

Digital & Nudge
for
Mainstreaming Evs
and
Decarbonizing PowerGrid

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D-Sharing

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Phased Approach for Decarbonizing Power System

RE 1.0

- Less RE Installation at Any Time Zone
- Promote to Introduce Any Types RE by Incentivizing Supply-side, e.g., FIT
- Diversification by Differentiating Treatment by Power Source.

RE 2.0

- RE penetrated to some extent
- Stimulate Demand-side to Take "Nominal" RE 100% Electricity through Corporate PPA
- Concentrated on solar PV, the least cost destabilizing grid at night time

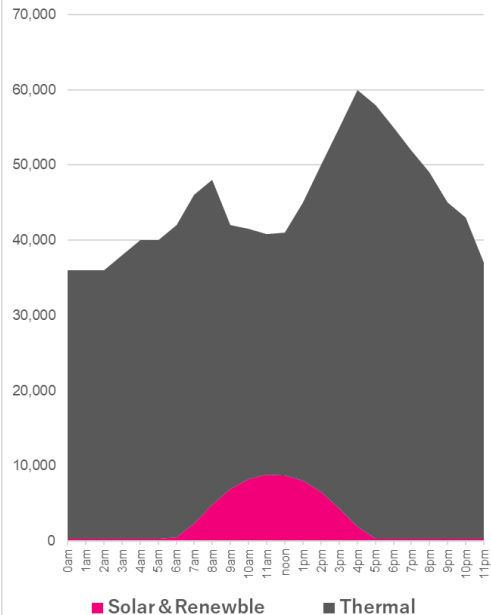
RE 3.0

- 100% RE Achieved only at Daytime Bringing Frequent Suspension of RE generation
- Decline Efficiency of Thermal Power Plants
- Needs for Mutual Following with a Daytime Demand Shift and a Nighttime Supply Shift

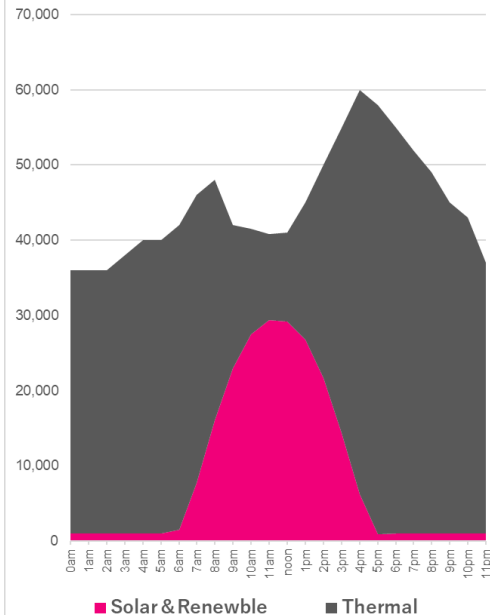
RE 4.0

- Stimulate Demand-side for "Real" RE 100% Electricity by All Consumers for All Hours
- Stimulate Supply-side to Provide "Real" 100% Electricity for 24 Hours - 7 Days with Battery Storage and Other Means(Synchronize as close as possible to each other)

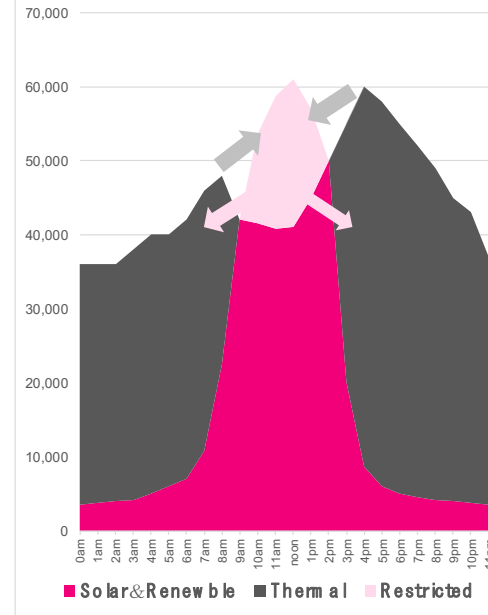
RE 1.0
Generated Power
(MWh)



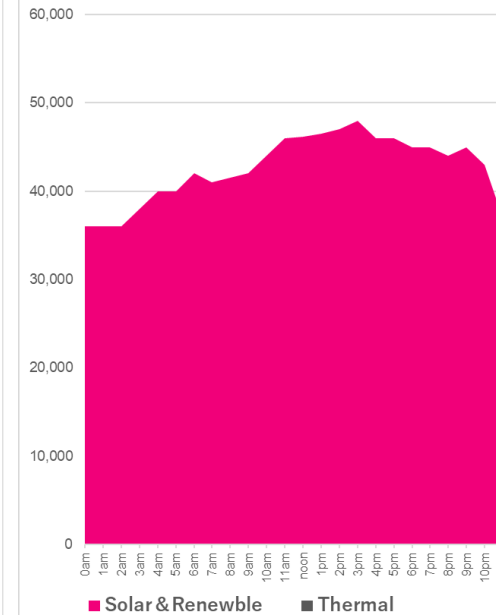
RE 2.0
Generated Power
(MWh)



RE3.0
Power Generated
(MWh)



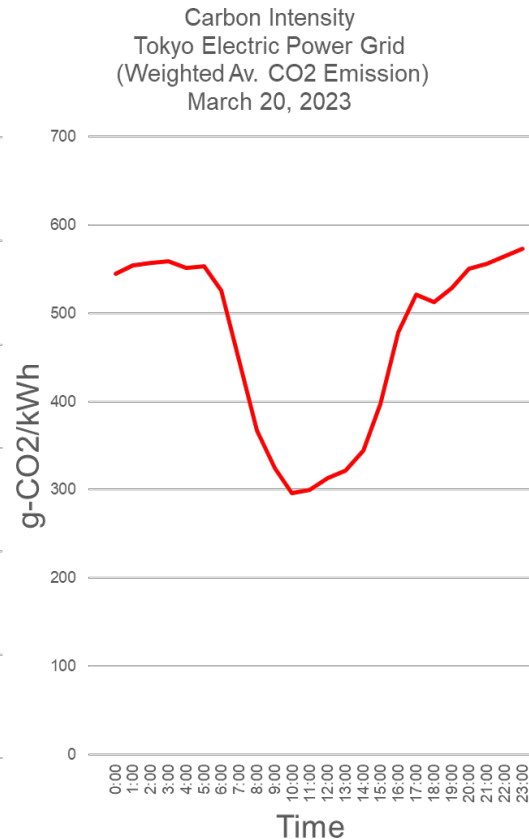
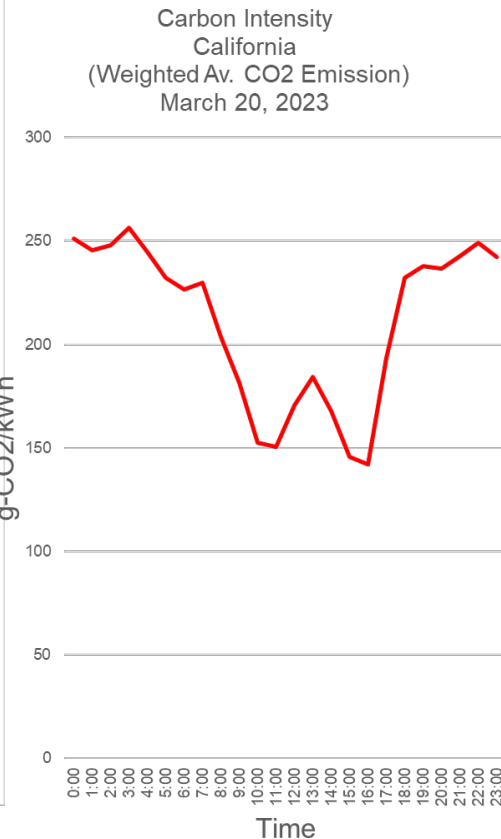
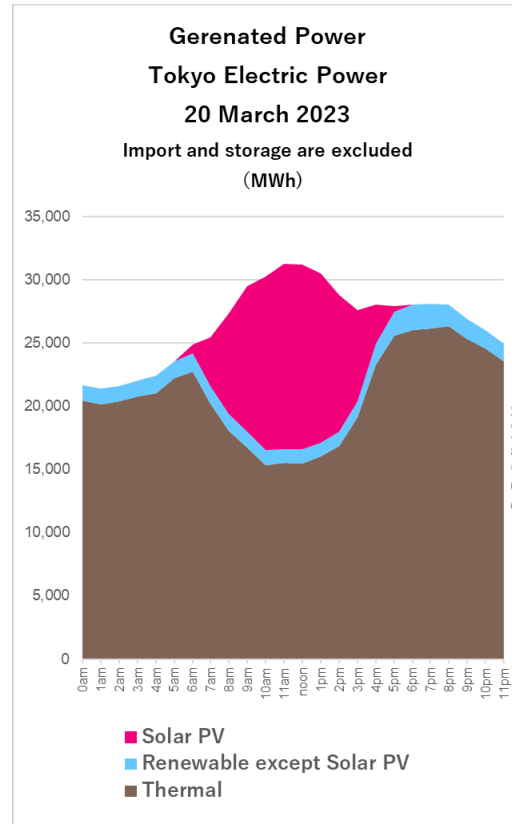
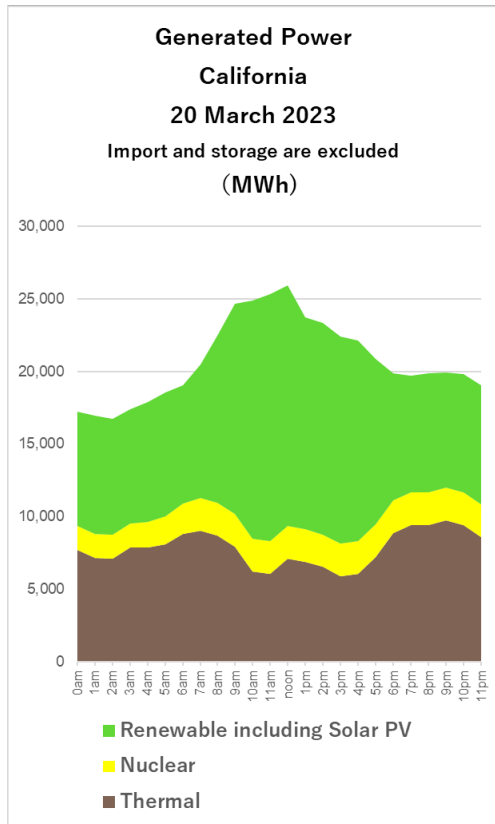
RE 4.0
Power Generated
(MWh)



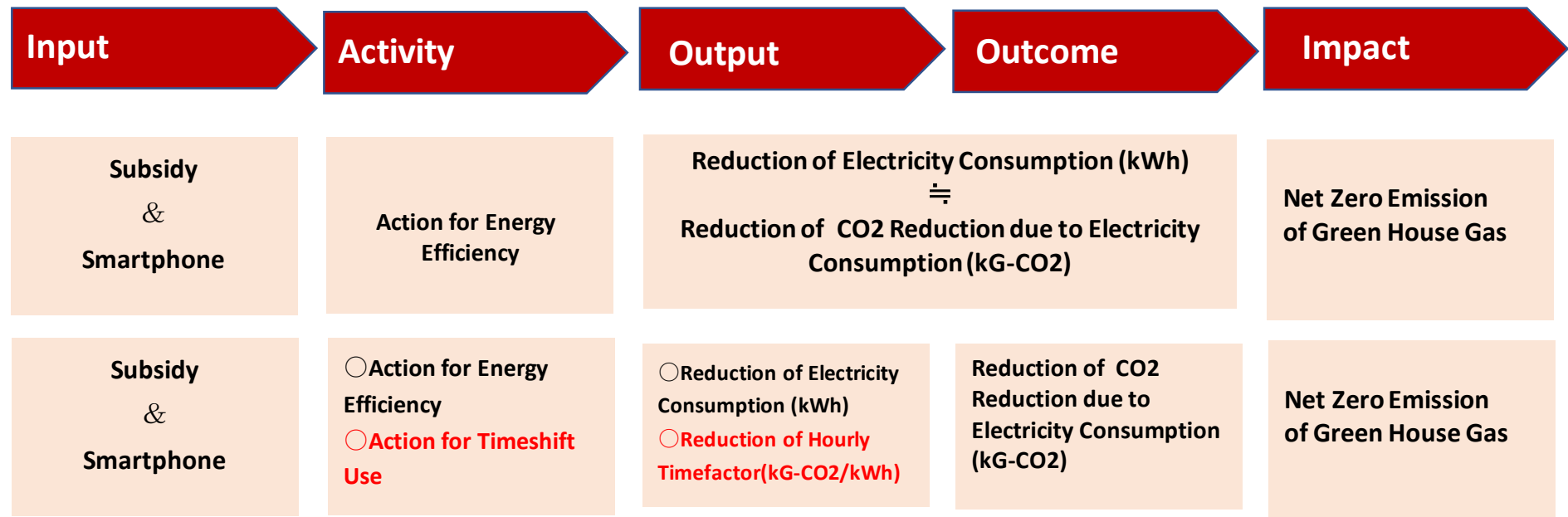
Hourly Electricity Generation by Source Type

Comparison of Tokyo Metropolitan Area and California, US

(Monday, March 20, 2023)



Update of EBPM Framework for Zero-emission in Household Electricity Consumption

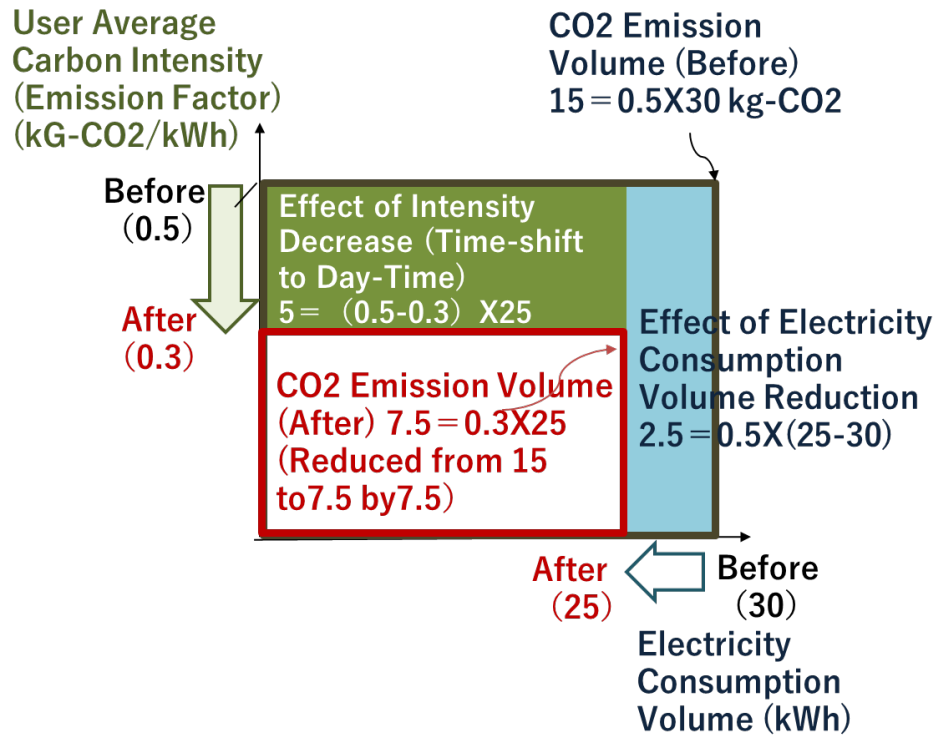


Methodology to precisely calculate CO2 emissions by electricity consumption

CO2 Emission by Electricity Consumption

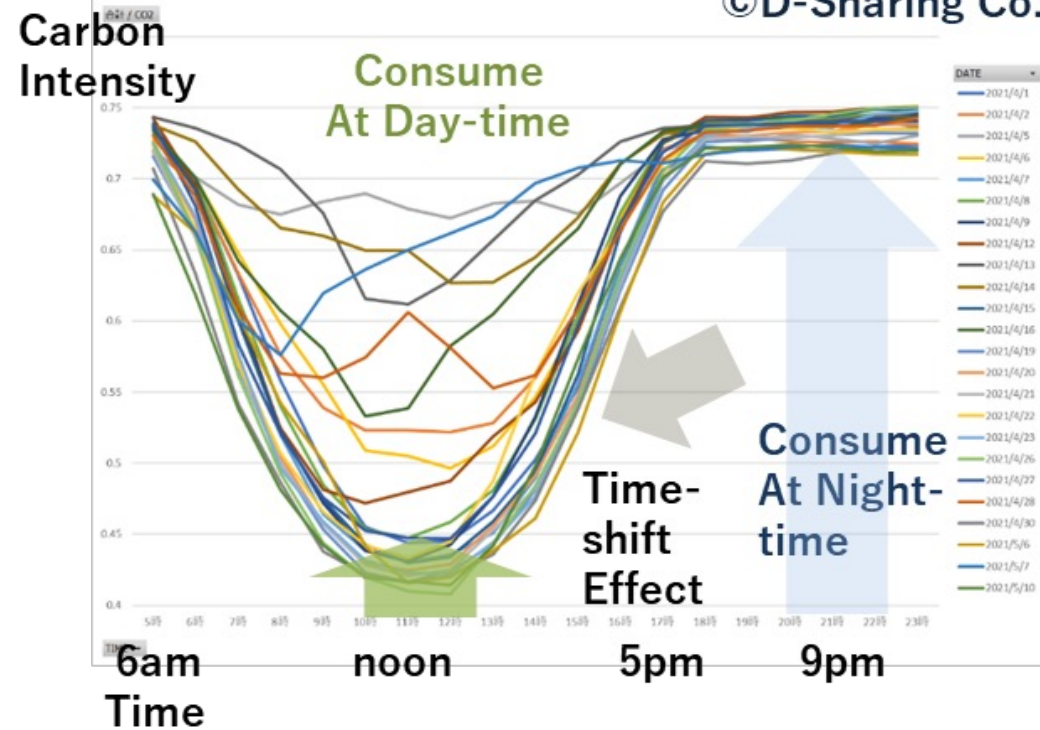
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$$\text{CO2 Emission (kg-CO2)} = \text{Electricity Consumption (kWh)} \times \text{User Average Carbon Intensity (kg-CO2/kWh)}$$



CO2 Emission Reduction by Electricity Consumption

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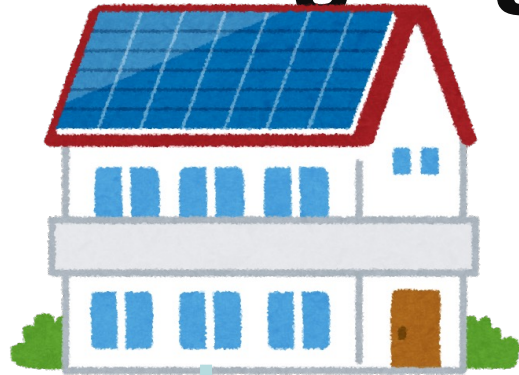
Day-time Charging Nudge

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Smartphone Application



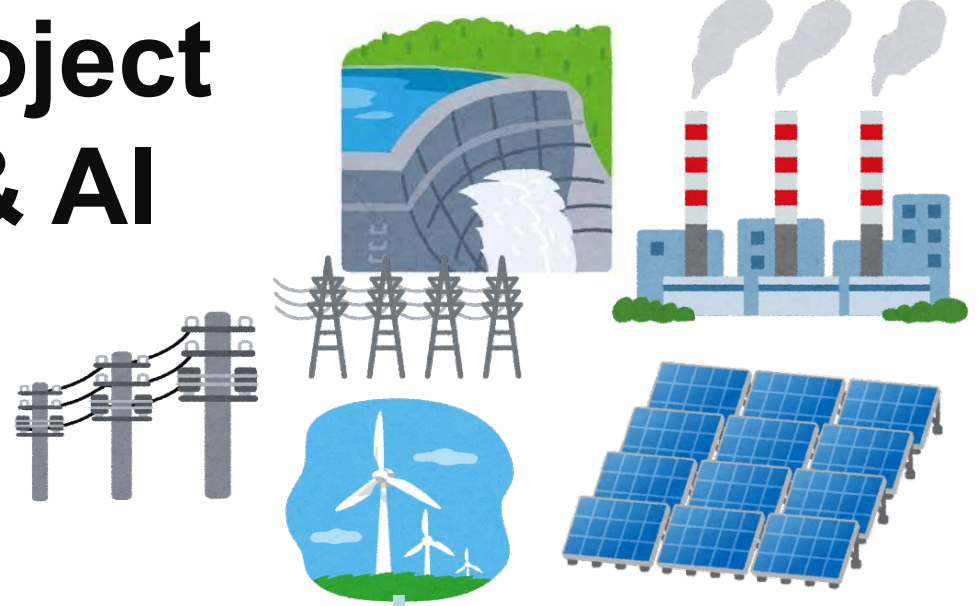
Nudge by Digital Project Utilizing Big-Data & AI



Onsite Power
Generation



Net Consumption
By Smart-Meter



Hourly Carbon
Intensity of Grid

Past (analyzed by AI) ⇒ Present ⇒ Future (AI Forecast & Set Baseline)

Visualizing 3 KPIs Using 3 Big Data-Set

Reduction of
Consumption

×

Reduction of
User Carbon
Intensity

=

Reduction of
CO2 Emission



Goal-setting (commitment) , Ranking, Competition,
Trade of NFT as Certificate of Carbon-Reduction Value