CRUISE LINER EMISSIONS REDUCTION INCENTIVES PROJECT
MARINE FUELS FACT SHEET

Summary: Bluewater Network is a partner in the Port of San Francisco's Cruise Liner Emissions Reduction Incentives Project to reduce cruise ship emissions by offering lower docking fees to ships that switch from bunker fuels to cleaner marine distillate fuels while operating in San Francisco Bay.

The US EPA awarded a one-year $100,000 grant through the West Coast Diesel Emissions Reductions Collaborative to the Port of San Francisco to offset revenues lost by providing reduced docking fees to the cruise lines in exchange for using cleaner fuels.

Emissions Reductions: By switching from bunker fuels to marine distillate fuel with .5 percent sulfur content, a ship reduces emissions as follows: Sulfur oxides 90 percent; Particulate Matter 60 percent; Nitrogen Oxides 6 – 10 percent.

Sample Emissions Reductions from Cleaner Marine Fuels – Regal Princess – Berthing Only

Air Pollutant	Bunker Fuel Pounds per Port call	Marine Distillate Pounds Reduced per port call	Total Emissions Reductions per Season (12 calls)	Total for Cruising Season in SF (12 calls)
Sulfur Oxides	1,520 lbs	1,368 lbs	16,416 lbs	
Nitrogen Oxides	2,040 lbs	204 lbs	2,448 lbs	
Particulate Matter	140 lbs	84 lbs	1,008 lbs	**19,872 lbs ~ 10 tons per year**

Sources: ENVIRON, Shoreside Power Study for Port of San Francisco, 2005; California Resources Board.

Cruise Ship Operations: Cruise ships made 83 calls to the Port of San Francisco in 2004. Each ship spends about 10 to 12 hours in port loading or unloading passengers and taking on supplies. A vessel will burn 15 to 20 tons of fuel while docked and idling its large diesel engines to provide on-board electricity, depending on its size and power needs.

Bunker Fuel: Cruise ships and other ocean-going ships typically operate on heavy bunker fuel, the bottom of the barrel of the oil refining process. It is very thick, black, relatively cheap and sold by the ton. The sulfur content is about 2.8 percent or 28,000 parts per million. Some cruise ships use an intermediate bunker fuel of 1.5 to 2 percent sulfur. These fuels typically costs $170 to $200 to ton but has recently soared to more than $300 per ton.

Marine Distillate Fuel: This more refined, cleaner marine fuel is often used in cargo ship auxiliary engines when in port to provide on-board electricity. The sulfur content is about .5 percent sulfur or 5,000 parts per million. It typically costs $100 to $200 per ton more than bunker fuel, but has recently soared to more than $600 per ton in some ports. Recent prices can be found on bunkerworld.com

Cruise ship engines: Cruise ships operate on five to nine diesel-electric engines and use one or more in port to provide on-board electricity. Large marine engines are mostly unregulated and not required to use air pollution controls. Because cruise ships require far more electricity than a cargo ship when in port, they produce more emissions when idling at the dock.