

ANALYSIS

TEMPERATURES CHOSEN BY TENANTS WITH INDIVIDUAL METERING AND BILLING FOR HEATING

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MAGNUS WAHMAN, MATTON COLLECTION

Higher temperature in multi apartment buildings after introduction of individual metering and billing

Statistics from seven public housing companies using individual metering and billing for heating in 7,865 apartments in total in Sweden indicate that most residents in these buildings opt for an indoor temperature of around 21–22°C. A few residents choose a lower temperature and a few choose a higher temperature. On average, tenants choose 21.7°C. This is slightly higher than the temperature of 20–21°C supplied in the buildings of property owners without individual metering and billing for heating.

The purpose of this report is to investigate what temperature tenants actually choose when given the opportunity to make their own decisions about the temperature through the individual metering and billing of heating.

Article 9 of Directive 2012/27/EU of the European Parliament and of the Council on energy efficiency ('Energy Efficiency Directive') imposes a requirement for the individual metering and billing of heating in apartments. However,

this requirement only applies if it is technically possible and cost-effective. A precondition for the individual metering and billing of heating being cost-effective while resulting in energy savings is that a clear majority of residents choose a lower temperature in their apartments than what they would have had without individual metering and billing.

Rents in Sweden include heating

Apartment rents in Sweden include heating, with very few exceptions. The public housing companies try to

More information
Therese Rydstedt
08-406 55 16
therese.rydstedt@sabo.se
or **Per Holm**
08-4065521
per.holm@sabo.se

SABO SWEDISH ASSOCIATION OF PUBLIC HOUSING COMPANIES

maintain the same temperature for all apartments in their property holdings (usually 20–21°C) to optimise the operation and minimise energy use. The temperature is controlled centrally in the building and residents cannot increase the temperature themselves. The Public Health Agency of Sweden recommends a permanent indoor temperature of 20–23°C for the public housing sector and 22–24°C for vulnerable groups.

The potential for the individual metering and billing of heating to generate energy savings must thus be based on the current indoor temperature provided of 20–21°C in the property holdings of the public housing sector and the recommendations of the Public Health Agency.

The report shows what temperature residents opt for in houses with comfort measurement and energy measurement. Comfort measurement means that the indoor temperature, not energy, is measured in the apartment. The purpose of comfort measuring is to give residents the opportunity to affect their costs for heating. The financial incentive for residents is the same with comfort measurement as for energy measurement, that is to say that if you choose a lower temperature in the apartment you pay less than if you choose to have a higher temperature. The business model for comfort measurement compensates for the risk that the resident opens windows to lower the temperature. In addition, customized district heating heat exchanger output temperature to the radiators is

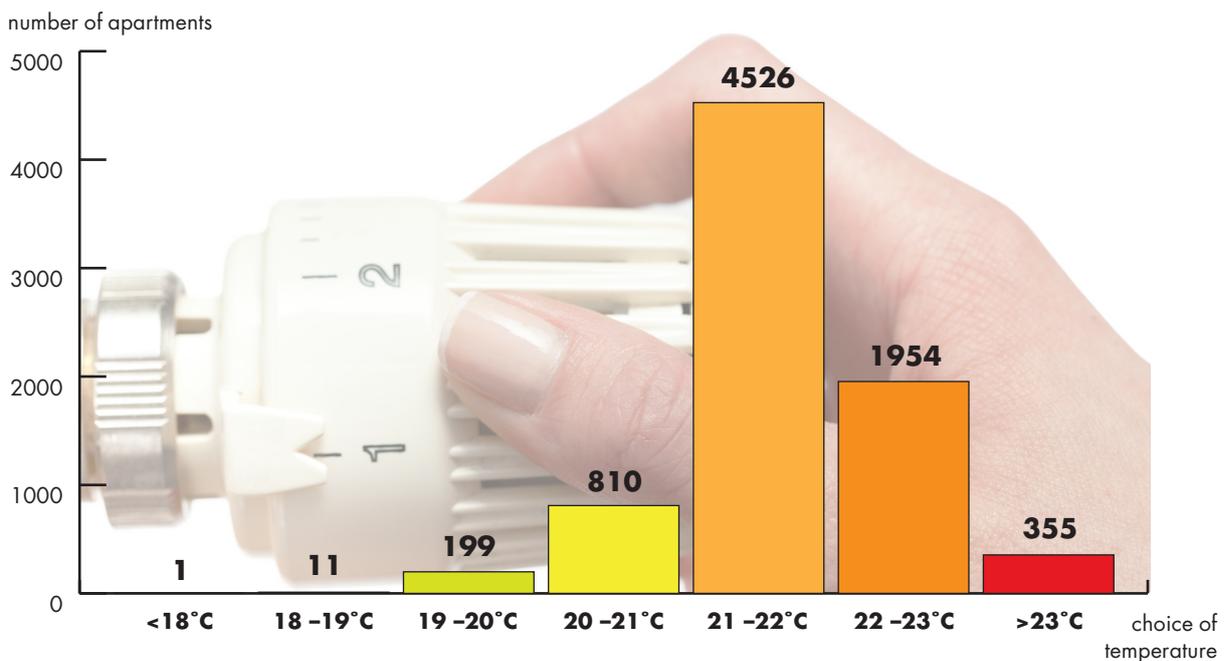
automatically adjusted at high outside temperatures and at increased solar radiation in spring and autumn. The result of this study shows what residents opt for when they receive a financial incentive. Hence, the result is therefore representative regardless of method of measurement.

SUMMARY AND CONCLUSIONS

Statistics from seven public housing companies using individual metering and billing for heating in 7,865 apartments in total in Sweden indicate that most residents in these buildings opt for an indoor temperature of around 21–22°C. A few residents choose a lower temperature and a few choose a higher temperature. On average, tenants choose 21.7°C. This is slightly higher than the temperature of 20–21°C supplied in the buildings of property owners without individual metering and billing for heating.

We may thus conclude that the individual metering and billing of heating is not cost-effective when compared with a centrally controlled temperature, and nor does it result in any improvements to energy efficiency. The reason is that only a few tenants actually opt for a temperature of less than 20–21°C. The introduction of individual metering and billing for heating in Swedish would force through unprofitable investments, increase energy use and thus counteract the purpose of the Energy Efficiency Directive.

DIAGRAM OF TENANT'S CHOICE OF TEMPERATURE WITH INDIVIDUAL METERING AND CHARGING FOR HEATING, NUMBER OF APARTMENTS



SABO has contacted member companies that have individual metering and billing for heating and collected data on tenants' choice of temperature. All responses received are presented in this report.

Familjebostäder i Göteborg

APARTMENTS WITH INDIVIDUAL METERING AND BILLING FOR HEATING AND MEASUREMENT METHOD

This company has been using the energy metering measurement method since 2011 in 74 apartments. The apartments have had temperature meters since 2015. However, charging for heating has recently been discontinued.

BUSINESS MODEL

The rent for these apartments does not include any heating. Heating input is metered and compiled every month and the tenant is charged SEK 0.74 per kWh used (2015 price). The price per kWh corresponded to the average actual budgeted cost for the year in question.

CHOICES MADE BY TENANTS

The average temperature in those buildings where the company had individual metering and charging for heating was 22.5°C for the period April 2015 up to and including March 2016. The following table indicates how many apartments chose what temperature.

FACTS

Number of apartments	18 500
Annual turnover	1 267 Mkr
Number of employees	250
Website	www.familjebostader.se

Contact details

Anna Staxäng, hållbarhetsstrateg
tel: +46 31-731 67 71,
anna.staxang@familjebostader.se



TABLE OF TEMPERATURES CHOSEN BY TENANTS

Temperature (°C)	Number of apartments	Apartments (%)
<18	0	0
18-<19	0	0
19-<20	0	0
20-<21	0	0
21-<22	11	16
22-23	49	71
>23	9	13

Average annual temperature: 22,5 Total with comfort metering: 69

Helsingborgshem

APARTMENTS WITH INDIVIDUAL METERING AND BILLING FOR HEATING AND MEASUREMENT METHOD

This company has been using the comfort metering measurement method since 2011, in 3,674 apartments with comfort metering means measuring temperature in each apartment.

BUSINESS MODEL

Tenants can choose a temperature of between 18 and 23°C. The rent includes 21°C. If the tenant decides to increase the temperature in the apartment to above 21°C, this entails a cost of SEK 45 per degree and month for a normal-sized three-room apartment (plus kitchen) of 75 m². If the tenant decides to reduce their temperature instead, a deduction is made from the rent by the same amount. The temperature is automatically set at 21°C if it falls below 18°C. This is to maintain a good climate for the tenants and the building. Charges for heating are made between October and April. No charges are made when the outdoor temperature is more than 12°C.

CHOICES MADE BY TENANTS

The average temperature in those buildings where Helsingborgshem has individual metering and billing for heating was 21.7°C in 2014. The following table indicates how many apartments chose what temperature.

FACTS

Number of apartments	12 000
Annual turnover	893 Mkr
Number of employees	200
Website	www.helsingborgshem.se

Contact details

Britt Bengtsson, energicontroller,
tel +46 42-20 82 29,
Britt.Bengtsson@helsingborgshem.se



TABLE OF TEMPERATURES CHOSEN BY TENANTS

Temperature (°C)	Number of apartments	Apartments (%)
<18	1	0,03
18-<19	6	0,2
19-<20	93	3
20-<21	564	15
21-<22	1 567	43
22-23	1 185	32
>23	258	7

Average annual temperature: 21,7 Total with comfort metering: 3674

Höganäshem

APARTMENTS WITH INDIVIDUAL METERING AND BILLING FOR HEATING AND MEASUREMENT METHOD

This company has been using the comfort metering measurement method since 2011, in 35 apartments.

BUSINESS MODEL

The tenants can choose a temperature of between 18-23°C. The rent includes 21°C. If the tenant decides to increase the temperature in the apartment to above 21°C, this entails a cost of SEK 55 per degree and month for a normal-sized three-room apartment (plus kitchen) of 75 m². If the tenant decides to reduce their temperature instead, a deduction is made from the rent by the same amount. If the temperature falls below 18°C the temperature is calculated as 18°C. Charges for heating are made between October and April. No charges are made when the outdoor temperature is more than 12°C.

CHOICES MADE BY TENANTS

The average temperature in those buildings where Höganäshem has individual metering and billing for heating was 21.7°C in 2015. The following table indicates how many apartments chose what temperature.

FACTS

Number of apartments	1 400
Annual turnover	108 Mkr
Number of employees	14
Website	www.hoganashem.se

Contact details

Ludvig Ekman, driftadministratör,
tel: +46 42-33 78 81,
ludvig.ekman@hoganashem.se



TABLE OF TEMPERATURES CHOSEN BY TENANTS

Temperature (°C)	Number of apartments	Apartments (%)
<18	0	0
18-<19	0	0
19-<20	3	8
20-<21	5	14
21-<22	12	34
22-23	13	37
>23	2	5

Average annual temperature: 21,7 Total with comfort metering: 35

Kalmarhem

APARTMENTS WITH INDIVIDUAL METERING AND BILLING FOR HEATING AND MEASUREMENT METHOD

This company has been using the comfort metering measurement method since 2000, in 932 apartments.

BUSINESS MODEL

Tenants can choose a temperature of between 18 and 23°C. The rent includes 21°C. If the tenant decides to increase the temperature in the apartment to above 21°C, this entails a cost of SEK 55 per degree and month for a normal-sized three-room apartment (plus kitchen) of 75 m². If the tenant decides to reduce their temperature instead, a deduction is made from the rent by the same amount. Charges for heating are made between September and April. No charges are made when the outdoor temperature is more than 12°C.

CHOICES MADE BY TENANTS

The average temperature in those buildings where Kalmarhem has individual metering and billing for heating was 21.7°C in 2015. The following table indicates how many apartments chose what temperature.

FACTS

Number of apartments 4 700
Annual turnover 315 Mkr
Number of employees 48
Website www.kalmarhem.se

Contact details

Thom Renström, energicontroller,
 tel: +46 480-44 75 30,
thom.renstrom@kalmarhem.se



TABLE OF TEMPERATURES CHOSEN BY TENANTS

Temperature (°C)	Number of apartments	Apartments (%)
<18	0	0
18-<19	3	0,3
19-<20	33	4
20-<21	140	15
21-<22	352	38
22-23	326	35
>23	69	7

Average annual temperature: 21,7 Total with comfort metering: 932

Lunds Kommuns Fastighets AB

APARTMENTS WITH INDIVIDUAL METERING AND BILLING FOR HEATING AND MEASUREMENT METHOD

This company has been using the comfort metering measurement method since 2004, in 3,000 apartments.

BUSINESS MODEL

The tenants can choose a temperature of between 18 and 24°C. The rent includes 21°C. If the tenant decides to increase the temperature in the apartment to above 21°C, this entails a cost of just over SEK 50 per degree and month for a normal-sized three-room apartment (plus kitchen) of 75 m². If the tenant decides to reduce their temperature instead, a deduction is made from the rent by the same amount. Temperatures below 18°C are calculated as 18°C. Temperatures below 16°C are charged as 24°C to avoid apartments cooling down. Charges for heating are made between October and April. No charges are made when the outdoor temperature is more than 12°C.

CHOICES MADE BY TENANTS

The average temperature in those buildings where LKF has individual metering and billing for heating was 21.5°C for the period January 2015 – March 2016. The following table indicates how many apartments chose what temperature.

FACTS

Number of apartments	9 000
Annual turnover	885 Mkr
Number of employees	204
Website	www.lkf.se

Contact details

Bertil Lundström, teknisk chef,
tel: +46 46-35 85 53,
bertil.lundstrom@lkf.se



TABLE OF TEMPERATURES CHOSEN BY TENANTS

Temperature (°C)	Number of apartments	Apartments (%)
<18	0	0
18-<19	2	0,1
19-<20	62	2
20-<21	88	3
21-<22	2 535	84
22-23	307	10
>23	6	0,2

Average annual temperature: 21,5 Total with comfort metering: 3 000

Uddevallahem

APARTMENTS WITH INDIVIDUAL METERING AND BILLING FOR HEATING AND MEASUREMENT METHOD

The company has been using the comfort metering measurement method since 2005, in 32 apartments.

BUSINESS MODEL

The tenants can choose a temperature of between 18 and 23°C. The rent includes 21° C. If the tenant decides to increase the temperature in the apartment to above 21°C, this entails a cost of SEK 45 per degree and month for a normal-sized three-room apartment (plus kitchen) of 75 m². If the tenant decides to reduce their temperature instead, a deduction is made from the rent by the same amount. The temperature is automatically set at 21°C if it falls below 18°C. This is to maintain a good climate for the tenants and the building. Charges for heating are made between October and April. No charges are made when the outdoor temperature is more than 12°C.

CHOICES MADE BY TENANTS

The average temperature in those buildings where Uddevallahem has individual metering and billing for heating was 21.5 degrees in 2015. The following table indicates how many apartments chose what temperature.

FACTS

Number of apartments 4 300
Annual turnover 290 Mkr
Number of employees 81
Website www.uddevallahem.se

Contact details

Andreas Skålegård, energiingenjör,
 tel +46 522-65 35 00,
andreas.skalegard@uddevallahem.se



TABLE OF TEMPERATURES CHOSEN BY TENANTS

Temperature (°C)	Number of apartments	Apartments (%)
<18	0	0
18-<19	0	0
19-<20	2	6
20-<21	8	25
21-<22	10	31
22-23	11	34
>23	1	3

Average annual temperature: 21,5 Total with comfort metering: 32

Övikshem

APARTMENTS WITH INDIVIDUAL METERING AND BILLING FOR HEATING AND MEASUREMENT METHOD

This company has been using the comfort metering measurement method since 2010, in 123 apartments.

BUSINESS MODEL

The tenants can choose a temperature of between 19 and 23°C. The rent includes 21°C. If the tenant decides to increase the temperature in the apartment to above 21°C, this entails a cost of SEK 38 per degree and month for a normal-sized three-room apartment (plus kitchen) of 75 m². If the tenant decides to reduce their temperature instead (though no lower than 19°C) a deduction is made from the rent by the same amount. Charges for heating are made between October and April. No charges are made when the outdoor temperature is more than 14°C.

CHOICES MADE BY TENANTS

The average temperature in those buildings where the company has individual metering and billing for heating was 22.0°C for October 2015 to March 2016. The following table indicates how many apartments chose what temperature.

FACTS

Number of apartments	3 134
Annual turnover	227 Mkr
Number of employees	52
Website	www.ovikshem.se

Contact details

Göran Söderlund, energi- och miljöansvarig,
tel: +46 70-191 98 72,
goran.soderlund@ovikshem.se



TABLE OF TEMPERATURES CHOSEN BY TENANTS

Temperature (°C)	Number of apartments	Apartments (%)
<18	0	0
18-<19	0	0
19-<20	6	5
20-<21	5	4
21-<22	39	32
22-23	63	51
>23	10	8

Average annual temperature: 22,0 Total with comfort metering: 123

SABO SVERIGES ALLMÄNNYTTIGA BOSTADSFÖRETAG
Besöksadress Drottninggatan 29, Box 474, 101 29 Stockholm
SABO Tel 08-406 55 00, hemsida www.sabo.se, e-post info@sabo.se