

Fact Sheet 8: Micro-hydro



Archimedes-screw micro-hydro turbine, near Monmouth¹

What are they?

'Hydroelectric' generators use the movement of water to produce energy. A recognisable example would be a water wheel. Many modern hydroelectric generators are large scale, requiring the creation of a reservoir. A micro-hydro installation is a hydroelectric generator under a certain size.

What do they do?

Hydroelectric power stations use the energy in flowing water to generate electricity. A hydro 'turbine' is spun by the force of the water. The turbine spins a generator that produces electricity.

How do they work?

There are many different designs of micro-hydro turbine, from water wheels to propellers. They are each suited to a different type of river. Moving water has energy. The faster it moves, the more energy it has. A *small amount of fast flowing* water has the same energy as a *large amount of slow moving* water.

Some turbines use the speed of the water to generate power, and are suited to water flowing from a high drop. Other turbines use the weight of the water, and are suited to wide, slow rivers with a small drop (example above). Because of the range of turbines, micro-hydro installations can be used in many different rivers. Hydroelectric generators are eligible for the Feed-in Tariff scheme.

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Where do they go?

Micro-hydro installations need water flowing through them. They can be placed in rivers directly, or have an amount of water from a nearby river diverted to run through them. Despite their name, micro-hydro turbines are relatively large pieces of equipment and require engineering works to install them.

What issues need to be considered?

Because they interfere with the flow of rivers, all micro-hydro installations will require permission from the Environment Agency, and may need permission from Natural England if there are protected species at the site. Structures may be needed to reduce the ecological impact of the turbine e.g. fish ladders to allow migratory fish to travel upstream around the turbine.

What are the planning requirements?

Planning permission will be required for hydro-electric generators. A hydro-electric generation scheme will have a number of impacts on the river system and projects should be developed in a manner which is compatible with the many other uses to which a river is put. When assessing the planning application, the local planning authority will consider a number of planning issues, including:

- Siting and design.
- Visual impact on the local landscape.
- Hydrological and ecological considerations.
- Fisheries interests.
- Noise, construction and operational disturbance.
- Impact on recreation and public access to the river.

Micro-hydro planning applications will need to be supported by additional information, such as technical studies and assessments. Early engagement with the local planning authority, the Environment Agency and other organisations such as Natural England will be necessary to ensure that all statutory remits are met, and that proposals do not detract from the existing value and interest of the watercourse and its surroundings.

More info

Environment Agency pages on hydropower:

<http://www.environment-agency.gov.uk/business/topics/water/126571.aspx>

British Hydropower Association:

<http://www.british-hydro.org>

The companion guide to planning policy statement 22 provides more information on the planning and development of renewable energy schemes across England:

<http://www.communities.gov.uk/publications/planningandbuilding/planningrenewable>

Please Note: National planning guidance is currently under review and the companion guide to planning policy statement 22 is referred to for information only.