

## Bicycle lights

To avoid a \$50 fine and reduce the risk of a crash, all cyclists should have lights while riding at night or in hazardous weather conditions that cause reduced visibility. In addition to choosing the correct light for your cycling activities, it is important to always wear bright, visible clothing, and cycle safely.

The road rules specify that you must have:

- A flashing or steady white light on the front of the bicycle
- A red light (flashing or steady) on the rear of the bicycle, and
- A rear red reflector that can be seen from 50metres when a low beam headlight is projected onto it.

Both lights must be visible from a distance of 200 metres, and the rear light must be in addition to the reflector, not as a replacement.

There are different types of lights available:

- Flashing Light Emitting Diode lights (LEDs) and strobes for front and/or rear
- Steady, “directional beam” front lights:
  - Powered by non-rechargeable batteries (standard batteries)
  - Powered by rechargeable batteries
  - Powered by a dynamo (generator lights)

### Flashing LEDs and strobes

These are generally the cheapest, but can be very effective due to their visibility. The rear red ones are very popular and are recommended for all cyclists - from those that only occasionally cycle at night, to the serious after dark commuters. A front flashing white light, though it makes you visible, will not light your way. They are best used as a back up for steady front lights, or for occasional nighttime riders.



The standard flashing lights have 3 LEDs, but you can also get ones with up to 7 and with different flashing patterns. The “one-strobing bulb” puts out a brighter light but uses more power and flashes less often. LEDs, on the other hand, use very little power. They usually use normal AA size batteries which last 100-300 hours when used in the flashing mode.

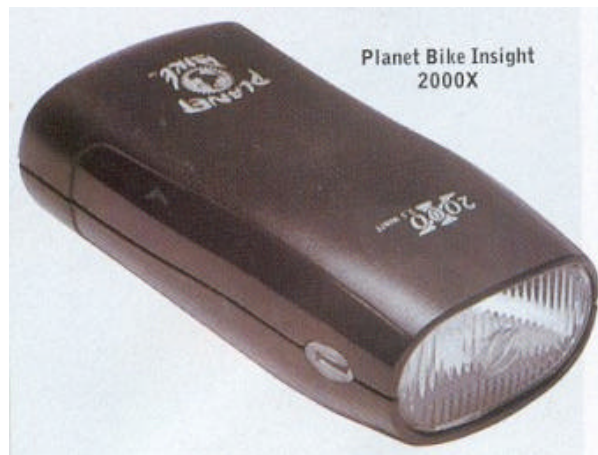
A word of warning – when mounting flashing lights, make sure they face directly forward or backward as visibility is low when viewed from the side. This is especially important for those who clip their flashing light to their clothes, helmet or backpack. Most times the light is facing upward or to the side and is not visible to motorists and other road users, thus negating its effectiveness. The best place to mount lights is on the seat post (high enough, clear of any rack mounted packs), the seat itself, and the handlebars. Generally, the higher the mounting position, the better.

LEDs are a cost effective way of ensuring better visibility on overcast and rainy days. Remember the front light must be white and the rear red.

Prices range between about \$15 and \$30

### **Standard (non-rechargeable) battery powered front lights**

These use standard batteries, usually AA, or C types, and are the cheapest outlay for directional beam lights. However, because they use up batteries quite quickly (only lasting up to 6 hours at the most before you need new batteries), they are best for occasional night riders. If you commute more than 60 minutes in the dark a week, then, in the long run, it is more economical to buy a rechargeable battery system and save the cost of buying (and discarding) batteries.



The better quality lights generally use halogen globes and some of the more advanced sort may come with a rechargeable battery pack. The wattage of the globes in these lights, which governs the brightness of the light, is usually substantially lower compared to lights using rechargeable batteries.

Prices range from \$25 to \$100

### **Rechargeable battery powered front lights**



For regular night cyclists, a light with a rechargeable battery pack may be a more economical option. They are also usually brighter than non-rechargeable types (6 - 32 watts compared to 2 - 6 watts). Some systems come with two lights with different wattage (brightness) bulbs. This allows you to vary the amount of light (and battery burn time) that you are using depending on the conditions. These systems give off enough light to allow serious night time mountain biking.

One thing to look for in a rechargeable light is the size and weight of the battery pack, and how it attaches to the bike. For instance, you can get packs which fit into the water bottle holder, that strap onto the frame with Velcro or “sticks” with their own pump type mounting system.

There are different types of rechargeable batteries available. **Lead acid** batteries are the cheapest but are usually heavier for the same “burn time” as other types of batteries. An advantage, however, is that they tend to lose their charge more slowly so you have some

warning that your light is about to fail. **Nickel cadmium** (NiCad -lighter) and **nickel metal hydride** (NiMH - lightest) batteries are lighter than lead acid for the same burn time but tend to lose their charge quite suddenly leaving you with no light in the middle of the ride. That is why we recommend having a back up flashing front light when using rechargeable battery lights.

As well as the standard handlebar mounted lights, you can also get ones which fit onto your helmet. The benefits of these are that the light beam is directed where you are looking, not just straight in front of the bikes travel direction. This is useful for looking forward around bends in the road or path where a handlebar mounted light cannot see. One disadvantage is that, since the light is shining along your line of sight, the shadow cast is directly behind the object. This makes objects appear “flat” or two-dimensional and distances may be hard to judge. Helmet mounted front lights are best used in conjunction with a handlebar mounted light which gives better depth perception. The size and weight of battery packs for helmet-mounted lights are important, as they will need to be carried in a pocket.

Most rechargeable light batteries take about 7 to 8 hours to fully charge and will last about 1 to 3 hours (depending on the wattage bulb/s being used).

Prices range from about \$100 up to about \$350.

### **Dynamo powered front lights**

Dynamos, also known as generator lights, are also an economical option for frequent night travelers. The dynamo works off a roller in contact with the wheel. Dynamos can even be incorporated into the hub (expensive). Dynamo lights usually go out when you stop cycling, though some come with a back-up battery that gives some light when stopped. The dynamo can power both the front and rear lights.



The benefit of dynamos is that you do not need to remember to buy or recharge batteries. The higher quality dynamos generally have replaceable rollers.

Prices range between about \$60 and \$350. Hub dynamo systems start around \$400.

### **Bicycle light manufacturers**

Some of the popular and well-known brands include:

- Cat Eye
- KnightLite
- VistaLite
- Planet Bike
- Cygo Lite
- Zefal
- Smart

- NiteRider
- Schmidts (hub dynamos and lights)
- Lumotec (dynamos)
- Busch and Miller (dynamos)