

NEWS & RELEASE

For further inquiry please contact:

Xymax Real Estate Institute
Phone: +81 3-5544-6640 FAX: +81 3-5544-6641
info-rei@xymax.co.jp

Electric Power Consumption by Office Tenants

Reduced by 15% in summer and 5% in winter from the pre-quake level (the areas covered by TEPCO)

Xymax Real Estate Institute calculated the electric power consumption by office tenants with the data of tenants in office buildings under Xymax Group's management across Japan, and compared the changes before and after the earthquake in the areas covered by Tokyo Electric Power Company (TEPCO). (The monthly data and calculation method can be found on the page 5.)

As part of corporate social responsibility, many companies today have a strong interest and concern in energy issues ranging from global warming to nuclear power. The shutdown of nuclear power plants after the Great East Japan Earthquake may be a particular concern for businesses in Japan. However, evaluating the current electricity use and taking appropriate measures to solve energy related problems was difficult as there was no available quantitative data of electric power consumption by tenant.

Definition of Electric Power Consumption by Office Tenants

The electric power per *tsubo* (3.3 sq m) consumed by tenants in office buildings in one month.

Key Findings (the areas covered by TEPCO)

- **On an annual average, the electric power consumption by office tenants after the earthquake was 10% lower than the pre-quake level (Figure 2).**
- **In summer (July – September), the electric power consumption was approx. 15% lower in 2011 and 2012 than it was in 2010 (before the earthquake) (Figure 3).**
- **Whereas in winter (January – March), the electric power consumption was only approx. 5% lower in 2011 and 2012 than it was in 2010 (before the earthquake) (Figure 4).**

The electric power consumption by office tenants may be a useful data not only for real estate businesses but also for general occupiers of office buildings when considering energy issues.

Xymax Real Estate Institute will continue to provide data regarding these issues and conduct further analysis on background and factors for the changes as well as further studies on energy consumption per building.

Xymax set up a specialized team and over the past two years has gathered information and provided tools to promote reduction of electricity use.

Related releases (Xymax website: http://www.xymax.co.jp/english/news/news_release.html)

- Development of the model to estimate energy consumed by office tenants with 95% accuracy (August 17, 2012)

The information contained in this report is as of the date of preparation. XYMAX accepts no liability for any inaccuracies or omissions in this report.

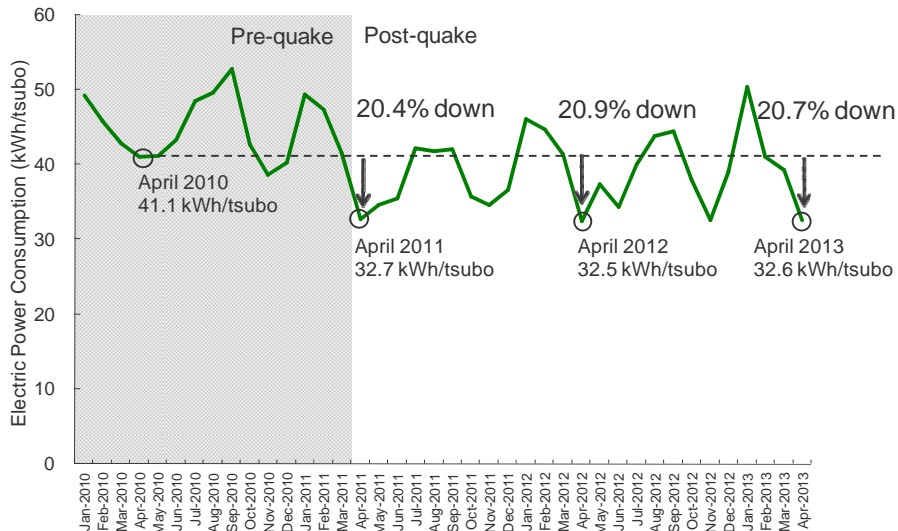
No copying, quoting, forwarding, distributing, reprinting or any other use of this report is allowed.

Copyright © 2013 XYMAX Corporation. All rights reserved.

Electric Power Consumption by Office Tenants (January 2010 – April 2013)

Figure 1 shows the changes in electric power consumption from January 2010 to April 2013 by tenants in office buildings in the areas covered by TEPCO. The amount for April 2013 was 32.6 kWh/tsubo, a decrease of 20.7% from the pre-quake level in April 2010 (41.1 kWh/tsubo).

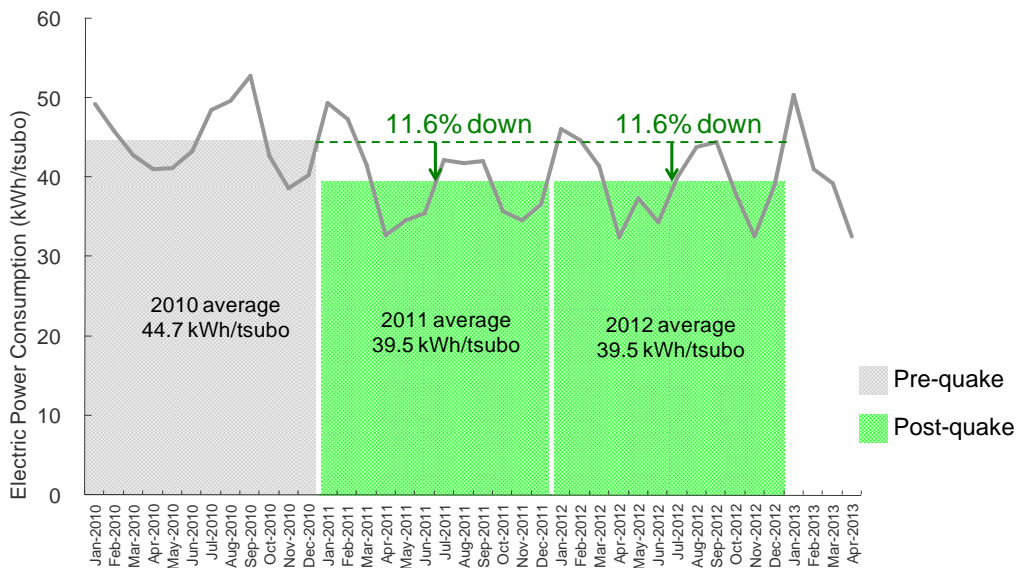
Figure 1: Electric Power Consumption by Office Tenants (the areas covered by TEPCO)



The annual average is down by more than 10% after the earthquake.

The annual average electric power consumption by office tenants was 44.7 kWh/tsubo in 2010, and 39.5 kWh/tsubo in 2011 and 2012, a decrease by 11.6% from 2010, showing that the consumption was reduced by more than 10% after the earthquake.

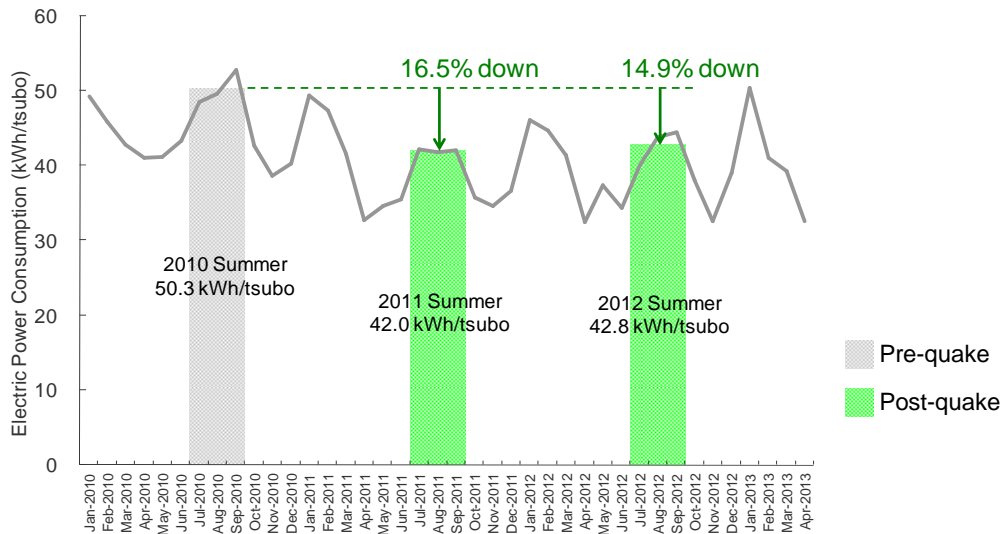
Figure 2: Annual Average Electric Power Consumption by Office Tenants (the areas covered by TEPCO)



The consumption was 15% down in summer but only 5% down in winter after the earthquake.

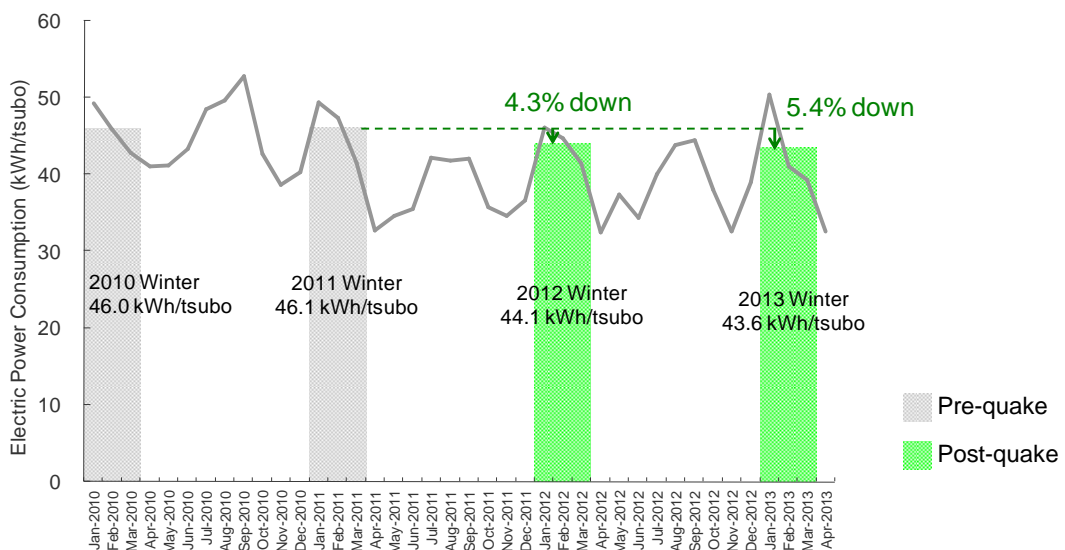
In summer (July-September average) the electric power consumption by office tenants was 50.3 kWh/tsubo in 2010, 42.0 kWh/tsubo in 2011 (down 16.5% from 2010) and 42.8 kWh/tsubo (down 14.9% from 2010), showing that the amount decreased by roughly 15% in each year after the earthquake (Figure 3).

Figure 3: Electric Power Consumption by Office Tenants in Summer (the areas covered by TEPCO)



Whereas in winter (January-March average) the electric power consumption by office tenants was 46.0 kWh/tsubo in 2010, 46.1 kWh/tsubo in 2011, 44.1 kWh/tsubo in 2012 (down 4.3% from 2011), and 43.6 kWh/tsubo in 2013 (down 5.4% from 2011), showing that the amount decreased by only 5% in each year after the earthquake (Figure 4). Thus, the reduction of electric power consumption was smaller in winter than in summer.

Figure 4: Electric Power Consumption by Office Tenants in Winter (the areas covered by TEPCO)



Monthly Electric Power Consumption by Office Tenants and Temperature (January 2010 – April 2013)

Electric power consumption in the areas covered by each electric power company

	Hokkaido Electric Power Company	Sapporo	Tohoku Electric Power Company	Sendai	Tokyo Electric Power Company	Tokyo	Hokuriku Electric Power Company	Kanazawa	Chubu Electric Power Company	Nagoya	Kansai Electric Power Company	Osaka	Chugoku Electric Power Company	Hiroshima	Shikoku Electric Power Company	Takamatsu	Kyushu Electric Power Company	Fukuoka
	kWh/tsubo	°C	kWh/tsubo	°C	kWh/tsubo	°C	kWh/tsubo	°C	kWh/tsubo	°C	kWh/tsubo	°C	kWh/tsubo	°C	kWh/tsubo	°C	kWh/tsubo	°C
Jan-2010	49.0	-2.0	29.8	2.8	49.3	7.0	25.9	4.4	42.4	4.6	43.3	6.1	44.4	5.2	49.6	5.9	43.4	6.6
Feb-2010	46.8	-3.2	26.4	2.1	45.8	6.5	25.9	4.8	37.8	7.0	37.7	7.8	40.7	7.6	44.5	7.4	36.9	9.4
Mar-2010	43.1	-0.1	28.0	4.4	42.8	9.1	24.3	6.8	31.6	9.1	35.6	9.6	34.1	9.1	40.0	9.3	32.7	10.9
Apr-2010	40.7	5.5	25.2	8.2	41.1	12.4	24.9	10.7	31.0	13.3	34.0	13.6	29.7	13.0	36.1	13.2	31.4	13.8
May-2010	40.6	12.2	25.6	14.7	41.2	19.0	24.8	16.5	31.9	18.7	35.2	18.8	27.7	18.5	32.8	18.8	32.9	19.2
Jun-2010	38.9	19.2	24.8	20.4	43.3	23.6	24.6	21.9	34.4	23.9	36.3	23.9	28.0	23.3	33.8	23.9	35.3	23.5
Jul-2010	43.1	22.1	24.7	25.3	48.5	28.0	23.9	26.5	39.3	27.8	41.5	27.9	33.6	27.2	44.5	27.8	39.1	27.7
Aug-2010	43.6	24.8	23.1	27.2	49.7	29.6	23.6	29.3	40.1	29.4	42.7	30.5	39.6	30.3	46.5	30.4	42.9	30.3
Sep-2010	43.5	20.0	25.2	21.7	52.8	25.1	24.5	24.5	43.0	26.1	44.8	26.7	47.5	26.2	53.0	26.7	46.3	26.3
Oct-2010	39.7	12.2	24.5	16.2	42.7	18.9	24.6	18.0	32.9	19.4	38.1	19.9	34.0	19.2	34.9	19.8	35.6	20.0
Nov-2010	37.8	5.9	24.0	10.1	38.6	13.5	24.2	11.3	30.3	12.1	32.4	13.2	27.3	12.0	26.5	12.7	30.6	13.2
Dec-2010	41.6	0.6	23.9	5.7	40.3	9.9	25.1	7.0	33.2	7.9	34.3	9.0	33.1	7.3	33.1	8.3	34.2	8.8
Jan-2011	49.7	-3.8	26.6	0.5	49.4	5.1	28.7	1.5	44.6	2.8	42.1	4.4	44.3	2.9	43.2	4.1	43.1	3.8
Feb-2011	44.6	-1.1	25.0	3.2	47.4	7.0	27.6	4.5	42.0	6.6	39.0	7.4	44.7	6.6	41.7	6.6	42.3	8.2
Mar-2011	42.0	0.7	24.2	3.8	41.6	8.1	24.6	5.4	35.5	7.5	35.3	8.1	36.4	7.2	36.1	7.9	33.7	8.8
Apr-2011	34.3	6.9	22.8	10.0	32.7	14.5	23.3	11.5	30.2	13.3	32.3	13.8	30.5	13.4	30.6	13.6	29.9	14.7
May-2011	37.2	11.1	22.8	15.6	34.6	18.5	24.0	17.4	30.9	19.0	33.5	19.6	28.9	19.5	25.4	19.6	31.6	19.8
Jun-2011	38.9	17.3	22.2	20.6	35.5	22.8	24.1	22.7	31.8	23.8	34.3	24.2	29.9	23.6	26.9	24.0	32.5	23.9
Jul-2011	39.3	21.8	22.2	24.8	42.2	27.3	23.6	27.2	42.0	27.5	40.8	27.8	39.3	27.6	35.1	27.3	40.0	27.9
Aug-2011	37.9	23.6	21.8	24.9	41.8	27.5	23.2	27.5	40.1	28.3	39.8	28.9	40.6	28.2	34.9	28.6	40.1	28.5
Sep-2011	39.1	19.2	22.3	22.1	42.1	25.1	23.4	23.8	40.1	25.1	40.3	25.2	40.4	24.9	37.3	25.1	40.7	25.2
Oct-2011	35.6	12.1	21.4	15.9	35.7	19.5	23.2	17.5	32.0	18.8	33.7	19.5	29.6	18.5	27.8	19.2	32.1	19.7
Nov-2011	36.4	6.0	21.8	10.5	34.6	14.9	23.7	13.3	30.5	13.9	30.9	15.2	26.4	14.7	23.9	15.0	30.5	16.3
Dec-2011	39.9	-2.0	21.4	3.4	36.6	7.5	23.0	5.3	33.0	6.7	32.0	8.1	30.3	6.9	28.5	7.9	29.4	8.5
Jan-2012	47.9	-4.5	25.2	0.4	46.1	4.8	28.1	2.9	42.7	4.2	39.9	5.6	42.0	4.7	36.6	5.2	38.9	6.3
Feb-2012	44.5	-4.4	22.5	0.3	44.7	5.4	27.2	2.6	41.6	4.1	37.9	5.1	42.8	4.3	36.2	4.7	38.4	5.7
Mar-2012	40.3	0.1	23.5	4.5	41.4	8.8	25.9	7.0	35.3	8.3	36.8	9.1	36.5	8.7	31.0	8.9	33.0	10.7
Apr-2012	37.3	7.0	21.0	9.8	32.5	14.5	22.2	12.7	29.1	14.2	29.2	15.2	27.9	15.0	26.1	15.0	26.4	16.2
May-2012	37.8	13.0	23.6	15.9	37.4	19.6	26.4	17.1	32.6	19.2	33.5	19.6	30.2	19.6	24.6	19.4	32.2	20.1
Jun-2012	35.2	17.1	21.5	18.2	34.3	21.4	24.3	21.3	30.3	22.3	31.5	23.0	29.9	23.2	24.3	22.8	30.3	23.1
Jul-2012	39.6	21.8	24.1	22.8	40.0	26.4	24.4	26.8	37.7	26.9	36.5	27.8	36.2	27.4	27.8	27.7	34.7	28.0
Aug-2012	38.1	23.4	24.3	26.2	43.8	29.1	27.1	28.9	41.8	28.4	42.0	29.4	43.9	29.5	34.3	29.3	39.4	29.1
Sep-2012	39.0	22.4	26.1	23.9	44.5	26.2	27.2	25.2	40.1	25.8	40.5	26.0	41.8	25.6	31.9	25.2	36.7	24.5
Oct-2012	35.9	13.0	20.8	16.6	38.0	19.4	25.9	18.1	33.9	19.0	33.8	19.3	30.1	18.9	26.8	18.9	31.9	19.2
Nov-2012	33.8	5.5	22.0	9.7	32.6	12.7	23.0	10.5	27.2	11.3	29.3	12.4	24.9	11.7	21.5	12.3	26.3	12.9
Dec-2012	40.0	-2.3	26.0	3.3	39.0	7.3	24.8	4.7	34.9	5.3	33.6	6.6	35.5	5.5	26.2	6.3	31.2	7.6
Jan-2013	53.7	-4.7	32.1	0.7	50.4	5.5	29.0	3.0	47.3	4.0	43.1	5.2	46.9	4.4	34.1	4.7	41.0	6.1
Feb-2013	43.1	-4.0	29.8	1.1	41.0	6.2	26.2	3.1	38.3	4.6	36.5	5.6	39.9	6.0	31.1	5.8	32.4	7.8
Mar-2013	40.8	0.0	28.5	5.8	39.3	12.1	23.4	8.3	34.9	10.5	34.7	10.7	34.3	10.7	27.7	10.4	29.9	12.3
Apr-2013	35.1	6.3	22.0	10.2	32.6	15.2	22.5	11.4	27.1	13.8	28.4	14.3	25.6	13.5	22.3	13.6	26.2	14.7

Average temperature: website of the Meteorological Agency (<http://www.data.jma.go.jp/obd/stats/etrn/index.php>)

Electric Power Consumption by Office Tenants

Period January 2010 – April 2013 (monthly data)

Subject data Of the office-use tenants occupying the office buildings around Japan under management by Xymax Group, the valid data (roughly 300 buildings, 3,000 tenants) was used as the sample data for this study.

Calculation Method

- 1) Calculate the monthly electric power consumption in kilowatt-hour (kWh) by tenant.
- 2) Adjust the outcome in 1) based on the ordinary business days of the week (Monday-Friday).
- 3) Calculate the electric power consumption per *tsubo* (approx. 3.3 sq m) by dividing the outcome in 2) by the rentable area of the tenant space.
- 4) Average the outcome in 3) by the areas covered by each electric power company.

Notes

- Uses other than office use, such as retail, warehouse, and computer room are excluded from the subject data.
- Tenants in buildings with central air conditioning or gas heat pump where separate calculation of the energy use by tenant is impossible are excluded from the subject data.
- The month in the data represents the month the electric power meter is read, usually on 20th of each month.
- Extraordinary amounts (too high, too low) are identified as outlier and excluded from the subject data.
- The number of subject tenants varies every month as tenants move in and out.