

Energy and Mobility Optimization in a Local Community with EDMS

Toyota City's Low Carbon Society System Field Test Project



January 16, 2015
Masayuki Kawamoto
TOYOTA

Next Generation Low Carbon Society Systems

Expand Low-carbon society from Households to Mobility systems and Public space

Low-carbon transportation systems

Virtual Electric Power Management Server

DRAS

Public Charger

TDMS

Ecological Driving Assistance

Optimizing energy use at commercial and public facilities



Optimizing energy use in a local community

EDMS

Optimizing energy use in homes

Home Appliances



FC water heater

Vehicle to Home

Manufacturing Plants

School

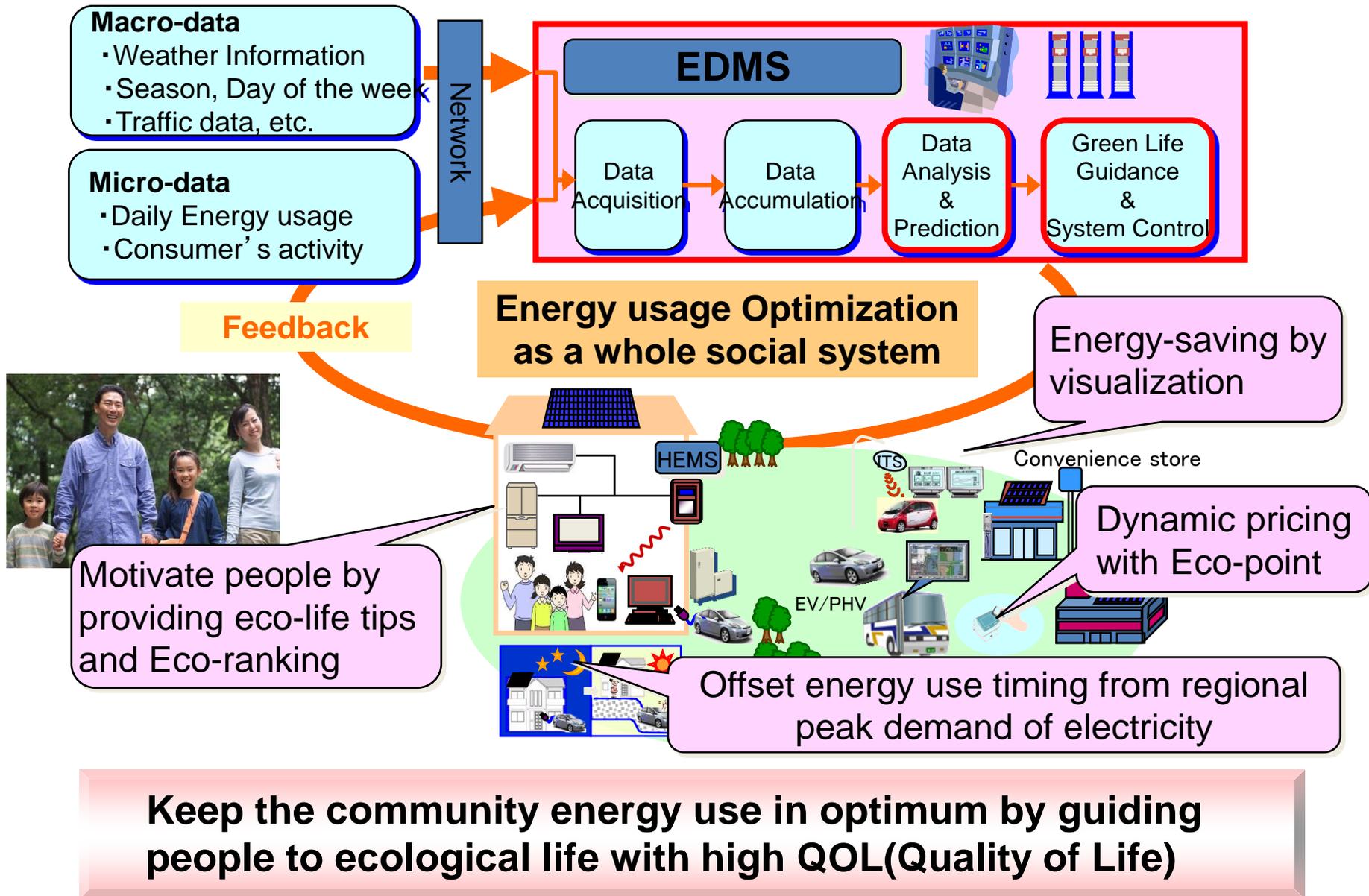
FEMS

BEMS

Convenience Store

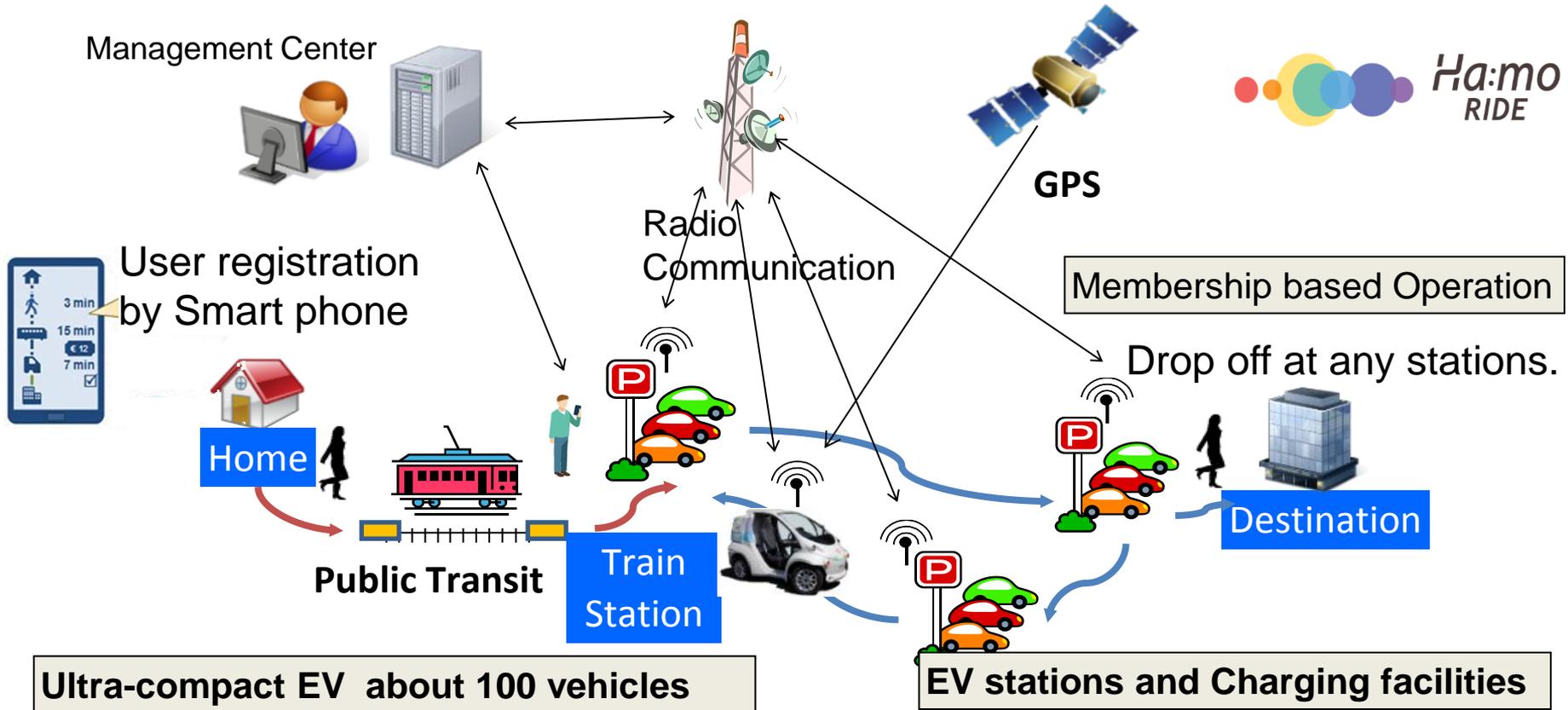


Motivate a Green Life Style to Optimize Total Energy Use



Traffic Management System (TDMS) : Ha:mo

Self-service car sharing system complementing public transportation, utilizing ultra-compact electric vehicles



Peak power control for EV charging cooperated with EDMS

Optimum timing info. & control for PHV Charging

Provide the optimum charge timing information or automatic control with reasonable price, avoiding local electricity usage concentration

PHV Charging Mode

1) Charge Now

Start PHV charge within
3 hours from now



2) Recommended Charge timing

Recommend based on
energy demand balance
in the community



3) Optimum Control

Automatic charge timing
control by EDMS

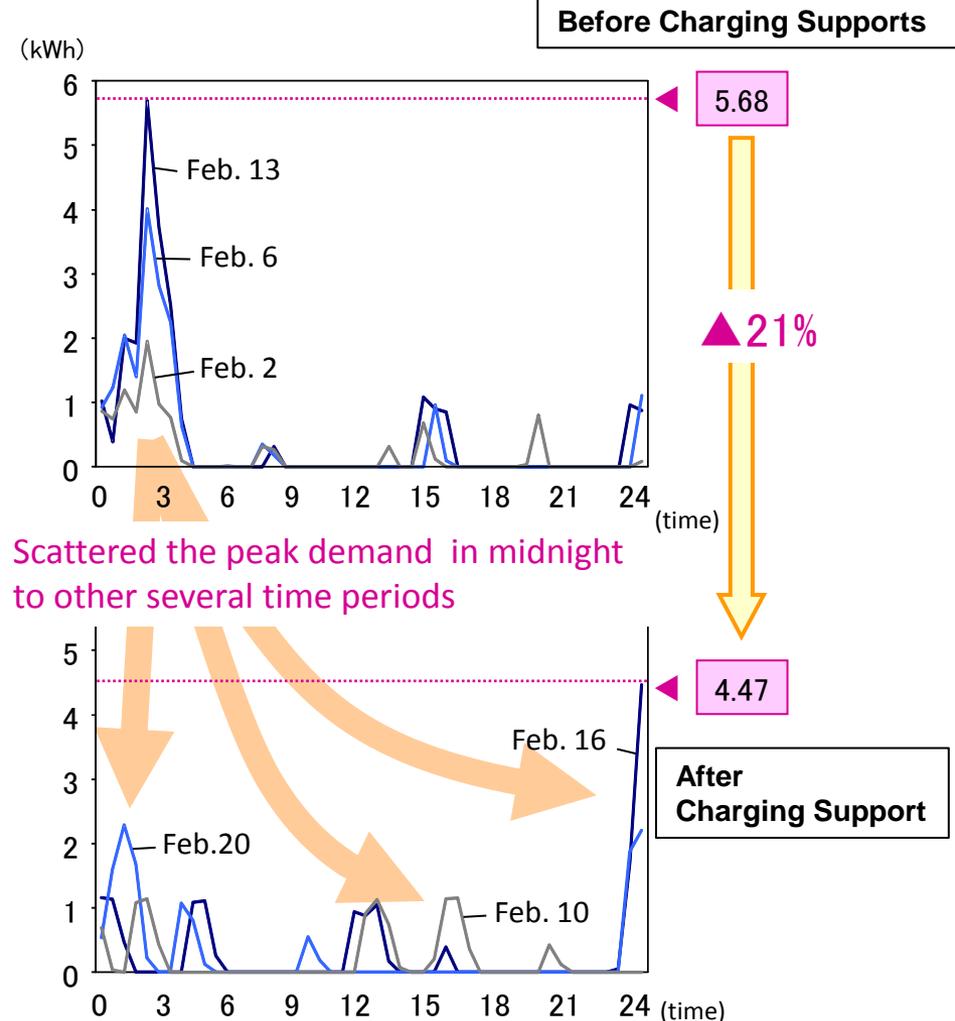


4) PHV Charging status

Monitor PHV status
e.g. SOC of Battery,
Remaining charging time,
etc.



Charge timing Scattering result



CO2 reduction target(-30%) in the Master Plan was achieved

| Category | Sub Module | Calculation Results(CO2 Emission , Reduction (t-CO2)) (CO2 Reduction rate(%)) | | | | |
|--|---|--|-------------------------|----------------------------|------------------------------|-------------------------------|
| | | CO2 Emission (2006) | Est.CO2 Emission (2020) | CO2 reduction (2006->2020) | Reduction Rate in the sector | Reduction rate in all sectors |
| 1)Optimum Energy use in a Home | Diffusion of Smart House and Renewable energy use | 460,000 | 377,790 | ▲82,210 | ▲18 | ▲9 |
| 2)Optimum Energy use in a Local Community | DR point incentive・RTP | | | | | |
| | Life support agent/advice | | | | | |
| | Personal Target Set&Challenge | | | | | |
| | Surplus PV power sharing In a local community | | | | | |
| Surplus PV power sharing with local school | | | | | | |
| 3)Low Carbon Transportation System | Next Generation Vehicle promotion | 419,000 | 236,470 | ▲51,530 | ▲12 | ▲6 |
| | Expansion of Electricity and Hydrogen charging facilities | | | | | |
| | Traffic flow management and Eco-drive promotion | | | | | |
| | Modal shift to Public Transit | | | ▲131,000 | ▲31 | ▲15 |
| | Personal Mobility Sharing | | | | | |
| Total | | 879,000 | 614,260 | ▲264,740 | | ▲30.1 |

Thank you for your attention

TOYOTA

