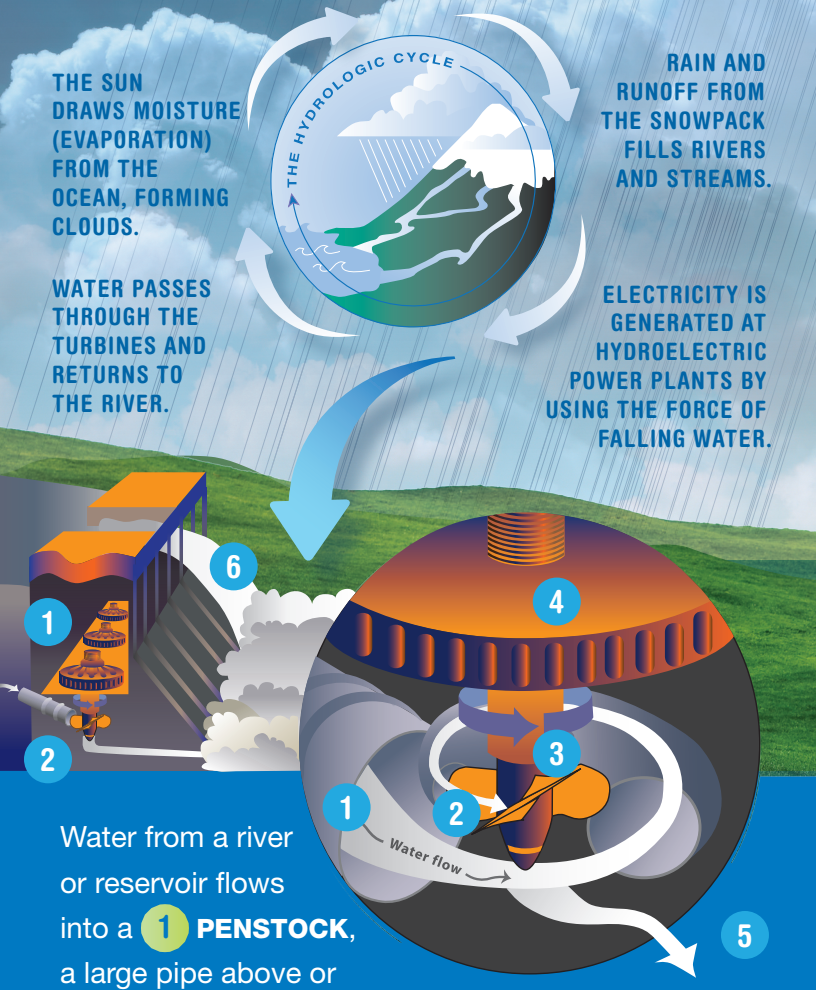
Hydropower: from water to watt

Rain and melting snow feed streams and rivers. Dams hold back the river water so it can be released onto turbine blades that spin like a propeller. The spinning blades convert the power of the falling river water into electricity, creating hydropower — a clean, renewable energy and the main source of the Northwest's low-cost electricity.



Water from a river or reservoir flows into a 1 **PENSTOCK**, a large pipe above or below ground, that is commonly used to direct the water flow. 2 **TURBINE BLADES** are pushed by the force of water exiting the penstock, causing them to transfer 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 electromagnets inside a stationary ring of copper, moving electrons to produce electricity. 5 **WATER FLOW** used to turn the turbines returns to the river. 6 **SPILLWAYS** release water downstream that is not directed to the turbines to generate electricity.

Hydropower: from dam to doorstep

BPA captures the electricity created at 1 **DAMS** and sends it across transmission lines. The 2 **TRANSMISSION LINES** move the electricity to 3 **SUBSTATIONS** and then transformers, which reduce the voltage of the electricity so it can be used. The lower voltage electricity travels across more 4 **LINES** to 5 **BUSINESSES** and 6 **HOMES**. Some of these lines are strung on metal and wood poles, some are underground. They carry the electricity to your house and through smaller wires in between the floors, ceilings and walls, all the way to the 7 **ELECTRIC** outlets and switches that power your 8 **LIGHTS**, computers, televisions and household appliances.

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