BISHOP HEBER
HIGH SCHOOL

# The truth about phone chargers

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# One of the greatest dangers to society is the phone charger

The BBC has been warning us about this since 2005:

> *'The nuclear power stations will all be switched off in a few years. How can we keep Britain's lights on? . . . unplug your mobile-phone charger when it's not in use.'*

# Sadly, a year later, Britain still hadn't got the message. . .

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## Britain tops energy waste league


**British people are Europe's worst energy wasters, with bad habits such as leaving appliances on stand-by likely to waste £11bn by 2010, a study claims.**

If current levels of wastage continue, an extra 43m tonnes of carbon dioxide will be pumped into the atmosphere in that time, it added.

Leaving mobile phone chargers plugged in and lights on were among the most common energy-wasting habits.

The Energy Saving Trust surveyed 5,000 people in five countries for the study.

Figures in the Habits of a Lifetime report, commissioned to mark the start of Energy Saving Week, said 71% of UK consumers admit to leaving stand-by buttons on once a week.

Meanwhile, 65% of UK consumers leave chargers on once a week and 63% forget to switch the lights off when leaving the room.

**ENERGY WASTERS LEAGUE**

- 1. UK
- 2. Italy
- 3. France
- 4. Spain
- 5. Germany

# The BBC rams home the message

**Britain tops energy waste league**

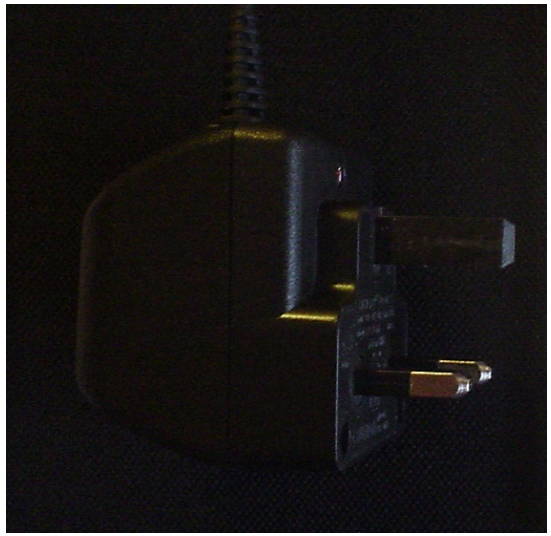
and how did this come about? The BBC rams the message home:

*'65% of UK consumers leave chargers on once a week'*

# Planet-destroying black objects

From the way the BBC talks about these planet-destroying black objects, it's clear that they are roughly as evil as Darth Vader.

charger



vader

But how evil, exactly?

# How much power does a charger (left plugged-in) guzzle?

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# Every little helps?

- The phone charger uses less than 0.5 W when plugged in
- Average **total** power consumption of the average Brit is 5000 W.[1]
- Following the BBC's advice, *always unplug your phone charger when not in use*, could potentially reduce British energy consumption by one hundredth of one percent...

If only people would do it!

[1] Including car driving, home heating, and so forth, not just electricity.

# If everyone does a little, we'll achieve only a little.

Don't be distracted by the myth "every little helps". We must do a lot! We need **big** changes in supply and demand to get off fossil fuels.

*"But surely, if we all do a little, it'll add up to a lot?"*

No! This is just a way of making something small *sound* big. Watch out for statements like:

*"if everyone did X, then it would provide enough energy/water/gas to do Y," where Y sounds impressive.*

# The "if-everyone" multiplying machine

from the Conservative Party's *Blueprint for a Green Economy*:

> *The mobile phone charger averages around ... 1W consumption, but if every one of the country's 25 million mobile phones chargers were left plugged in and switched on they would consume enough electricity (*219 GWh*) to power* 66 000 *homes for one year.*

66 000? Wow, what a lot of homes! Switch off the chargers!

# Straight-talking numbers

66 000 sounds a lot, but the sensible thing to compare it with is the total number of homes that we're imagining would participate in this feat of conservation, namely *25 million homes*. 66 000 is just one quarter of one percent of 25 million.
Whilst the original statement was correct, better to say:

> *If you leave your mobile phone charger plugged in, it uses one quarter of one percent of your home's electricity.*

And if *everyone* does it?

> *If everyone leaves their mobile phone charger plugged in, those chargers will use one quarter of one percent of their homes' electricity.*

# So don't feel too good about switching your phone charger off!

Obsessively switching off the phone-charger is like bailing the Titanic with a teaspoon. Do switch it off, but please be aware how tiny a gesture it is.
Put it this way:

> *All the energy saved in switching off your charger for one day is used up in one second of car-driving.*

> *The energy saved in switching off the charger for one year is equal to the energy in a single hot bath.*

# Why do chargers use so little when not charging?

Modern phone chargers (not the old ones, which get hot when they're not on, and sup about 3 W of power) contain *switch mode transformers*.

- The voltage in the transformer is regulated and controlled by electronic switching.
- Switch mode transformers operate at high frequency, between 50 kHz and 200 kHz.
- They use only a small amount of power when they are switched on but no load is applied (they are plugged in but you are not charging your phone)
- They are also used in computer power supplies where a number of voltages are required.

# Switch mode power supplies vs. traditional transformers

Traditional transformers:

- Bulky and heavy with lots of iron.
- Have to operate at mains frequency (50 Hz).
- Energy loss due to currents induced in the core and magnetic hysteresis.
- Can be warm when switched on, even if there is no load.
- Often audible buzz or hum due to the vibration of components due to the changing magnetic fields.
- Voltage falls as load is applied, so have to use voltage regulators (more lost energy).

# Switch mode power supplies vs. traditional transformers

Switch mode transformers

- Much lighter and smaller.
- Greater efficiency in use.
- Use very little power when they are switched on but no load is applied.

# Best use of "if-everyone" multiplying machine

The Plug In And Go Green Eco Charger

*"The Eco Charger reduces the amount of energy needed to power a mobile phone more than any other on the market."*

# Best use of "if-everyone" multiplying machine

If everyone got one of these, the ad says, the UK "could make a collective saving as a country of £85 million"

Unfortunately the CarPhone Warehouse didn't have the space in their advertisement to apply the "if-everyone" multiplier to the price tag, but in fact if everyone in the UK bought one of these 'Eco Chargers' (at £22.99), it would cost us, as a country, £1.3 billion.