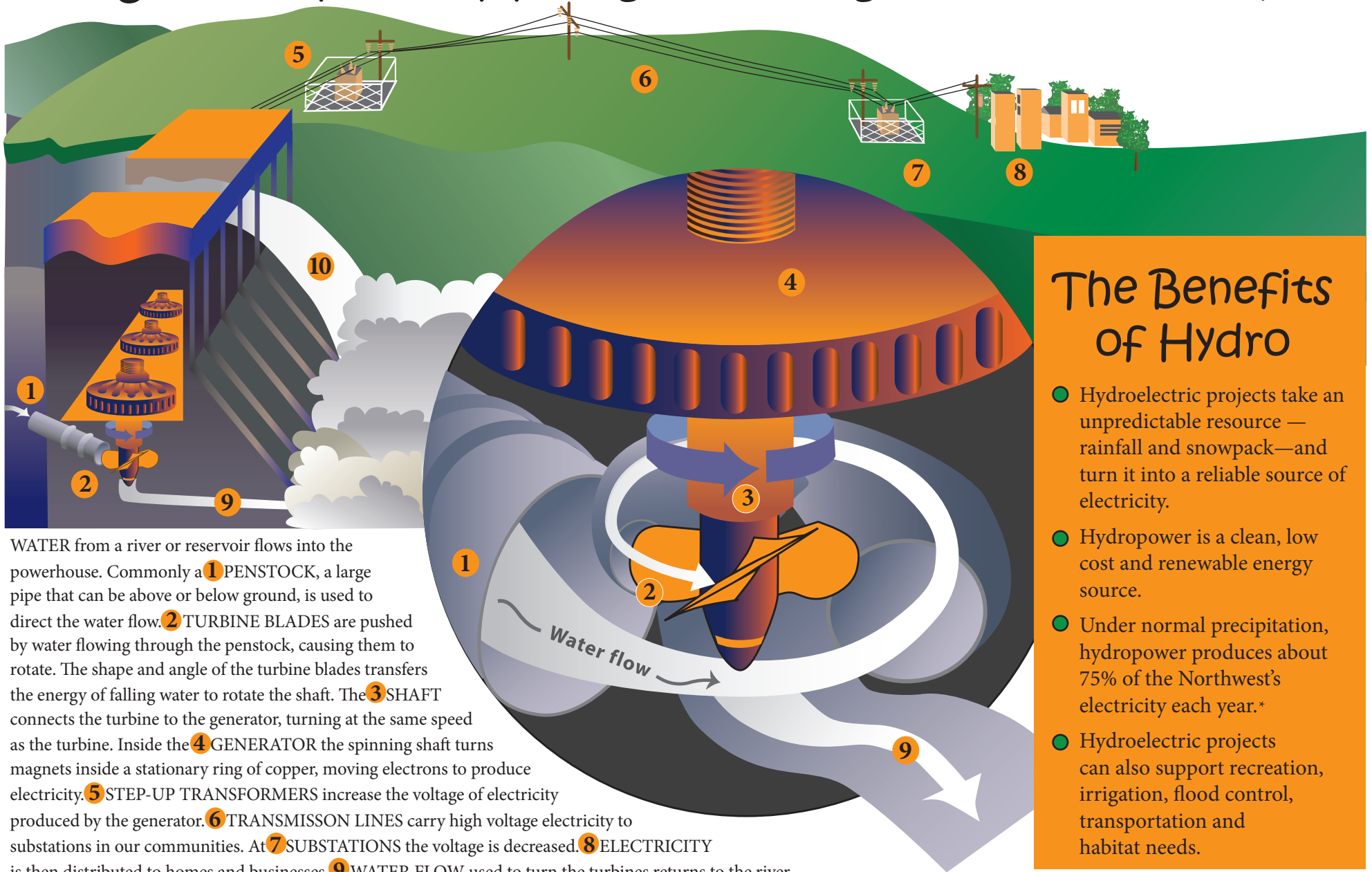


# HYDROPOWER

Uses the force of falling water to generate electricity



WATER from a river or reservoir flows into the powerhouse. Commonly a **1** PENSTOCK, a large pipe that can be above or below ground, is used to direct the water flow. **2** TURBINE BLADES are pushed by water flowing through the penstock, causing them to rotate. The shape and angle of the turbine blades transfers the energy of falling water to rotate the shaft. The **3** SHAFT connects the turbine to the generator, turning at the same speed as the turbine. Inside the **4** GENERATOR the spinning shaft turns magnets inside a stationary ring of copper, moving electrons to produce electricity. **5** STEP-UP TRANSFORMERS increase the voltage of electricity produced by the generator. **6** TRANSMISSION LINES carry high voltage electricity to substations in our communities. At **7** SUBSTATIONS the voltage is decreased. **8** ELECTRICITY is then distributed to homes and businesses. **9** WATER FLOW used to turn the turbines returns to the river. **10** SPILLWAYS release water downstream that is not directed to the powerhouse to generate electricity.

## The Benefits of Hydro

- Hydroelectric projects take an unpredictable resource — rainfall and snowpack—and turn it into a reliable source of electricity.
- Hydropower is a clean, low cost and renewable energy source.
- Under normal precipitation, hydropower produces about 75% of the Northwest's electricity each year.\*
- Hydroelectric projects can also support recreation, irrigation, flood control, transportation and habitat needs.

\* Source: Northwest Power and Conservation Council, Pocket Guide, 2010