

Frequently Asked Questions about the Emission Control Area Application Process

The United States Government is planning to request that the International Maritime Organization designate an area off our coasts in which stringent international emission controls would apply to ocean-going ships. The U.S. Environmental Protection Agency is currently preparing the documents for this application package. This information sheet answers questions we have heard from stakeholders about the application package and approval process.

What are the international marine standards and why is application for area designation necessary?

In October 2008, the International Maritime Organization (IMO) adopted stringent new standards to control harmful exhaust emissions from the engines that power ships. The IMO is the United Nations agency concerned with maritime safety and security and the prevention of marine pollution from ships. The standards are found in Annex VI to the International Convention on the Prevention of Pollution from Ships (MARPOL).

MARPOL Annex VI is a program that consists of two sets of standards to control emissions from ships. The global standards for the sulfur content of fuel and nitrogen oxides (NO_x) emissions from engines apply to ships at all times. In recognition that some areas may require further control, Annex VI also contains geographic-based standards. Ships operating in designated Emission Control Areas (ECAs) are required to comply with more stringent fuel sulfur and engine NO_x limits.

The table below summarizes the global and geographic-based international standards and their phase-in schedule.

International Ship Engine and Fuel Standards (MARPOL Annex VI)

	Year	Fuel Sulfur	NOx
Emission Control Area	Today to Jul 2010	15,000 ppm	
	2010	10,000 ppm	
	2015	1,000 ppm	
	2016		Tier 3 Aftertreatment*
Global	Today to Jan 2012	45,000 ppm	
	2012	35,000 ppm	
	2020	5,000 ppm	
	2011		Tier 2 Engine Controls*

* Today's Tier 1 NOx standards range from approximately 10 to 17 g/kW-h, depending on engine speed. The Tier 2 standards represent a 20% NOx reduction below Tier 1, and the Tier 3 standards represent an 80% NOx reduction below Tier 1.

These international standards are an important part of our national program to reduce NOx and particulate matter (PM) emissions from ships operating in areas that affect air quality in the U.S. To achieve the full benefits of the international program, areas off our coastlines must be designated as an ECA.

Who can apply for ECA designation?

To be eligible to submit an application to designate a new ECA, an interested country must have ratified, and thus become a Party to, MARPOL Annex VI. An application for an ECA must be approved by the Parties to MARPOL Annex VI; this would take place at a meeting of the Marine Environment Protection Committee (MEPC). The U.S. deposited its Instrument of Ratification with the IMO on October 8, 2008. Annex VI entered into force for the U.S. on January 8, 2009, thus the U.S. is now eligible to apply for an ECA.

The U.S. Environmental Protection Agency (EPA) has the lead on developing the ECA application package for the U.S. Government. We are coordinating with U.S. Coast Guard, State Department, the National Oceanic and Atmospheric Administration and other agencies to develop the package.

What are the required components of an ECA application?

The criteria and procedures for ECA designation are set out in Appendix III to MARPOL Annex VI. To be approved, an ECA application must demonstrate a need to prevent, reduce, and control emissions of sulfur oxides (SOx), PM, and/or NOx from ships. The specific criteria are summarized below.

Annex VI Appendix III requires:

- a delineation of the proposed area of application;
- a description of the areas at risk on land and at sea, from the impacts of ship emissions;
- an assessment of the contribution of ships to ambient concentrations of air pollution or to adverse environmental impacts;
- relevant information pertaining to the meteorological conditions in the proposed area of application to the human populations and environmental areas at risk;
- description of ship traffic in the proposed ECA;
- description of the control measures taken by the proposing Party or Parties;
- relative costs of reducing emissions from ships compared with land-based controls; and
- an assessment of the economic impacts on shipping engaged in international trade.

What is the expected timeline for the U.S. ECA application to the IMO? When an application is submitted, what are the steps and timeline for approval and for implementation?

Now that the United States has ratified Annex VI, the first opportunity to apply for ECA designation for U.S. coasts is at the 59th session of the Marine Environment Protection Committee (MEPC 59), to be held in London in July 2009. To allow for time for translation of the package into the working languages of the IMO, the ECA application must be submitted no later than March 2009.

An application for ECA designation must be approved by the Parties to Annex VI, as an amendment to Annex VI. Assuming the application is considered at MEPC 59, the earliest possible approval date is the following MEPC meeting, MEPC 60, which is anticipated to take place in March 2010. Given the MARPOL amendment acceptance process and the lead time specified in the regulations, an ECA submitted on this timeline could be expected to enter into force as early as August 2012.

How would vessel operators be affected?

Since the ECA is likely to become effective between 2010 and 2015, ships operating in the ECA would be required to use fuel with a sulfur content not exceeding 10,000 ppm; in 2015, this would be reduced to 1,000 ppm. 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.

In addition, engines on vessels constructed in 2016 and later would need to comply with the Annex VI Tier 3 NO_x limits, when operating in an ECA. These NO_x limits are expected to necessitate the use of aftertreatment technology, such as selective catalytic reduction (SCR).

Are there any ECAs currently in effect?

Yes, there are two ECAs in effect today, exclusively controlling SO_x thus they are called Sulfur Emission Control Areas, or SECAs. The first SECA was designated to control the emissions of SO_x in the Baltic Sea area, and entered into force in May 2005. The second SECA was designated to control the emissions of SO_x in the North Sea area, and entered into force in November 2006. Ships operating in these areas must currently use fuel with a sulfur content that does not exceed 15,000 ppm.

Is the U.S. intending to submit a joint application with Canada and/or Mexico?

We are collaborating with Environment Canada with the intent to submit a joint U.S./Canada ECA application. President Bush and Canadian Prime Minister Harper agreed on this approach at the March 2006 Security and Prosperity Partnership meeting. While our mutual goals could be met with individual applications, a joint application will be received more favorably at the IMO.

We have also had discussions with the Mexico National Institute of Ecology (INE) regarding inclusion of Mexico in the joint application. While the INE has expressed interest, there is concern that it will not be possible to perform the necessary inventory and air quality analyses in time for a submittal to MEPC 59. In addition, it is not clear if Mexico will ratify Annex VI in the near term. We expect to work with Mexico separately, if necessary to extend the ECA in the future.

How far off the U.S. coastline will the ECA extend? How will practicalities like the sovereign waters of adjacent nations be handled in the application?

We have not yet completed all of the analyses that will be necessary to make a determination of the boundaries of a U.S./Canada ECA. Preliminary air quality modeling suggests that emissions from ships are transported over great distances. As such, the area included in the application will likely be continuous along the coasts.

In the case of adjacent nations, the ECA would not extend into the exclusive economic zones (EEZ)¹ of countries that are not part of the application, even if the emissions from ships operating in the EEZs of those countries have an impact on U.S. air quality. Generally a country's EEZ extends to a distance of 200 nautical miles (nm) out from its coastal baseline. One exception is in the area around Florida, where the U.S. EEZ is much smaller because of the proximity to the Bahamas EEZ.

¹ An EEZ is a seazone over which a country has sovereign rights for the purpose of exploring, conserving and managing natural resources of the seabed and subsoil and the superjacent waters. For more information on the U.S. EEZ, see <http://www.nauticalcharts.noaa.gov/csdl/mbound.htm>

Will the coasts of Alaska and Hawaii (and other U.S. territories) be included in the application? If not, can they be included in the future?

Ideally, we would like to include all of the U.S. coasts in our application for ECA designation, including Alaska, Hawaii, and the U.S. territories. To do so, however, we will have to provide information that demonstrates a need for control, as specified in the criteria for ECA designation. This is challenging because, although our emissions modeling includes all 50 states, our air quality modeling does not extend beyond the 48 contiguous states. Therefore, it will be necessary to find other ways to measure the health and environmental impacts of marine emissions on health and human welfare outside the continental United States.

We have not made a final determination on whether the coasts of Alaska and Hawaii will be included in the initial U.S./Canada ECA application. We are working with the Alaska DEC and Hawaii DOH to generate information that would better inform us of the health and environmental impacts that shipping may have in these states. We have not yet engaged other U.S. territories on this issue.

We intend to submit an application for ECA designation at the earliest possible date covering the areas for which we have the strongest case. If the case for controlling additional areas is compelling, such areas would be included in a future, supplemental application for ECA designations.

Will designation of a U.S. ECA encourage shipping lines to divert “discretionary” shipments away from U.S. ports (in favor of nearby ports not within the designated ECA)?

We are exploring this question as we develop our application for ECA designation. Our current analysis suggests that this will not be the case. We don't expect shipping to shift from U.S. ports to ports outside the ECA. Shippers currently choose ports for a number of reasons including available facilities, geographic location, and access to land-based distribution channels (railroads and highways). ECA designation will not affect these underlying reasons for choosing one port over another. In addition, the increase in fuel costs associated with operating in an ECA zone are expected to be small compared to the total fuel costs of ocean-going vessels, since operating in the ECA would be only a small portion of the total operating time of such a vessel. Even if it would be advantageous for a ship to take steps to avoid operating in an ECA, at least some of those benefits would likely be offset by additional costs in terms of time and labor.

Finally, we expect the ECA to cover a continuous zone along U.S. and Canadian coasts, and Mexico at a later date. Therefore, the options for avoiding the ECA by using some other port would be limited.

Will the low-sulfur fuel that meets the ECA requirements be available when the U.S. ECA goes into force? What will happen if the fuel is not available in time?

Distillate fuel is already available, in the U.S. and Canada, which would meet the long term 1,000 ppm fuel sulfur limit that applies in ECAs beginning in 2015. Although a U.S./Canada ECA could result in additional demand for distillate fuel, on a global scale, we believe the amount of distillate fuel used in an ECA would be very small.

Global distillate fuel demand is projected to grow significantly over the timeframe of the long term ECA standards. The U.S. Energy Information Administration projects an annual growth in global demand for refined products of about 1.5 percent per year over the next five years.² This growth is largely from developing economies such as in India and China. In response to this demand, refineries have planned and begun substantial refinery capacity expansion projects. In comparison to this growth in distillate supply and demand, any effect on demand from a U.S./Canada ECA would be small.

What are the projected health benefits from a U.S. ECA designation? Projected economic benefits? How do these outweigh the differential fuel costs?

Many of our nation's most serious nonattainment areas for ozone and particulate matter with diameter less than 2.5 microns (PM_{2.5}) are affected by emissions from ships. Currently more than 40 major U.S. ports are located in nonattainment areas for ozone and/or PM_{2.5} and are heavily impacted by these emissions. The contribution of these engines to air pollution is substantial and is expected to grow rapidly in the next two decades. Without further action, by 2030, NO_x emissions from ships are projected to more than double, growing to 2.1 million tons a year, while annual PM_{2.5} emissions are expected to almost triple to 170,000 tons.

In preparation for an ECA designation application, EPA is performing a number of scientific and economic analyses including air quality, health effects, deposition, and refinery modeling. Preliminary results suggest that the health (and other) benefits would greatly outweigh the costs of an ECA. The application will use our final air quality modeling and benefits analyses to make a strong case for an ECA designation based on the health and environmental impacts of the sulfur, particulate matter, and NO_x emissions from ships.

How would a U.S. ECA be implemented and enforced under U.S. law?

MARPOL Annex VI is implemented by U.S. law through the Act for the Prevention of Pollution from Ships (APPS). APPS grants authority to both the EPA and the U.S. Coast Guard with respect to implementation and enforcement. EPA has authority to issue regulations to implement the standards; we expect to work with Coast Guard as we develop those regulations. Coast Guard and EPA each have enforcement authority, although the Coast Guard will have the lead especially with respect to vessel surveys and compliance actions.

² U.S. Energy Information Administration, "International Energy Outlook 2008," September 2008, www.eia.doe.gov/oiaf/ieo/index.html.

How does an ECA fit into EPA's Clean Air Act Program?

An Emission Control Area is part of a three-part program to address emissions from shipping, along with the stringent international standards recently adopted by the IMO and our Clean Air Act standards for Category 3 marine diesel engines. In our Advance Notice of Proposed Rulemaking, we indicated we are considering standards similar to the program set out in the United States Government submittal to the IMO for the international program (see 72 FR 68522, December 5, 2007). We are currently preparing a Notice of Proposed Rulemaking for the Clean Air Act program, and the final rule is due by December 17, 2009 (see 72 FR 69518, December 7, 2007). More information about our Clean Air Act marine diesel engine program can be found at www.epa.gov/otaq/marine.htm and www.epa.gov/otaq/oceanvessels.htm.