

## Off Grid Domestic Lighting

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This proposal is for replacing all of your domestic lighting with 12v LEDs powered from a battery that is charged by a combination of solar panels and a small wind turbine. At present there are 230v or 110v ac mains powered LED bulbs, but each bulb has a built-in circuit that converts the mains ac power into 12v DC. A typical house could have 40 or more such bulbs, which is very wasteful and environmentally unsound.

12v LED lighting is available for camper vans and boats but there is no reason why you cannot light your whole house this way. You can simply disconnect your existing domestic lighting circuits from the distribution board and connect them via a new distribution board to a suitably sized rechargeable lithium ion battery. Replace the bulbs in your lighting fixtures with 12v LEDs – you may need to construct an adapter (but see business opportunity below) – or replace the fixtures with ones designed for 12v LEDs. Switches do not need to be changed, unless they are dimmer switches, (again, see business opportunity below). Simply connect 12v solar panels and/or a 12v wind generator to the battery, most of the lithium batteries for campers and boats have built-in charge controllers.

You will need to do some calculations to find out what size of battery, solar panel and wind generator you need; this will depend on what renewable energy you have available in your area and how much lighting you intend to use in your house. It would be possible to set up a backup mains charger that you can switch in if you have a prolonged period of heavy cloud with no wind and the lights go dim, but if you have done your calculations right, this should not be necessary.

For table lamps that plug into mains sockets at present, there are 12v 10A plugs and sockets for caravans, campervans and boats, and you could wire several of these for bedside lamps and table lamps. They could also be used to run other low voltage equipment such as mobile phone chargers, tablets, TVs and laptop computers.

There is a business opportunity here for small companies to manufacture and sell adapters to modify existing ac mains lighting fixtures to use 12v LEDs. There is also a business opportunity to provide a 12v replacement for existing mains-powered dimmer switches.