



## ENERGY



# Baltimore's Solar-Powered Water Wheel Can Devour 50,000 Pounds of Harbor Trash Every Day

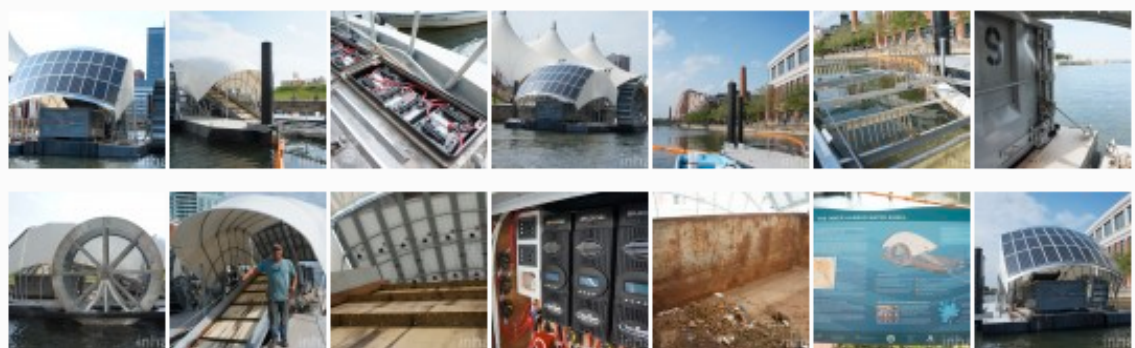
by **Lucy Wang**, 05/19/14

### INHABITAT PHOTO GALLERY

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Trash isn't a pretty sight, but Baltimore's new Water Wheel actually makes collecting garbage look cool and fun. Powered by 30 **solar panels** and the water current, the Water Wheel Trash Inceptor can remove a whopping 50,000 pounds of trash a day—a rate that the **Waterfront Partnership of Baltimore** hopes will make the harbor swimmable by 2020. Designed by **Clearwater Mills'** John Kellett and Daniel Chase, the solar-powered trash collector generates 2,500 watts of electricity a day, which is enough energy to power the average Maryland home.



Every year, **stormwater runoff** carries tons of trash and debris from the streets and streams of the Jones Fall **watershed** down into the mouth of the Jones Falls stream and out into the Baltimore Harbor. "I was tired of always hearing tourists say 'ugh, this harbor's disgusting'," says Water Wheel co-founder John Kellett. "I thought, there's got to be a better way than collecting trash on our front doorstep." After a successful prototype and securing the support of the Waterfront Partnership of Baltimore, the world's first Water Wheel was constructed in just seven months with a crew of less than four men.

Here's how it works: two orange booms help funnel debris towards the Water Wheel, where spring-loaded leaf rakes intercept the trash and push it onto a moving conveyer belt which empties out into a 16 yard **dumpster**, located on top of a floating dock. Once the dumpster is full, the dock is detached, hooked up to a boat, and then taken to a RESCO **waste-to-energy plant**, where the trash is incinerated and turned into electrical energy. The solar-powered pumps move 20,000 gallons of water an hour onto the rotating **waterwheel** that turns the conveyer belt.

In addition to cleaning up the harbor, the Water Wheel also provides other benefits. The constant rotation of the waterwheel puts much needed oxygen back into the water, helping to attract schools of fish and improve habitat conditions and **water quality**. The trash collector also removes organic waste, which if left to decompose, causes oxygen depletion and releases ammonia. As a project of the Healthy Harbor Living Laboratory, the Water Wheel also serves to educate people about stormwater management and the Inner Harbor.

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"Baltimore will soon pass a trash TMDL (total maximum daily load) or 'pollution diet,' that will legally require the city to remove a certain amount of trash from the water bodies a year," says Adam Lindquist, Healthy Harbor Manager. "Our hope is to put the Water Wheel out of business." While the Water Wheel will be a permanent fixture of Baltimore for now, there are talks of adding another one to the mouth of Washington D.C.'s trash-clogged Anacostia River. You can check out more pictures of the amazing Water Wheel in our **gallery!**

**+ Clearwater Mills**

**+ Waterfront Partnership of Baltimore**

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