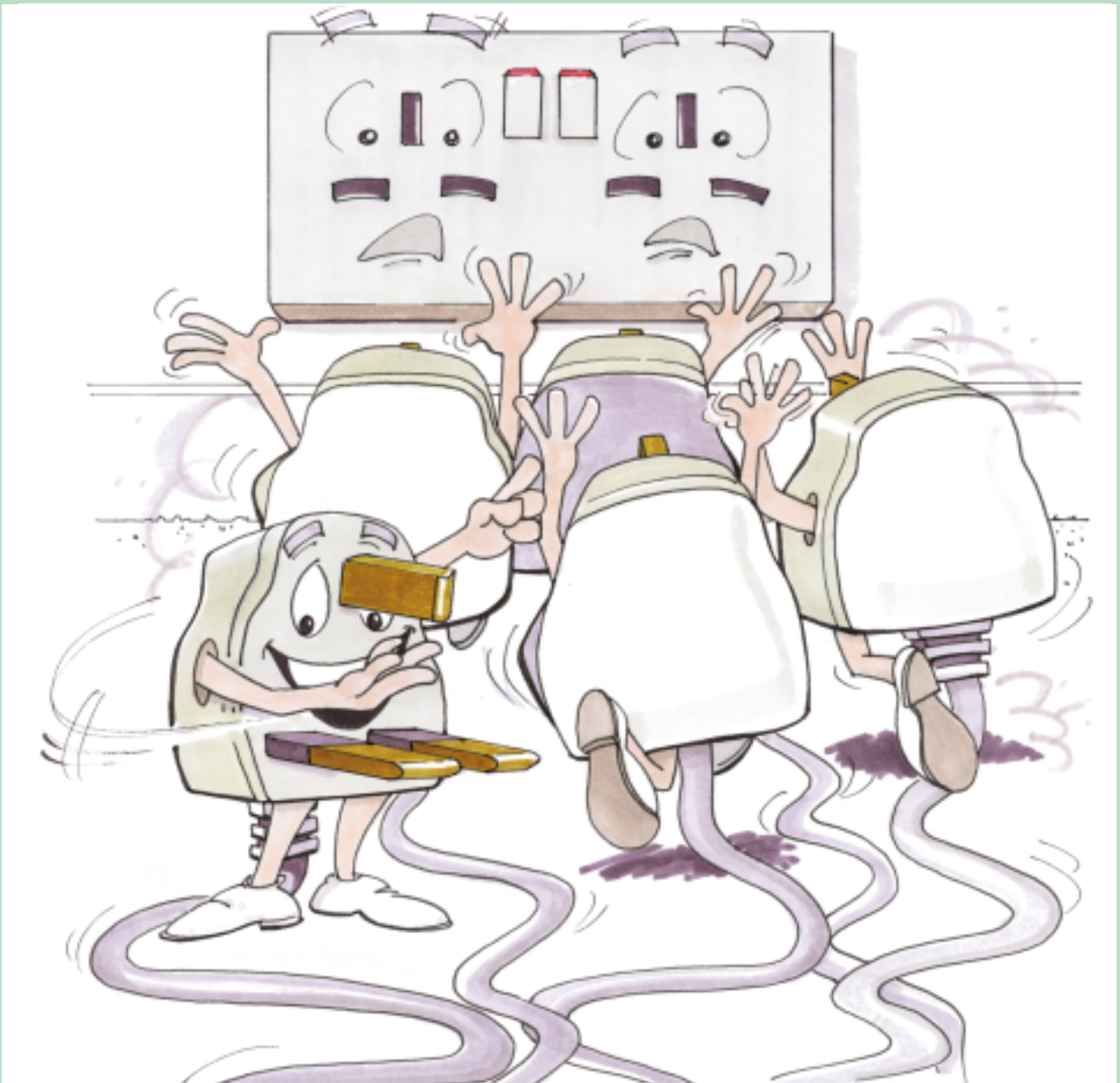




Electrical Convenience in New Build Homes Survey Report



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The Questions

In late 1998, Copper Development Association launched a survey to find out whether owners of two-year old homes were satisfied with the level of electrical convenience their homes had to offer. The housing developments surveyed were located in Hertfordshire, North London and the West Midlands and homeowners were asked the following questions:

- **Was electrical convenience an important issue when deciding to purchase your property?**
- **Had the builder installed sufficient sockets in the property to suit your requirements at the time of build?**
- **Did the builder ask if you would like extra sockets at the time of build?**

The Answers

The answers were surprising. Fewer than 30% of new home buyers considered electrical convenience a high priority at the time of purchase, and fewer than 30% were asked by the builder if the installed sockets were sufficient and suitably placed to meet their needs. In the few cases where the builder had offered to install additional sockets at the time of build, the customer had perceived the price as too high. Feedback indicates that builders charge more to install an additional socket at time of build than a contractor would charge as a retrofit.

By the time their homes were two years old, over **50%** said they did not have enough sockets to cope with the demands of modern technology and the sockets that were fitted could be better positioned! For owners of three bedroom homes, the situation is even worse. Only 20% were asked by the builder if they required more sockets, but after two years **two out of three** said they did not have enough outlets. Overall, a staggering **53%** of respondents expressed their frustration at not having sufficient socket outlets.

Why does the demand for sockets exceed the supply?

The reasons for this high level of dissatisfaction are not hard to find. The levels stipulated by the NHBC are for guidance and reflect practice at the time of publication. Meanwhile, the needs of consumers are constantly rising. The increasing ownership of satellite television receivers, personal computers, games consoles and other electronic and electrical equipment – now invariably permanently on standby to maintain tuning and time-keeping – means that many more sockets are required than previously and that the numbers will continue to increase. The result is that when one appliance is required, another has to be unplugged. Often, the socket outlets end up behind furniture making an inconvenience into a chore.

Socket outlets need to be more conveniently situated and better distributed around the house. Teenagers' bedrooms are a particular problem; most will have hi-fi systems and televisions as well as computers and electronic games, making the NHBC guidance of two single sockets look somewhat miserly.

Trailing extension leads and over-long equipment cords are both unsightly and dangerous – they are often subject to physical abuse, such as being walked on, for which they are not designed, and are frequently under carpets or out of sight so that damage goes undetected. Since the plug fuse is so rarely correctly rated, there is a high risk of fire. Where leads trail across doorways there is a serious risk of tripping. Socket outlets should be well distributed in every room so that the standard two metre long flexible cords on portable appliances do not need extending and dangerous trailing extension leads are not required. Of course, it goes without saying that two or three way adapters should **never** be used!

Many telephones now incorporate answering machines and therefore require a power supply adjacent to the telephone socket. Many other items, such as mobile phones, laptop computers and personal organisers, require frequent connection to the mains power supply for extended periods to recharge their batteries. If the number of sockets available is limited, this can become very inconvenient.

Survey Results

The survey covers two, three and four bedroom homes on mixed estates in four locations and compares the average provision with the National House Building Council (NHBC) guidance. Because each estate had a variety of styles of each size of house, the figures for each size band have been averaged. As you will see, most homes meet or exceed the NHBC guidance, but are still judged to be inadequate by their occupants. There is an obvious need for more socket outlets in new, as well as in older, homes and CDA feels sure that by raising awareness consumers will benefit.

Number of socket outlets (singles)				
	NHBC guidance	2 bedroom homes	3 bedroom homes	4 bedroom homes
Kitchen/Utility	6	6.25	6.68	8.46
Lounge + Dining room	4	5.75	6.84	10.23
Main bedroom	3	3.50	4.35	4.69
Bedroom 2	2	2.71	2.81	3.54
Bedroom 3	2	-	2.23	3.46
Bedroom 4	2	-	-	3.00
Landing/Hall	2	1.54	1.65	3.23
Percentage who thought this provision inadequate		42%	67%	43%

Table 1- Average numbers of socket outlets in two, three and four bedroom homes

Table 1 gives the average number of socket outlets provided in each size of house compared with the current NHBC guidance. In the main rooms, i.e. excluding the hall and landing, average provision is slightly above the NHBC level for the smaller sizes, while four bedroom homes exceed the minimum comfortably. (Table 3 in the appendix gives further detail).

Even so, two out of three owners of three bedroom homes and four out of ten two and four bedroom homes thought that there were too few sockets to meet their present needs. (Charts showing the response divided by size band and geographical area are given in the Appendix).

Three bedroom homes stand out as being the least satisfactory to their owners, while two and four bedroom homes have higher approval ratings. This is probably because families with children occupy most three bedroom homes; most do not have spare rooms so all their leisure activities are carried out in bedrooms or living rooms. On the other hand, four bedroom occupiers have more flexibility (and their homes tend to be built to a higher standard) while two bedroom occupiers are often couples or single people with fewer leisure demands.

The differences in perceptions in the four geographical areas can be seen in Figure 1 to Figure 3 in the Appendix.

Based on the results of this survey, CDA produced recommendations for the number of socket outlets in each room. This information was requested by the Institution of Electrical Engineers, along with recommendations from other bodies, and incorporated into the new Guidance Note 1 'Selection and Erection' provision of socket outlet recommendations.

Table 2 shows these new IEE recommendations (March 2000) compared with the current NHBC guidance (1994). The IEE recommendations are far greater than the NHBC guidance and reflect the occupiers' views of their needs. The Electrical Contractors Association (ECA) and SELECT, the equivalent organisation in Scotland, have endorsed these recommendations.

Recommended provision of socket outlets

(All socket outlets are twin)

Room	NHBC guidance*	IEE GN1 recommendation
Lounge	2	6 to 10
Dining	1	3
Kitchen	2	6 to 10
Double Bedroom	1.5	4 to 6
Single Bedroom	1	3
Bedsitter	-	4
Hall	0.5	2
Stairs/Landing	0.5	1
Loft	-	1
Study/Home office	-	6
Garage	-	2
Utility	-	2

Table 2- Recommended provision of socket outlets

*Actual recommendations are given as 'single' sockets. These are shown as doubles here to compare with the new IEE recommendations.

Why do homeowners regard the level of provision as inadequate?

Survey respondents were unanimous in asking for better provision of sockets in every room in the house, with many also requesting:

- **Dedicated sockets for kitchen appliances**
- **Sockets in non-living areas such as garages and lofts**
- **Better distribution of sockets in rooms to improve accessibility**
- **Sockets adjacent to every telephone point**

The perception of the homeowner depends on a wide range of factors, e.g.;

- **the number and age profile of people living in the house**
- **the pattern of family life, for example, whether they watch television together or separately**
- **the sophistication and variety of their home entertainment equipment**
- **their degree of computer literacy, for example whether or not they are connected to the internet**
- **whether any of the occupants work from home – if so, the extra equipment will require additional sockets (see also technical note in Appendix on home offices/studies).**



The needs of each family will change over time, their needs increasing as children are born and grow, reaching a maximum when the children become teenagers. This variation in need is superimposed on a rising trend caused by the introduction of new and unforeseen domestic appliances and equipment.

Homeowners must also consider the resale potential of their homes; even if the existing provision meets their own needs, it may not satisfy a potential buyer.

What exactly does the typical family need?

The Chipperfields are typical of many families living in the commuter city of St. Albans. Alison and Mark and their six-year-old daughter Sophie live in a two-year-old three bedroom house. Both parents work and Mark is spending an increasing amount of his time working from home. When they took part in the CDA survey the shortcomings of their 'new' home became apparent.

Mark: 'Electrical convenience was not a priority when we bought our home. It was only after moving in that the problems presented themselves. There were too few sockets in every room, particularly in the spare bedroom which doubles as an office. Some sockets were inaccessible – for example hidden behind a wardrobe or the settee and we had no power at all in the loft and a walk-in cupboard in the kitchen which was a bit of a nuisance. It's odd that the house had extras like wiring for a burglar alarm and external lighting, and TV and BT points upstairs and downstairs but lacked essential sockets.'

Alison: 'I'm very safety conscious, especially where Sophie is concerned. We had trailing extension leads and we knew some of the sockets were overloaded with plugs. It was obvious we needed more sockets installed.'

In total, the Chipperfields needed an additional 12 sockets (6 doubles) fitted.

Mark and Alison needed two extra double sockets in their office/spare bedroom to accommodate a PC workstation and a bedside lamp, leaving one outlet spare. The kitchen/diner needed one additional double so that the portable TV and phone charger, previously plugged into adapters, could have their own sockets. In the lounge, two extra doubles were needed – one next to the BT point for the answer machine and one on an accessible wall so that the settee doesn't need to be moved each time they need to plug in the Hoover. Sophie's room had only one accessible double socket with one obscured by the bed. Two walls had no provision at all. Mark and Alison had the foresight to have one extra double installed on one of these walls so that Sophie's future needs could be catered for.

The installation of the extra sockets took one day and cost around £300. There was some disruption to the decor though not as much as if the rooms had been wall papered. Alison: 'It's made a real difference – no more ugly extensions or adapters and no more furniture moving to plug things in!' Mark: 'I can't understand why more sockets weren't fitted when the house was built. Surely it wouldn't add much to the cost to put more sockets on a ring in the first place?'

Recommendations

1. Increase socket provision in line with IEE guidelines (Table 2).
2. Distribute sockets evenly and conveniently around each room.
3. Two twin socket outlets should be located close to TV aerial outlets to allow for TV, video and ancillary equipment supplies.
4. One twin socket outlet should be near any telephone outlet for telephone, answerphone or fax equipment.
5. Children's bedrooms should have adequate provision of sockets for computer and electronic equipment.
6. Promote electrical convenience to home buyers – Indicate positions of sockets and TV/telephone points on house plans.
7. Ensure that all your customers are offered additional sockets at a reasonable price.

8. For home offices/studies (see technical note in Appendix):
 - there must be no spurs on the ring
 - double sockets must have two separate earth terminals, one for each conductor
 - the ends of the ring must terminate in separate connectors at the consumer unit in accordance with the wiring regulations. It may be better to install a dedicated ring circuit for office or study areas.
9. Fulfil your customers’ needs for electrical convenience and safety.

Appendix

Technical note on home offices/studies

Where sockets are required for a home office there are special requirements. Equipment such as personal computers, fax machines and some printers have RFI (radio frequency interference filters) fitted and these cause a small standing current of up to 3.5 mA to flow to earth. This is not a fault situation but a necessary part of the function. If it can be reasonably expected that two or more such devices might be connected to the ring circuit, then the Section 607 rules of the Wiring Regulations must be applied. A separate leaflet on this subject is available from CDA (Publication 142).

Number of socket outlets (singles)					
	NHBC guidance		2 Bedroom Homes	3 Bedroom Homes	4 Bedroom Homes
Kitchen/Utility	6	Best	8.20	8.00	11.00
		Average	6.25	6.68	8.46
		Worst	5.20	4.88	6.00
Lounge + Dining room	4	Best	6.33	7.50	12.67
		Average	5.75	6.84	10.23
		Worst	4.40	5.38	8
Main bedroom	3	Best	4.33	5.43	4.83
		Average	3.50	4.35	4.69
		Worst	2.60	3.50	4.50
Bedroom 2	2	Best	3.33	3.38	4.17
		Average	2.71	2.81	3.54
		Worst	2.20	2.25	2.67
Bedroom 3	2	Best	-	3.14	4.00
		Average	-	2.23	3.46
		Worst	-	1.63	2.25
Bedroom 4	2	Best	-	-	3.33
		Average	-	-	3.00
		Worst	-	-	2.25
Landing/Hall	2	Best	1.80	2.25	4.33
		Average	1.54	1.65	3.23
		Worst	1.17	1.13	2.67

Table 3- Analysis of number of socket outlets by size band



Figure 1

Two bedroom homes needing more sockets

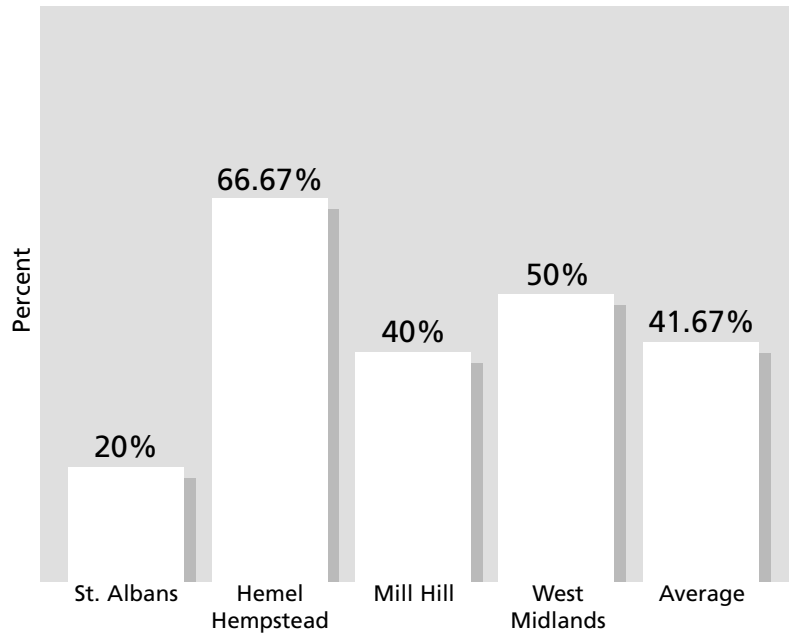


Figure 2

Three bedroom homes needing more sockets

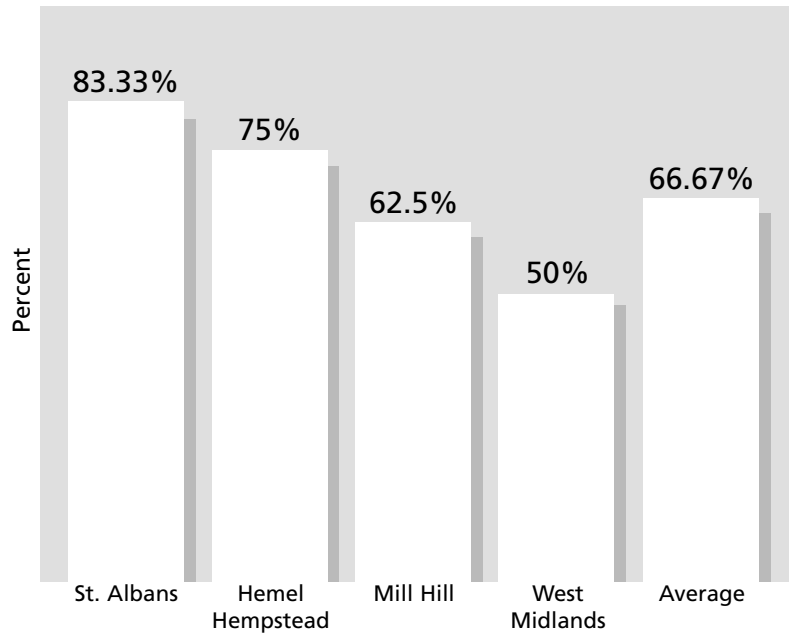
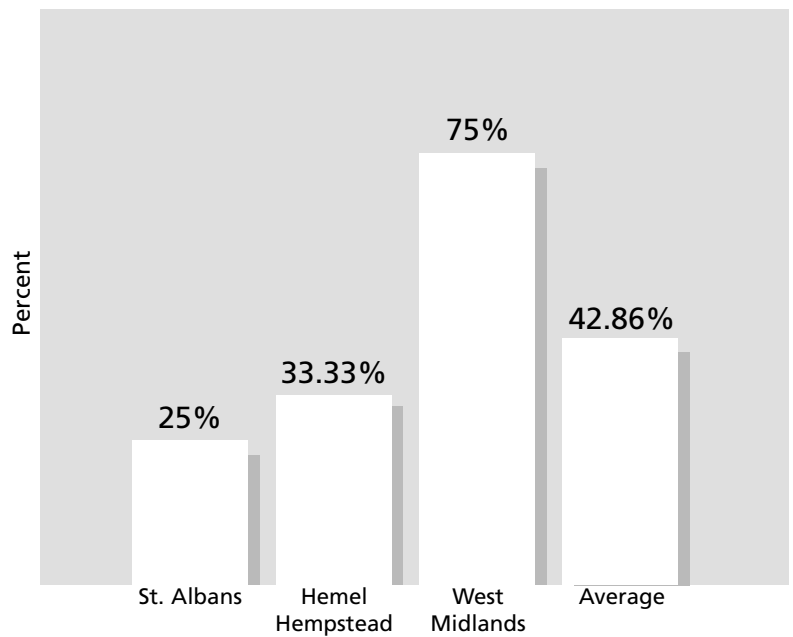


Figure 3

Four bedroom homes needing more sockets



Electrical convenience may not be a priority when a new home is purchased but shortcomings soon become evident. This survey reveals the need for extra sockets to be installed at the time of build to fulfil the requirements of today's homeowners.

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