

**Collaboration Software**

**The design process by BIM**

Our team members are divided into two groups. They are architectural designer and environmental engineer. Environmental engineer analyze in parallel with architectural design. That makes better environmental performance. So our team approach to the nZEB(nearly Zero Energy Building). We design this project in collaboration with the students who are familiar with the Tokyo.

The model is made by "archiCAD" which can share the dates with many soft wares .Therefore Modeling can effectively save the time.

**Project Concept**

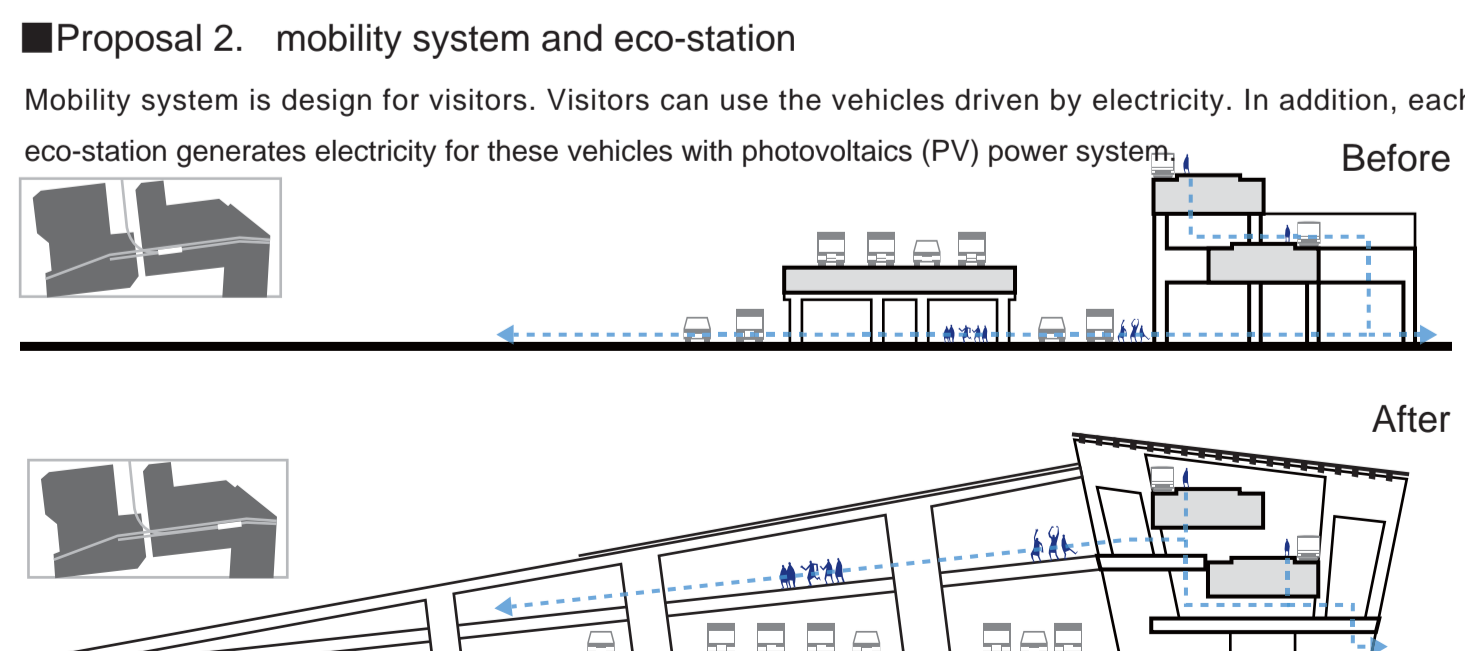
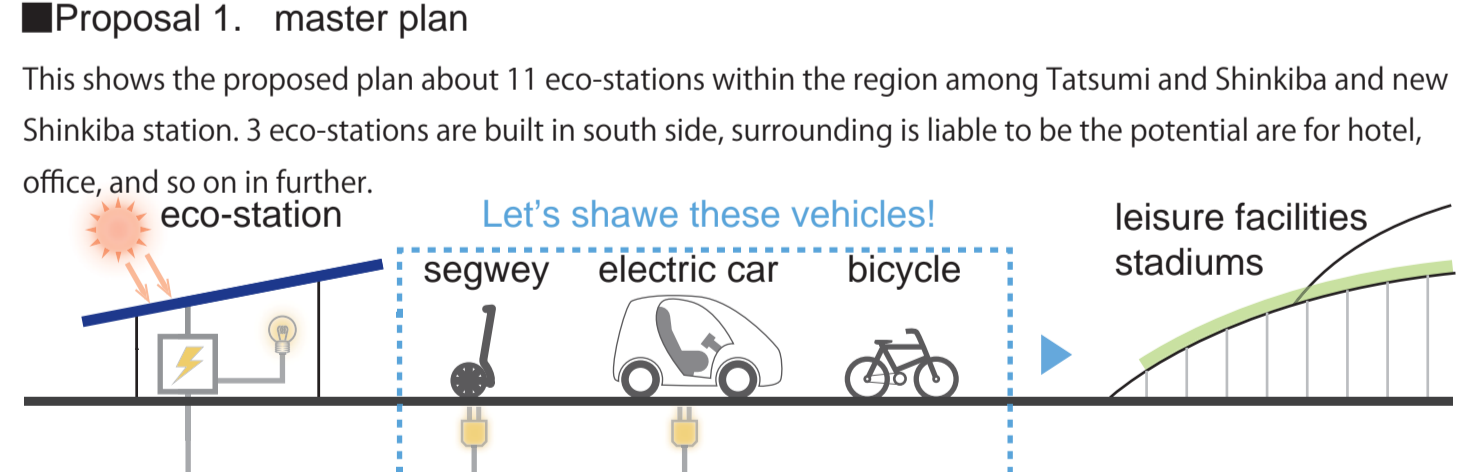
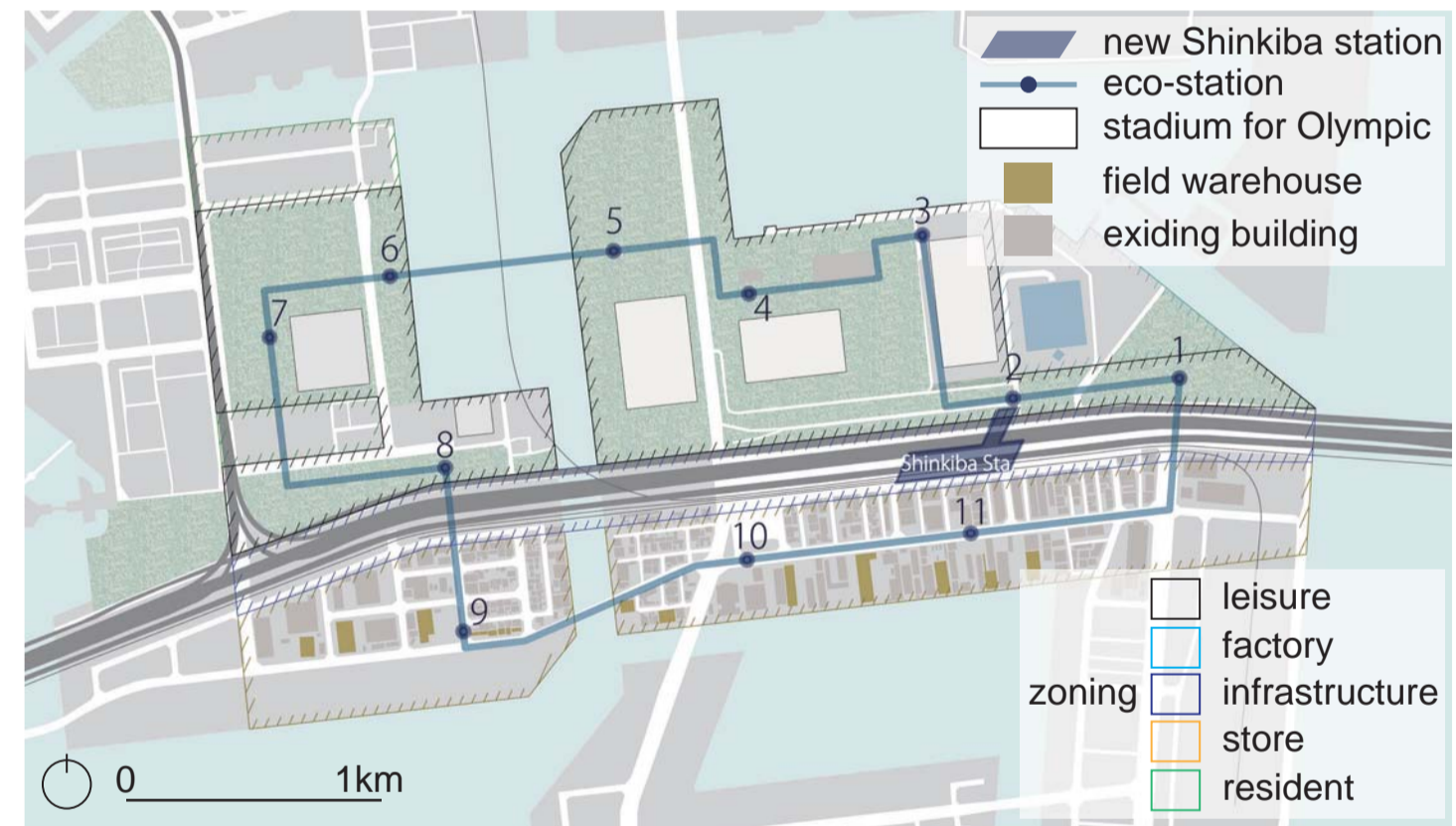
New Shinkiba station and a mobility system is proposed in this project to make better situation not only "Tokyo Olympic 2020" but also "beore/after Olympic".

In addition, the project has other important points. The points are the roofs of new Shinkiba station and 11 eco-stations. These illustrations show the details of this project.



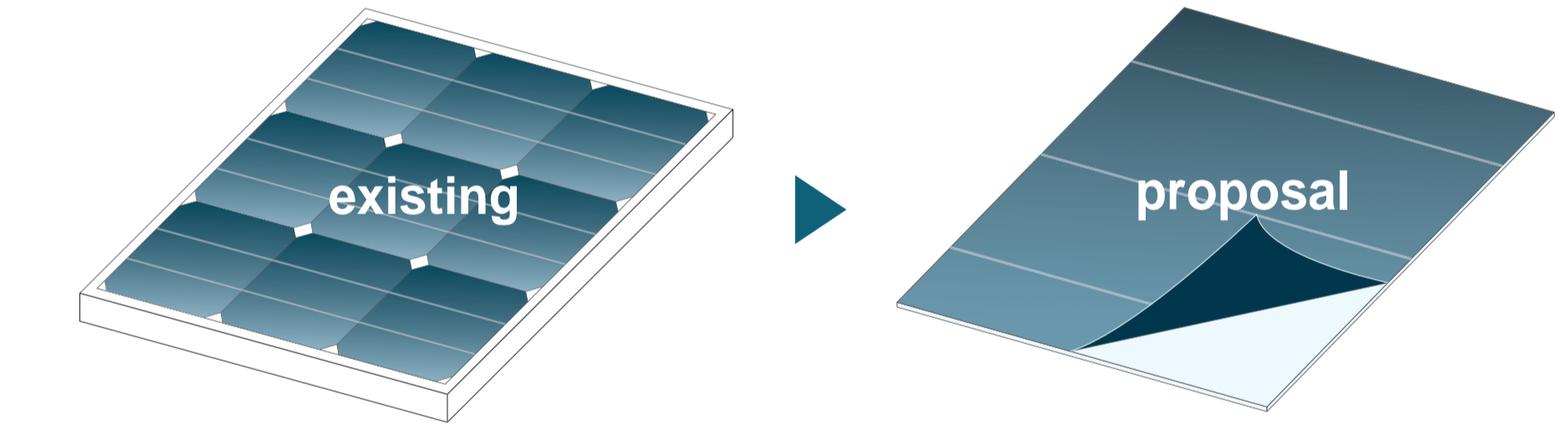
**Research 1. location**

Result of site visiting. Some problems were noticed. Firstly, the left picture was taken below some overhead viaduct for railway and highway. Many visitors of this site can't avoid walking under these bridges to the leisure facilities in north. Secondly, the right picture shows that some visitors are waiting for crossing the road. They have to walk to other facilities in spite of the facilities are quite far. Finally, many cars appeared in both pictures. All visitors usually walked near the moving cars.



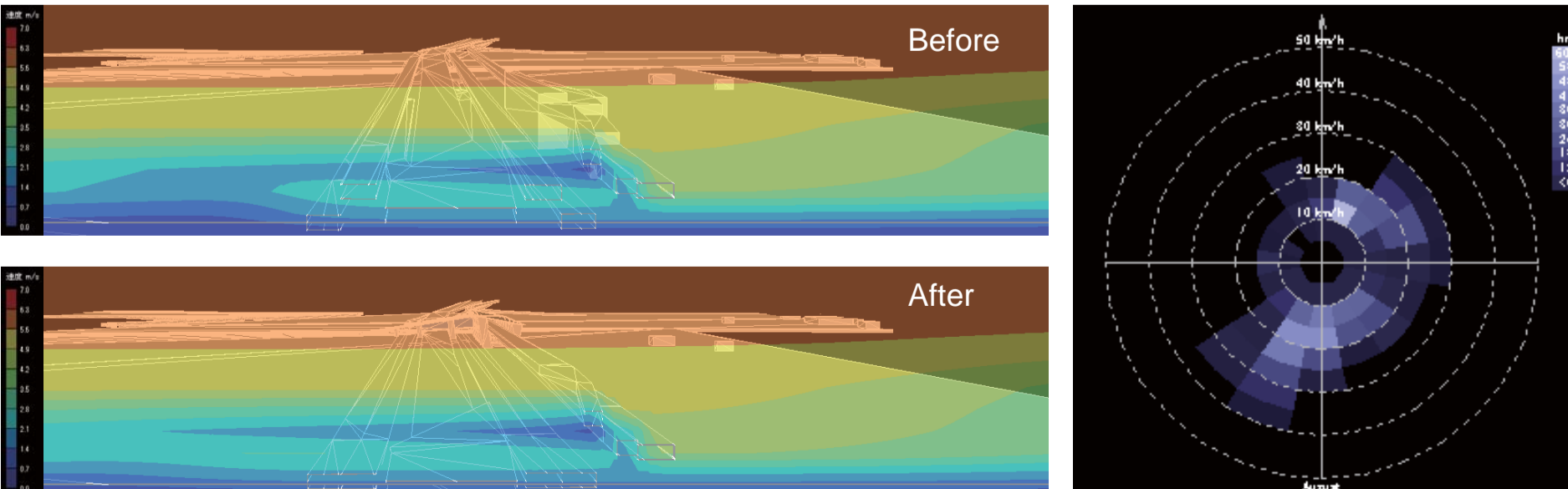
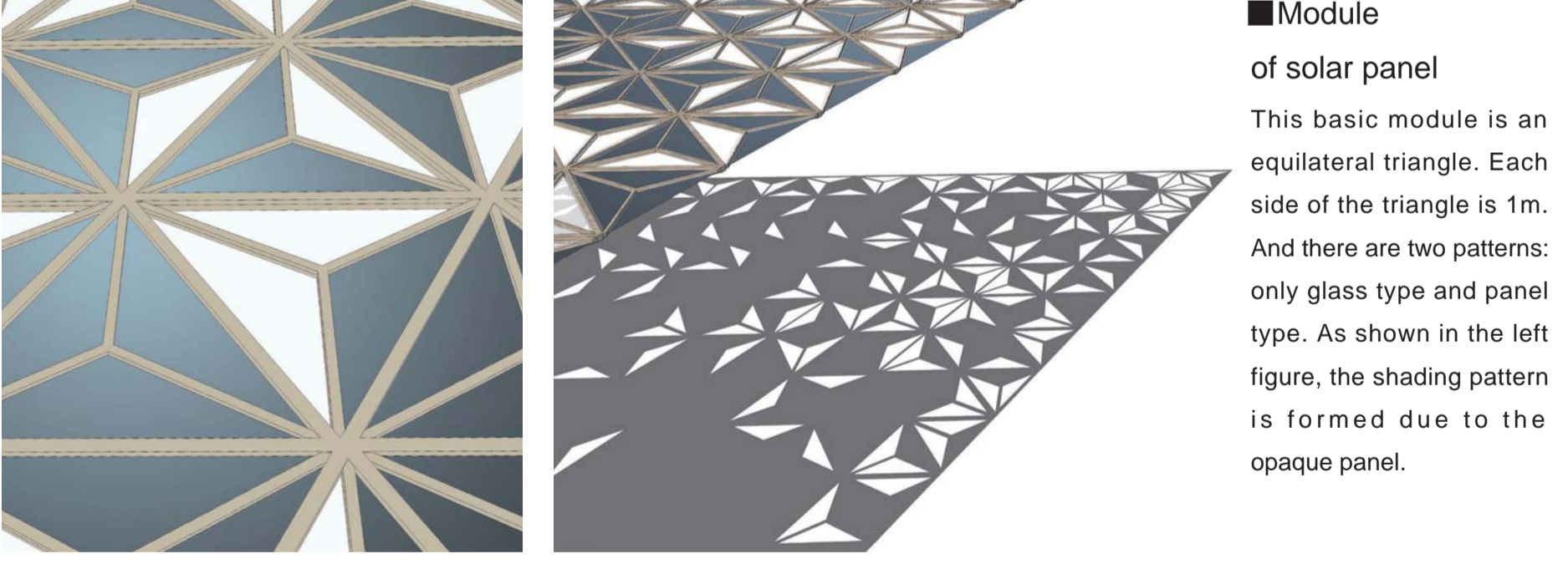
**Proposal 3. new Shinkiba station and changing position of bridge to high**

New station has a footbridge for visitors instead of dropping the highway to GL. They can go to each facility without having to worry about anything. Moreover, we examined some influences of dropping highway. These results are shown in the next pictures of airflow analysis.



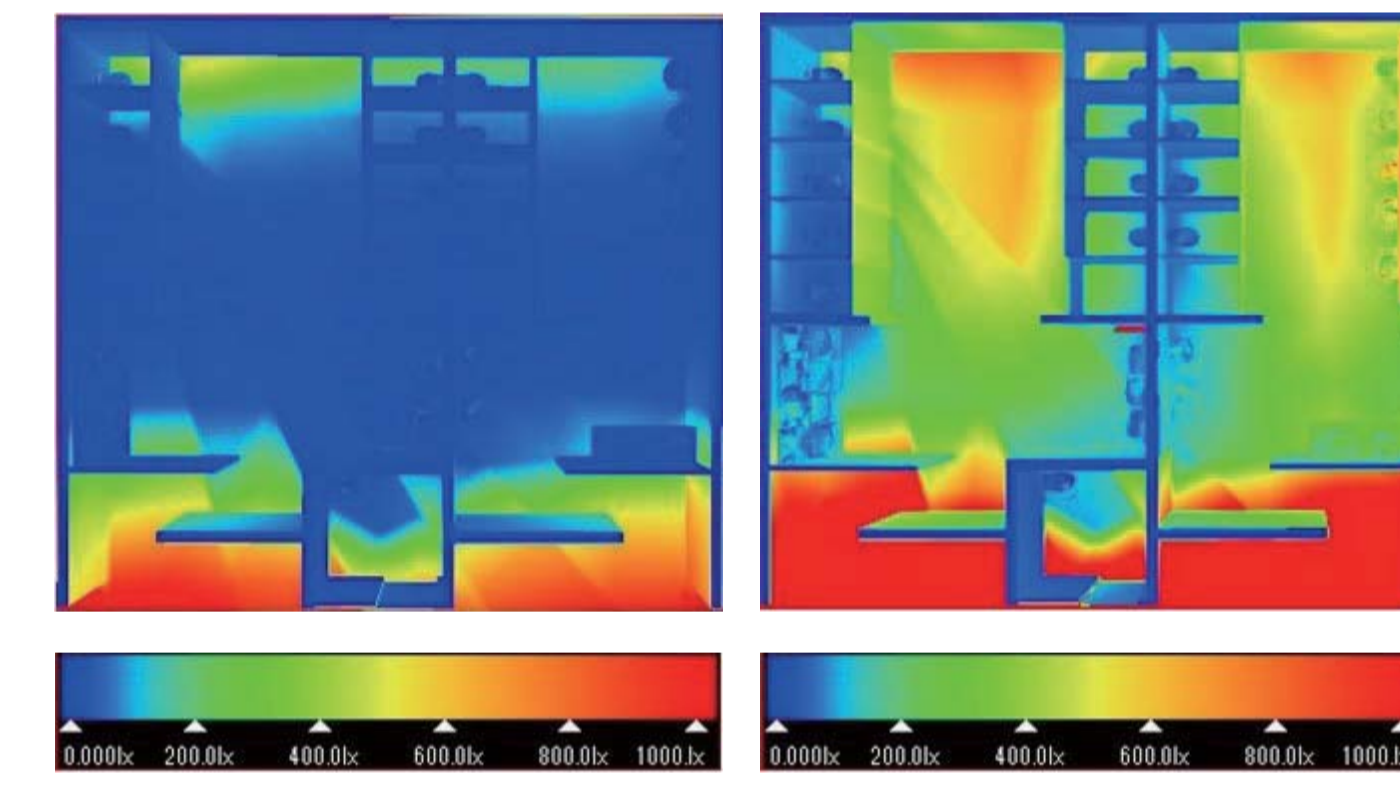
**Proposal type of solar panel**

In this project, we choose a new type of PV power system. This product is very thin. And the method to use panel is to paste the film on glasses or plastics. It can produce a very thin solar panel. Therefore, we can freely change its shape.



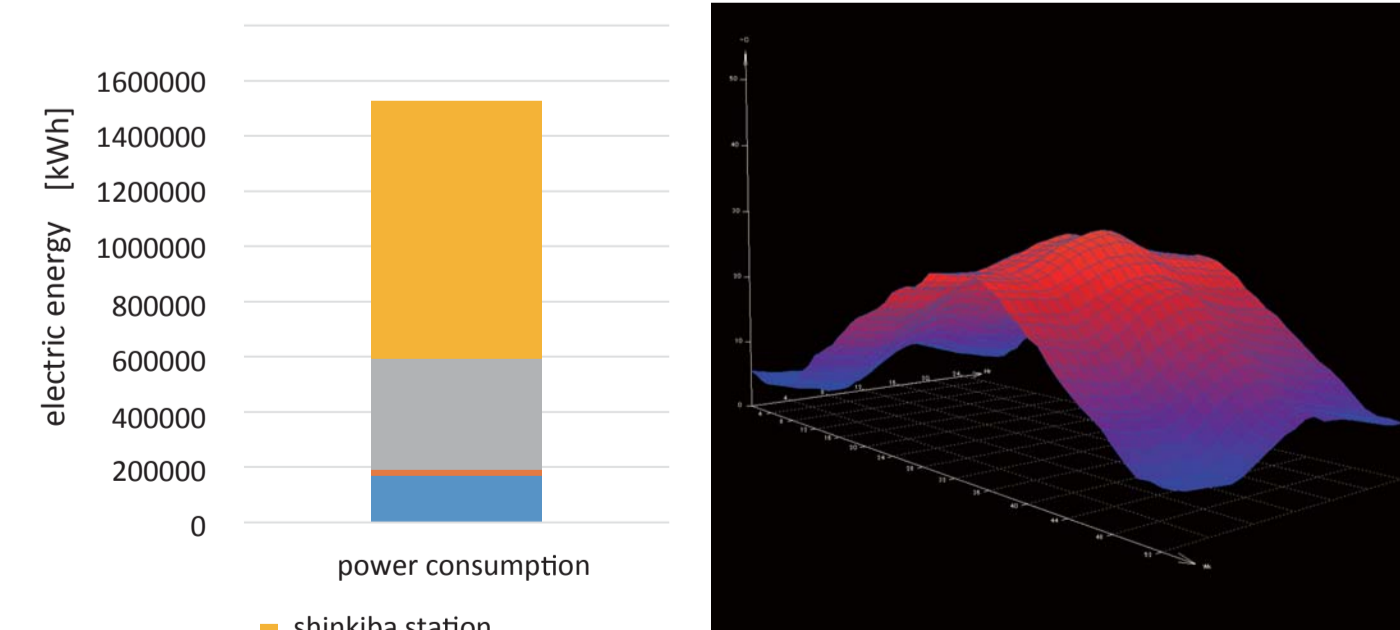
**Airflow analysis**

The wind makes persons cool. So it is necessary for people living in hot region. The right figure shows mainly direction of wind of Shinkiba in August. In summer, the wind mainly comes from south-southwest. Because the existing of highway, it prevents the wind from blowing to north area. Therefore, the wind is able blow to north area by removing the highway to GL.



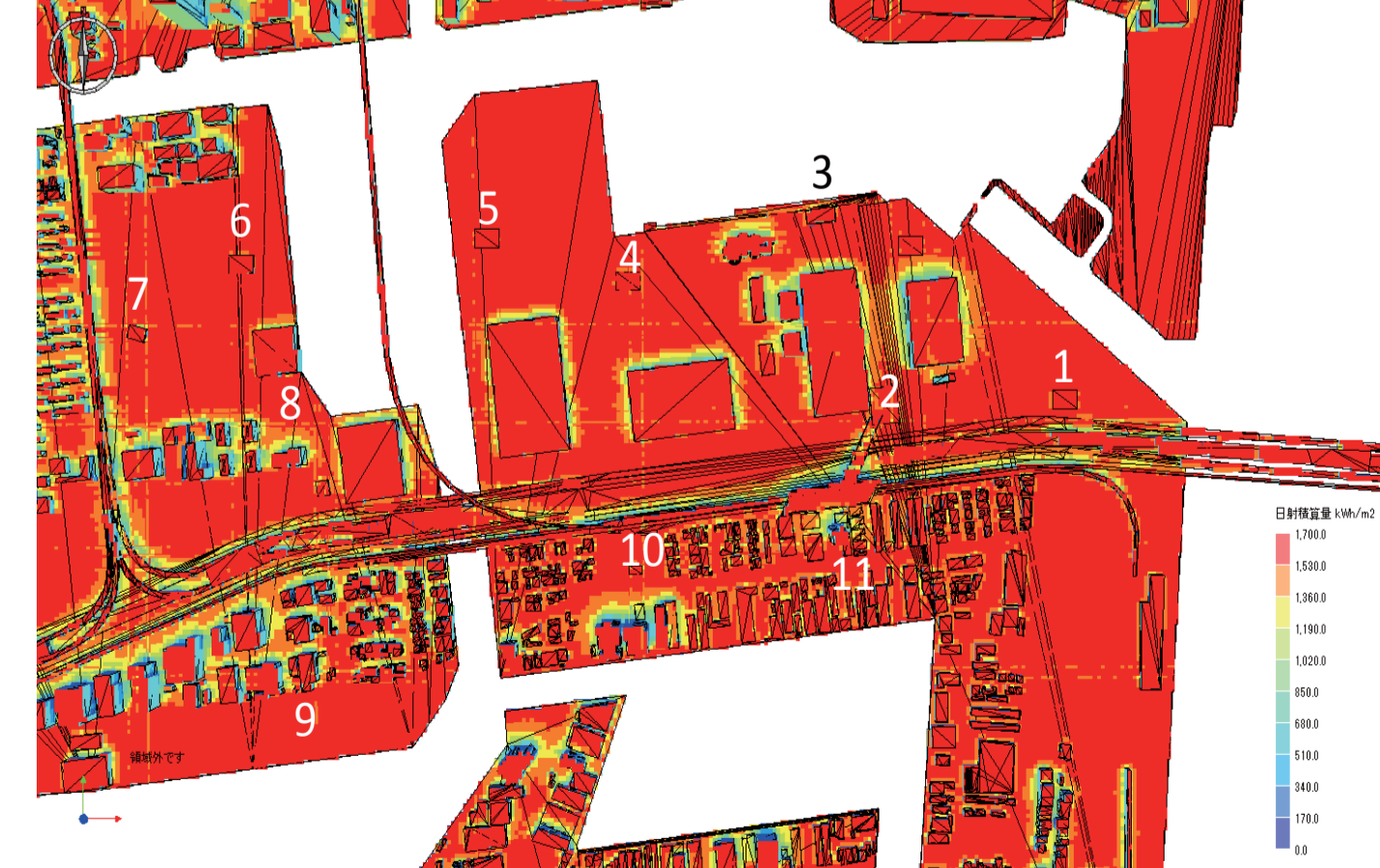
**Illumination analysis**

This is the result of the illumination analysis in a part of eco station. Without opening, you will not be able to maintain sufficient brightness in the room. However, if you have an opening, it is possible to collect adequate daylight inside a room and obtain sufficient brightness. From this result, it can lead to saving energy in daytime by providing an opening.



**Towards nZEB**

Energy saving prevent the earth from becoming warm. In this case, we reduced electricity to achive nZEB using daylight in each eco-station. The target of zero electricity utilization is quite different. We calculated amount of electricity consumption by Design Builder. Figure displays the electricity consumption for 11 eco-stations, a station, and 165 vehicles. All electricity is generated by PV installed on the roof of each eco-station.



**Solar radiation integrated analysis**

It is important to analyze information of site in architectural design. In particular, it is more important to evaluate the environmental performance there. To make the environmental performance higher, solar radiation integrated analysis is made. The upper figure shows the result of solar radiation integrated analysis. Around the station and Eco Station, there are no tall buildings to prevent the solar radiation. Solar radiation integrated analysis shows that the roof has received direct solar radiation. Therefore solar power generation can be implemented by using solar panels.