

# 'S SITE

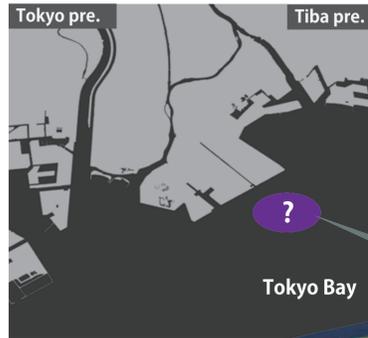
## Sustainable Satellite Island with Traffic & Energy

### Concept

By not put anything in front of the "'s", wearing the meaning "of all."  
Now asking sustainability on the sea ...  
And sustainability, is that the global environment can sustain an environment that enables our survival.

What environmental issues and energy conscious, that intensive-urban and low-carbon-city has been attracting attention in recent years in the structure of Japanese cities.

Therefore, the reduction of the size that can work without resorting to large automobile CO2 emissions an artificial island, we have developed a transportation network. Then, in order to allow for the power supply of the artificial island, we have decided to use solar renewable energy, such as wind.



### Energy System



#### Use of renewable energy

Using solar power and wind power, aiming to supply 100% of the power in an artificial island. We have developed a power generation facility to compensate the power needed for one year in an artificial island was predicted using Design Builder. Put the 1,300 homes, the 2700 apartments in five buildings, and one central facility in an artificial island, we have analyzed.

Analysis result - Consumption electricity per year unit:kWh

	Consumption electricity per one	Total of consumption electricity
House	4854.05	6310259.15
Apartment	780.92	2108484.84
Central facility	3673969.80	3673969.80
Total	3679604.77	12092713.79

The total power consumption per year was 12 billion kWh from the analysis results

#### Calculation of electricity generated

**Quantity of solar power**  
The solar power generation systems system is installed in the place getting the sunlight such as the roof of apartment and the roofs of house. We calculated the amount of electricity generated using the monthly solar radiation of Tokyo. The quantity of generation during one year of approximately 188Wh per one square meter it followed.

**Expected electric power generation of solar power [kWh]**  
= System rating output [kW] × Amount of solar radiation [kWh / m<sup>2</sup>·day] × 30 × General design factor

**Quantity of wind power**  
Wind power generation is a power generation methods that will reduce the emission of CO2, and it can be introduced in large quantities economically. We calculated the amount of electricity generated using the monthly average wind speed of Tokyo. Of approximately 510,000kWh a year per one it followed.

**Expected electric power generation of wind power (per one) [kWh/M]**  
= Wind power density [kW/m<sup>2</sup>] × Area exposed to wind [m<sup>2</sup>/unit] × 730 [h/month] × Total efficiency

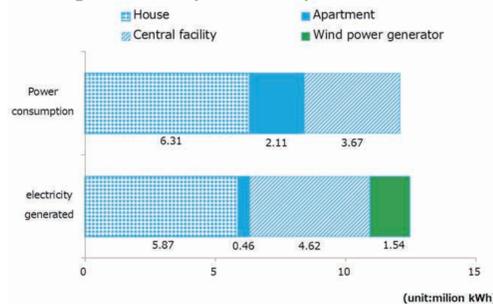
Calculation formula and numerical quoted from the New Energy and Industrial Technology Development Organization and 2011 weather statistics information (Japan Meteorological Agency)

Calculation result-Electricity generated per year unit:kWh

	electricity generated per one	Total of electricity generated
House	4514.83	5869281.60
Apartment	91019.01	455095.07
Central facility	4616974.20	4616974.20
Wind power generator	512895.78	1538687.33
Total	512895.78	12480038.19

There were 11 million kWh power generation. When calculating the, Suppose 24 m2 solar panels placed one per door housing. Assume that 2928 square meters apartment is placed on the roof of one building per. Assumed central facility and 24 531 square meters located in the southern half of the roof

#### Power generation and power consumption



The total balance is only better PV power is not large enough about 1161532kWh. We cover the power of artificial island that you should have a minimum of three wind power there.

### Central Facilities

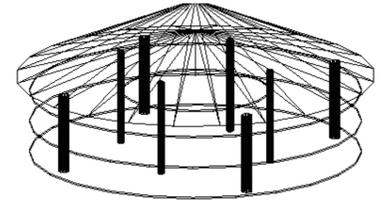
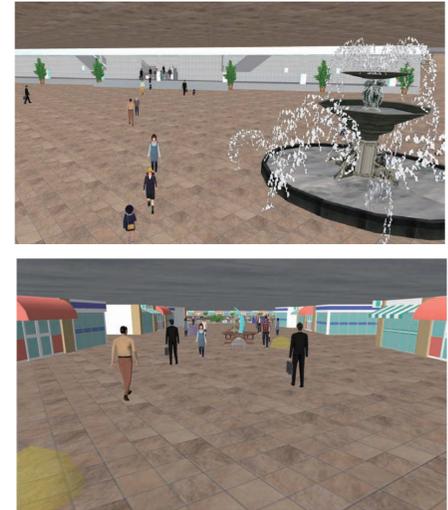
#### About central facilities

It is estimated in the metropolitan area, with proliferation of high-density facility that has a variety of functions and are increasing the load on the energy

We've built a complex of commercial facilities and railway station is a facility through a lot of use throughout the day in the center of an artificial island.

By doing so, we made it possible to aggregate the energy burden and to prevent the proliferation of useless building.

In addition, placing a bench or table in the first floor of the building, a space that can talk freely, we can be used as a place of community formation.



### Traffic System



#### About traffic

The main transportation in the artificial island is a bicycle and foot. Its purpose is to consider environmentally and reducing the emissions of CO2 For a comfortable passing, we widen sidewalk and made bikeway For residents who do not have a car, we have set up spot of car-sharing. Way to go out of this island, you need to use the road in the coastline. Has been given the role of the breakwater and seawall by passing it through a road in the fill

You can hardly see the road, we encouraged the transformation of traffic consciousness. (car ⇒ bike, walking)

#### Traffic analysis using TRANSYT 14

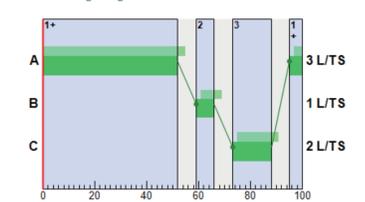
As the point at which the signal is needed on the island, there is a confluence with underground parking.

Traffic volume prediction ~Target time: Peak commute time (8:00 to 9:00) ~ Calculated on the basis of daytime employment population ratio and proportion of those who use the car as a means of transportation when commuting.

We were designed to control the traffic intersection that has been calculated is possible.



Phase Timings Diagram for Controller Stream 1



Stage Sequence Diagram for Controller Stream 1

