

# The costs and benefits of replacing older household's appliances

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## 1. Abstract

The efficiency of households' appliances has increased significantly in the last years [1]. For instance, the average consumption of a refrigerator is now about 40% less it was 10 years ago [2][3]. The stock of household appliances is very large and the continuous increase in their efficiency means that a huge energy savings potential exist in the residential sector [5] by replacing older equipment by more efficient one. There are many measures aiming at promoting more efficient equipment, but despite these programs and the natural replacement of older (not functioning) equipment, the stock of older equipment seems to be large [3] and about one third of households appliances are 10 or more years old. When the target of the measures is older equipment the expected savings increase substantially in comparison with savings obtained when the measure is applied without taking into consideration the age of replaced equipment. However, the implementation of the measure becomes harder and more expensive than a typical replacement due to the end of life of a given appliance and the social perspective on economic costs of the measures is at risk. In this text it is explored the capability of using public funds to accelerate the replacement of older equipment.

**Key words:** Energy efficiency, residential sector, appliances labeling, replacement of household appliances.

## 2. Conclusions

In average equipment 10 years old consume more 473 kWh than a A+ device, meaning than the replacement allow to save 607 GWh (131 ktoe), which is almost 40% of the expected savings in the residential / services sector in the NEEAP. However, identifying and selecting older equipment for being replaced by efficient one can be a hard task.

The potential for energy savings of full replacement of class D and lower refrigerators is large. Typically a class D refrigerator (with 2 doors) consumes in average more 389 kWh per year than class A+ equipment. If we consider all the devices as being class D (this is a

conservative approach since in reality there many equipment belonging to classes E/F/G thus the savings are higher) and all of them are replaced by class A+ equipment than savings higher than 607 GWh (127 k toe) per year could be obtained (following table).

In order to increase the success chances a campaign informing consumers that with the replacement of old equipment they are saving big quantities of energy and if they take the 100 € subsidy then the payback of acquiring new equipment is between 8 and 9 years. Consumers can start saving money to buy new equipment when the class A+ equipment reaches the end of its life. This massive replacement costs 100 M€. Implementing the NAPEE as it is now means that 250 thousand devices worst than class D still exist by 2015 with an extra 97.3 GWh (28.2 ktoe) annual electricity consumptions.

## 3. References

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