

# *Proposal to Designate an Emission Control Area for NO<sub>x</sub>, SO<sub>x</sub> and PM*

Submitted by the United States  
and Canada  
March 27, 2009

## Context

- Leaders of Canada and United States agreed to work together toward an ECA designation for North America at the Security and Prosperity Partnership meeting in March 2006:

***"To reduce marine air pollution .... Our two countries are preparing to approach the International Maritime Organization to designate special areas for controlling sulfur emissions from marine vessels."***

- This was re-confirmed by the Government of Canada in the 2007 Regulatory Framework on Air Emissions
- ECA application was submitted to the IMO on March 27 and announced by the two governments that it intends to present in July 09 for adoption in March 2010

## Overview

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- ❑ To implement a 2006 commitment by the Prime Minister and the President, the United States and Canada have proposed an Emission Control Area (ECA)
- ❑ This is necessary to protect public health and the environment:
  - significantly reduce emissions from ships
  - deliver substantial benefits to large segments of the population
  - deliver substantial benefits to marine and terrestrial ecosystems
- ❑ Initial consultations were held in January 2009
- ❑ The US submitted the proposal to IMO March 27 and announced it March 30. Canada announced it April 9.
- ❑ This will be considered by IMO in July and begins more consultations, not ends them.

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## The ECA application describes

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- ❑ the proposed area covered
- ❑ human populations and environmental areas at risk
- ❑ how ships contribute to ambient concentrations of air pollution and its adverse impacts.
- ❑ relevant information on meteorological conditions in the proposed ECA
- ❑ ship traffic in the proposed ECA
- ❑ control measures taken by Canada and the US
- ❑ relative costs of reducing emissions from ships compared with land-based controls
- ❑ economic impacts on international shipping

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## The Proposed Area

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## Consultations: What we heard

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### **How will the ECA be handled for the internal waters of the Great Lakes both on the US and Canadian side?**

- The proposal to the International Maritime Organization **will not include** the Great Lakes.
- However, these waters will be subject to similar domestic regulations in both countries.
- Canada views these regulations need reflect fleet renewal as Lakers need to be replaced.

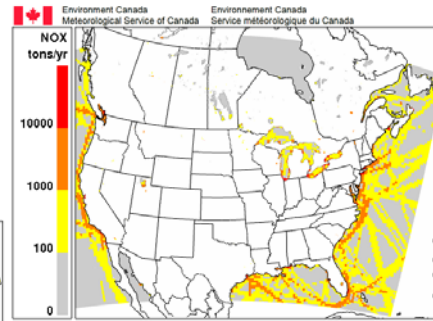
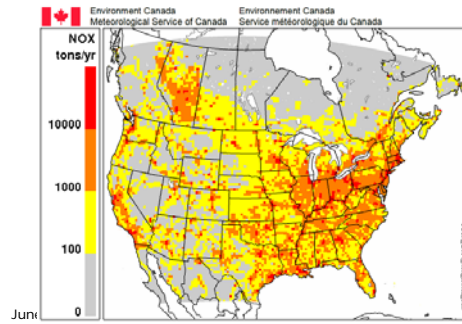
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## Ships Produce Significant Emissions, Compared to Emissions on Land

- Projection of NO<sub>x</sub> annual emissions from marine commercial shipping sources



- NO<sub>x</sub> emissions from ships will be of the same order of magnitude as emissions from industrial and on-land transportation sources and concentrated along coastlines and seaways

## Ship Emissions Contribute to Air Pollution

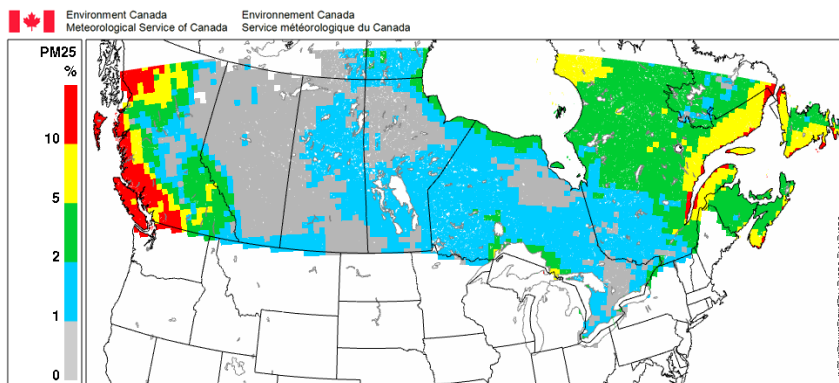


Figure 3.3-6: Ships' Contribution to Ambient PM<sub>2.5</sub> in Canada in 2020.

# ECA Will Reduce Air Pollution

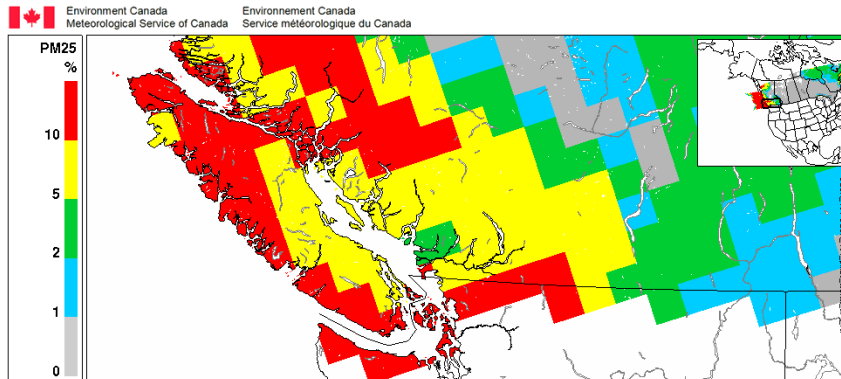


Figure 3.3-11: Reduction in Levels of Ambient PM2.5 in 2020 from the Proposed ECA Compared to Current Performance, Zoomed Over Southwestern British Columbia.

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# ECA Will Improve Human Health

- Ship emissions contribute to a large number of adverse human health impacts, especially in densely populated coastal areas.
- In U.S. and Canada combined as many as 8,300 lives can be saved and over three million people can experience relief from acute respiratory symptoms each year.

Table 4.2-3: Ships' contribution to 2020 human health impacts in Canada, and improvement resulting from ECA (combined PM2.5 and ozone)

HEALTH EFFECT	2020 ANNUAL SHIP-RELATED INCIDENCE (CURRENT PERFORMANCE)	2020 ANNUAL REDUCTION IN SHIP-RELATED INCIDENCE WITH ECA
Mortalities	390	175
Hospital Admissions	99	34
Emergency Room Visits	320	95
Adult Chronic Bronchitis Cases	260	140
Child Acute Bronchitis Episodes	1,520	780
Asthma Symptom Days	76,000	19,000
Minor Restricted Activity Days	110,000	20,000
Restricted Activity Days	290,000	150,000
Acute Respiratory Symptom Days	790,000	280,000

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## Ship Emissions Contribute to Acid Deposition

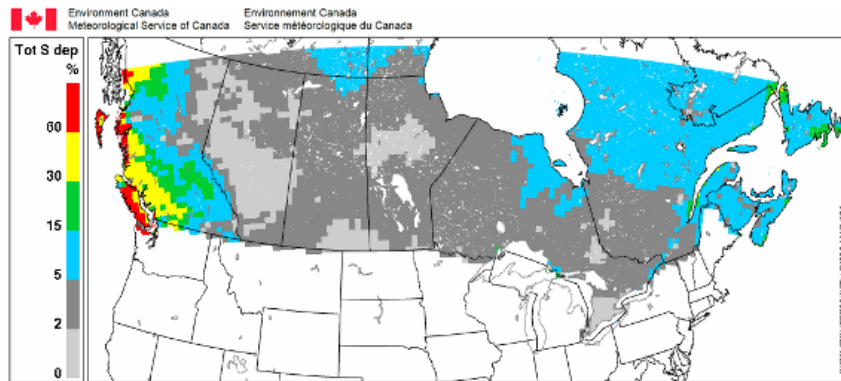


Figure 5.1-7: Ships' Contribution to Sulphur Deposition in Canada in 2020 at Current Emissions Performance.

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## ECA Will Improve Ecosystems

- Significantly reduce the amount of sulphur and nitrogen deposition in sensitive ecosystems.
  - 19 percent reduction in excess deposition in southwestern British Columbia
  - eliminate excess deposition over about 13,500 km<sup>2</sup> across Canada
- Designating an ECA will help some of these areas begin to recover their natural balance.

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## Land-Based Sources Are Controlled

- U.S. and Canada have already imposed stringent restrictions on emissions of NO<sub>x</sub>, SO<sub>x</sub>, PM and other air pollutants from a wide range of industrial, commercial and transportation activities.
- U.S. and Canadian air pollution control programs have been highly successful.
  - The most significant source categories have applied advanced emission control technology where feasible, reducing emissions by as much as 99% in many cases.

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## Estimated Costs

- ECA costs are expected to be reasonable
  - small absolutely
  - compared to the costs of achieving similar emissions reductions from land-based sources
- One of the most cost-effective measures to obtain necessary improvements to air quality in the U.S. and Canada.

TYPE OF COST	COMPLIANCE STRATEGY	COST IN 2020 (BILLIONS USD)
Operating Costs (apply to all ships)	Fuel Switching	\$1.9
	Urea Consumption (for SCR-equipped engines)	\$0.17
Hardware Costs (apply to ships built in 2020)	Fuel Switching	\$0.03
	SCR	\$1.1
<b>Total Costs (US + Canada)</b>		<b>\$3.2</b>

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## Economic Impacts Will Be Modest

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- Economic impacts on ships engaged in international trade expected to be modest:
  - US\$18 per TEU for ship in liner service with about 1,700 nm operating in the ECA
    - 3% increase in operating costs
  - US\$7 per day per passenger for seven-day cruise entirely within the ECA
- For vast majority of goods currently moved by ship, there are no close transportation alternatives.
- Consumer price impacts expected to be small
  - transportation only a small share of total production costs for finished goods

## Our ECA Timeline

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- Presentation at IMO in July 2009
- Continued consultations with provinces, stakeholders, and IMO members throughout summer
- Adoption of ECA in March 2010 at IMO;  
**implementation as early as August 2012**



## Consultations: What we heard

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### **How are the ECA requirements and going to be implemented in Canada on both domestic and foreign ships?**

- The ECA will be implemented by amendments to the future *Vessel Pollution Prevention Regulations*, under the *Canada Shipping Act, 2001*.
- This will follow the full regulatory process.
- Enforcement will be through Transport Canada Marine Safety.

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## Conclusions

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- Ship emissions contribute significantly to air pollution, adverse human health outcomes and ecosystem damage in the U.S. and Canada.
- The proposed ECA will dramatically reduce these effects and improve public health and the environment.
- U.S. and Canada have already implemented stringent emission controls on land-based sources of air pollution.
- Similar controls on ships will achieve substantial benefits at comparable and reasonable costs.
- Adopting the proposed ECA will show Annex VI supports human health and environmental goals.
- We will continue to work with stakeholders.

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