

Evacuation Centers

[Background]

Many issues, including information provision to evacuees and assisting people in need of help, arose in the aftermath of the Great East Japan Earthquake due to a shortage of government staff.

[Response]

In addition to reviewing its Regional Disaster Risk Reduction Plan, the City of Sendai prepares itself for disasters by interacting with community members and partner facility representatives who helped operate evacuation centers in the aftermath of the earthquake and through developing an evacuation center operation manual based on their experience.

Evacuation center operation in the aftermath of the Great East Japan Earthquake

Sendai City’s plan before the Great East Japan Earthquake was to have ward office staff members transfer evacuation center operational duties to evacuees as soon as possible after opening the centers. However, in the aftermath of the earthquake, most evacuation centers experienced a shortage of government staff due to an unexpectedly large number of evacuees seeking shelter at all 288 evacuation centers, which totaled about 106,000 people, surpassing one-tenth of the City’s population. As a result, evacuees were only provided with limited information, requests were not accommodated, people who needed help were not properly assisted, and the privacy of evacuees was compromised.

Types of evacuation centers

To protect the safety of citizens in case of a disaster and also provide people who lost their homes to a disaster with a place to live for the time being, the City of Sendai designates indoor facilities and outdoor spaces equipped with essential functions as evacuation centers. In addition, applying the lessons it learned from the earthquake on the capacity of its designated evacuation centers and the number of needed government staff, the City has prepared auxiliary evacuation centers and *ganbaru* (doing one’s best) evacuation facilities.

Type	Description
Designated evacuation center	Facilities to provide shelter in case of a disaster (e.g., municipal elementary, junior high, and high schools)
Auxiliary evacuation center	Facilities to complement designated evacuation centers (e.g., citizen centers) <b>New</b>
<i>Ganbaru</i> evacuation facility	Facilities to be operated by voluntary community members stockpiling emergency supplies (e.g., community assembly halls) <b>New</b>
<i>Ittoki</i> (temporary) evacuation area	Areas for seeking temporary evacuation in the immediate aftermath of a disaster (e.g., municipal parks)
Evacuation centers for people with disabilities	Facilities for people who require special care unavailable at designated evacuation centers (e.g., social welfare facilities)

※ In addition to the facilities above, the City provides short-term refuge areas for stranded commuters and tsunami evacuation areas.

Designated evacuation center operation

1 Basic policy

Local organizations, evacuees, evacuation center supervisors, and facility managers are to operate designated evacuation centers by serving their roles in collaboration with one another. In addition, in case circumstances require remaining in evacuation centers longer than expected, evacuees are to establish evacuation center operation committees in preparation for taking over operational duties as soon as possible.

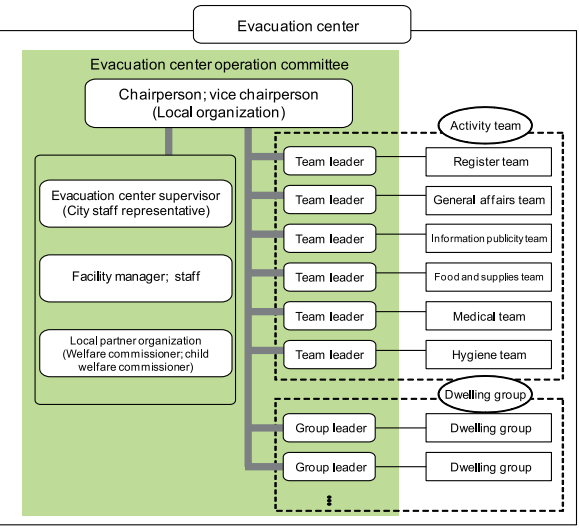
2 Establishing and operating designated evacuation centers

① Operation manual

Local organizations that will be participating in operating evacuation centers are to discuss matters relating to establishing and operating evacuation centers with the City and facility managers, and also develop Community-edition Evacuation Center Operation Manuals with attention to their community’s circumstances. Manuals must clarify the roles of all groups involved and matters relating to establishing and operating evacuation centers. Evacuation center operation committees are strongly encouraged to include female members from the very beginning. In addition, since the City previously experienced difficultly communicating with non-Japanese evacuees, evacuation center operation committees are required to prepare multi-lingual disaster display sheets are included in the emergency supplies.

② Types and roles of groups involved; evacuation center operation committee model

Local organization	Local organizations are to lead evacuation center operations, and also serve as primary members particularly when establishing an evacuation center operation committee.
Evacuee	Evacuees are to actively help local organizations with evacuation center operations. If circumstances require evacuation centers to operate longer than expected, evacuees are to assume larger roles in operating their centers, eventually taking over all operational duties.
Evacuation center supervisor	Applying what it learned from the Great East Japan Earthquake, the City has assigned evacuation center supervisors to all designated evacuation centers, who are to participate in disaster drills conducted in their communities with the aim of building friendly relationships with community members. Evacuation center supervisors are also in charge of coordinating with Disaster Response Headquarters in the event of a disaster.
Designated staff	Designated staff are assigned in advance to designated evacuation centers near their homes to respond to disasters during non-working hours, including nighttime and holidays. They are to build friendly relationships with community members, as are evacuation center supervisors, and are to arrive at evacuation centers as soon as possible in the case of a disaster to serve until evacuation center supervisors can take over.
Facility manager	Facility managers are in charge of matters relating to using evacuation centers, such as allocating space to evacuees and determining common areas.





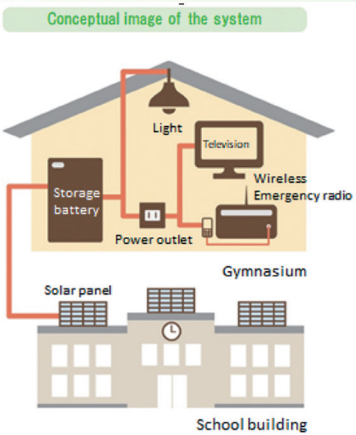
Disaster-prevention solar energy system

1 Introduction to designated evacuation centers

① Overview

In the aftermath of the Great East Japan Earthquake, due to supply disruption of electricity and gas, various issues arose during initial response, including operating evacuation centers. Therefore, to secure a stand-alone power source and also reduce normal-time CO2 emissions, a system comprising solar power and rechargeable batteries has been introduced.

This system allows the use of wireless emergency radio, as well as other information and communication equipment, television, and lighting in case of a power failure by switching between solar power during the day and rechargeable battery power during the night.



System features

	Daytime	Night-time
Regular circumstances	Electricity generated by solar power is Supplied and contributes to the reduction of CO2 emissions.	When the storage battery is in a state of discharge, it is charged overnight.
During power outages	Electricity generated by solar power is Supplied while concurrently storing it in a storage battery.	Electricity charged during the day is supplied.

Electricity Available Per Day				
	Device	Electric energy consumption	Number of devices	Duration
Information gathering	Wireless emergency radio	50W	1	24 hours
	Television	50W	1	24 hours
	Mobile phone	5W	Recharging 50 phones	
Lighting	Emergency lighting	415W	2	6 hours
	Floodlighting	40W	2	24 hours
Other	Large fan	40W	3	6 hours
Power consumption			10 kWh	

The estimation for emergency lighting is based on use restricted to nighttime.  
(e.g., from evening to lights out)

② Maintenance and renewal

The system requires daily maintenance to ensure proper performance in case of a disaster.

To prevent and detect malfunction, the City conducts not only daily visual inspections but also regular high-precision inspections, including performance testing and filter cleaning with the system’s power off, and performs repairs as necessary for maintaining proper performance.

③ New initiatives

Having secured the system’s disaster response capacity, with the aim of putting its solar power to effective use at normal times and also extending the life of its rechargeable batteries, the City is currently investigating the possibility of managing its energy by using virtual power plant technology with help from the private sector. In addition, through industry-government-academia collaboration, the City is also carrying out a project aimed at visualizing the amount of available electric energy at the time of a disaster.

④ Budget

[System introduction] approx. 5.8 billion yen (using the central government’s Green New Deal Fund, Subsidy for Carbon Dioxide Emissions Reduction Projects, and Projects, and Miyagi Environment Grant)

[System maintenance] approx. 12.2 million yen/year

2 System introduction to private facilities <budget: approx. 20 million yen/year>

The City of Sendai provides financial help to private facilities that will serve as disaster risk reduction bases, including ones already designated in its regional disaster risk reduction plan, for installing renewable energy equipment and other equipment needed to maintain disaster risk reduction functions.

Emergency supplies

1 At the time of the Great East Japan Earthquake

Before the earthquake, the City had prepared for disasters with prefabricated toilets and what it had thought would be enough food and water to last 24 hours. However, with the earthquake causing an unexpectedly large number of evacuees to seek shelter at its evacuation centers, the City ran out of food and water not very long after. In addition, although relief supplies began arriving on the third day following the earthquake, it took a while before evacuation centers began receiving the right amount of what they needed.

2 After the Great East Japan Earthquake

① Types of supplies <budget: approx. 70 million yen/year>

Since the City now knows that relief supplies can only be expected to begin arriving on the third day after a disaster (or after 48 hours), it increased its stockpile of food to 48 hours’ worth of supplies for 106,000 evacuees, i.e., the maximum number of evacuees from the Great East Japan Earthquake, and 10,000 disaster response staff. The stockpile comprises a larger number of products than before, which were selected with attention to food allergies. Applying what it learned from operating evacuation centers, the City also added electric generators and floodlights to its stockpile.

② Distribution inventory stockpile <budget: approx. 0.4 million yen/year>

The City of Sendai has a Distribution Inventory Stockpile contract with a private company for having supplies, such as diapers, purchased by the City regularly replenished by the company as part of its distribution inventory. Thanks to the contract, the City no longer needs to worry about replacing old supplies with new ones. At the time of concluding the contract, Sendai City was the first large city to adopt this system.

③ Supply system

In preparation for large scale disasters with long-term effects, the City concluded contracts with truck delivery and warehouse companies for help with delivery and supply management. However, since the City believes it should personally take care of such matters as allocating supplies according to the needs of different evacuation centers, coordinating with Disaster Response Headquarters, and receiving relief supplies, it manages the operation of supply collection and delivery bases by itself.

3 Self-help and Mutual aid

While the City of Sendai stockpiles enough supplies for 48 hours after disaster occurrence, this will likely not be enough. Therefore, the City ensures that citizens are well informed about reinforcing their own Self-help effort by increasing their stockpiles from the pre earthquake standard of three-days to one-week’s worth of supplies, and also endeavor to increase stockpiling by inner-city companies.

Another important way of improving our disaster response capacity is to incorporate and maintain such services as soup kitchens into disaster drills as some communities have.