Economic Incentives for Alternative Fueled Vessels

Workshop on Alternative Fuels for Ferries and Other Vessels

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1. Introduction
2. Carl Moyer Program
3. Mobile Source Emission Reduction Credits (MERCs)
4. Congestion Mitigation and Air Quality Program (CMAQ)
5. Tax Credits
6. Legislative Efforts
7. Summary

Economic Incentives Agenda

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Introduction

- Emissions from marine vessels account for about 5% of all heavy-duty mobile source NOx emissions in the State of California
- Estimates for the next 10 years predict an increase of 20% in NOx emissions from marine vessels in the state compared to a 9% increase in NOx emissions due to onroad vehicles and reductions in NOx emissions from offroad equipment and locomotives
- Most low emission vessel projects funded so far have been diesel-to-diesel repowers

	Current		2010	
Source	**NOx**	**PM 10**	**NOx**	**PM 10**
Onroad Heavy-duty Vehicle	426	23	465	14
Offroad Equipment	406	22	317	26
Marine	71	10	84	12

Estimates of California NOx and PM Emissions

Carl Moyer Memorial Air Quality Standards Attainment Program

- The Carl Moyer Program funded 33 marine vessel projects in its first year of implementation in FY98-1999. Those projects represented reductions in NOx of 375 tons/year

Purpose	Reduce emissions from heavy-duty engines to meet goals set in the 1994 California State Implementation Plan.
Eligible Vessels	All marine vessels including ferries, tug/tow/push boats, fishing boats, bulk carrier, passenger ship
Project Types	New purchases, repowers (including diesel to diesel), and retrofits
Incentive Amount	Up to $12,000 per ton of NOx reduced. Typical ferry projects received about $120,000
Apply to	California local Air Quality Management District (AQMD) or Air Pollution Control District (APCD)
For more information	California Air Resources Board: http://www.arb.ca.gov/msprog/moyer/moyer.htm

Carl Moyer Program Project Example: Diesel to Diesel Ferry Engine Repower

- Three funded statewide, all in the Bay Area
- 19 tons of NOx reduced annually
- Cost effectiveness is about $1,500/ton of NOx reduced

- Typical project consists in replacing the two Detroit Diesel 12V71 engines with Detroit Diesel Series 60 engines
- Other marine projects include fishing boats and tugs

Mobile Source Emission Reduction Credits (MERCs)

- Alternative fueled vessels can easily provide long term emission credits used to offset new stationary source emissions

Purpose	Offset economic growth-related increased stationary emissions with reductions from mobile sources
Eligible Vessels	All vessels (ARB and local District approval required)
Project Types	All projects providing real, quantifiable and surplus reductions including repowers, retrofits, and new purchases
Incentive Amount	The incentive amount depends on among other things the market value of the emission credits
Apply to	California local Air Quality Management District (AQMD) or Air Pollution Control District (APCD)
For more information	California Air Resources Board: http://www.arb.ca.gov/msprog/mserc/mserc.htm

MERC Project Example: PG&E Generating Otay Mesa Facility

- 4 commercial ferries repowered with new lower emitting diesel engines
- 35 tons of NOx reduced annually for 30 years
- Cost effectiveness was greater than $12,000/ton of NOx reduced

- Typical project consists in replacing two-stroke Detroit Diesel engines with Detroit Diesel and Cummins electronically controlled engines
- MERC credits will also be generated by tug boat repowers

Congestion Mitigation and Air Quality Program (CMAQ)

- Approximately $8 billion has been authorized for FY98-03. Funding is distributed to County Transportation Planning agencies based on attainment status and population

Purpose	Fund projects in air quality non-attainment and maintenance areas which reduce transportation-related emissions
Eligible Vessels	Projects included in the State or County Transportation Plan and/or State Implementation Plan
Project Types	Projects must provide quantifiable transportation-related emission reductions
Incentive Amount	Public agencies (cities, counties, transit operators) compete for project funding. Public/private partnerships are allowed
Apply to	State and County Transportation Planning Agencies
For more information	Federal Highway Administration: http://www.fhwa.dot.gov/environment/cmaq.htm

Congestion Mitigation and Air Quality Program (CMAQ)

- CMAQ funding has been traditionally used to fund projects such as traffic flow improvements, transit improvements, and transportation demand management strategies and not projects related to alternative fueled vessels
- The Bay Area AQMD is funding, through CMAQ, the purchase of a new ferry for the Alameda-Oakland service
- The New York Metropolitan Transportation Council is providing CMAQ funds to the Port Authority of New York and New Jersey to establish barge services that will ship freight containers to New Jersey across the Hudson River as opposed to trucking the containers across the Verrazano Narrows bridge
- The Transportation Equity Act for the 21st Century which authorizes the CMAQ funds also sets aside $20 million per year for the construction of ferry boats and ferry terminal facilities in Alaska, New Jersey and Washington.

Tax Credits

- Current federal tax credits do not apply to alternative fueled vessels
- Clean-fuel vehicle property deduction provides a deduction of $2,000 to $50,000 based on vehicle size
- Clean-fuel vehicle refueling property deduction provides a deduction of up to $100,000
- These deductions are not available for vehicles used by governmental units

Legislative Efforts

- Many current incentive programs are the result of successful legislative efforts
- The Carl Moyer Program (AB 1368, AB 1571) was a result of the cooperative efforts of government and industry to provide a solution to air quality and transportation issues
- Similarly, the Sacramento Emergency Clean Air and Transportation Program (AB 2511), which will provide $50 million in incentive for onroad projects in the Sacramento area, is the result of a community-based effort
- Successful legislative efforts to create incentive programs have relied on consensus building of concerned stakeholders (regulators, equipment owners/users, and environmental groups)
- Other examples are California legislative efforts aimed at reducing congestion in the Bay Area like San Francisco Bay Area Water Transit Authority
- Key to all these programs is justifying the funding and then finding the funding source

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- Generally alternative fuel technologies have higher front end costs but much lower NOx and PM emissions. Incentives based on the emission benefits are used to offset the higher initial cost of these technologies
- Incentive programs will depend on emissions benefits and California's economy. They may only available for a limited time
- Alternative fuel technologies will have to compete with conventional technologies, but can take advantage of incentive programs to reduce first costs by increased volume and improved reliability
- The most successful programs are those that bring together all the stakeholders and develop consensus solutions that are workable, cost effective, and provide needed improvements in congestion and air quality