

## Summer Energy Saving Action Plan 2017 of the University of Tsukuba

Since 2015, our university plans summer / winter energy saving actions and strive to reduce the use of electricity. The “Action Plan for Reducing Global Warming Gases in the University of Tsukuba” was determined on March 24, 2016 by the Board of Directors, as to reduce the emission of global warming gases. From this fiscal year, according to the “Regulation for Management of Energy in the University of Tsukuba” set on March 23, 2017 as Regulation No. 16, we are setting the framework for the whole university to reduce the use of electricity and emission of global warming gases and move forward in this area.

For reducing emission of greenhouse gases and the use of electricity, our university’s summer 2017 plan is as follows:

### I Basic Principles

The basic principles of this summer energy saving plan are set to be implemented without causing negative impacts on education, research, medical activities and others. This plan aims to ensure a healthy and safe environment for the students and staff in the University of Tsukuba.

### II Time Period

From July 1, 2017 until September 30, 2017

### III Target Facilities

This plan targets all university facilities excluding staff residence.

### IV Goal

The goal is to reduce the use of electricity and gas (used for air conditioning) by 1.6 % than the precedent fiscal year. Attachment 1 shows a breakdown of goals for each campuses.

<sup>1</sup> The electricity bill includes basic fee and usage fee.

1. Goal for reduction of use of electricity:

By following the Energy Saving Action Plan, cut down by 1.6% than the precedent fiscal year. (Total electricity use: down 475,000 kWh/ 3 months. Total electricity bill<sup>1</sup>: down 7,711,000 yen / 3 months)

2. Goal for reduction of use of gas for air conditioning:

By following the Energy Saving Action Plan, cut down by 1.6% than the precedent fiscal year. (Total gas use: down 75,000 m<sup>3</sup> / 3 months. Total utility fee: 4,225,000 yen / 3 months)

### V Action Plan in Detail

Here is the list of actions:

#### 1. Action Plan for the University Headquarters

(1) Update the real time data on TEMS (Univ. of Tsukuba Electricity Monitoring System, <http://tems.tsukuba.ac.jp>) to provide information of electricity usage on Tsukuba Campus.

- (2) Promote awareness of energy saving measures by university website, email and posters (see Attachment 2).
- (3) Inspect the electricity reduction actions of each departments and provide feedback. Also, inform the users about turning lights off when not in use and the appropriate temperature for air conditioning. Try to make students gather at certain rooms instead of them staying at many different rooms of the university.
- (4) Inform the departments each month on the amount of electricity used.
- (5) When renovating the facilities, switch to LED lights and effective air conditioning.
- (6) Open a webpage for gathering proposals on energy reduction from students and staffs. Hold a meeting to discuss on those proposals, and adopt good ones for the next Action Plan.
- (7) Consider the campuses' energy and electricity reduction actions as a research field for the university's research and education.
- (8) Conduct research on new and alternative energy; contribute to reduction of emission of global warming gases and energy and electricity use. Make feedback to the society with these new energy techniques.

## **2. Action Plan for the Departments**

- (1) Each department will act according to the action plan indicated on Attachment 3 for the reduction of electricity and gas use. Confirm TEMS each day and gas bill each month, to know the department's progress with the action plan.
- (2) In addition, each department needs to report each month to their Faculty Meeting on the total amount of emitted global warming gases and energy usage.
- (3) Faculty should encourage students to reduce electricity use.
- (4) Turn off lights during lunchtime and after hours; turn off unnecessary office equipment.
- (5) The following is the examples of actions for the reduction of energy.

### **(Air conditioning)**

- Use air conditioning only where the room is being used.
- In laboratories where air conditioners need to operate for the whole day, set the room temperature moderately high, where possible.

### **(Lighting)**

- Turn off or dim lights near the windows and during lunch break. After hours use lighting only where necessary for work and safety reasons, and turn off any other unnecessary lights.

### **(Educational and research equipment)**

- Adjust the operating schedule of large experimental equipment with the division in charge of the energy, for usage of energy.
- When there is a school-wide event, try to stop the use of facilities or equipment unrelated to the event, where possible.

### **(Others)**

- Stop seat warming and water warming of washlets.
- Stop using air towels.
- Lock the doors of rooms that won't be in use for a long time.
- Ask the vendors to make the automatic vending machines operate in eco-mode.

## **3. Action Plan for Each Students and Staffs**

- (1) Confirm the real-time TEMS information on internal website, if you are on Tsukuba Campus.

(2) The following is the examples of actions for the reduction of energy.

(Lighting)

- Turn off lights in unused lecture rooms, etc.
- Turn off any unnecessary lighting. Before hours and during lunch break use lighting only where necessary for work, and use desk lights if necessary.

(Air conditioning)

- Set the cool air conditioning temperature at 28 °C. Use fans and circulators to send cool air evenly.
- Use blinds and curtains, to reduce heat coming in from windows. Do not leave the entrance wide open, in rooms where air conditioners are at work.

(Office equipment)

- Set PC, printers, copying machines etc. on energy saving mode and reduce the number of equipment in use. Turn off the main switch on TV etc. as to reduce standby electricity.
- Set the refrigerators and electric pots on energy saving mode and reduce the number of equipment in use.

(Educational and research equipment)

- Reduce the number of equipment that use electricity for the whole day (deep freezers, thermostatic chambers, chemical kept refrigerators).
- Consider renewing outdated equipment that use much energy.
- Avoid the use of large experimental equipment on weekday afternoons.
- Try to use the equipment that need to operate for certain period, over the weekend, if possible.

(Work outfit)

- Wear "Cool-Biz" (polo shirts, short-sleeve shirts with "no tie and no Jacket").

(Others)

- Refrain from using elevators. Use Staircases for "two-up three-down".

## **VI Verification**

- In Tsukuba campus, real-time energy usage is widely confirmable on TEMS webpage. The university headquarters notify students and staffs to look at TEMS daily and promote electricity-saving awareness. Analyze the TEMS data to verify the progress of actions.
- Interview students and staffs on energy and electricity saving.
- Hold committee on collecting ideas on energy and electricity saving, and reflect the ideas on the next Action Plan.

## **VII When the electricity use reach near the contract limit**

When the peak electricity use reach near the contract limit, follow the actions listed below, in addition to all of the actions above listed.

- Electric pots: No use.
- Lights in the hallway: Turn off (where safety is confirmed)
- Rooms not in use: Lights off (where it doesn't cause work stress)
- Electric air conditioning in lecture rooms and offices: pause
- Self-generating electricity machines in Tsukuba Campus: peak-cut operation

These actions will take place after the Division of Facilities Maintenance has informed the whole university.

### **VIII Enforcement and Follow-up**

- The Environment and Energy Saving Committee will review the plan and will make amendments, if required. The results are reported through on-campus meetings for informing students and staffs.

Campus Energy and Electricity Saving Goals

Names of the facility		Energy Usage (Jul-Sep)		Cut down goals (Jul-Sep)		H29 Total contract
		H29 Summer	H28 Summer	Cut down	Electricity Bill <sup>2</sup>	
		Goal	Data			
Tsukuba Campus (Central)	Electricity	15,549 千	15,802 千	Down 253 千 kWh	Down4,063 千円	12,700kW
	Gas	2,982 千 m <sup>3</sup>	3,031 千 m <sup>3</sup>	48 千 m <sup>3</sup>	Down2,717 千円	—
Tsukuba Campus (Medical)	Electricity	10,570 千	10,742 千	Down 172 千 kWh	Down2,699 千円	7,260KW
	Gas	1,588 千 m <sup>3</sup>	1,614 千 m <sup>3</sup>	26 千 m <sup>3</sup>	Down1,447 千円	—
Tsukuba Campus (Kasuga)	Electricity	454.2 千 kWh	461.6 千 kWh	Down 7.4 千 kWh	Down35 千円	449kW
	Gas	34 千 m <sup>3</sup>	34 千 m <sup>3</sup>	0.5 千 m <sup>3</sup>	Down30 千円	—
Tsukuba Campus (Ichinoya)	Electricity	436.2 千 kWh	443.3 千 kWh	Down 7.1 千 kWh	Down132 千円	526kW
	Gas	—	—	—	—	—
Tsukuba Campus (Hirasuna & Oikoshi)	Electricity	787.9 千 kWh	800.7 千 kWh	Down 12.8 千 kWh	Down230 千円	790kW
	Gas	—	—	—	—	—
Tokyo Campus (Bunkyo Building)	Electricity	450.5 千 kWh	457.8 千 kWh	Down 7.3 千 kWh	Down136 千円	610kW
	Gas	—	—	—	—	—
Elementary School, Univ. of Tsukuba	Electricity	85.1 千 kWh	86.5 千 kWh	Down 1.4 千 kWh	Down28 千円	178kW
	Gas	6.9 千 m <sup>3</sup>	7.0 千 m <sup>3</sup>	0.1 千 m <sup>3</sup>	6 千円	—
Junior & Senior High School at Otsuka	Electricity	138.9 千 kWh	141.2 千 kWh	Down 2.3 千 kWh	Down45 千円	299kW
	Gas	—	—	—	—	—
Junior & Senior High School at Komaba	Electricity	90.4 千 kWh	91.9 千 kWh	Down 1.5 千 kWh	Down29 千円	161kW
	Gas	7.9 千 m <sup>3</sup>	8.0 千 m <sup>3</sup>	0.1 千 m <sup>3</sup>	7 千円	—
Senior High School at Sakado	Electricity	84.4 千 kWh	85.8 千 kWh	Down 1.4 千 kWh	Down26 千円	117kW
	Gas	4.90 千 m <sup>3</sup>	4.98 千 m <sup>3</sup>	0.08 千 m <sup>3</sup>	4 千円	—
Special Needs Education School for the Visually Impaired	Electricity	126.9 千 kWh	129.0 千 kWh	Down 2.1 千 kWh	Down41 千円	258kW
	Gas	—	—	—	—	—
Special Needs Education School for the Deaf	Electricity	111.3 千 kWh	113.1 千 kWh	Down 1.8 千 kWh	Down34 千円	179kW
	Gas	10.30 千 m <sup>3</sup>	10.46 千 m <sup>3</sup>	0.16 千 m <sup>3</sup>	9 千円	—
Special Needs Education School for the Mentally Challenged	Electricity	31.2 千 kWh	32.1 千 kWh	Down 0.9 千 kWh	Down18 千円	78kW
	Gas	5.32 千 m <sup>3</sup>	5.41 千 m <sup>3</sup>	0.09 千 m <sup>3</sup>	5 千円	—
Special Needs Education School for the Physically Challenged	Electricity	29.0 千 kWh	29.5 千 kWh	Down 0.5 千 kWh	Down10 千円	91kW
	Gas	—	—	—	—	—
Attached Kurihama Special Needs School	Electricity	43.3 千 kWh	44.0 千 kWh	Down 0.7 千 kWh	Down15 千円	146kW
	Gas	—	—	—	—	—
Shimoda Marine Research Center	Electricity	192.5 千 kWh	195.6 千 kWh	Down 3.1 千 kWh	Down58 千円	114kW
	Gas	—	—	—	—	—
Sugadaira Research Station	Electricity	39.4 千 kWh	40.0 千 kWh	Down 0.6 千 kWh	Down12 千円	43kW
	Gas	—	—	—	—	—
Total	Electricity	—	—	Down 475.9 千 kWh	Down7,711 千円	—
	Gas	—	—	Down 75.03 千 m <sup>3</sup>	Down4,225 千円	—

<sup>2</sup> The electricity bill includes basic fee and usage fee.

(千 kWh= thousand kWh, 千 m<sup>3</sup>= thousand m<sup>3</sup>, 千円= thousand yen)

## Example on Reducing Electricity Bill

Subject		Action	Monthly Electricity Bill Reduced			
Lighting		Turn off during lunch or recess (1 hour)	One room (20m <sup>2</sup> )	dow n 50 yen/ 1 room per month	Large room About 264,000m <sup>2</sup>	dow n 660,000 yen / month
		40W Fluorescent Light, dim one of the lights		dow n 130 yen/ 1 Light per month (42W×10h×20days×0.015yen/Wh)	100 Lights	dow n 13,000 yen/ month
		32WHf Fluorescent Light, dim one of the lights		dow n 110 yen/ 1 Light per month (35W×10h×20days×0.015yen/Wh)	100 Lights	dow n 11,000 yen/month
Air Conditioning		Raise set temp by 1°C (Summer) or lower by 1°C (Winter)	One room (20m <sup>2</sup> )	dow n 90 yen/ 1 room per month	Large room About 264,000m <sup>2</sup>	dow n 1,188,000 yen/ month
Office Equipment	PC	Eco-mode	1 Note PC	dow n 80 yen/ 1 PC per month	4,000 PC	dow n 320,000 yen/ month
	Copy Machine	Eco-mode	1 Copy Machine	dow n 1,420 yen/ 1 Machine per month	100 Machines	dow n 142,000 yen/ month
	Electric Pots	Reduce number	1 Electric Pot	dow n 800 yen/ 1 Pot per month	50 Pots	dow n 40,000 yen/ month
Others	Washlets	Stop w arm seat and w arm w ater	1 Washlet	dow n 420 yen/ 1 Washlet per month	100 Washlets	dow n 42,000 yen/ month

## Example of Reducing Gas Bill

Subject		Action	Monthly Gas Bill Reduced			
Air Conditioner using Gas		1 hour pause per day	One room (20m <sup>2</sup> )	dow n 100 yen/ 1 room per month	100 rooms , 20m <sup>2</sup> each	dow n 10,000 yen/ month