5 Promising Types of Water Power

1. Modular Hydropower

Modular hydropower uses separate, similar components—constructed off-site—that can be easily integrated and scaled to greater capacities. Modular hydropower makes low-head, environmentally friendly hydropower development economically feasible.

2. Powering Non-Powered Dams (NPD)

Existing infrastructure can be equipped with generation equipment. Adding generation equipment to existing infrastructure can lower construction costs and reduce permitting time. There are 81,000 dams across the United States and only 3% produce energy. A 2012 DOE study identified potential for 12,000 MW of new hydropower at NPDs. Using existing infrastructure can lower construction costs and reduce permitting time which adds power to the grid faster.

3. Pumped-Storage Hydropower (PSH)

A pump moves water to a higher elevation. The water is released when electricity is needed. PSH provides 97% of U.S. utility scale energy storage. The PSH fleet comprises 42 plants with a capacity of 22 GW. Pumped-storage hydropower is America’s largest form of energy storage, working like a big battery, storing energy to meet peak electricity demand. PSH projects provide critical services that help maintain the reliability and resiliency of the nation’s power grid.

4. Tidal Energy

Powerful tidal currents turn an underwater turbine. Harnessing energy from the ebb and flow of tides improves grid resiliency by diversifying generation with a reliable, forecastable resource. Tidal energy plants can be built close to load, limiting the need and expense for long transmission cables. Tidal energy devices can also serve critical applications such as maritime sensors, desalination, and extracting elements from seawater.

5. Wave Energy

A device converts wave movement into electricity. Wave energy resources are enormous, with potential.domestic markets also include military bases, remote communities, and subsea data centers.