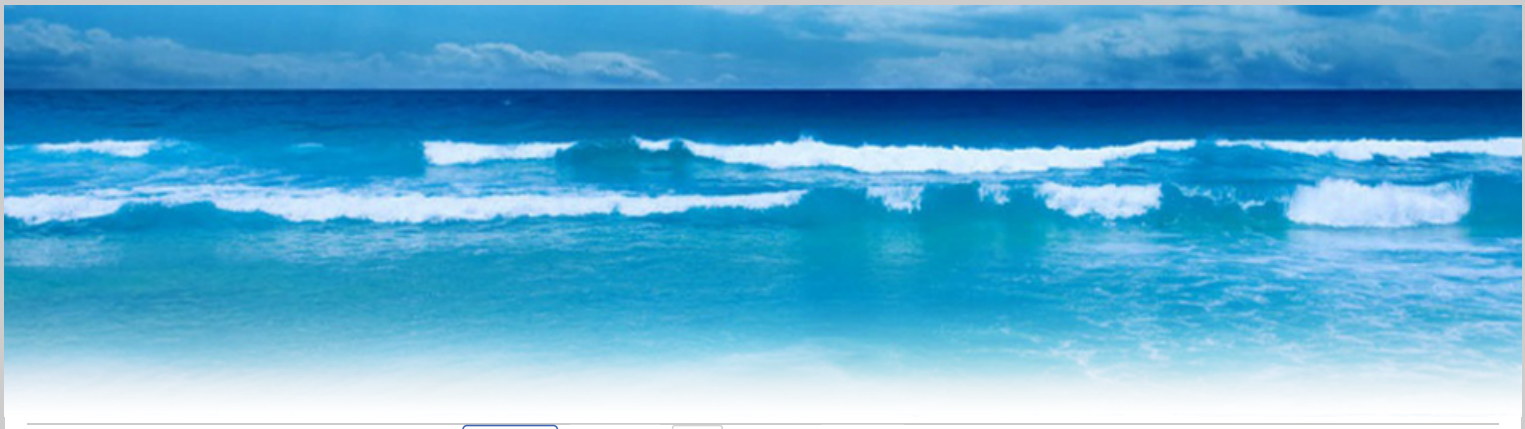
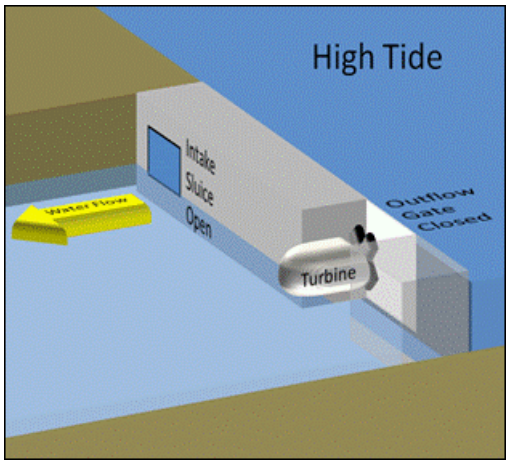
tidalpower.co.uk

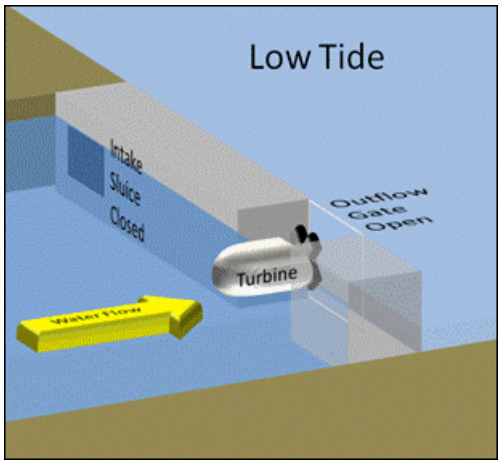


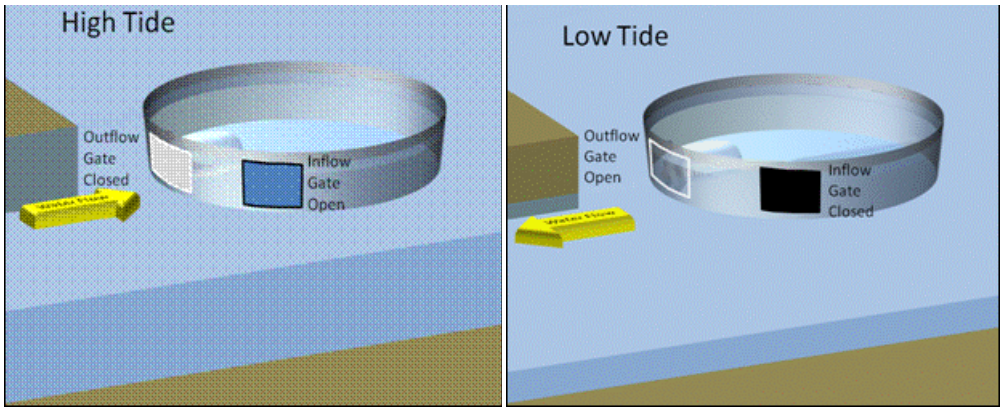
Tidal Lagoon

The tidal lagoon scheme is very similar to the tidal barrage method of using tides to generate power. In fact, the only real difference between the two is that the tidal lagoon does not block off an entire estuary, but rather makes use of only part of it.

The concept is relatively simple. A large enclosed structure is built in the estuary or anywhere that tidal forces are adequate. As high tide comes in, the lagoon is filled. At low tide, the lagoon is allowed to empty through a turbine to generate power. The diagrams below show the differences and similarities between a tidal barrage and a tidal lagoon.







So a tidal lagoon is basically just a barrage that creates a circular pool within the larger area of the estuary rather than closing off the entire area with a dam the way a standard barrage does.

Advantages of a Tidal Lagoon

The main advantage of a tidal lagoon is that it has less environmental impact than tidal barrages because they don't block the entire flow of water into and out of a given area. They can also more easily be combined with intermittent pumps that use renewable energy to raise the level of water within the lagoon higher. While this may seem like using two steps when one would suffice, the energy gain is substantial because the gain in power generation as water levels rise is not linear. Thus, a rise of two feet provides roughly twice as much energy as a rise of one foot. So, adding extra height to the tidal lagoon actually makes the outflow generation more efficient and allows more energy to be generated overall than if the water level were left low and the energy used for the pumps were simply put into the grid.

Drisadvantages of a Tidal Lagoon

There are two major disadvantages to the tidal lagoon and they are cost and maintenance. Building such a facility requires careful construction and a generally longer dam (because it is a circle). Additionally, maintenance is higher because the system is subjected to saltwater and ocean assaults from all sides. Energy production also tends to be lower in tidal lagoons because they don't store as much water.