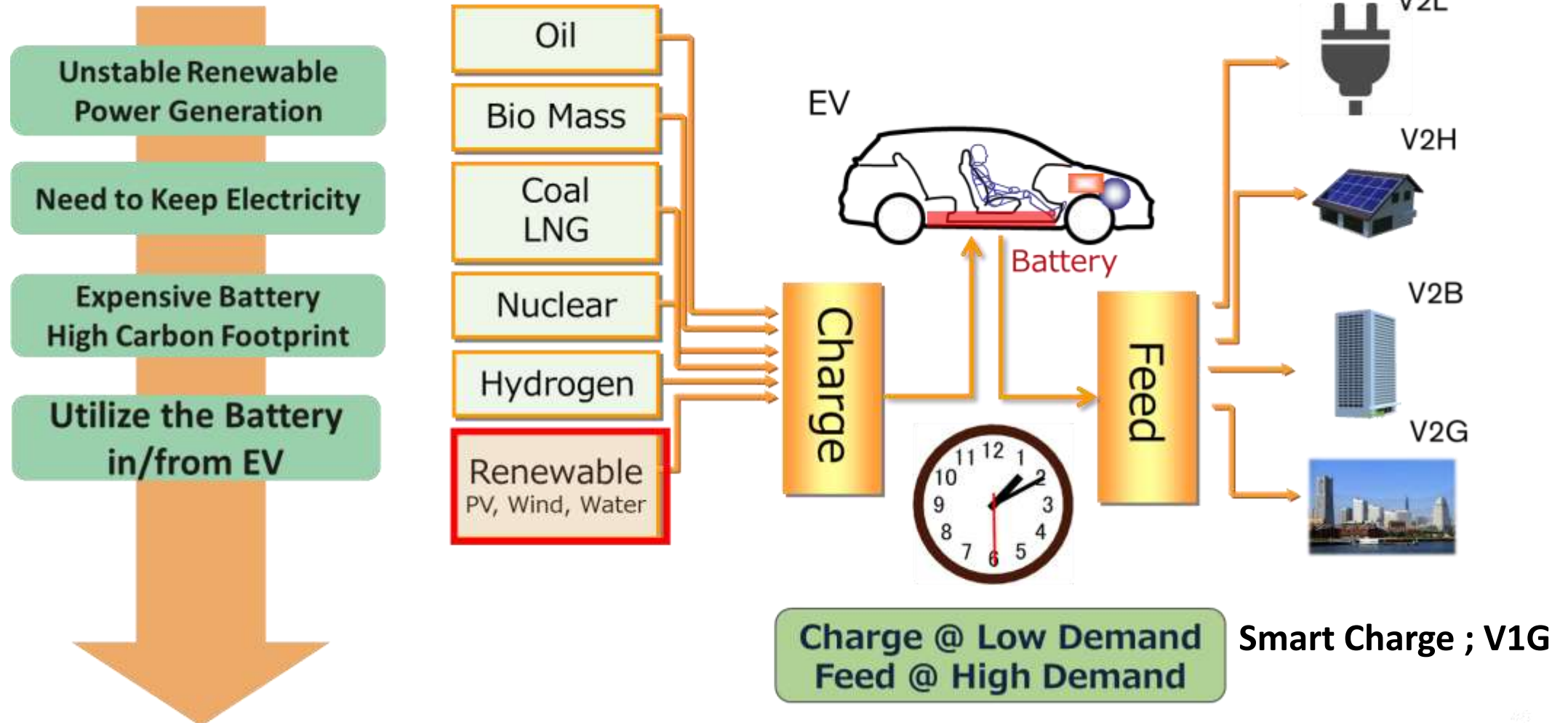


# Electric Vehicles and the Electric Grid; and Grid Integrated Vehicles (GIV)

**Speaker : M. D. Yoshida,**  
*Secretary General, CHAdeMO Association*



Smart Charge ; V1G

# What V2X Can

## ■ Feed Electricity

- Leisure, Work
- Peak Shift at House, Building
- Utilize PV
- Back to Grid for Carbon Neutral



## ■ Carry Electricity

- Physically Transportable
- Isolated Area instead of Wiring

## ■ Emergency Back-Up

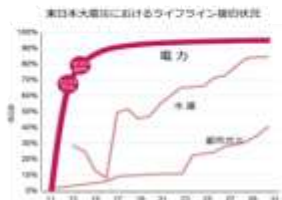
- Carry Energy to Hazardous Area
- Drive, Carry, and Feed to Shelter
- Shift the Peak as Total Demand Response



100K of EV will help to Shift the Total Peak of Tokyo



2011 : Drive without Gas



2016 : Drive and Feed



2019 : Feed



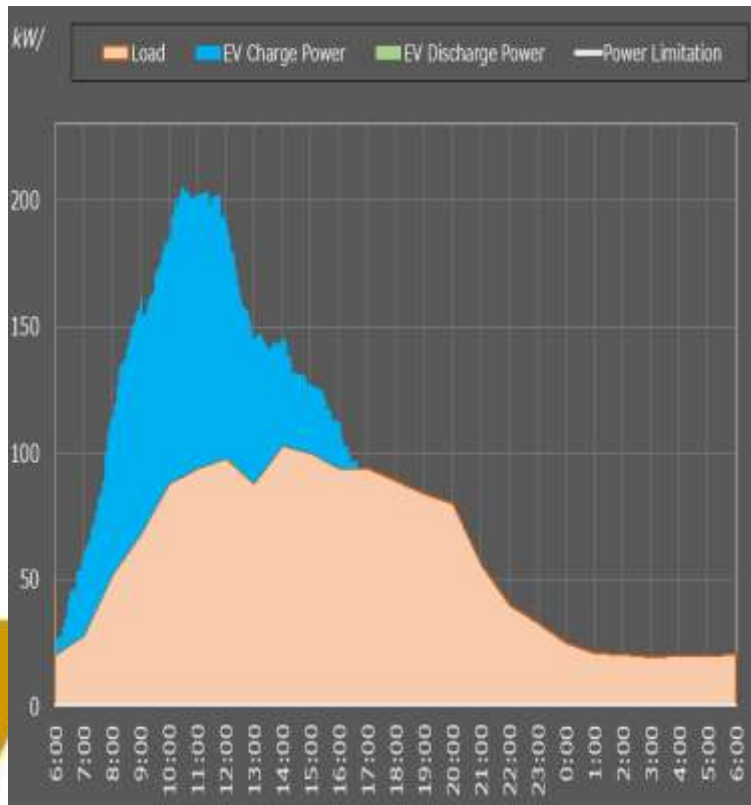
# Global Experiments



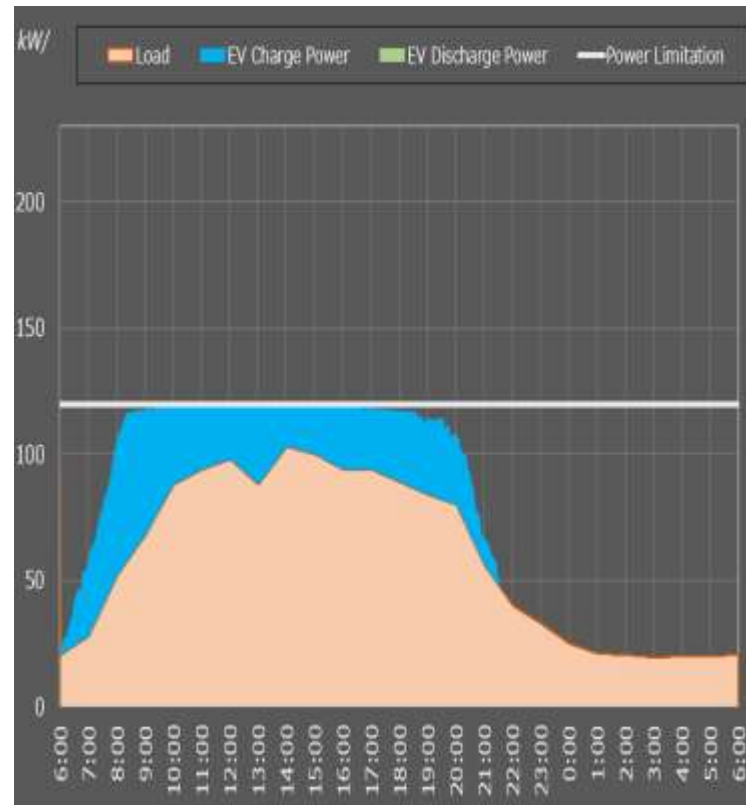
Source: CHAdEMO website, <https://www.v2g-hub.com>

# Smart Charge

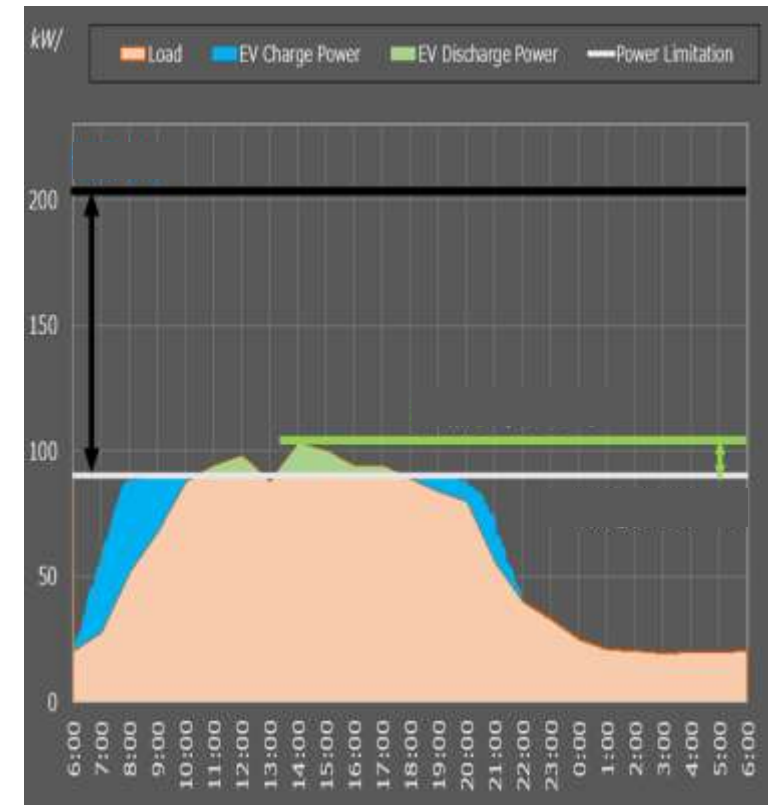
No Limit



Limit Up to 120kW

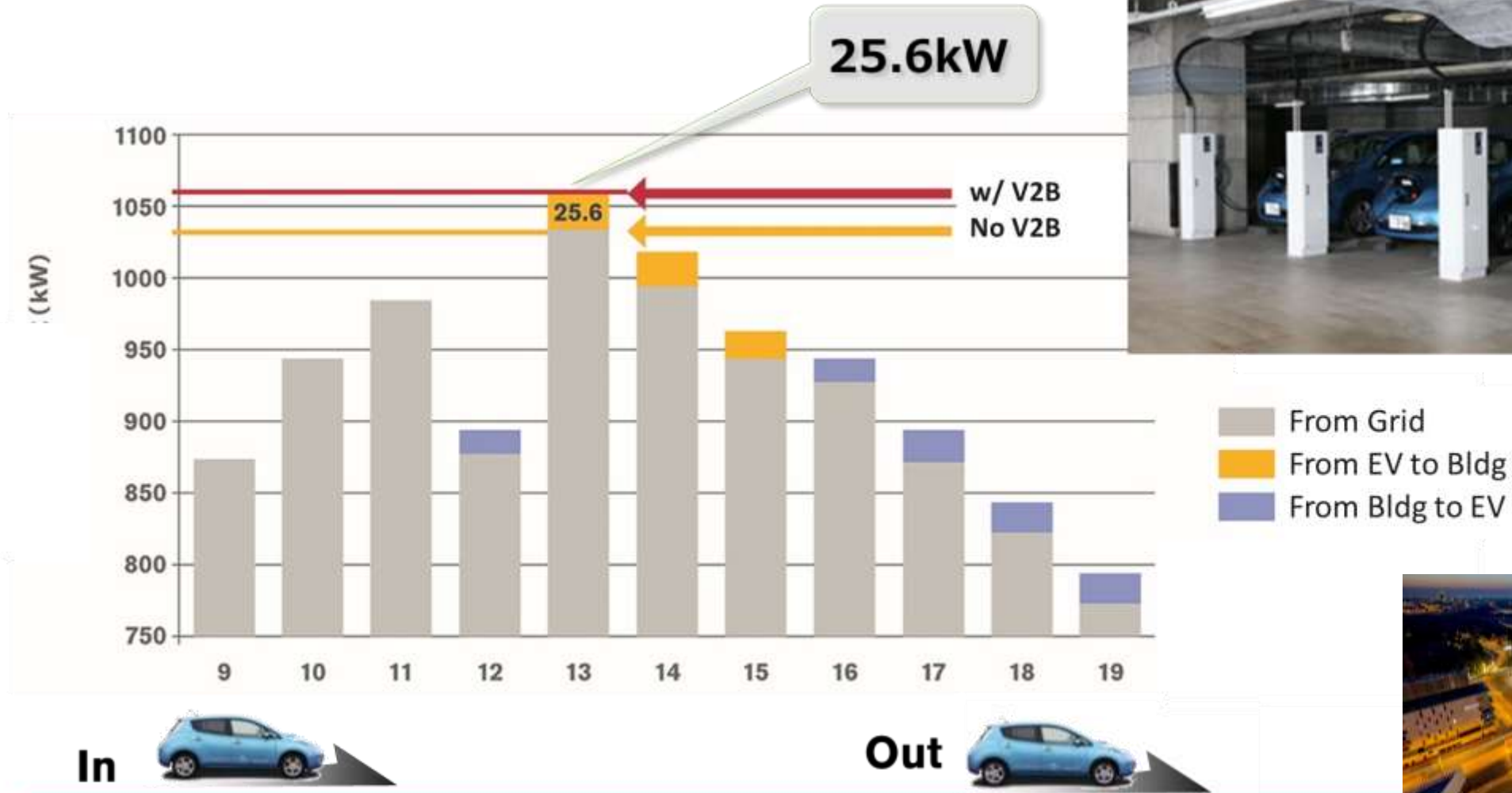


Limit up to 90kW + V2H



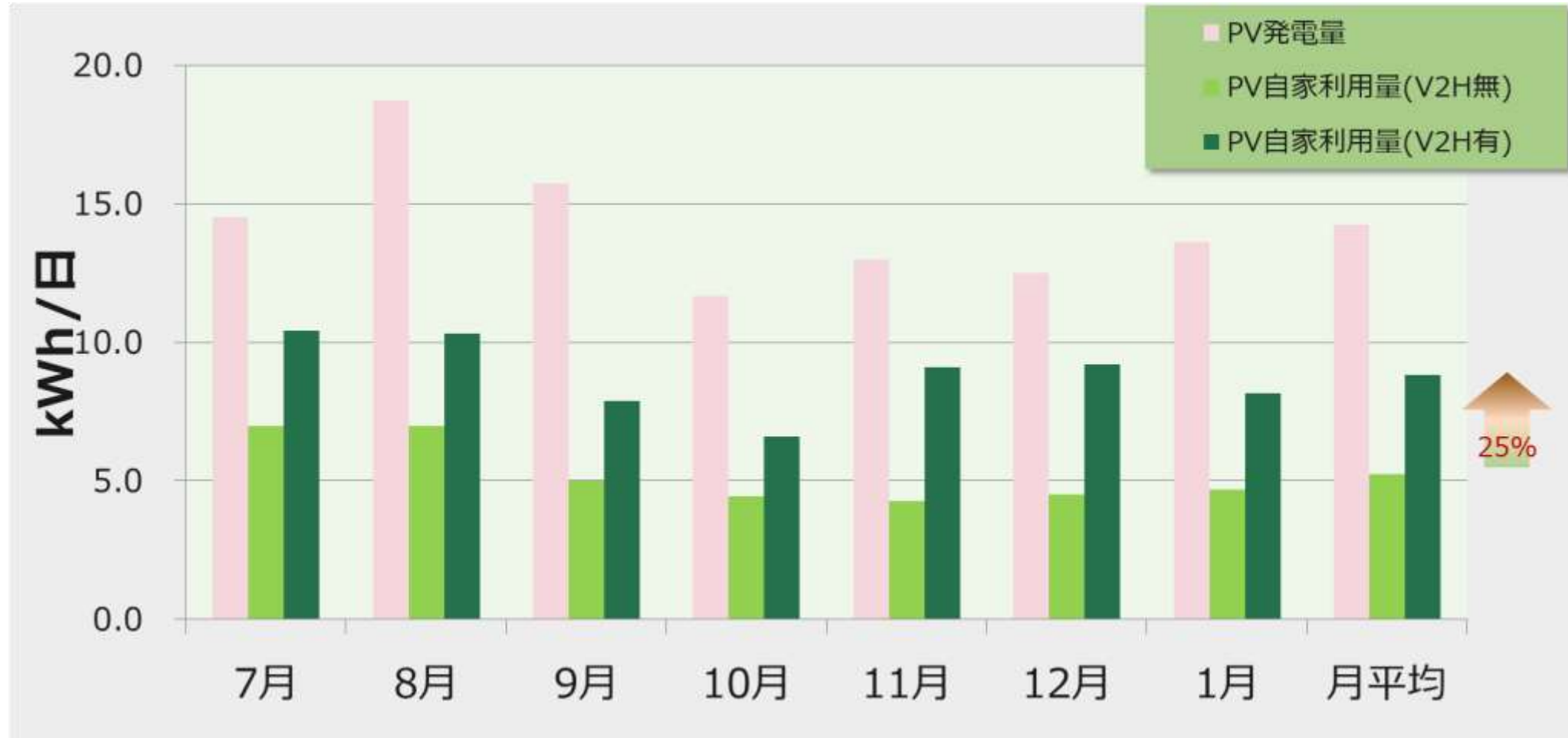
50EV per 1 building

# Peak Shift

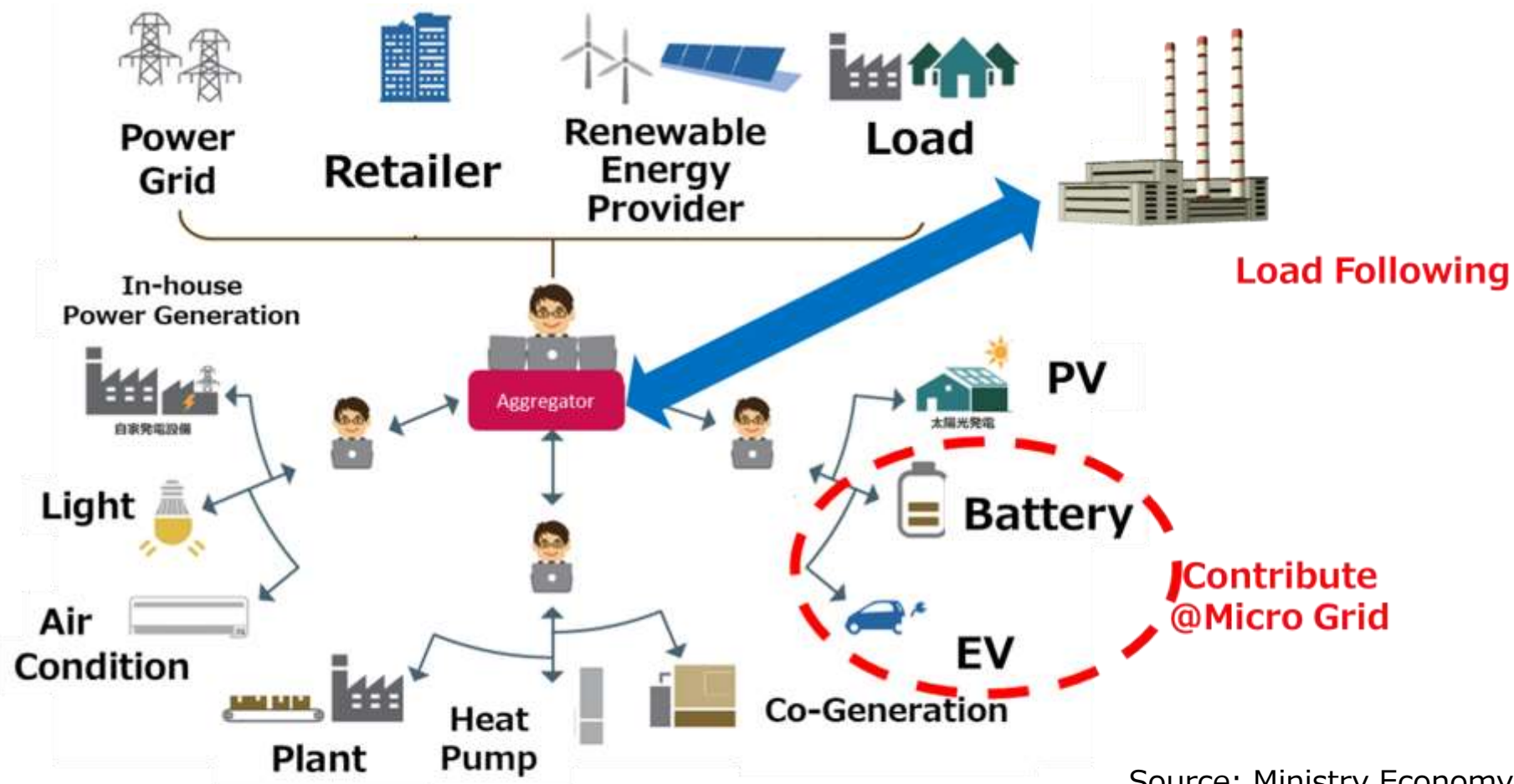




# PV Utilization



# Virtual Power Plant



Source; Ministry Economy Trade and Industry

VPP: Virtual Power Plant

DER Owner or Aggregator Provide the Function to control DER acting as "Power Plant" (It include reverse power flow from DSR)





# Emergency Help



## Heating

Kettle (700-1000W)



Electric blankets  
(50W-90W)

## Information access



Phone charging  
(15W/phone)



## Recovery support



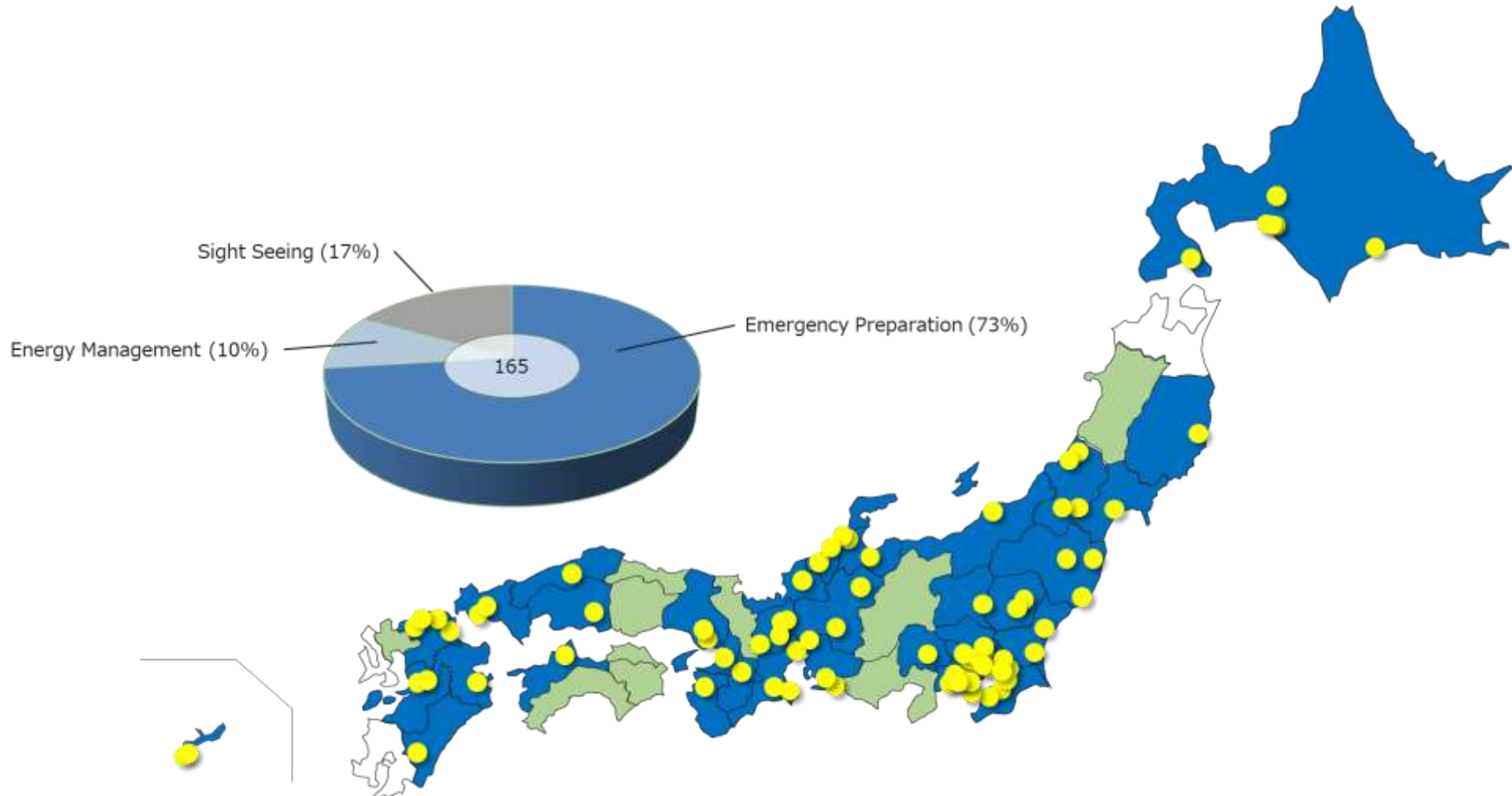
LED floodlight (70W)



LED electric signs (200W)



# Actual Activities



# Thank You

For discussions/suggestions/queries email: [www.indiasmartgrid.org](http://www.indiasmartgrid.org)  
[www.isgw.in](http://www.isgw.in)

[Links/References \(If any\)](#)

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