Operational costs in Sweden

Jakob Engardt, 2011-01-17

Operational costs

In Sweden, the property owner are accountable for all the operational costs to our tenants. The housing tenant pays rent including operational costs. We cannot negotiate directly with a housing tenant about the rent; therefore, we negotiate with the tenant´s association about rental for housing tenants each year. It is different for local tenants. With them we negotiate directly. And it differs from time to time about what is including in the rent.
It is very important to have good control of operating expenses. It is important to have as low operating costs as possible without compromising the quality for our tenants.

With the help of key ratios, we can monitor our costs compared with other property owners and also against our own properties within Akelius. We also compare our key ratios with REPAB and SABO. Their mission is to gather information from property owners about rents, costs and maintenance costs and compile it into tables.

One can measure key ratios in several ways, For example:

Cost ratios, for example €/m^2 BOA.
Quantitative indicators, such as kWh/m^2 BRA.
Qualitative indicators such as number of errors / apartment and year.

BOA is residential apartments surface area.
BRA is defined as the inner area restricted by the enclosing walls inside.

Distinctions between operational costs, maintenance and investment

Investments are associated with actions that bring new and thus raising the standard of the property. An example of an investment is a renovated and better equipped bathroom.

Most technical systems in the building wear out. There may be climatic, mechanical or human wear and tear sooner or later, creating the need for renewal to the original standard. These measures are **maintenance** measures, if implemented as a preventive measure before the error or function deficiency occurs. To emphasize the requirements for inspection and planning it is called the planned maintenance.

If the maintenance is being carried out only after the error occurred, called the measures in place repairs and placed under **operational costs**. The operational costs are characterized by the word suitability. This means that the operating business should ensure that the rental item is serviceable as the lease requires. Therefore, among the operational functions are servicing and maintenance tasks. They are necessary to ensure that the technical systems have the requisite reliability and for it to have clean and tidy public areas. The operational costs also include the supply of heat, water and electricity.

Operating costs can be allocated as follows:

- Media Supply (heat, common electricity, water)
  Media supply covers costs for the purchase of oil, electricity and charges for water and sewage.

- Sanitation
  Covering the costs of refuse collection

- Property Maintenance, supervision and maintenance and repairs
  Includes overview and management of buildings and installations to a property and the replacement or supply of consumables.
  The term includes actions carried out at least once a year and aims to maintain the building's function.
  It includes repairs to buildings caused by unforeseen events that cannot be attributed to the supervision and care or scheduled maintenance. Repairs include measures such as damage, deductibles, defects in workmanship or defects in materials and equipment.

- Cleaning
  Includes cleaning of stairwell, operating rooms, and private spaces.

- Exterior property maintenance
  Includes overview and management of the land on a property and the replacement or supply of consumables. The term includes actions carried out at least once a year and aims to maintain the plot function.

- Property Insurance
  The insurance includes insurance costs for both building and land. Only the cost of premiums is included. Property Insurance covers compensation for water, fire and burglary. In addition, the property owner's insurance third party liability.

- Service Agreement

- Administration, local governance, joint management
  Covering the costs of managing the administration, staff costs for administrative staff, office costs, etc.

What are we doing to reduce operating costs

In order to ensure that operating costs are as good as they can be, we focus on high costs in comparison to key ratios. We must analyze which operating costs are too high compared with our own key figures and those that are too high compared with, for example REPAB ratios. Then we perform an analysis of a specific action.
After the analysis we carry out a net present value calculation of this measure to see if it is an interesting investment that can lower the operating costs. If the net present value calculation indicates that it is a viable investment, then we decide to implement the investment.

Case 1

In 2009 we noted that we had excessive total electricity costs in Valen 1 in Täby. It was 5 € / m2 BRA. It is a house built at the beginning of 1980 with mechanical ventilation with heat recovery. We analyzed why costs were excessive and found that we could make savings if we replaced all the lights in the stairway to the new presence controlled flourescent lighting by 10% due to light, a total of 328 luminares. Then we made a present value calculation on this. Valen 1 is a real estate of 20002 m^2 and 336 apartments.

Analysis

Valen 1, Presence-driven stairwell lighting.
Värmevägen 2-10 is identical with dark staircase and balconies. Åkerbyvägen 1-3, in addition to the stairways it also has a corridor on the ground floor. On each landing, there are four fluorescent lamps and a fixture in the open stairwells each of varying appearance/age and quality. The burn time is 24 hours/day. In the elevator there is a fluorescent fixture that is retained. Service life is 15 years but the actual life expectancy is longer. Because of the heat in the fixture and aging parts it is sometimes impossible to replace lamps without replacing the fixture. Or if it breaks and then you can not get hold of spare parts. The need to change the fixtures will increase over time.

Existing plant:
Light fittings x 328 with 2 x 18 W fluorescent +1 drossel 14 W results in 394 kWh/day = 143,664 kWh/year
(328*50*365*24=143,664,000)
Total Energy 143,664 kWh/year.

Controlled lighting system:
328 luminaires with 2 x 14 W HFD by 10% due to light + 1 drossel 5 W, results in 7.8 W 22 hours/day= 20,544 kWh/year
(328*7.8*365*22=20,543,952)
328 luminaires with 2 14 W HFD 100% + 1 drossel 5 W
2 hours/day=7,902 kWh/year
(328*33*365*2=7901520)=7,902 kWh
Total Energy 28,446 kWh/year.

Estimated price for electricity: 13 cent/kWh

Estimated annual savings:
(143,664-28,446) kWh/year*13 cents/kWh = 14,978 €

Net present value calculation

Questions.

1. What is the Net present value if you calculate at a rate of interest of 6%?
2. How much will you save in €/m^2 BRA and by how many percent will we lower the electricity cost for Valen 1?

Answers with explanations

1.
The formula to calculate the discount factor in this case is:

$$DF=1/r-1/r\ (1+r)^n$$

DF=1/0.06-1/0.06(1+0.06)^15=9.712

The formula for calculating present value in this case is:

$$PV=C*1/r-1/r\ (1+r)^n=C*DF$$

C is the annual savings.

PV=14,978 *9.712= 145,466 €

All savings have now been converted till today; this is the present value of 15 years of savings. Now we need only withdraw the investment to see if it is a profitable investment.

The formula to calculate the net present value is:

$$NPV=C_0+PV$$

C_0 is the Investment

NPV=-59,000+145,466 =86,466 €

An investment is profitable if investment income is positive. So this investment is a good investment.

2.
We will annually save:

14,978 /20,002=0.75 €/m^2 BRA

and we will lower the electricity cost by:

0.75/5=15.0 %

Operational costs in Sweden, Group work

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Case 2, Group work

Lowering electricity costs, Analysis and net present value calculation.

Prerequisites:

Replacing old stairwell lighting to modern presence-controlled lighting.

Old stairwell lighting:

283 light fittings with 2 x 24 Watt fluorescent lamps + 1 drossel 14 Watt. Burn time 24 hours a day.

New Controlled lighting system:

283 luminaries with 2 x 15 Watt with 10% due to light + 1 drossel 5 Watt. Burn time 20 hours a day.

The same 283 luminaries with 2 x 15 Watt 100% + 1 drossel 5 Watt. Burn time 4 hours a day.

Electricity price: 13 cent /kWh.
Investment price for the new Controlled lightning system is 56,000 €.
Life expectancy: 20 years.
Rate of interest:6 %
BOA: 26,012 m^2
BRA: 29,661 m^2

Questions.

(Questions 1-3 is about replacing old stairwell lighting to modern presence-controlled lighting)

1. How much is the estimated annual savings in € if we change to the new controlled lighting system?
2. What is the net present value of this investment?
3. How much will you save in €/m^2 BOA?
4. What should Akelius in Sweden do to lower operating costs for heating, water and electricity whilst retaining the same or even improving the standard. Suggest concrete proposals and how shall we work with our systems and key-ratios.

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Case 2, Group work

Lowering electricity costs, Analysis and net present value calculation.

Answers with explanations

Answer question 1.
Existing plant:
283 x light fittings with 2 x 24 W fluorescent +1drossel 14 watts
(283*62*365*20=128,085,800)
Total Energy 128,086 kWh/year.

Controlled lighting system:
283 luminaries with 2 x 15 W HFD by 10% due to light + 1 drossel 5 W 20 hours/day
(283*8*365*20=16,527,200)=16,527 kWh
283 luminaries with 2 x 15 W HFD 100% + 1 drossel 5 Watt 4 hours/day
(283*35*365*4=14,461,300)=14,461 kWh
Total Energy 16,527+14,461=30,988 kWh/year.

(128,086-30,988)*0.13=12,622 €

The annual savings are 12,622 €/year

Answer question 2.
The formula to calculate the discount factor in this case is:

$$DF=1/r-1/r\ (1+r)^n$$

DF=1/0.06-1/0.06(1+0.06)^20=11.47

The formula for calculating present value in this case is:

$$PV=C*1/r-1/r\ (1+r)^n=C*DF$$

C is the annual savings.

PV=12,622*11.47= 144,774 €

This is the present value of 20 years of savings.

The formula to calculate the net present value is:

$$NPV=C_0+PV$$

C_0 is the Investment

$$NPV=-56{,}000+144{,}774=88{,}774\ €$$

Answer question 3.

You will save:

$$12{,}622/26{,}012 = 0.49\ €/m^2$$