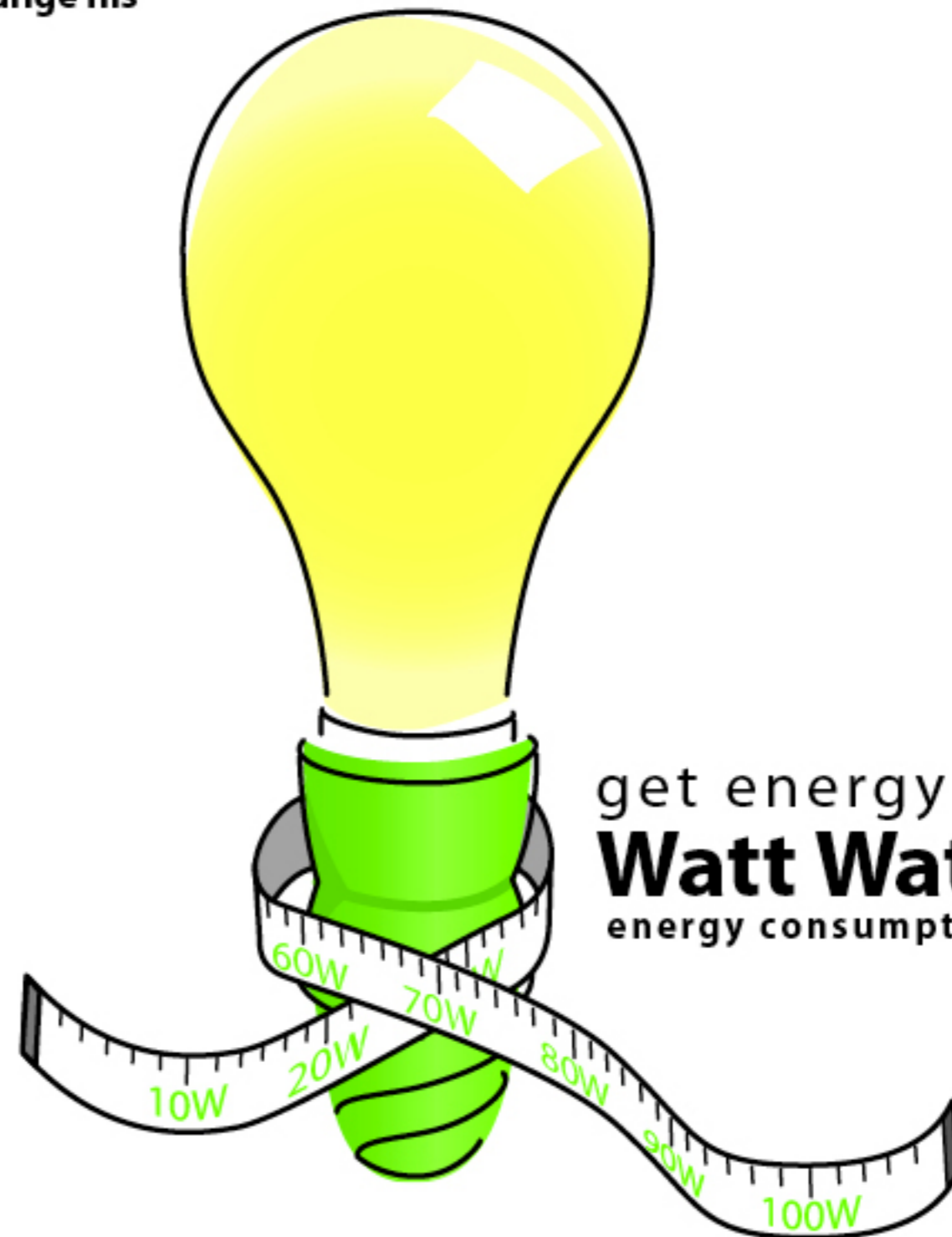








People are increasingly aware of the need to reduce their energy use, but a wealth of consumption data does not effect a change. And devices that automatically shut off without user input address the symptom, not the problem. **How can a user be made conscious of his consumption habits in order to change his overall behavior more effectively?**

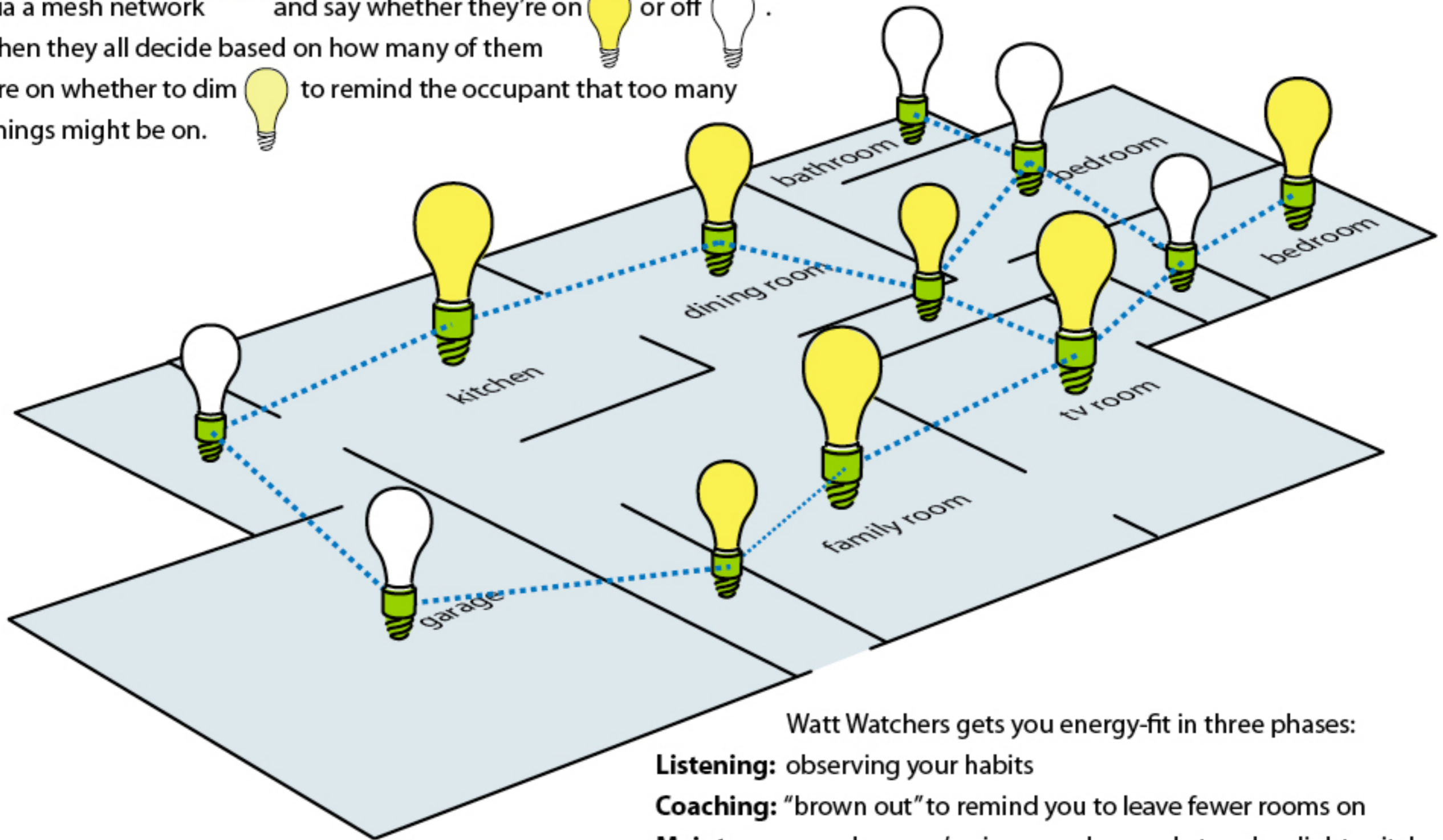


get energy fit with
Watt Watchers
energy consumption trainers

Watt Watchers energy consumption coach

system diagram

All the light bulbs in a house have special collars  that find each other via a mesh network  and say whether they're on  or off . Then they all decide based on how many of them are on whether to dim  to remind the occupant that too many things might be on. 



Watt Watchers gets you energy-fit in three phases:

Listening: observing your habits

Coaching: "brown out" to remind you to leave fewer rooms on

Maintenance: when you've improved enough, toggle a lightswitch to stop coaching and watch you to make sure you don't slip

Watt Watchers energy consumption coach

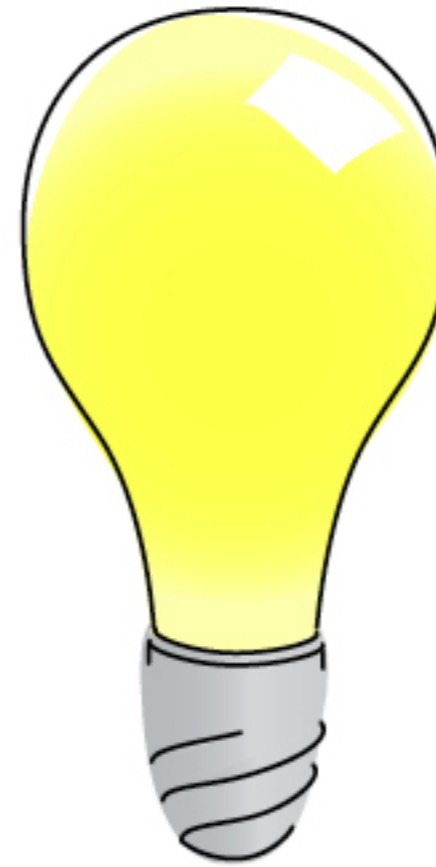
how it works

Watt Watchers uses the language of the brown-out to train motivated consumers to be aware of their consumption behaviors. **A lightbulb acts as a proxy for all the devices in the room**, and when all the lights in the house dim, the user knows to not only turn off the light in an unused room, but also the idle TV, heater, iron, and faucet.

Operation is simple; output consists of the lights dimming, and input consists of turning lights on and off, and toggling a switch a few times to switch from coaching mode to maintenance.

The Watt Watchers collar fits between a light bulb and its socket in order to measure when the light is on, dim it, and draw power for itself. The interface for this is an AC-DC converter circuit. A radio transceiver finds and synchronizes data and actions with other collars in a mesh network (that allows each transceiver to relay between distant collars), made possible by the low-overhead ZigBee protocol. This is mediated by a microprocessor that has an on-chip ZigBee radio and antenna. The total bill of materials is currently \$5 in low quantities.

But the system is the product; the collar is just a package for it. In the quantities achieved by distribution through energy companies, the cost would plummet. The electronics in a collar could be built into long-lasting CF or LED lights, or into lamps and fixtures. The marginal cost when building a house would be insignificant. The ZigBee network also makes extensions easy, so that another device could tap into the network and, say, record and visualize consumption data on a computer.



ABS plastic casing



AC-DC power converter



microprocessor with integrated ZigBee transceiver and antenna

