

Strategy for Energy and the Environment in JR East

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AMERICAN
PUBLIC
TRANSPORTATION
ASSOCIATION



Sustainability & Multimodal
Planning Workshop

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Key Presentation Take-Aways

- ★ Summary, process of the company
- ★ JR East Group Management Vision
“Move Up”2027
- ★ Energy conservation and CO₂ reduction,
and “ECOSTE”
- ★ Progress of introducing renewable energy
- ★ Biodiversity
~Hometown Forestation Program~

Summary, process of the company

<History>

- In April 1987, East Japan Railway Company (JR East) was established through division and privatization of the public Japanese National Railways.
- Initial aim of privatization was to maintain stable railway management.

Major figures of our company

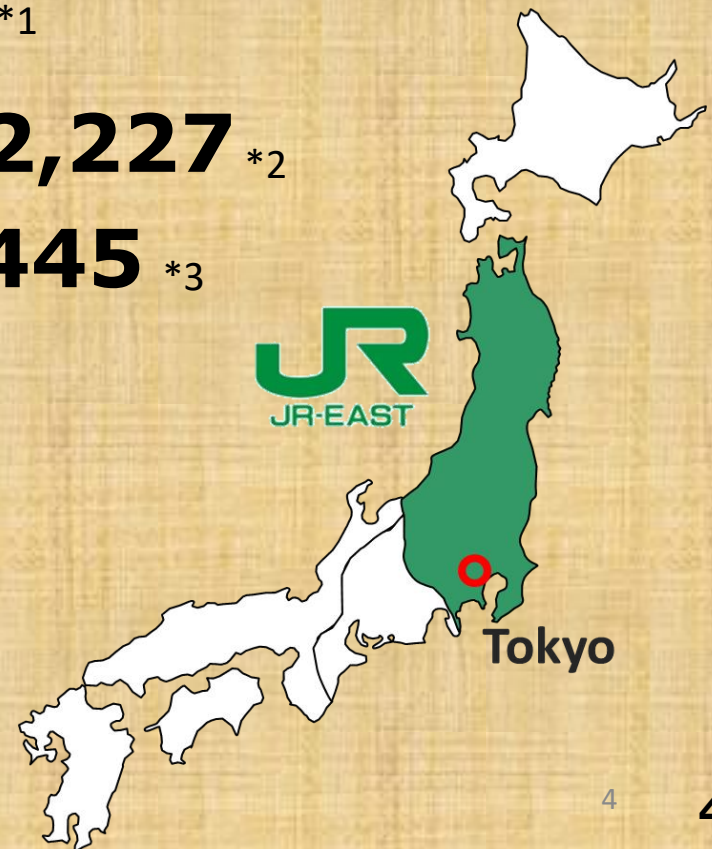
Passenger line network : **4634.7miles**^{*1} (7,457.3km)

Total number of passengers per day : **17.50million**^{*1}

Number of stations : **1,666**^{*1}

Total number of trains per day : **12,227**^{*2}

Number of employees : **56,445**^{*3}



*1...As of July 2017

*2...As of March 2017

*3... As of April 2017, only Regular employees

Characteristics of JR-East

VERTICAL MANAGEMENT STRUCTURE

We own our all rail infrastructures, operating and maintaining it as **a fully integrated railway model.**

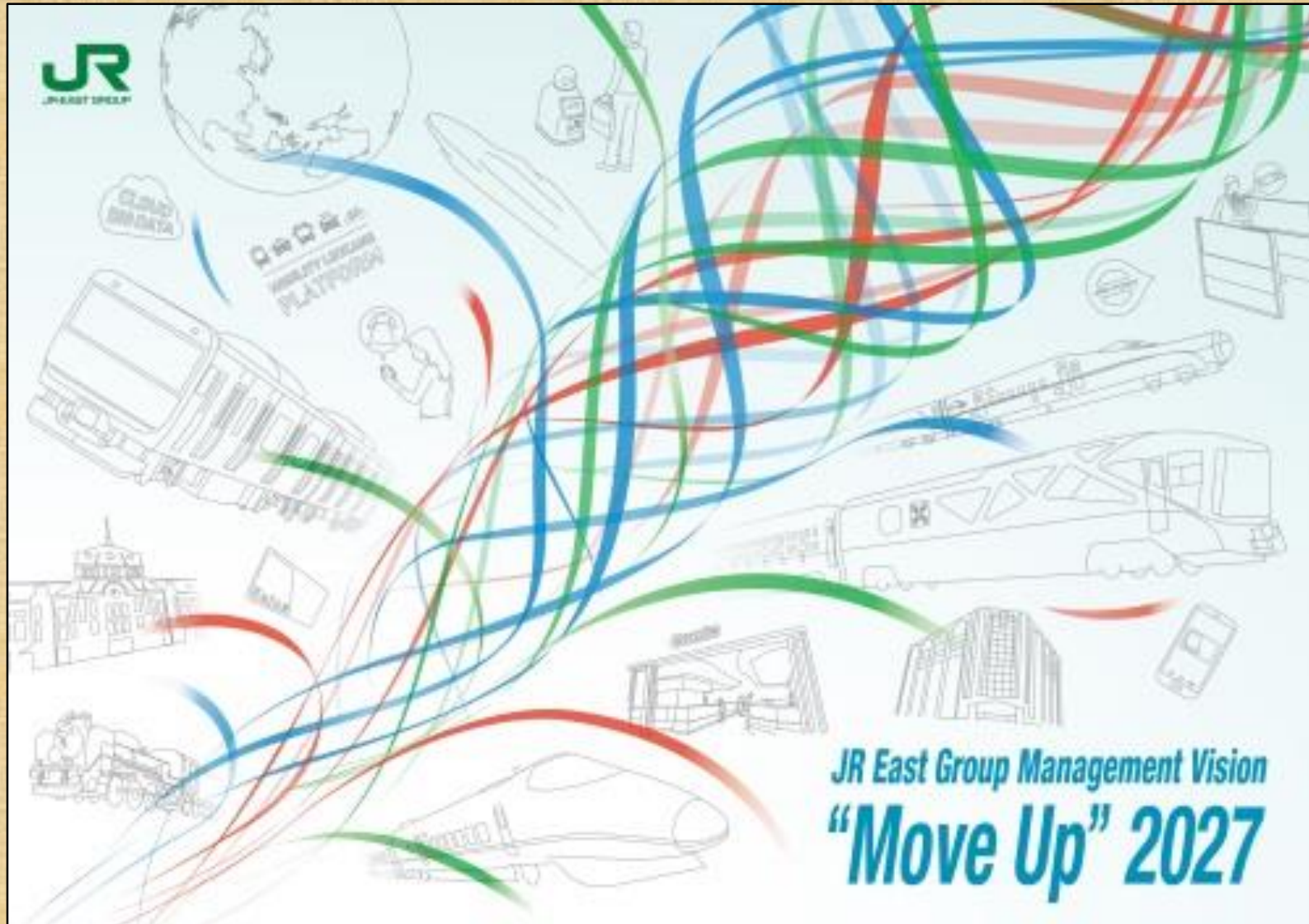
Operation and Maintenance



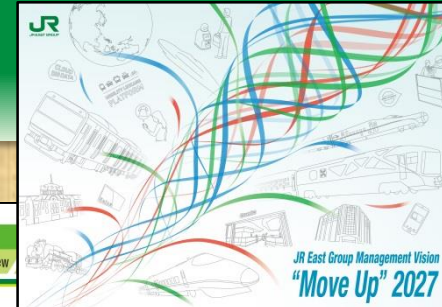
Infrastructure



JR East Group Management Vision “Move Up” 2027



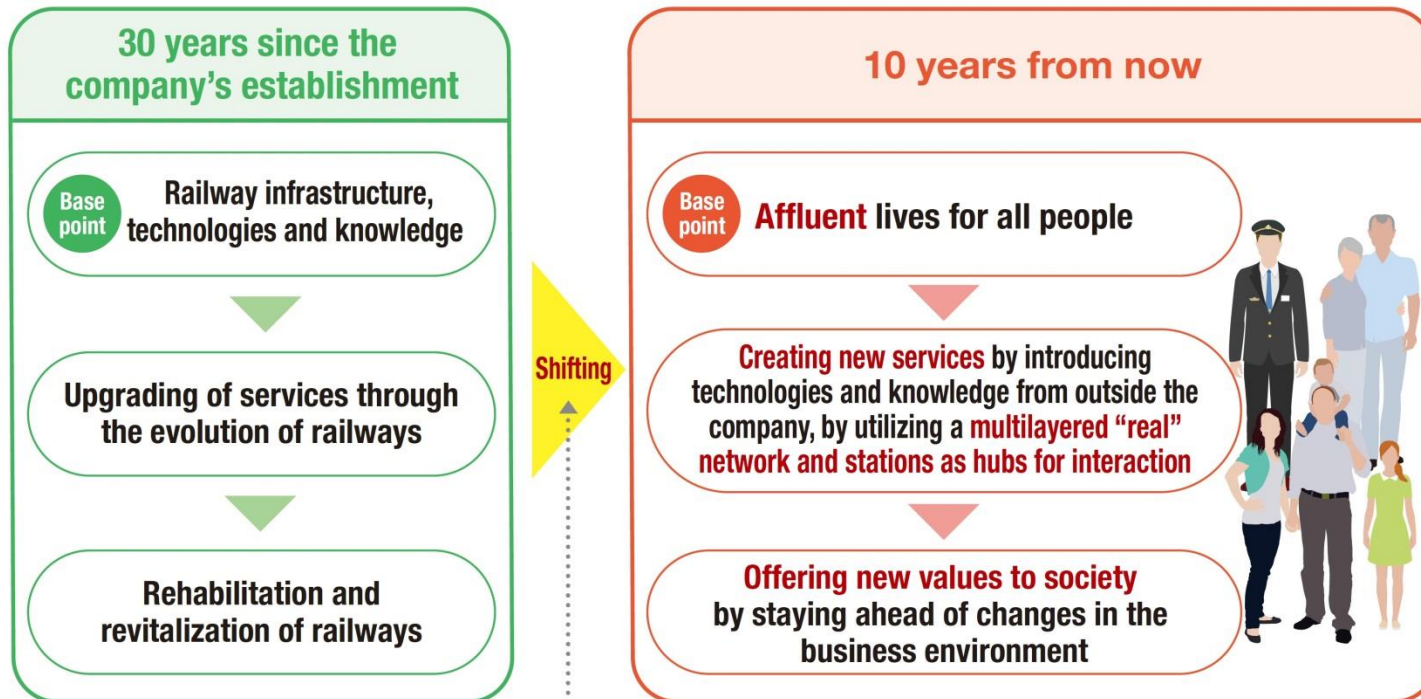
JR East Group Management Vision “Move Up” 2027



3. Basic Policies of “Move Up” 2027 ①



■ **Stories to create values:** From the provision of services with railway infrastructure as our basis to the introduction of new values to society, focusing on the affluence of everyone in their daily lives.



① Drastic changes and diversification in social structures due to the decreasing birth rate and population and aging of the population

② Changes and diversification in values related to what it means to work and be affluent

③ Changes in our living environment due to technological innovations such as AI and IoT

④ Acceptance of new values through globalization of economy and society

JR East Group Management Vision “Move Up” 2027

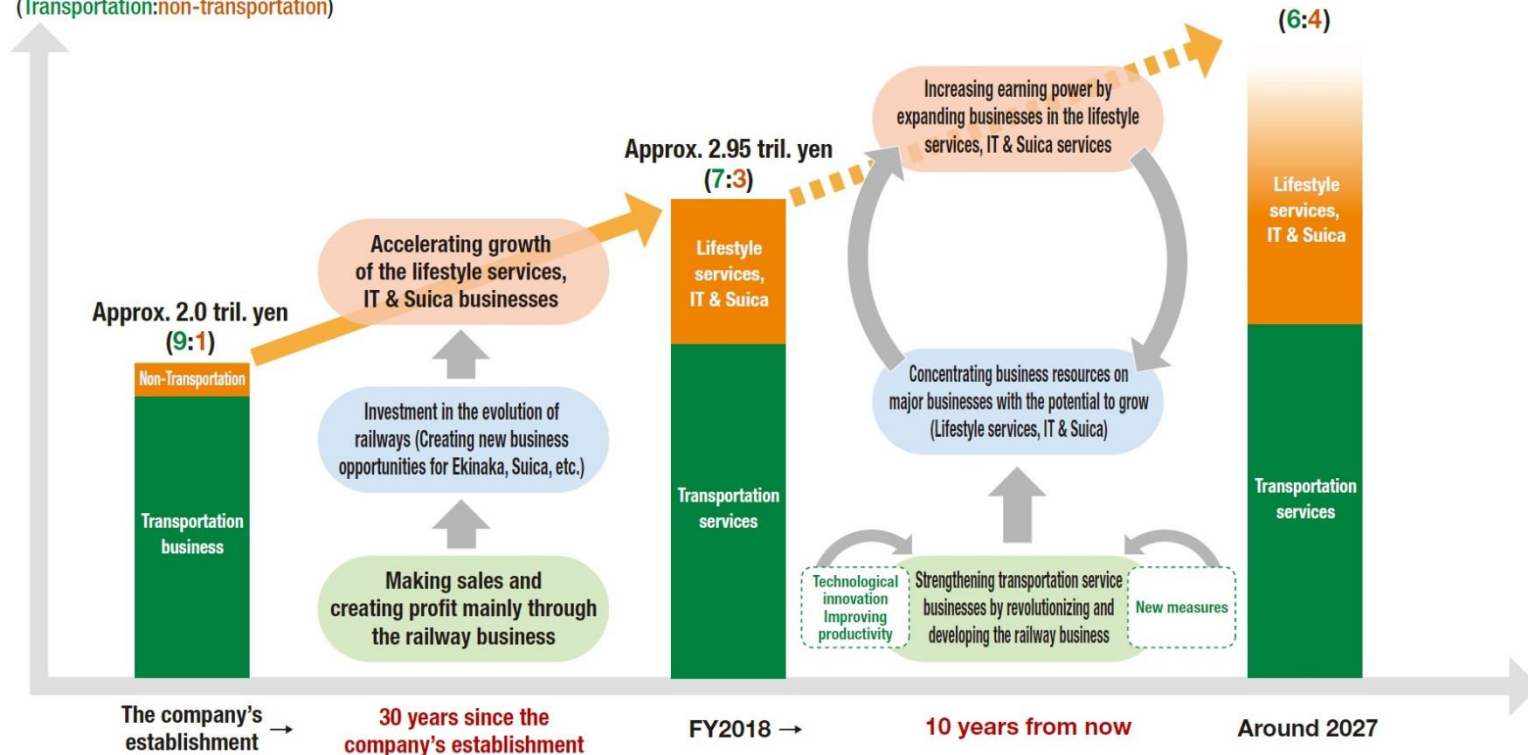


3. Basic Policies of “Move Up” 2027 ②

Group Philosophy Basic Principles → “Move Up” 2027 Basic Policies → Environmental change → Group strengths → Over

- There is an urgent need to **qualitatively reform**, revolutionize and develop transportation services mainly by railways.
- Further allocate management resources to lifestyle services and IT & Suica businesses, developing them as our **new growth engine**.

Consolidated operating revenues
(Transportation:non-transportation)



Energy and environmental strategies

- Prevention of global warming
- Diversification of energy



Realization of low-carbon society (decarbonization)



Development of "Smart Trains"

Smart trains

Environment

- Development of fuel-cell railcars using hydrogen as energy



【Topics】Smart trains

Group Philosophy Basic Principles → "More Up" 2027 Basic Policies → Environmental change → Group strengths → Overview → Other cities → "Move Up" Japan

■ Introduce Smart trains by qualitatively reforming railways from various perspectives including operations and

Services

- Realization of next-generation ticketing systems and touch-less and gate-less ticketing
- Realization of next-generation Shinkansen (360 km/h)



Safety

- Improving security and safety by utilizing sensor technologies for platforms and level crossings



Smart trains

Environment

- Development of fuel-cell railcars using hydrogen as energy



Train operations

- Realization of driver-less operations
- Speedy recovery of train service delays by ICT at times of transportation disorder



Maintenance

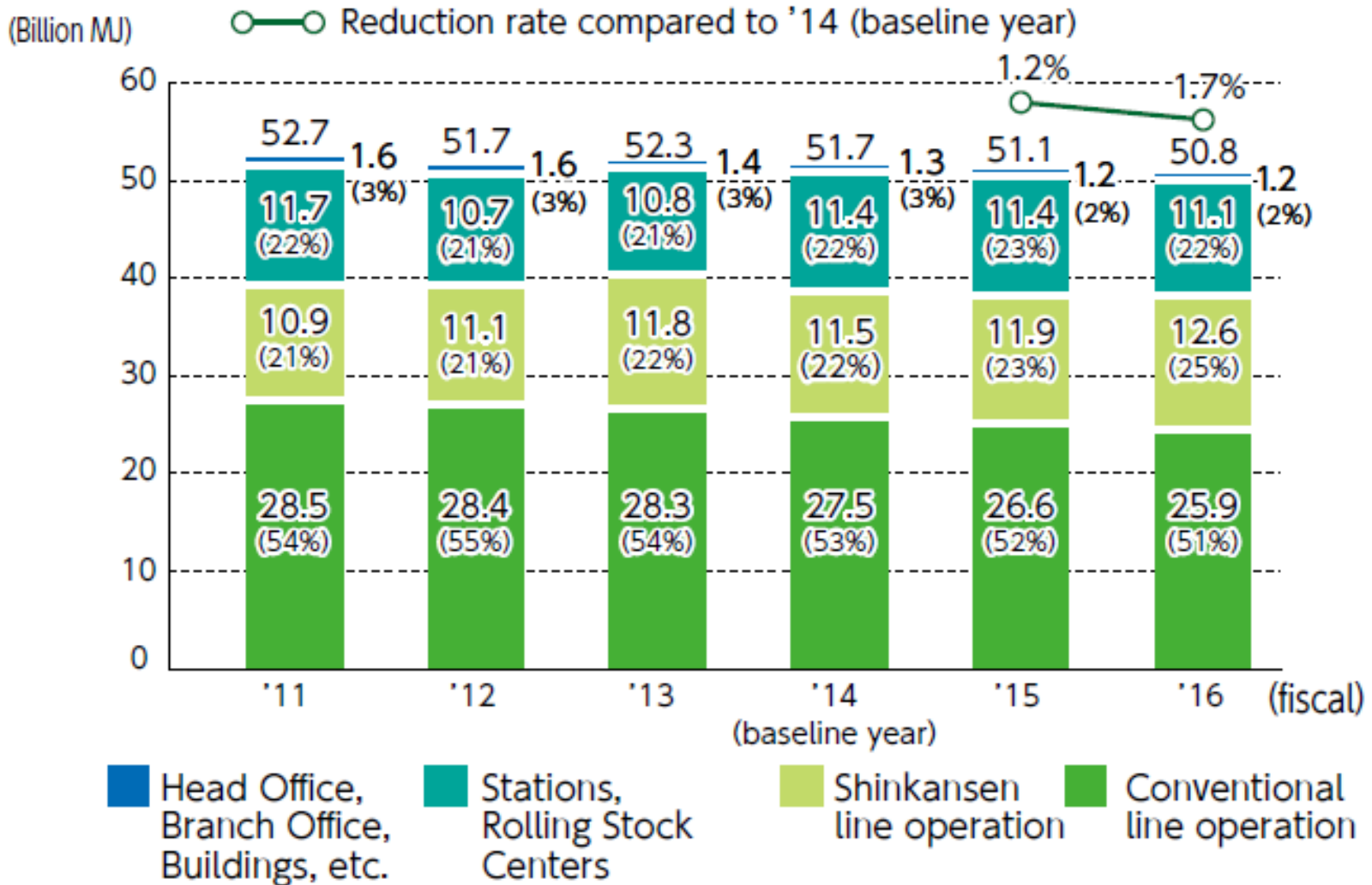
- Introduction of robots for maintenance
- Utilization of drones to understand situations at disaster and accident sites
- Realization of smart maintenance to respond to the condition of facilities and rolling stock



Environmental Targets

Item	Targets to be met by FY2031
Energy consumption from railway business activities	25% reduction (MJ: relative to FY2014 level)
CO ₂ emissions volume from railway operation	40% reduction (kg-CO ₂ /kWh: relative to FY2014 level)

Composition of energy consumption by JR East



Reducing energy consumed for train



E235 Series



E7 Series



E233 Series

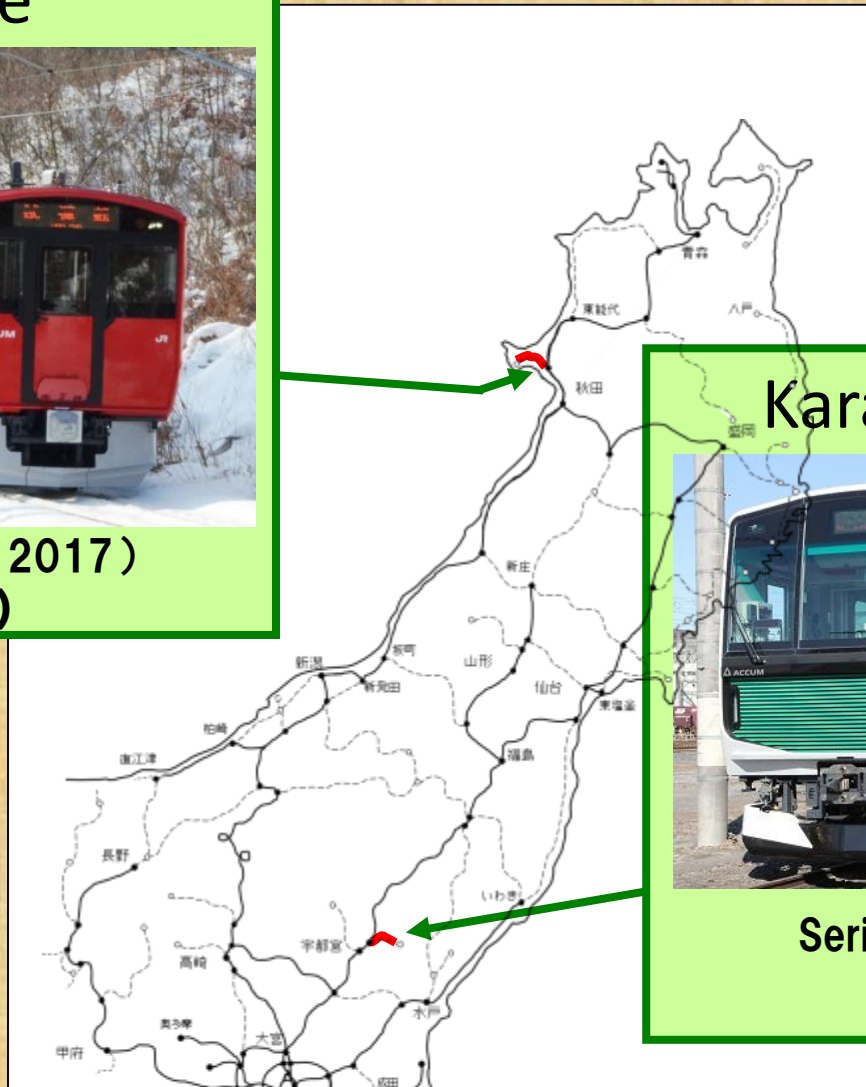
We are putting into service more new-generation energy efficient railcars, with features such as regenerative brakes, and Variable Voltage Variable Frequency (VVVF) inverters.

The accumulator railcar train

Oga Line



Series EV-E801(2017)
(ACCUM)



Karasuyama Line



Series EV-E301(2014)
(ACCUM)

“Delivering lectures on request” in the actual train



▪ January, 2018 at Karasuyama Line, in “ACCUM”₁₅

energy-saving stations “ecoste”

- “Ecoste” model stations introduce various technologies for environmental preservation, including energy conservation and use of renewable energies, aiming to appeal to passengers.
- We will create “ecoste” in different areas making use of regional characteristics.

What does "ecoste" stand for ?

Environment Earth

Conscious

Station of

East Japan Railway Company

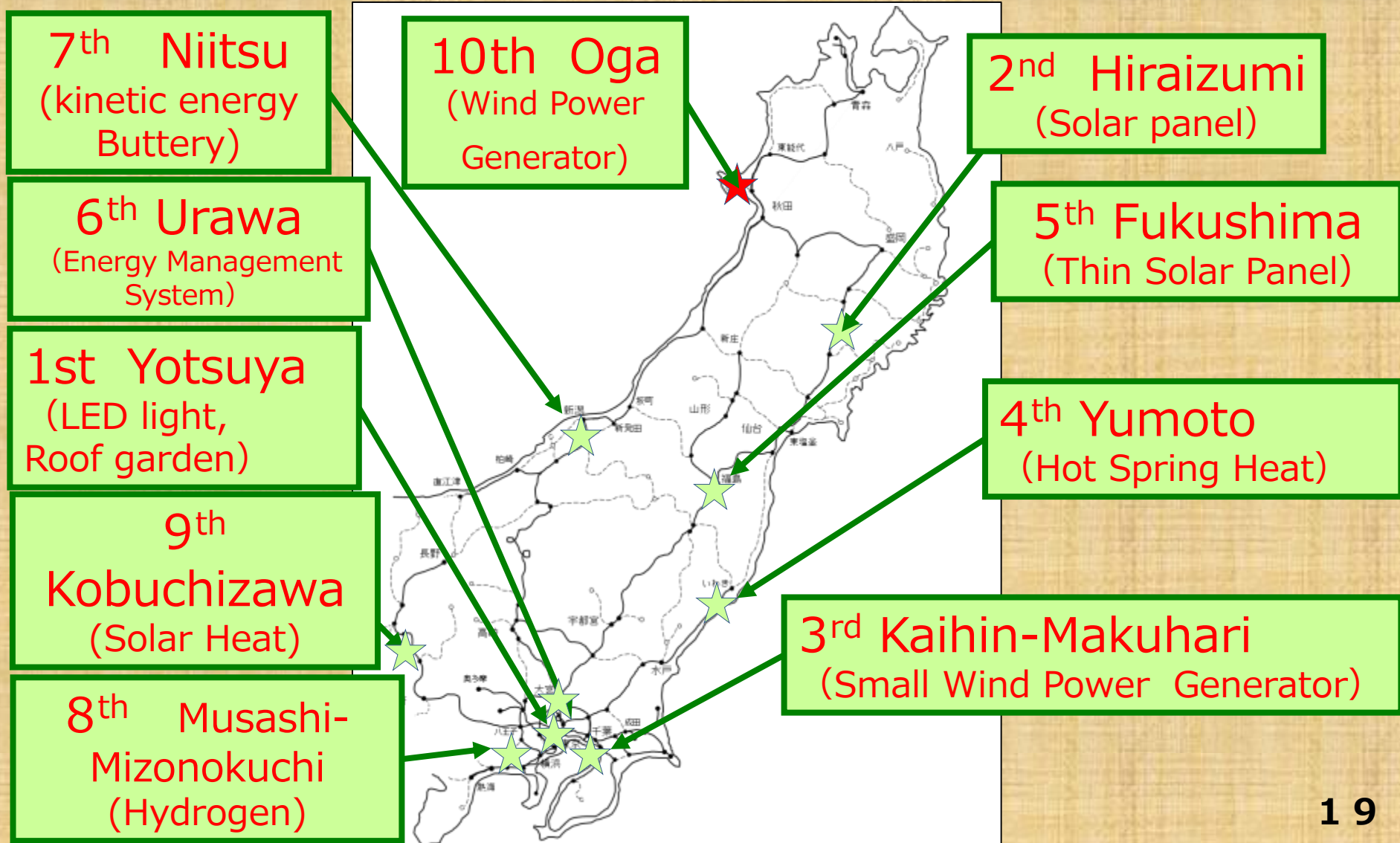
 ***ECOSTE!***

“ecoste” ~Four pillars~

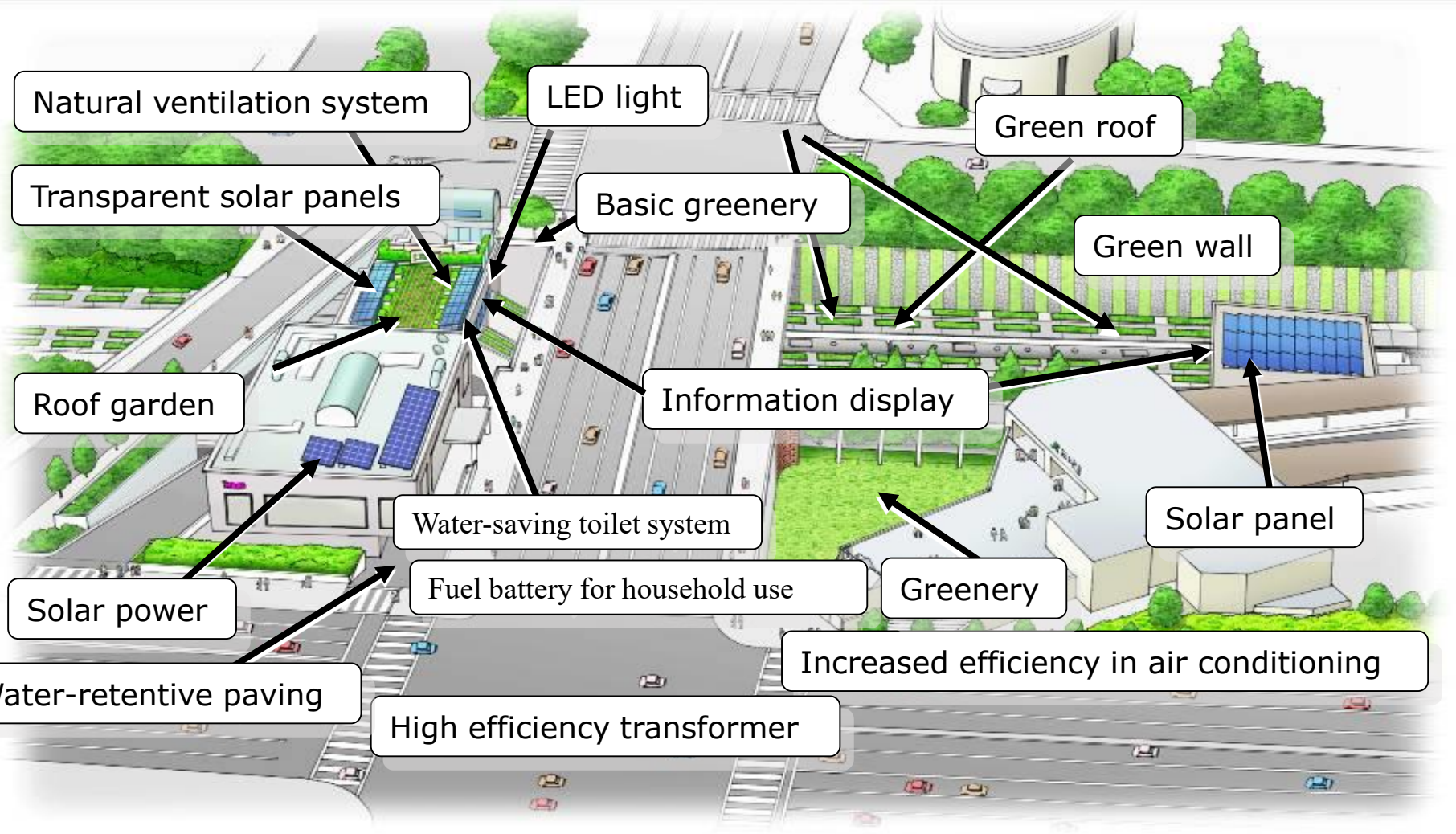
Four pillars

- 1 Energy conservation**
:Promoting more advanced energy conservation
- 2 Energy creation**
:Actively implementing renewable energy
- 3 ECO-Awareness**
:Preparing facilities that make users eco-aware
- 4 Environmental Harmonization**
:Creating vitality through an environment that is in harmony with people

In-service "ecoste" stations



The 1st ecoste model station - Yotsuya Station JR Chuo Line



The 1st ecoste model station - Yotsuya Station JR Chuo Line



The latest ecoste model station - Oga Station (JR Oga Line)

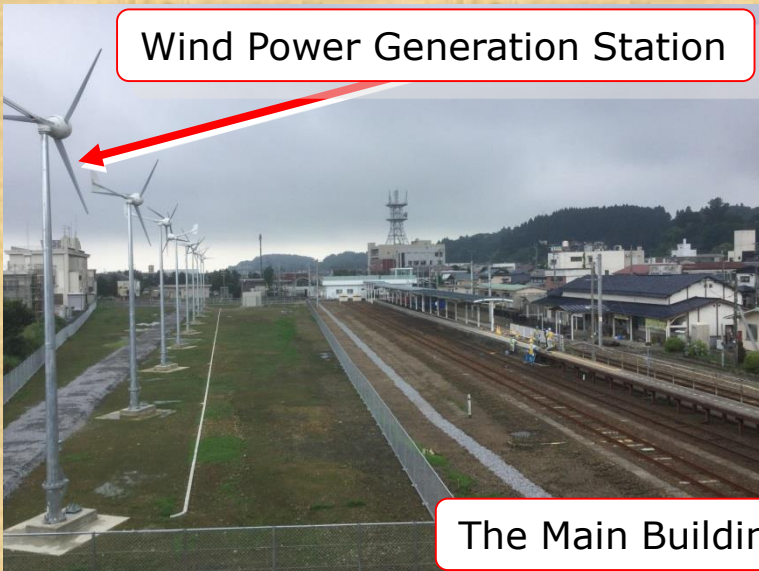
Namahage Statues
(Traditional character
of Akita Prefecture)



Catenary pole for charge
to ACCUM

Accumulator railcar train
EV-E801 series

Wind Power Generation Station



The Main Building of Station



The latest ecoste model station - Oga Station (JR Oga Line)



Progress of introducing renewable energy

Solar light



Akita Izumi solar power plant
 Power generation output Approx. 1.3 MW
 (Began use in March 2016)

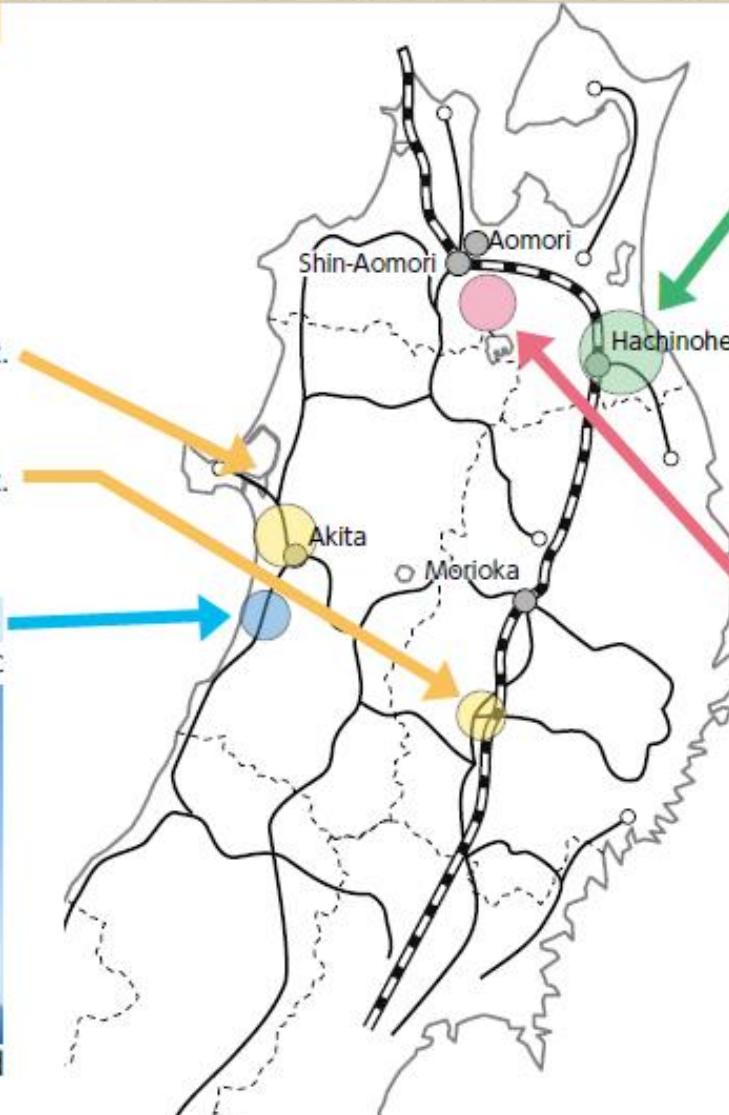
Hanamaki Atago solar power plant
 Power generation output Approx. 0.3 MW
 (Began use in February 2015)

Wind

Abundant wind resources along shorelines, etc



Between Michikawa and Shimohama on Uetsu Main Line



Biomass

Abundant forest resources and railway forest of the Tohoku region



Hachinohe biomass power plant
 Power generation output Approx. 12 MW (Use scheduled to begin in December 2017)

Geothermal

Abundant geothermal resources in the Tohoku region's volcanic areas



Hakkoda northwest region geothermal resource development survey

Biodiversity ~Hometown Forestation Programs~



Naruko-Onsen

Niigata-Pref

Miyagi-Pref



Tokyo

Fukushima-Pref

October, 2017 Naruko-Onsen, Osaki City, Miyagi Prefecture

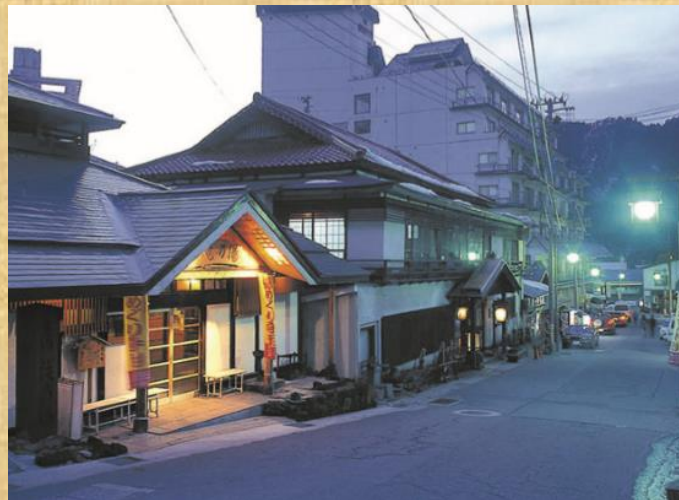
Biodiversity ~Hometown Forestation Programs~



Reception of Furukawa station



Nearby hot spring(2018 plan)



Nearby hot spring "Naruko-Onsen"



Naruko-Onsen station
(hot spring especially for foot)

Thank you for your attention!



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