

Energy Consumption and Energy Cost in Office Buildings (December 2018)

Cost rises along with a rise in unit price while energy consumption declines

May 15, 2019

Xymax Real Estate Institute has been studying the energy consumption and energy cost of office buildings in the Greater Tokyo area on a continuous basis. The results for the period between January 2010 and December 2017 were released in June 2018. This report covers the results for the period ending December 2018.

Energy consumption and energy cost are converted into indices, with figures as of December 2010 being 100.

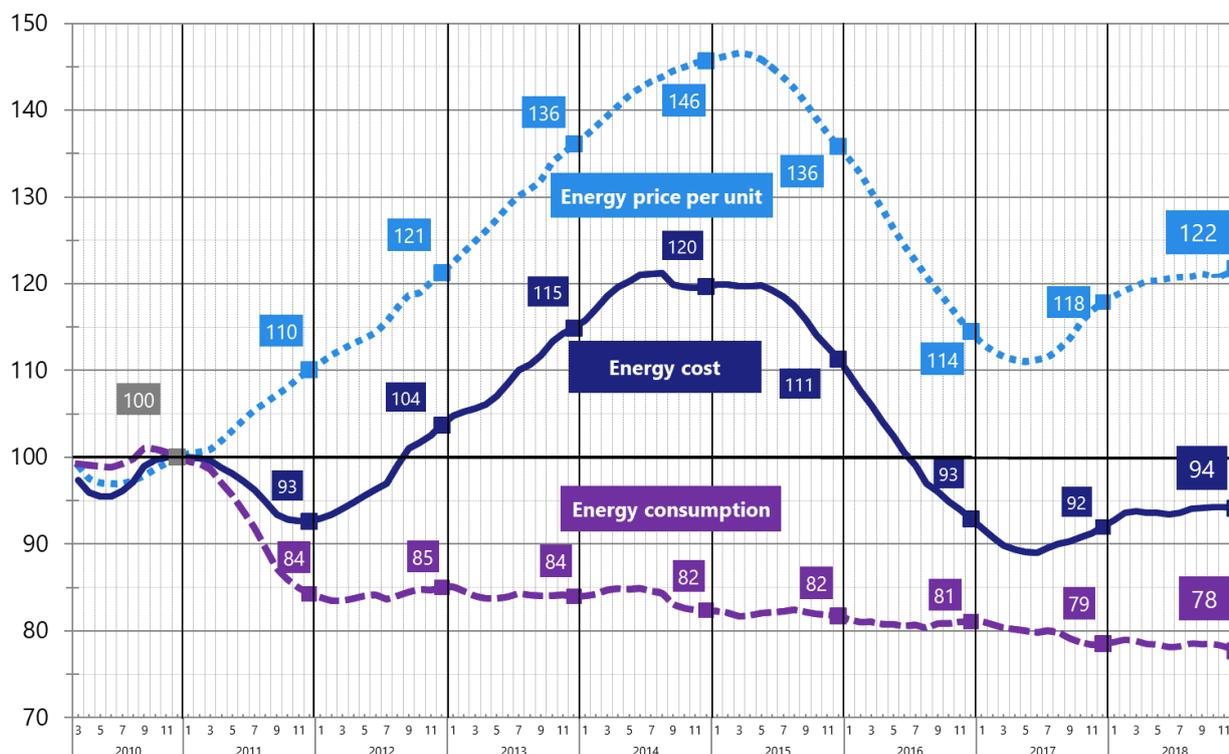
Summary of Survey Results

- Energy Consumption
1 point down from the previous survey (December 2017)
- Energy Price per Unit
4 points up from the previous survey (December 2017)
- Energy Cost
2 points up from the previous survey (December 2017)

1. Office Building Energy Consumption & Cost (12-Month Average)

Figure 1 shows the 12-month moving average of energy consumption, price per unit and cost. The energy price per unit (dotted line) rose 4 points from the previous survey, while energy consumption (dashed line) dropped 1 point. Energy cost (solid line) rose 2 points.

Figure 1: 12-Month Average Energy Consumption / Price per Unit / Cost



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2. Energy Consumption, Price per Unit, Cost (Annual Average)

Figure 2 indicates the trend of energy consumption volume. The average for 2018 was 128.9 MJ/sqm/month (1,546 MJ/sqm/year), down approximately 22% from 2010. Compared to 2017, consumption decreased by 16 MJ/sqm/year (approx. 1%).

Figure 2: Energy Consumption (MJ/sqm/month)

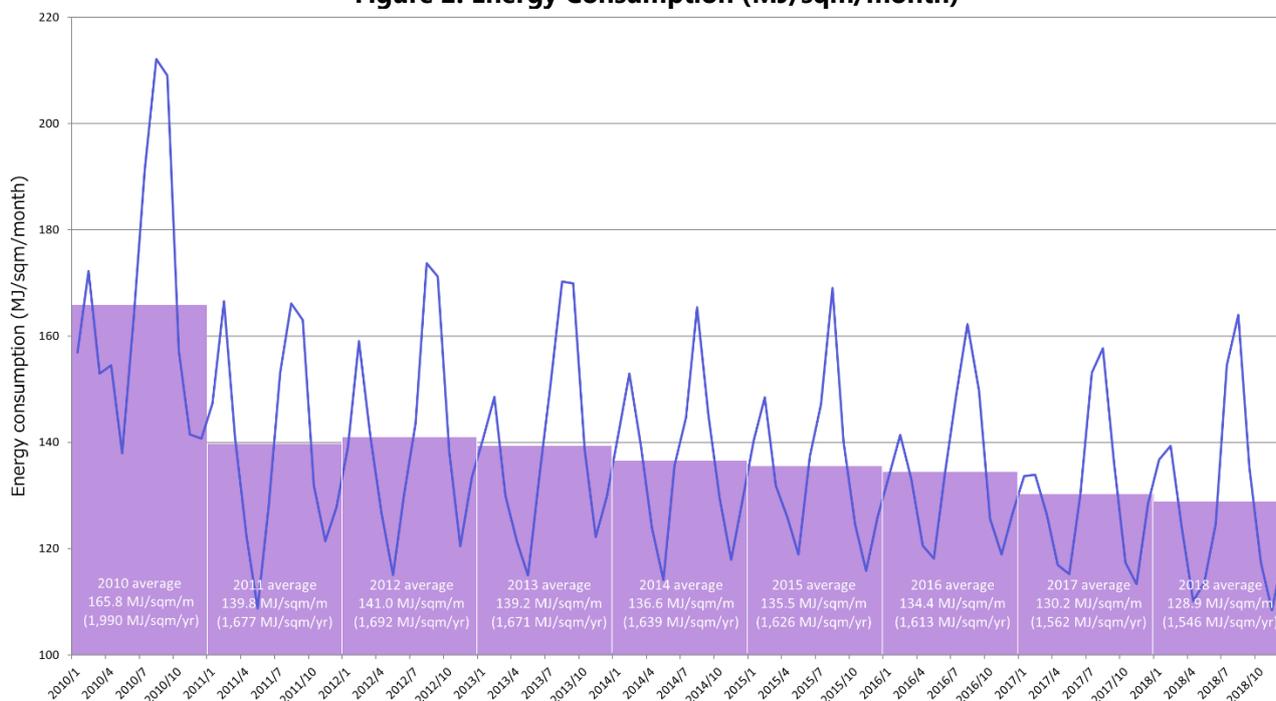
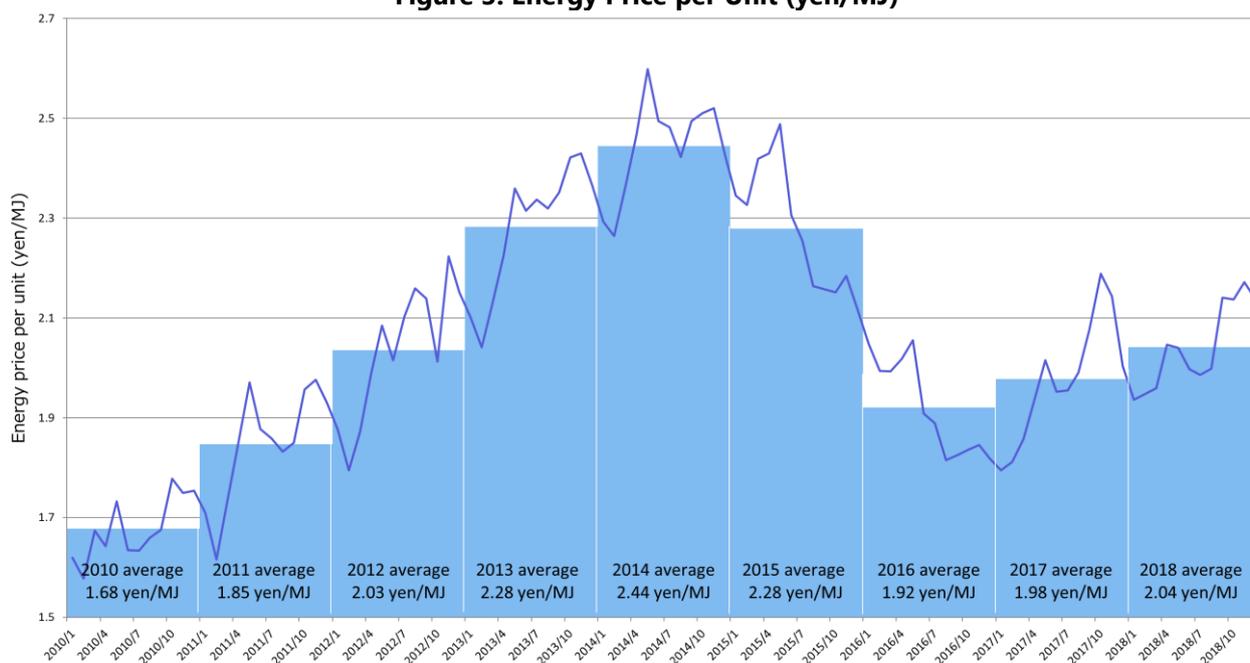


Figure 3 shows the trend of energy price per unit. After rising continuously since the start of the survey in 2010 until 2014, unit price started to decline in 2015 but turned upward again in 2017. The rising trend has continued in 2018.

Figure 3: Energy Price per Unit (yen/MJ)

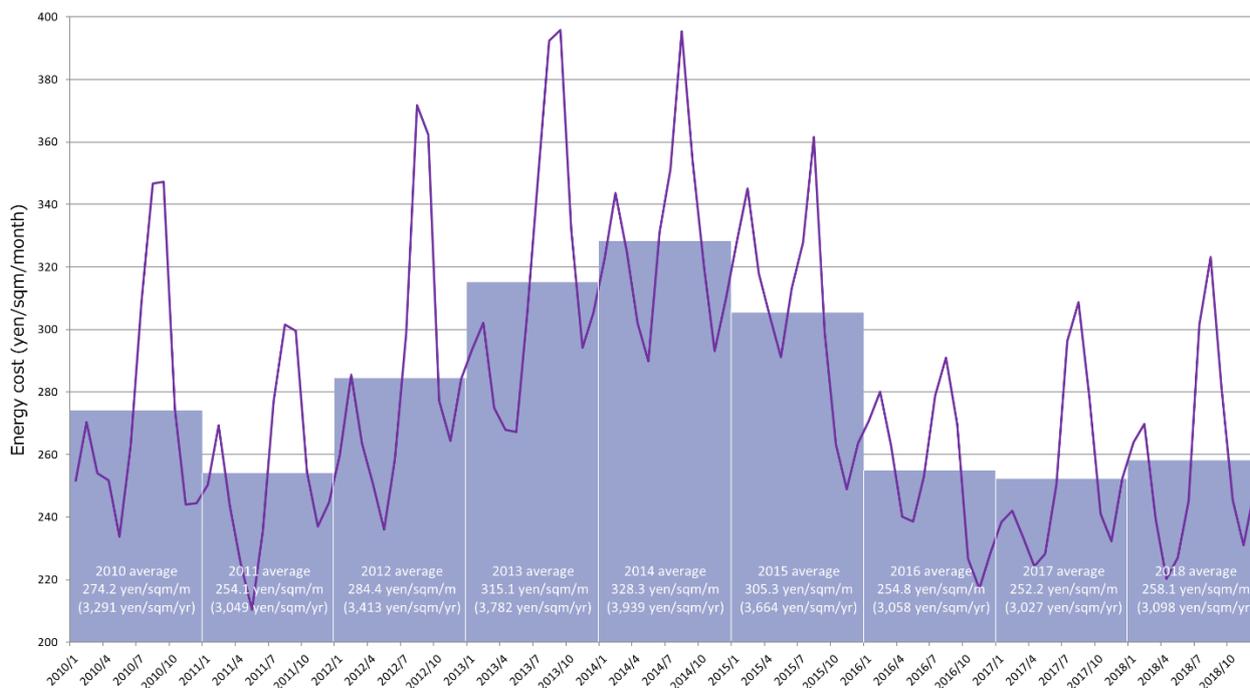


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Figure 4 shows energy cost. The rising trend since after the Great East Japan Earthquake turned downward in 2015 but resumed its upward trend in 2018.

Figure 4: Energy Cost (yen/sqm/month)



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Survey Overview

Period	April 2009 – December 2018 (117 months)
Targets	Approx. 100 typical tenant-occupied office buildings in Greater Tokyo managed by the Xymax Group from which we were able to obtain valid data.
Calculation method	<p>A. Monthly energy consumption, price per unit and cost</p> <ol style="list-style-type: none"> 1) Aggregate the consumption volume of and cost paid (excluding tax) for electricity, gas and heat of each building. 2) Convert the consumption volume of 1 above into mega joules (MJ) (primary energy volume) based on the following coefficients and sum up the results. Electricity: 9.76 MJ/kWh City gas: 45 MJ/cubic meters Cold/hot water, steam: 1.36MJ/MJ 3) Energy consumption (MJ/sqm/month) ⇒ Divide the total consumption volume calculated in 2 above by gross floor area (excl. vacant space) Energy price per unit (yen/MJ) ⇒ Divide the total cost paid calculated in 1 above by the total consumption volume calculated in 2 above. Energy cost (yen/sqm/month) ⇒ Divide the total cost paid calculated in 1 above by gross floor area (excl. vacant space) 4) Calculate the average value of the survey targets for each of the items derived in 3 above. <p>B. 12-month average</p> <ol style="list-style-type: none"> 1) Calculate the 12-month average of consumption, unit price and cost obtained in A for each month. 2) Convert the figures into indices with December 2010 = 100.
Remarks	<p>“Month” in this report is based on the date of the meter reading, which differs by building and by energy supplier.</p> <p>To ensure continuity and accuracy of the data, the gross floor area used in this survey excludes vacant space.</p>

*Please refer to *Energy Consumption and Energy Cost in Office Buildings (December 2017)* released on June 6, 2018 for the previous survey. https://www.xymax.co.jp/english/news_research/?type=research

Contact for inquiries concerning this report

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