

Potential of reducing the electricity demand in private sector

M.Sc. Sara Ghaemi*, Prof.Dr. Günther Brauner

Technical University of Vienna, Institute of Electrical Power Systems and Energy Economics

Abstract

During the last decades the amount of electricity demand increased continuously. The major driver is the residential sector with a bout 30% of the total energy consumption. In this paper the electricity consumption of household appliance in Austria is investigated and potential for reduction of demand by substitution of old equipment by new technology and reduction of the number of appliances which is used has been studied.

Fig.1 shows the penetration rate of the white goods in Austria for the last 10 years. It is shows that the ownership of microwaves increased from 57% to 75%, dishwasher increased from 50% to 72% and also the rate of the other appliance such as private wash machine, electrical stove, compact freezer-Refrigerator, freezers increased.

But the ownership of gas stove, refrigerator and general washing machine decreased.

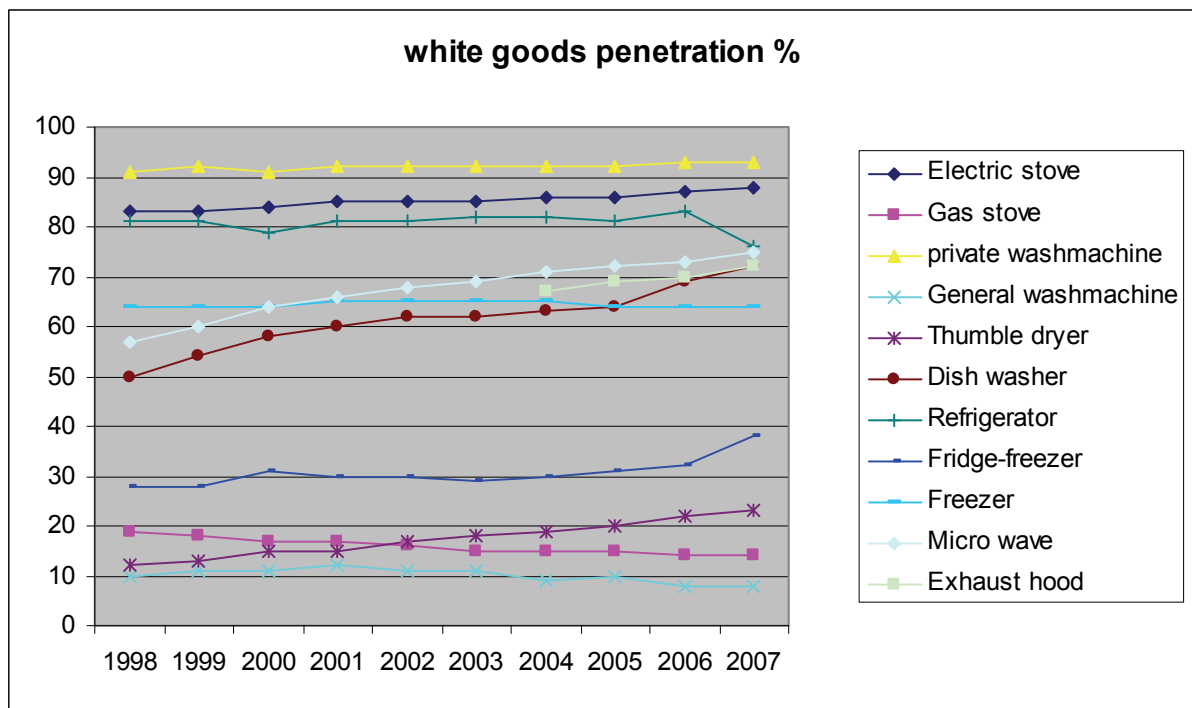


Fig.1: Penetration rate of white goods in Austria

In the last 40 years there was the big progress in the efficiency of electrical appliances. Today the typical consumption of high efficient appliances is only about 25 - 30 % compared to 1970.

A Questionnaire was used to evaluate the fitting of households with appliances. The result is that some types of appliances over saturated e.g. three refrigerators, 6 television sets and also very old equipment is still in used. The high number of appliances results in high operational and standby energy demand.

Based on questionnaire a simulation was performed to evaluate the potential of reduction of demand.

In this study the consumers were categorized to four groups. The potential of energy saving was evaluated according to reduction of number and replacement of old appliances. Also the standby power consumption shown in fig.2 was considered.

The result of the study shows that big potential in the households can be drawn from the households in the future.

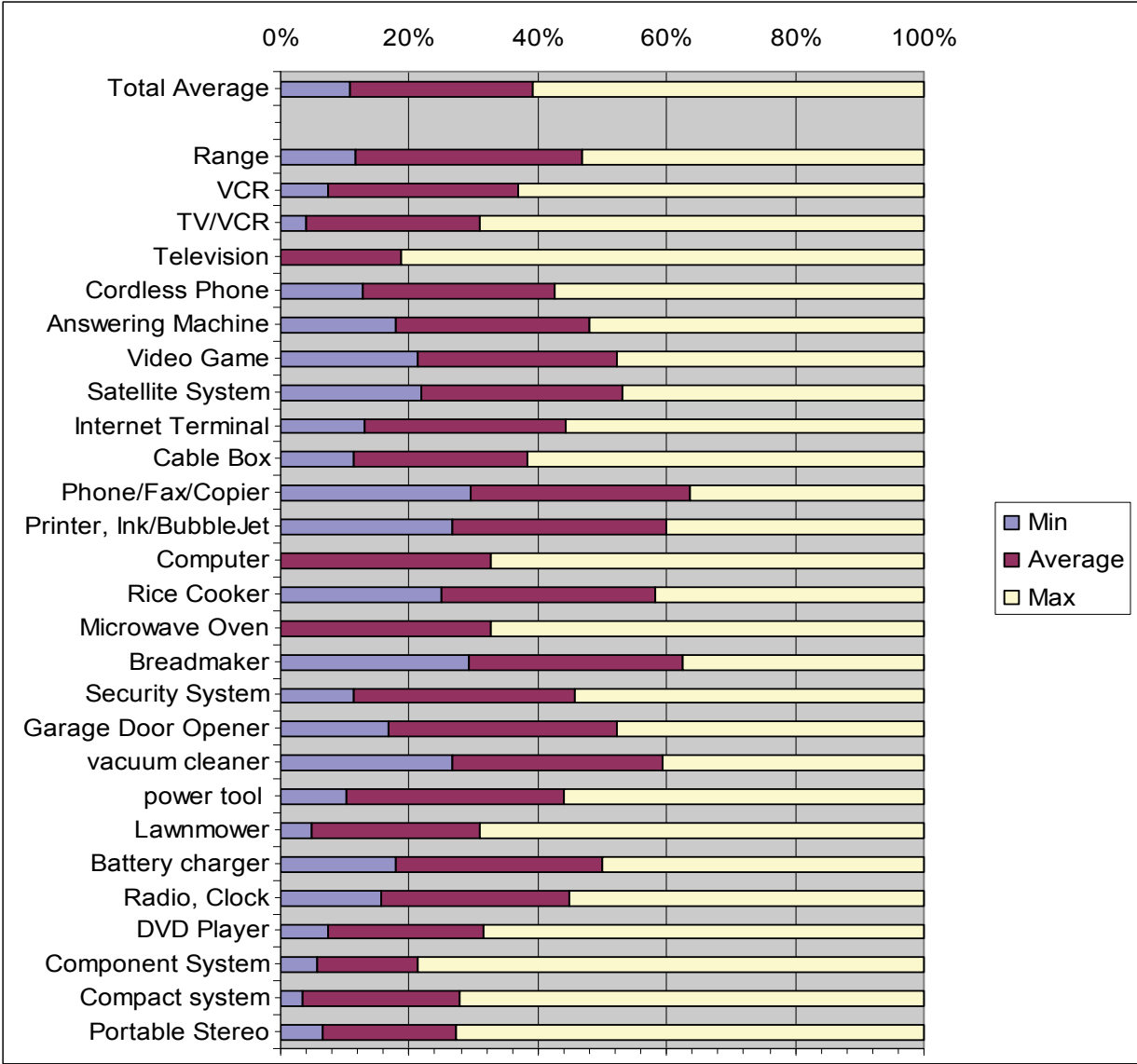


Fig.2: standby energy consumption of electrical appliances