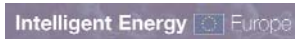


## **HEATING - the largest part of your home's energy bill**

10 ways to reduce your heat consumption  
without giving up on comfort



## Acknowledgements

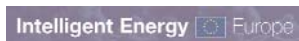
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For more information about the ISEES project  
see the website [www.isees.info](http://www.isees.info)



## 9. Use the warmth of the sun as well as people and appliances to help heat your room

The living room is generally used the most, and thus needs to be heated more. The bedrooms, on the other hand, usually need less direct heating or even none at all.

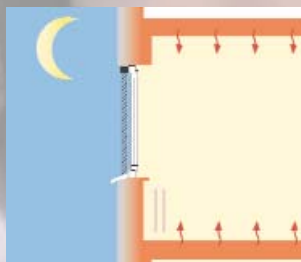
Where possible, the living room should face south and benefit from the light and warmth of the sun's rays.

Every person in a room gives off warmth. The more people in a room, the lower you need set the thermostat. When several people

are in the room, turn the heating down or off before the room temperature reaches uncomfortable levels. Electrical appliances (the stove, refrigerator, television, computer and lamps) also emit heat. Where practical, their normal everyday use can also contribute to a room's comfort and reduce the need for direct heating. The kitchen, for example, may need no direct heating at all - normally, the heat emitted from the stove, refrigerator and other appliances is enough.

## 10. Close exterior shutters and blinds at night

Exterior shutters and blinds and even curtains can help to reduce the heat loss around the windows. During the winter, these should be opened at sunrise and closed at sunset. This way you use the sun to help warm the rooms during the day, while preventing the escape of heat during the night.



On the average heating accounts for some 70% of the energy used in the home. As part of the ISEES project, user behaviour related to heat use was monitored over the 2006-07 heating period in 15 apartments in 5 countries - namely Bulgaria, Czech Republic, Slovakia, Lithuania and Great Britain. In each apartment indoor temperatures, window opening and heat consumption were tracked on a daily basis and then patterns identified. These measurements, combined with tenant interviews, revealed a considerable potential for savings even among the most conscientious heat consumers.

The quality of the building generally plays the greatest role in home heating requirements. While window replacement and insulation are proven methods of reducing energy needs in older buildings, the coordination and financing of refurbishment are often difficult barriers. Conscientious heat consumption is worthwhile - in older buildings before refurbishment, but even more so in renovated or new buildings. Practicing conscientious behaviour has long term benefits for your household budget and for the environment.



Each of the following factors plays a role in your heat consumption - keep them in mind throughout the heating season:

### Ventilation

-reducing the heat loss through open windows

### Room Temperature

-appropriate comfort temperatures and when.

### Heat Distribution

-deciding which rooms need more warmth and which less

**Passive Heat Sources** - using the sun, people and appliances to help heat your home

### Shutters, Blinds and Curtains

- minimizing heat losses at night.

**This brochure has some simple tips and tricks how you can reduce your heating needs and energy budget while remaining warm and comfortable the whole year through.**

While air change is necessary for a healthy indoor climate, the greatest heat loss from apartments is typically from this escape of heated air..

A minimal air change is necessary for a healthy interior environment. Apart from reducing indoor odours and toxins, air change also reduces air-borne moisture - caused by cooking, baths and showers, but also from people in the flat - which can cause condensation and mould growth. Depending on the age and quality of windows, some degree of air change occurs naturally even when the windows are

closed. Where windows are older or poorly installed, this takes the form of draughts. While draughts provide air change, they typically lead to increased heat consumption for 2 reasons;

- the continuous and uncontrolled loss of heated air.
- even a small draught feels uncomfortable. You're more likely to turn up the heat.

## 1. Minimize draughts at windows wherever possible using weather-stripping or caulking.

Opening windows remains the most common method of air change in residential buildings throughout Europe. Naturally when and for how long windows are open is a matter of individual preference and schedule, but many cases of poor practice with respect to windows were evident in both the inter-

views and the measurements conducted as part of the ISEES project.

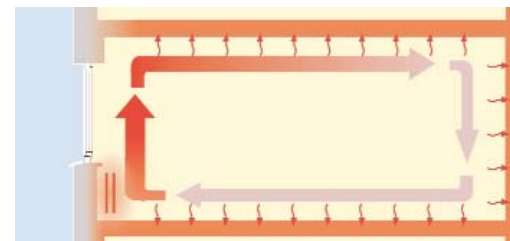
- some people slept with windows open all night (most notably in the United Kingdom and in Slovakia)
- many people aired the bedroom for an hour or more every morning

## 2. Avoid leaving windows open for long periods of time. Instead cross ventilate by opening windows and interior doors wide for only 2-5 minutes every 6-8 hours.

While all the apartments monitored by ISEES had windows on 2 sides of the building, there were few cases where windows on both sides were open at

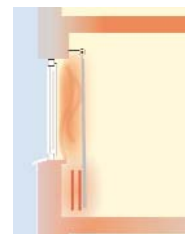
the same time and no cases where windows were normally closed with only short periods of cross ventilation every few hours.

## 8. Give your radiators room to breathe



To work effectively radiators need to generate a warm air current within the room. Air heated by the radiator should rise, move along the ceiling, drop into the

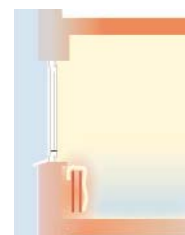
room and finally move along the floor back to the radiator. For the radiators to be effective, this room circulation must not be obstructed.



- Avoid drapes or interior blinds hanging over the radiators. Where desired, these should be located within the window alcove and above the interior window sill.



- Don't place sofas, fauteuils or other bulky furniture in front of a radiator. Keep the floor area in front of the radiator clear.

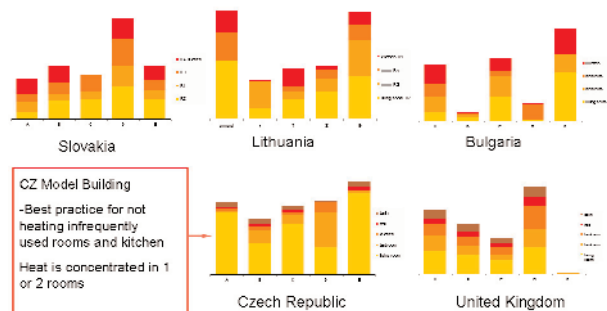


- Avoid hanging laundry on the radiators
- Avoid shelves sitting directly on the radiator.

- In addition to allowing valuable heat energy to escape, windows open a crack for long periods also create air currents which counter the effective circulation of radiator warmth. Open the windows wide for a few minutes every 6-8 hours for a quick but thorough air exchange.



February 2007 heat consumption – 5 model apartments in 5 countries



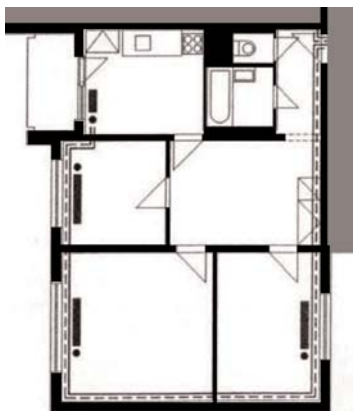
In the apartments monitored during the ISEES project heat was typically distributed evenly with respect to the size of the room. The apartments in the Czech Republic were an

exception - here most used rooms (typically living rooms) were heated more while the kitchen and less used rooms were heated little or not at all.

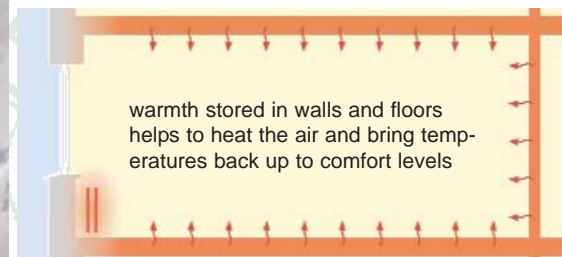
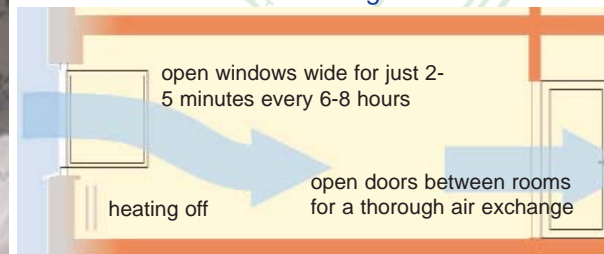
## 7. Heat where you need it - not every room equally.

Deciding how you layout and use your apartment will also effect heat consumption. Generally, the living room should be located to benefit

from the sun's warmth as well as from other heat sources. Especially in poorly insulated buildings, rooms at the outside corner of the building typically need more heat than 'internal' rooms. The 5 model apartments in Slovakia were flexible in this respect. Here most volunteers used the large central hall as the living room with rooms on all sides to buffer it from direct exposure to cold.



A thorough and quick air change ensures that the air is renewed without losing the heat stored in the walls and floors of the building.



## 3. Avoid heating when windows are open.

Ventilate the apartment before heating. If the heat is turned down at night or while you are out, ventilate first before turning up the heat. Poor practice was evident throughout the ISEES measurements;

- residents heated intensely for an hour or two in the morning before airing the rooms.
- windows were opened for long period even

while the heating was on - especially as outside temperatures became warmer in the spring.

- in the evening when many people were at home, windows were often opened to cool rooms where standard heating combined with other heat sources (people and appliances) raised room temperatures above a comfortable level.

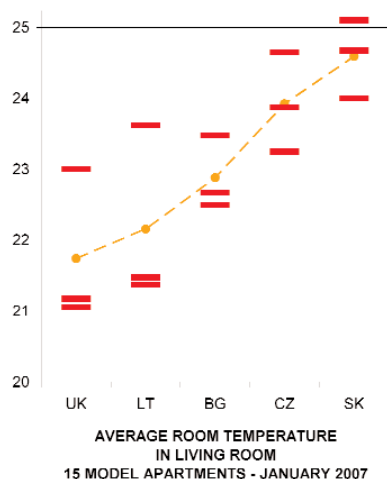
Comfort temperatures too are a matter of individual choice. While a daytime comfort temperature of 20°C is generally recommended for a healthy interior environment (21-22°C for babies and small children), ISEES measurements revealed daytime indoor tempera-

tures of 24°C and higher in all countries (less common in Bulgaria and Lithuania and more common in Great Britain, Slovakia and the Czech Republic.) In addition, measured temperatures were typically 2-4°C above what volunteers felt.

#### 4. Avoid excessive room temperatures.

Lowering your room temperature by 1°C typically brings 6% heat savings over the winter. Besides using less heat every month, you may be able to start heating later in the autumn and stop heating sooner in the spring - further increasing your savings.

Learn to predict your systems heat delivery. Intense heating helps increase room temperature quickly but often leads to quite high room temperatures. Even after the heat supply is off, the radiators continue to provide warmth. Turn off the heating before comfort temperatures are reached.



#### 5. Lower your temperature settings at night and when the apartment is empty.

Except in the UK, ISEES measurements showed little or no temperature sinking at night in the model apartments. Heat consumption was typically a little lower at night indicating reduced settings, but temperatures remained at or close to comfort temperatures.

Cooler settings at night are generally better for sleeping comfort and can help reduce heat consumption by as much as 20%.

**Reduce the thermostat setting 3-5° at night and when there is no one at home. This can be done either manually or by using the timer feature available on some heating systems.**

Generally, the heating should be turned down an hour before going to bed and up again a half-hour before rising. In the

evening, the heat stored in walls and floors is released slowly preventing a loss in comfort. The return to daytime comfort levels in the morning also requires time - not only for the room temperature to rise but also for the walls and floors to warm up again.

Keep this 'lag time' in mind not only when using the timer feature on your thermostat but also before adjusting the thermostat during the day. Turn down the heating one hour before leaving the home empty and avoid turning up the heating if you are only dropping in and leaving again. Bringing the room temperature up to a typical daytime comfort level not only requires time but substantial heat consumption - avoid it when it's not necessary.

#### 6. Put on a warm sweater and slippers

Before adjusting the thermostat to raise room temperature quickly, put on something warm instead. Especially in the UK model apartments, where heating was off for much of the day, periods of intense heating meant a comfortable temperature was

reached quickly but subsequently lead to excessively high room temperatures as the radiators continued to give off heat. The resulting uncomfortably high room temperatures were often reduced by opening windows.