

Tidal stream

Tidal stream technologies harness the energy from the tides using underwater turbines. The stream flows through the stationary turbines, causing them to turn using the same principle as a wind turbine. There are various different designs of tidal stream turbines such as seabed standing and surface floating designs.

Tidal stream technology is in its infancy. The world's first commercial scale tidal stream power generating device called SeaGen was installed in Strangford Lough, Northern Ireland in 2008 (see Figure 21). It generates 1.2 MW for between 18 and 20 hours a day. The majority of Ireland's tidal power lies on the east coast, with the potential on the west coast concentrated in the Shannon Estuary and Bull's Mouth. Due to relative resource constraints, the maximum potential for tidal stream is significantly lower than wave or offshore wind (see Figure 16 on page 25 and Figure 22 below).⁴⁵

Figure 21. SeaGen, Strangford Lough

Figure 22. Tidal Flow Map for Ireland. Source: SEAI

Figure 23. Electricity generated by tidal stream, (TWh/yr).



Trajectory 1

Trajectory 1 assumes that no tidal stream devices are installed in the Republic of Ireland by 2050.

Trajectory 2

Trajectory 2 assumes that tidal stream capacity grows to 100 MW by 2050, equivalent to roughly 50*2 MW tidal stream devices, larger than the 1.2-MW SeaGen device shown in figure 21. This capacity generates 300 GWh/y of electricity.

Trajectory 3

Trajectory 3 assumes that tidal stream capacity grows to 300 MW by 2050, equivalent to 150*2 MW devices. This generates 900 GWh/y of electricity.

Trajectory 4

Trajectory 4 assumes that tidal stream capacity grows to 800 MW by 2050, equivalent to 400*2 MW devices. This generates 2.5 TWh/y of electricity.

