Regulatory Announcement

Program Update: Proposal of Emission Control Area to Reduce Emissions from Ships in the U.S. Caribbean

The United States has submitted a proposal to the International Maritime Organization to designate an area off the coasts of Puerto Rico and the U.S. Virgin Islands in which stringent international emission controls would apply to engines and fuels on ships operating in the area. When adopted, this control program would dramatically reduce air pollution from ships and deliver substantial benefits to the population of those U.S. territories, as well as to marine and terrestrial ecosystems. This fact sheet contains an overview of the proposal.

Overview

The United States has proposed the designation of an Emission Control Area (ECA) for specific portions of the coastal waters around Puerto Rico and the U.S. Virgin Islands. This action would control the emission of nitrogen oxides (NOx), sulfur oxides (SOx), and particulate matter (PM) from ships operating in the area, most of which are flagged outside of the United States. These ships are significant contributors to the Territories' emission inventories. The ECA is expected to reduce emissions of NOx by 11,000 tons, PM2.5 by 3,300 tons, and SOx by 31,000 tons[1] per year, which is 27 percent, 86 percent, and 96 percent, respectively, below levels in 2020 absent the ECA. The overall cost of the ECA is estimated at $70 million.

The International Maritime Organization (IMO) is a specialized United Nations agency responsible for improving maritime safety and preventing pollution from ships. The U.S. Environmental Protection Agency (EPA) is a member of the U.S. delegation to the IMO and its Marine Environment Protection Committee (MEPC).

[1] The proposal to the IMO presented emission reductions in units of metric tones (MT): 10,000 MT NOx, 3,000 MT PM2.5, and 28,000 MT SOx reduced.

EPA United States Environmental Protection Agency

Office of Transportation and Air Quality
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The proposed ECA designation is the latest component of EPA's coordinated strategy to address emissions from all ships that affect U.S. air quality. For more information about other components of the strategy, including new Clean Air Act standards and the North American ECA, please visit EPA's Ocean-going Vessels Web page at www.epa.gov/otaq/oceanvessels.htm.

The Proposed U.S. Caribbean ECA

The area of the proposed U.S. Caribbean ECA includes waters adjacent to coasts of the Commonwealth of Puerto Rico and the U.S. Virgin Islands. The northern and southern boundaries of the proposed area would extend roughly 50 nautical miles (nm) and 40 nm, respectively, from the territorial sea baseline of the main island of Puerto Rico. The western edge of the proposed area would generally run north-south, about half way between the Puerto Rican island of Mona and the west coast of the main island. The eastern edge of the proposed area would generally run north-south, but extend eastward through the area between the U.S. Virgin Islands and the British Virgin Islands and also eastward through the area between Saint Croix and Anguilla and Saint Kitts. The proposed ECA is bounded such that it does not extend into marine areas subject to the sovereignty, sovereign rights, or jurisdiction of any state other than the United States.

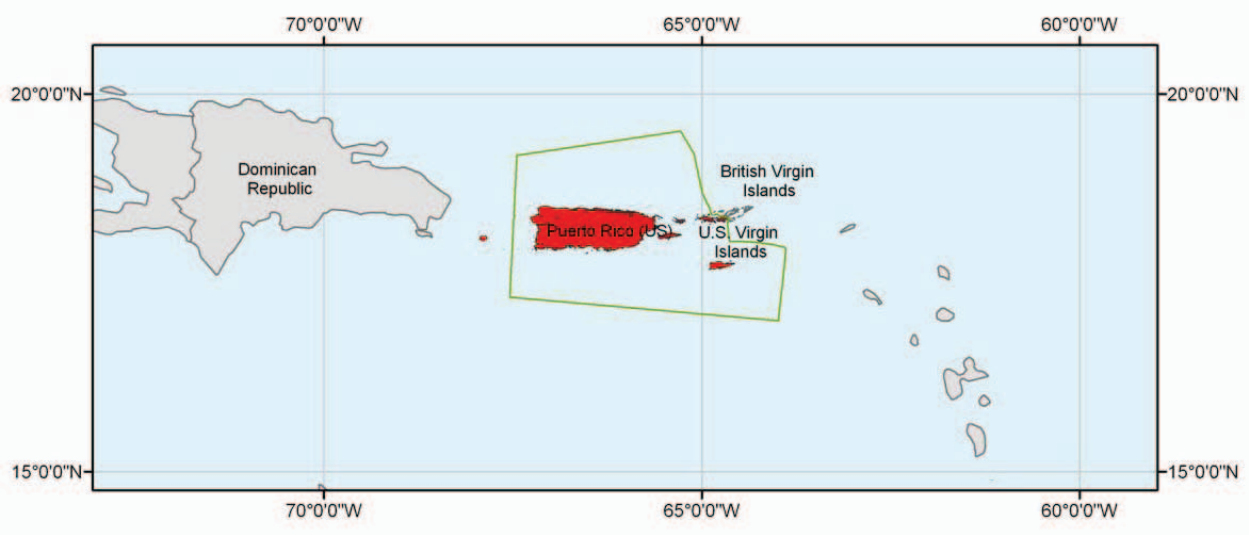

Figure 1: Area Proposed for ECA Designation

The Need to Reduce Emissions from Engines on Ships

The large marine diesel engines on ships are significant contributors to the territories' emission inventories. The largest vessels that operate in ports and waters of Puerto Rico and the U.S. Virgin Islands typically have Category 3 marine diesel propulsion engines. These engines currently use emission control technology that is comparable to that used by nonroad engines in the early 1990s. In addition, these large engines, as well as the smaller auxiliary engines installed on these ships, are operated on fuel that can have a sulfur content of 30,000 ppm or more. As a result, these ships generate significant emissions of fine particulate matter (PM2.5), NOx, and SOx that cause adverse health effects and harm to public welfare, and contribute to visibility impairment and other detrimental environmental impacts.

There are well established links between NOx, SOx, ozone and PM exposure and asthma, and the asthma mortality rate in Puerto Rico is 2.5 times higher than the rate in the continental United States. Puerto Rico and the U.S. Virgin Islands are comprised of many highly sensitive ecosystems that are already vulnerable and are threatened by pollution from ships. The dependency of the islands' economies on marine transportation in combination with the physical and human geography of the territories place these populations and environments at an elevated risk from ship-related pollution.

The contribution of diesel engines to air pollution is expected to grow even more over the next two decades. Designation of the proposed ECA would significantly reduce emissions from ships and deliver substantial benefits to the local population, as well as to marine and terrestrial ecosystems.

The U.S. Government's analysis for this proposal shows that in addition to exposure to emissions from ships operating in local ports, populations of these islands are also exposed to emissions from ships operating offshore, far beyond the boundaries of the proposed ECA. These port and offshore emissions affect virtually all people living in Puerto Rico and the U.S. Virgin Islands.

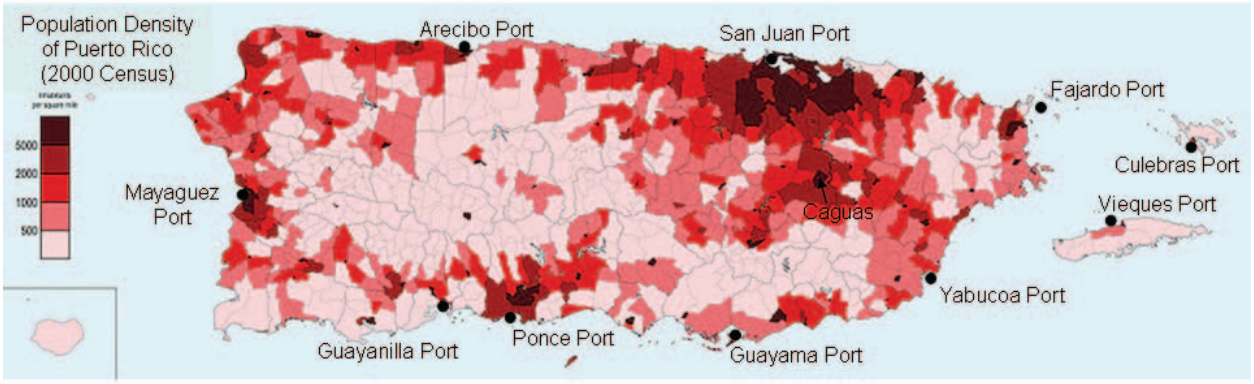

Figure 2: Ports and Populated Areas in Puerto Rico

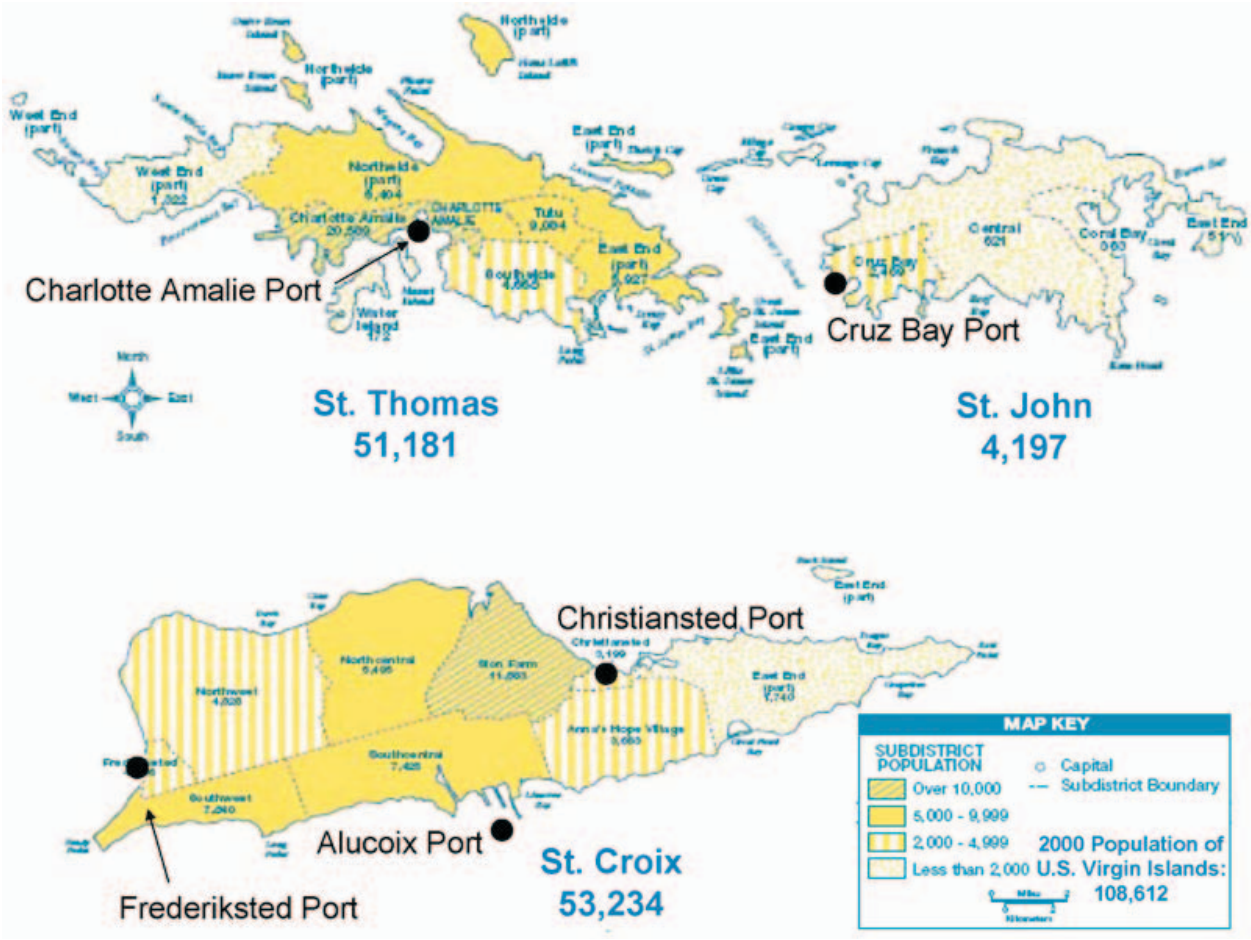

Figure 3: Ports and Populated Areas in the U.S. Virgin Islands

Emission Control Area Standards

In October 2008, the International Maritime Organization (IMO) adopted stringent new standards to control harmful exhaust emissions from the engines that power ships. The member states of IMO agreed to amend Annex VI to the International Convention on the Prevention of Pollution from Ships (MARPOL), adopting new tiers of NOx and fuel sulfur controls. The most stringent of these new emission standards apply to ships operating in specially designated Emission Control Areas (ECAs):

- Beginning in 2015, fuel used by all vessels operating in these areas cannot exceed 0.1 percent fuel sulfur (1,000 ppm). This requirement is expected to reduce PM and SOx emissions by more than 85 percent.
- Beginning in 2016, new engines on vessels operating in these areas must use emission controls that achieve an 80 percent reduction in NOx emissions.

In most cases, ships already have the capability to store two or more fuels. However, to meet the 2015 requirement of 1,000 ppm fuel sulfur, some vessels may need to be modified for additional distillate fuel storage capacity. As an alternative to using low sulfur fuel, ship operators may

choose to equip their vessels with exhaust gas cleaning devices ("scrubbers"). In this case, the scrubber extracts sulfur from the exhaust.

Costs

The costs of implementing and complying with the proposed ECA are expected to be reasonable in comparison to the costs of achieving similar emissions reductions through additional controls on land-based sources. We estimate the total costs of improving ship emissions from current performance to ECA standards while operating in the proposed ECA will be approximately $70 million in 2020. The costs to reduce a ton of NOx, SOx and PM are estimated at $500, $1,000 and $10,000, respectively.[2] In comparison, the 2007 heavy-duty highway truck rule cost $2,300 per ton for NOx and $15,000 per ton for PM. Improving current ship emission levels to ECA standards is one of the most cost-effective measures available to obtain clean air benefits for these islands.

The economic impacts of complying with the program on ships engaged in international trade are expected to be modest. For example, the impact on the price of a cruise on a medium-sized cruise ship that operates a route between the U.S. mainland and Puerto Rico is estimated to increase by approximately US$0.60 per passenger per day for a 5-day cruise. This represents a less than one percent increase in the price of such a cruise. Container ships operating in the proposed ECA are expected to see a cost increase of less than one percent of the cost of transport of a 20-foot container, or about $0.33 to $1.35 per unit, depending on the size of the ship and the length of the route.

Benefits

Reducing ship emissions from today's performance to ECA standards would reduce local inventories of NOx, SOx and PM2.5 in 2020 by approximately 11,000, 31,000 and 3,300 short tons, respectively. The emission reductions that will occur as a result of applying ECA controls in the proposed area would help reduce the damage to human health and the environment that is caused by ship emissions and would help Puerto Rico and the U.S. Virgin Islands achieve and maintain healthier ambient air quality. Designating this ECA would also help areas of environmental and ecological significance begin to recover their natural balance.

Next Steps

IMO members are slated to consider our ECA proposal at the 61st session of the Marine Environmental Protection Committee (MEPC 61), in London, beginning September 27, 2010. Final action on the proposal may be taken by Parties to Annex VI (those who have ratified the treaty) as early as MEPC 62, scheduled for summer 2011. Given the MARPOL amendment process and the lead time specified in the regulations, an ECA adopted at MEPC 62 could enter into force as early as 2014.

[2] The proposal to the IMO presented cost effectiveness in units of US$ per metric tone ($/MT): $600/MT for NOx, $1,100/MT for SOx and $11,000/MT for PM..

Public Participation Opportunities

There will be a public meeting hosted by the U.S. Coast Guard in advance of MEPC 61, on September 10, 2010, in Washington, DC. Members of the public interested in attending must contact the meeting coordinator at least 7 days prior to the meeting. Additional details, including the MEPC meeting agenda, can be found at the U.S. Coast Guard's IMO web page at www.uscg.mil/imo/mepc/default.asp.

For More Information

You can access the U.S. proposal and related documents on EPA's Office of Transportation and Air Quality web site at:

www.epa.gov/otaq/oceanvessels.htm

For additional information, please contact the Assessment and Standards Division at

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