Energy Management at home

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Energy-Management-related Products

Smart Meter（by regional power company such as CHUBU Electric Power, etc.）

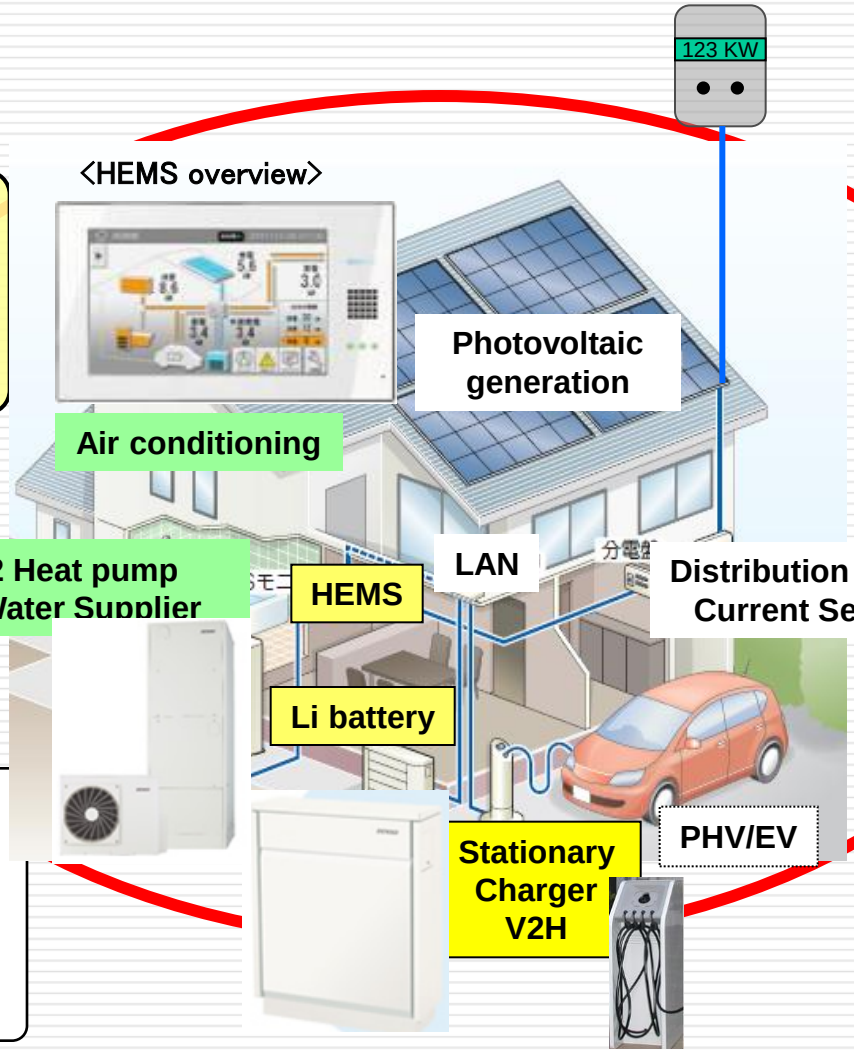
Newly developed field

Energy Management

- HEMS Controller
- Li Battery
- Stationary Charger（V2H）

Air conditioning/ Thermal devices

- CO2Heat Pump Hot Water supplier
- Air conditioner
- Ventilation system



Energy Generator

- Photovoltaic (PV)

Vehicle

- PHV/EV

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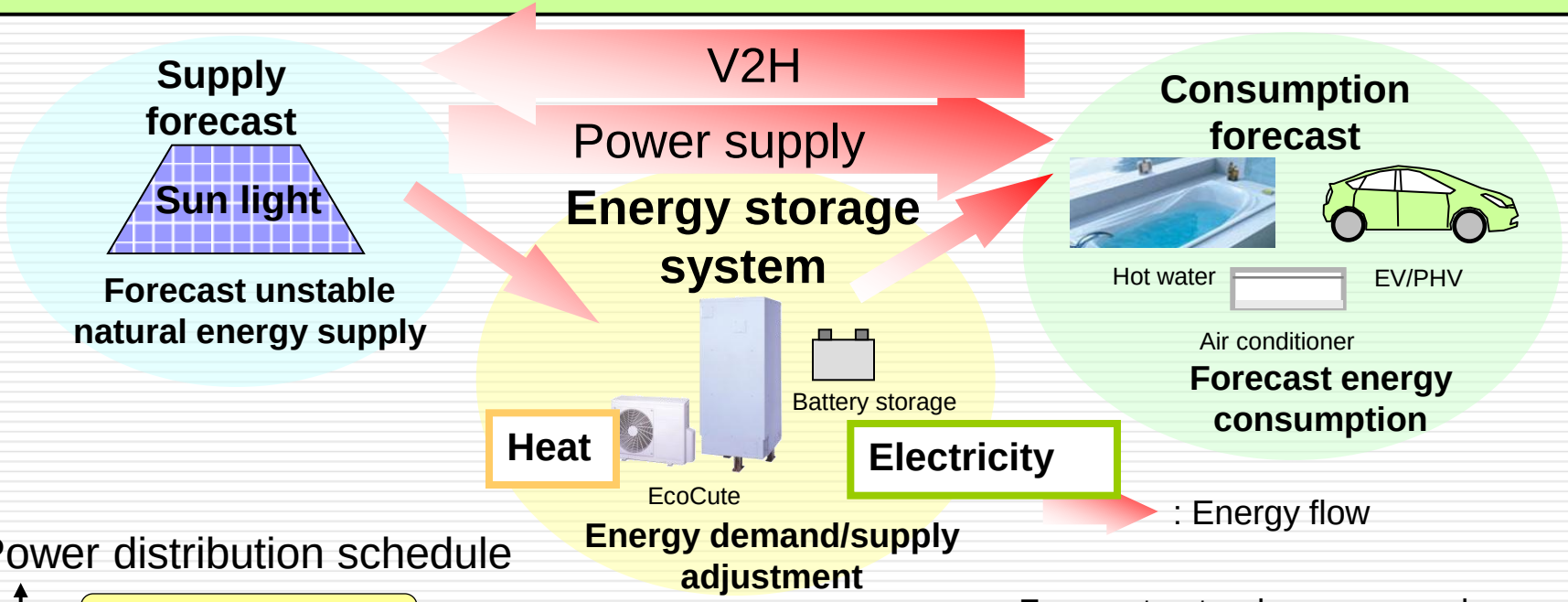
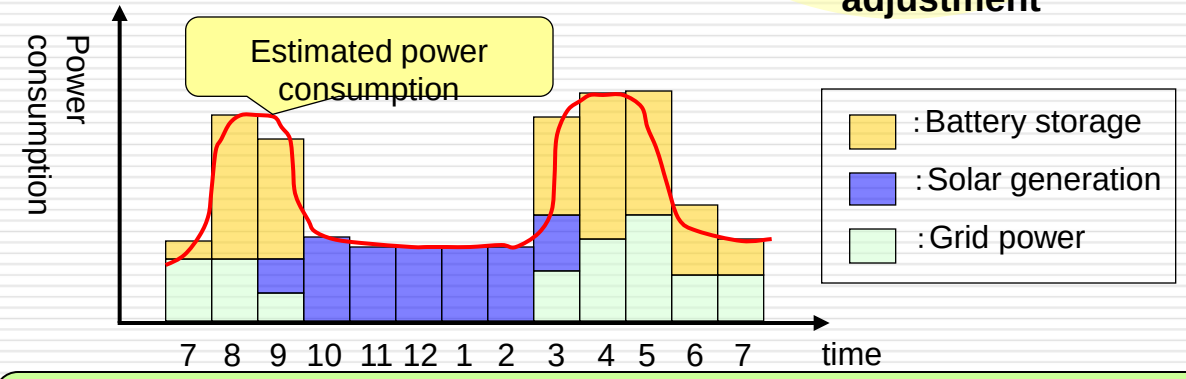
Energy Management for Both Vehicle and Home

Adjust demand/supply by energy storage system based on forecast and minimize CO_2



Power distribution schedule



Forecast natural energy supply

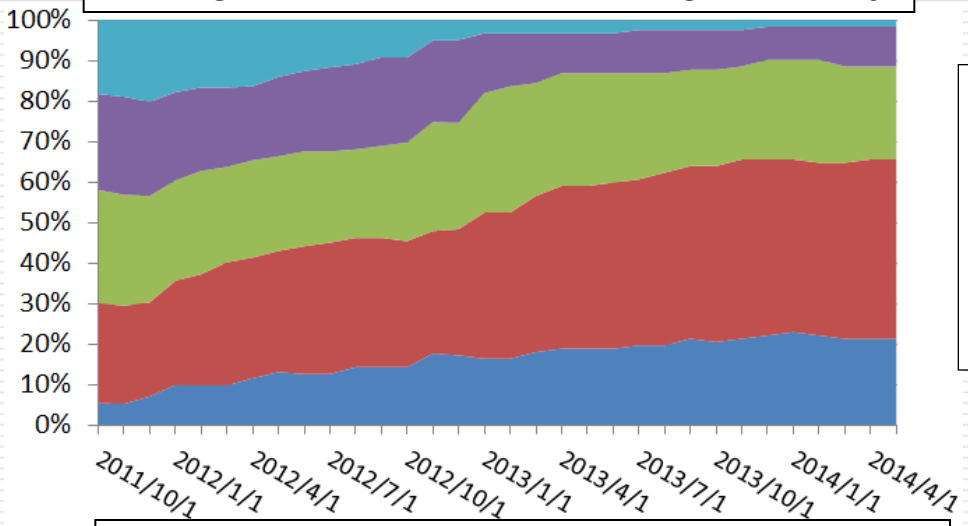
Surplus→ Storing to battery and Ecocute
Shortage → Supplement by battery store and grid power

Minimize CO_2 by optimizing power distribution

Highly accurate forecast of demand/supply at home/vehicle is a key to optimize power distribution

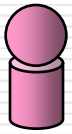
Life style change of HEMS users

Change in awareness of saving electricity



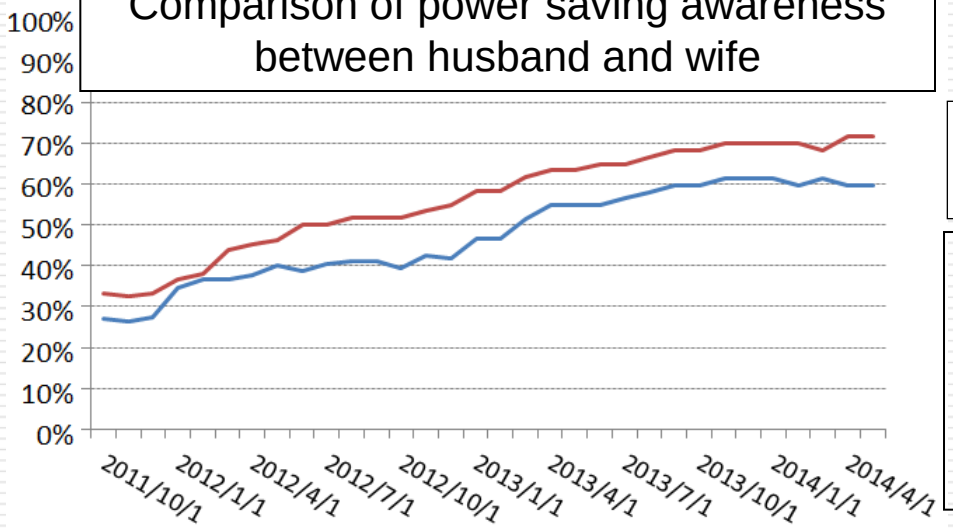
The voice of HEMS users

- *"The cooking and using households time depends on the amount of energy used and generated in the home."*
- *"I try to save electricity when purchased power is large."*



HEMS users

Comparison of power saving awareness between husband and wife



- Displaying the amount of energy provides guideline for conservation.
- Wives,staying home and often using households,is high awareness of energy saving.

People become more aware of saving electricity through the visualization of the amount of energy

Result and issues in Home energy management area

Summary of result

・Approx. 70% of CO2 was reduced when local generation/local consumption of PV is done, using HEMS, Stationary battery, Heat Pump Hot Water Supplier, PHV and V2H.　20% in home and 50% in PHV were realized

・HEMS, stationary battery, heat pump hot water supplier and air conditioner connected to HEMS have already been commercialized, and started to put into the market

・HEMS makes users to improve energy saving consideration.

Plans

・Promote the low carbon actions in both hardware and user consideration

・Promote use of home devices effective to low carbon

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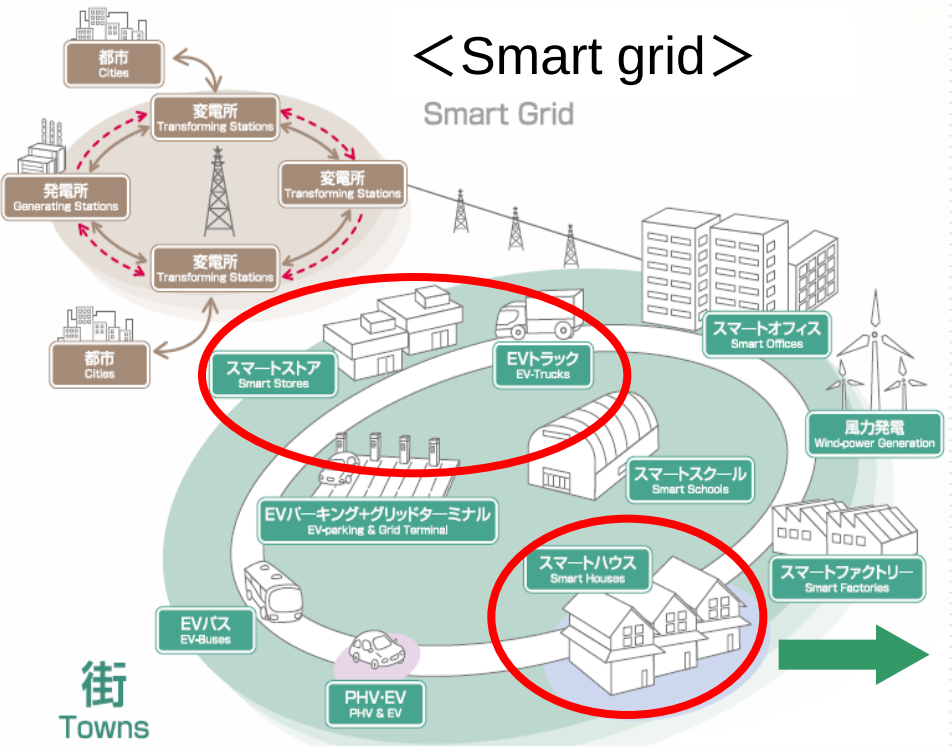
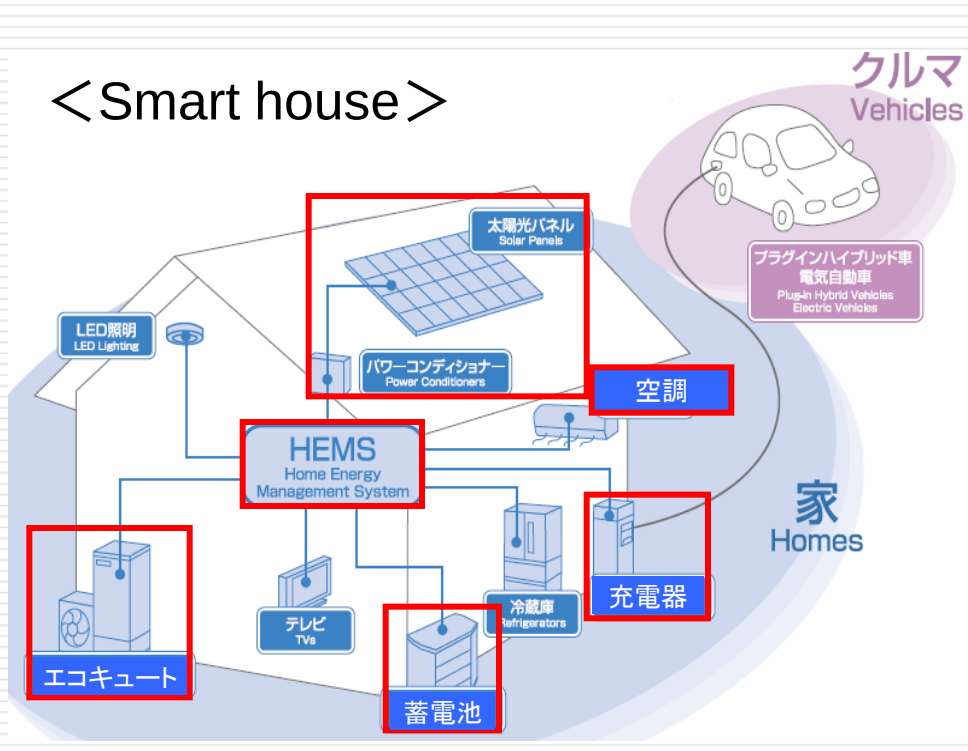
Appendix

Future image of social infrastructure

■ Overall image





Smart grid

Totally streamlined grid in community, town and home

HEMS(Home Energy Management System)

System to support home energy management

Achieve the low carbon society by expanding natural energy

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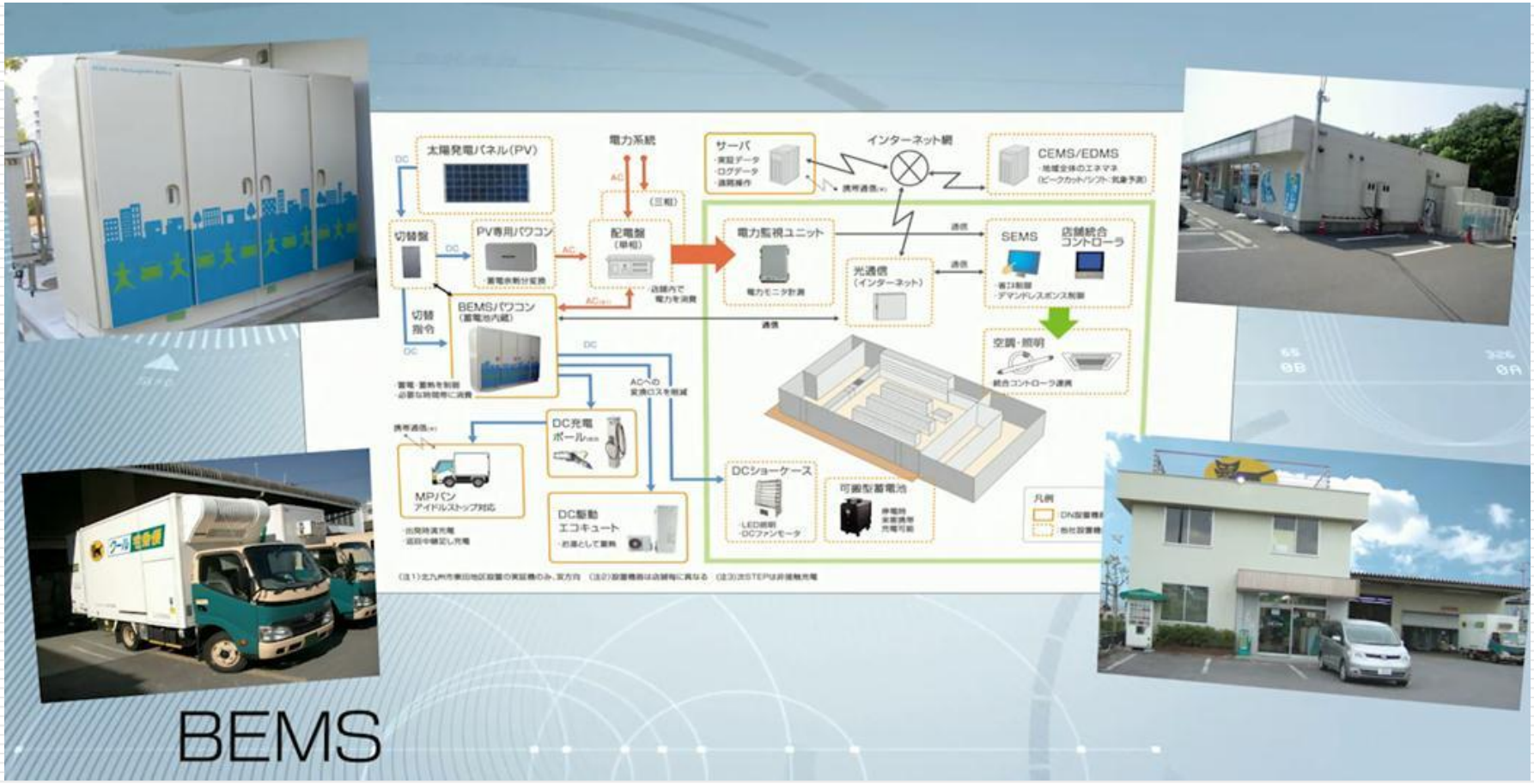
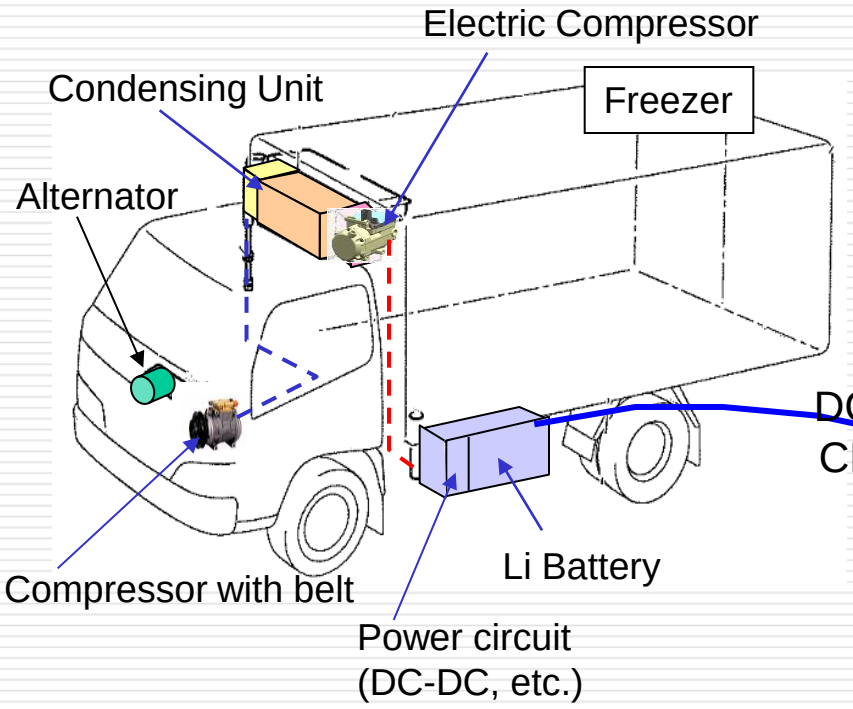
BEMS for commercial facilities



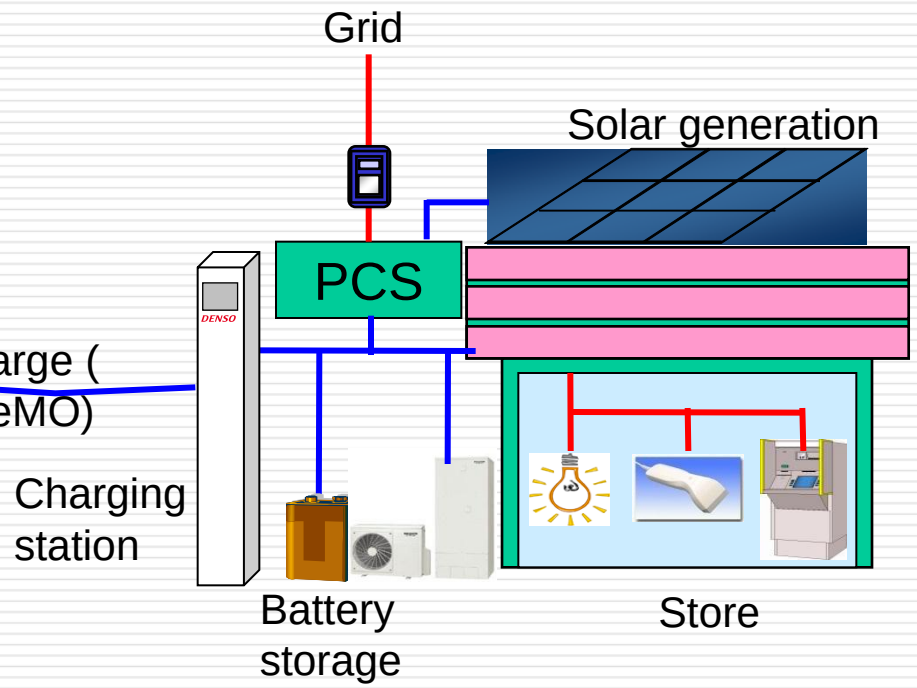
Linkage between Commercial EV and commercial facility

System outline



Electricity transaction with commercial facility

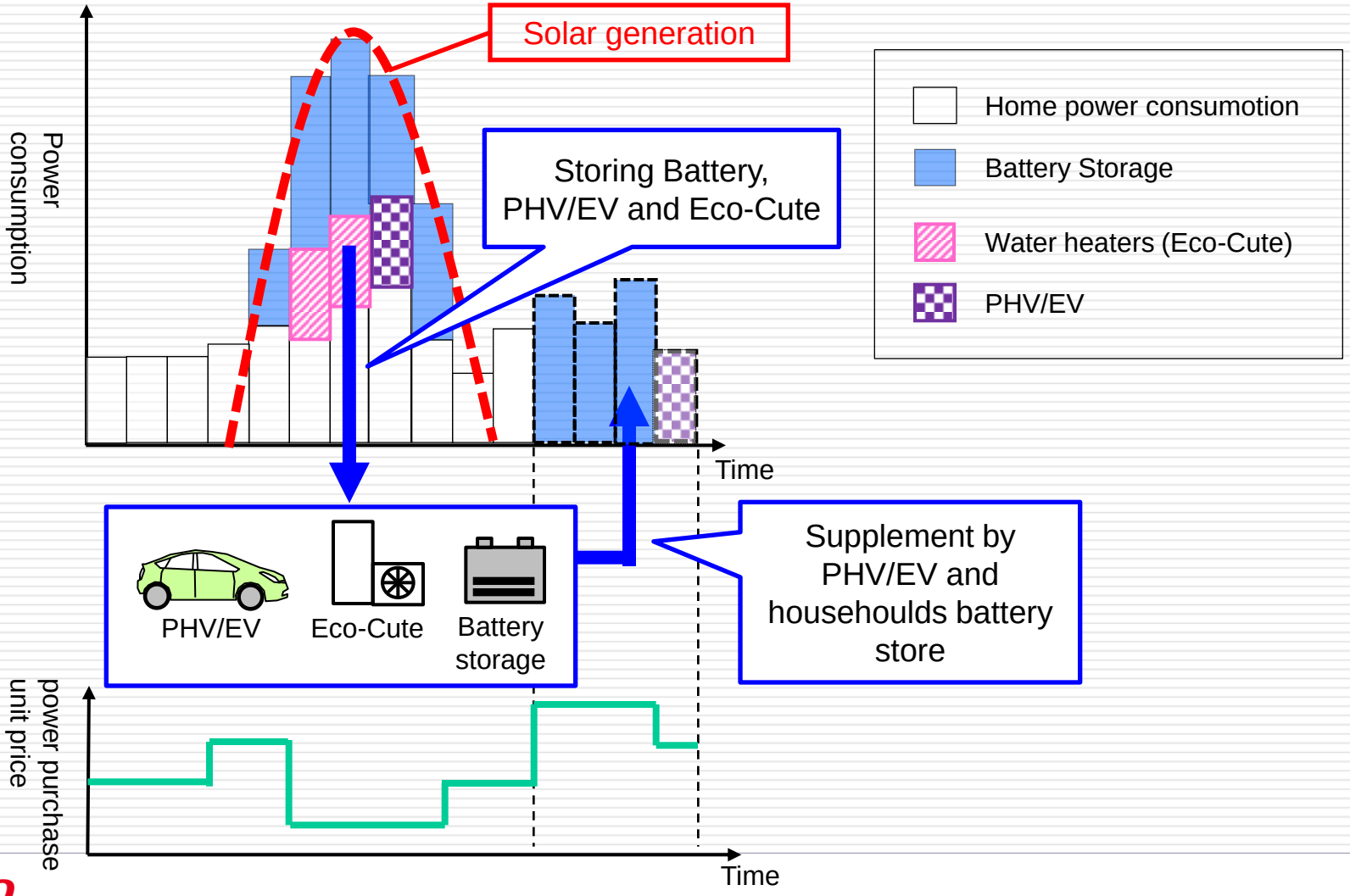
(Ex. Convenience store)



Charge to battery unit from commercial battery or alternator to keep cooling/freezing temperature at idling stop on delivery

HEMS automatic control

HEMS system estimates home power consumption and solor generation, and optimally operate for using the most of solor generation and low-cost grid power, from the wether information, and the electric power unit price information.



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