

## So What? Automatic Identification System

A large part of constructing a wind energy farm is deciding where to build. Concerns over wind energy potential, marine mammals, marine jurisdictions, and sediment type might dictate this decision; however, it is important to also consider shipping traffic. The Automatic Identification System (AIS) is a program designed to collect locational information from vessels across the coastal continental U.S., inland rivers, Hawaii, and Guam (Navigation Center – [www.navcen.uscg.gov/?pageName=AISmain](http://www.navcen.uscg.gov/?pageName=AISmain)).

Why should ocean energy planners consider AIS data when planning a wind energy site?

**1. To be better prepared for working with the multiple stakeholders for ocean spaces.**

Understanding as many of the possible use conflicts and alternatives in the beginning of a planning process is essential to project planning, and this need is not any different for an offshore wind energy project. AIS data, along with many other data types, are helpful for determining the best areas with the least amount of conflict. AIS data in real time, collected by the U.S. Coast Guard, are used for monitoring and routing large-vessel traffic, but they have found a secondary use as historical information. When collected over many months or years, AIS data can give patterns of ocean use by large vessels and help ocean energy planners avoid areas that are likely to cause problems with shipping commerce. The data are also helpful in showing where other potential routing measures might be advantageous for the Coast Guard to consider if large numbers of vessels are using a route not currently mapped on nautical charts. Without AIS data, planners are left with using less accurate predictions of shipping lanes that do not describe the full extent of shipping traffic.

**2. What used to take months, now takes minutes.** To obtain AIS data in the past, a person had to submit a formal request to the Coast Guard for only a couple of month's or a year's worth of data. Now MarineCadastre.gov has the entire 2009 and 2010 calendar years available for download by UTM zone and month. Aliquot blocks are also available from North Carolina to Maine.

**3. Analyzes trends across years.** The AIS Data Handler includes tools for analyzing trends within the AIS data, providing a one-stop shop for AIS data and analytical tools. Now, with the addition of the 2010 data, users can analyze both years of shipping data. Part of planning includes planning for the future, so the tools make it easy to compare traffic volume, consistency of traffic patterns, and more.

**4. Economic activity.** AIS data have the potential to describe how much of the economy is dependent on ports and large shipping areas. This can then show users which ports are the most valuable and what goods are going in and out of those ports.

**5. Can be used to model vessel noise.** By compiling ship traffic data with previous studies on noise levels for boats of similar size to those in the AIS data, noise maps can be made of the ocean using vessel traffic data. By overlaying these noise maps with marine mammal density predictions, scientists can study possible human effects on marine mammals.

**Quick Caveats.** AIS data are time-consuming and complex to process into a usable format. Ship masters must remember to fill in the records, and sometimes one AIS transponder is moved between multiple boats without the ship name and other information changing. Therefore, there is high potential for human error and omission of data within the data set. The AIS Data Handler works to clean up these errors for usability. AIS data only account for 50-60% of vessel traffic. The data are only required for larger passenger vessels, tug boats, etc., with recreational, fishing, and military boats usually not being tracked. Lastly, rules and regulations about carriage requirements have evolved over time; therefore, users must be careful in studying trends, since the data depend on AIS requirements and when those boats were first required to start using AIS.

AIS data can be used in a wide variety of ways to come to a wide variety of conclusions. However, there are things a planner needs to know before starting an analysis. As AIS users might know, the rate of “pings” or how fast a ship sends information to the AIS transponders is very high. This means that a ship moving slowly will have a higher density of pings in an area versus ten ships moving very quickly through a similar area. Therefore, users can’t simply analyze ping density to show ship density.

MarineCadastre.gov presents AIS data in the way it does because many types of users employ AIS data for different reasons, and we want to cater to them all.

**An example of AIS data used for ocean planning.** The North Carolina Wind Energy Task Force is using AIS data, along with several other data sets from the Marine Cadastre and data specific to North Carolina, to identify outer continental shelf lease blocks suitable for offshore wind energy siting.

(<http://explorer.arcgis.com/?open=450861e4d71448639fec7055213d7c03>)

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