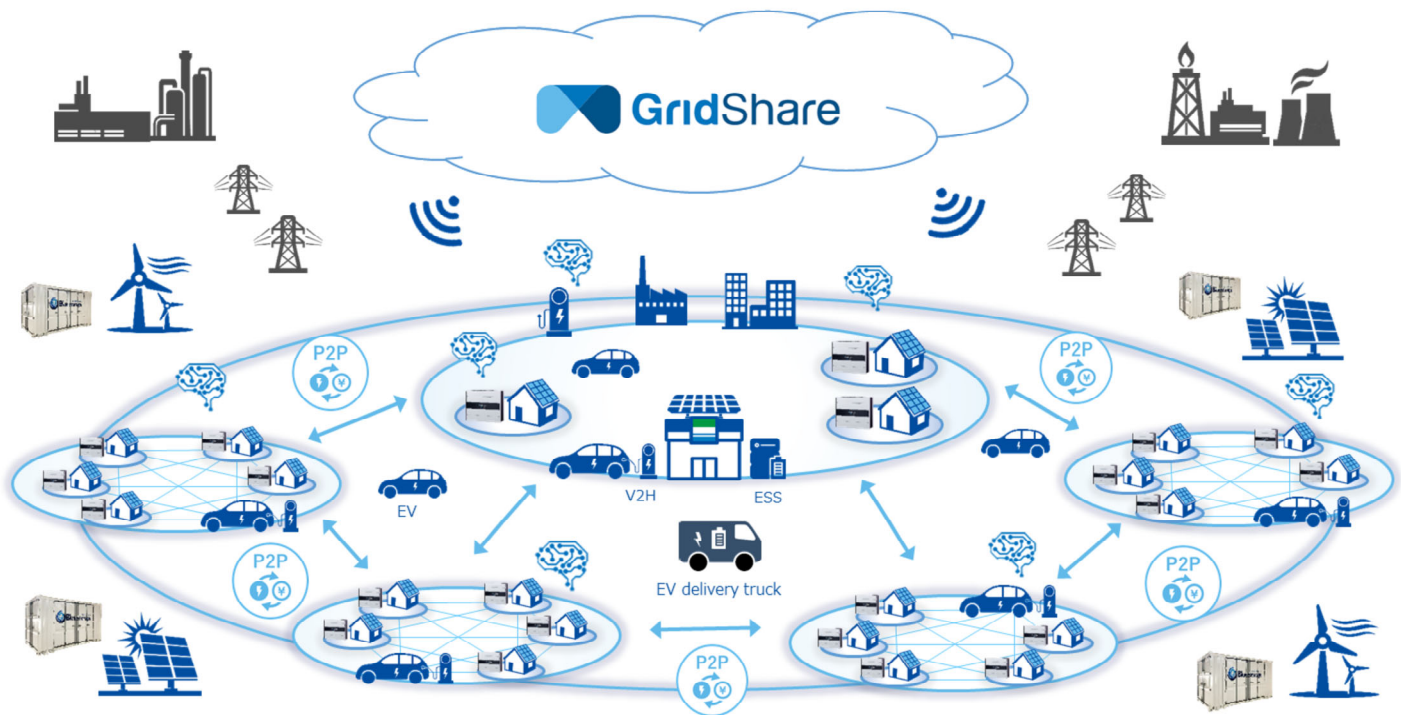
We can comprehensively control the distributed renewable power generation expanded by our partners, including VPP Japan and TRENDE, and the energy storage network for households connected to AI software called GridShare.

In the near future, when TRENDE's peer-to-peer technology is implemented, and the batteries with the 24M technology is mounted on EVs, and integrated under the GridShare, the growth will be accelerated.

We will embed by a circular flow to reuse and recycle EV batteries.

Platform that converts environmental value to points, which is brought by Smart Star 3, will connect households, convenience stores, supermarkets, and companies will create a community together with EVs.

Creation of new economic zones utilizing existing networks



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This slide shows our future vision. It shows all the hardware, software, technologies, and business models that were covered today. There are hurdles and challenges that we have to overcome, but this is not a dream.

We believe starting from small-scale projects will be organically connected and aligned to create a community and develop into a smart city. That is when the virtuous cycle between environment and economy can be created and a society will be able to achieve decarbonization in the true sense.

We will continue to work with our partners to realize such society.



株式会社 **NFブロッサムテクノロジーズ**
(NF Blossom Technologies, Inc.)

VPPJAPAN



TRENDE

PAND

24m



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