California Marine Engine Emissions Inventory and Pleasure Craft Survey

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Introduction

- California ARB continually looking at marine engine/boat emissions reductions
  - Catalyst based outboards
  - More stringent EVAP controls
  - Refueling standards, active vapor recovery
  - Chemical disclosures, labeling requirements
  - Detailed applications

“California has the worst air quality in the country”
Introduction

• But just how meaningful are these proposals and what affect with they have on the overall air quality/emissions inventory in CA?
Introduction

- With some of our industry data, together with CA pleasure craft survey/registration data
  - Leverage this information to potentially make a much more meaningful contribution to emissions reduction
Pleasure Craft Survey

• Conducted by the Institute for Social Research
  California State University
  – Approximately 1150 participants in survey
  – Targeted participants based on DMV and Coast Guard registration information
Pleasure Craft Survey

• Questions included:
  – What year is your boat?
  – Carbureted or fuel injection?
  – What material is fuel tank?
  – How many days did you operate your boat?
  – …About 32 questions in total
Pleasure Craft Survey Results

- Nearly 21% of the boats were from Model Year 2001-2005
Pleasure Craft Survey Results

- Data can be approximately split into old technology and new technology
  - 1970 to 2000
  - 2001 to 2007
Pleasure Craft Survey Results

- Approximately 50% of engine population use carburetors
Engine Retirement Rates

- Data from NMMA and the National Automobile Dealers Association

- Average powerboat scrapping rate: ~2.5% compared to 5% for automotive

California Outboard Engine Sales (Old Technology and New Technology) 1990-2014

- **Old Technology**
  - Yearly Sales
  - Cumulative Sales

- **New Technology**
  - Yearly Sales
  - Cumulative Sales

**Source:** NMMA Statistics
Assumptions

- Average engine 85HP (64kW) ICOMIA 12kW
- Average old technology HC+NOx 130g/kW-hr
- Average new technology HC+Nox 16g/kW-hr
- 35 hours/year operation
- 2.5% engine retirement rate

Attempt to understand to overall impact of old and new technology on the CA inventory
Old technology engines will be exhausted in ~2044 (30 years from now)
Emissions Inventory Projection (HC+NOx) Outboard Engines

% [HC+NOx]

YEAR


Dirty
Clean (16g/kW-hr)
Emissions Inventory Projection (HC+NOx) Outboard Engines

2044 until you reach 20% of emissions inventory

YEAR

% [HC+NOx]

Dirty | Clean (16g/kW-hr) | Sum
2019

- Do nothing but sell current engines
- Emissions will be reduced by 13%
- (In 5-years, fewer old technology engines)
2019

- More stringent emissions standards TODAY (100%)
- 13% from old technology retirement; 10% from lower emissions engines
2019

- Engine Incentive Program for 3 years...
- Potential to reduce emissions by 55%

![Graph showing emissions reduction]
Summary

• Leverage this data when faced with increased regulation

• Increased sales of 15% to 20% and retirement of older technology engines will make a very meaningful impact

• Next steps – explore feasibility of an incentive program/regulatory framework to support such a program
Overview of Major California Air Pollution Incentives, Grants, and Credit Programs

Participation in these incentive programs is open to all California residents or businesses that meet program eligibility criteria. The amount of funding available to each program is subject to budgetary limits. The basis for selecting the projects to be funded varies among programs – some are competitive based on potential emission reductions, and others distribute funds to eligible projects on a first-come, first-served basis as long as the program funds are available.

Information about the full range of air quality incentive programs is available on ARB’s website, [www.arb.ca.gov](http://www.arb.ca.gov), under Resources => grants/incentives. General information about heavy duty truck subsidies is also available from ARB’s hotline at 1-866-6-DIESEL (1-866-634-3735).

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<thead>
<tr>
<th>Program Type</th>
<th>Description</th>
<th>Forms Available At</th>
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<tbody>
<tr>
<td>Hybrid Truck and Bus Purchase Subsidies</td>
<td>Vouchers to help accelerate deployment of eligible new hybrid and zero emission trucks and buses.</td>
<td>Participating Dealers: <a href="http://www.californiahvip.org/dealerlist.asp">http://www.californiahvip.org/dealerlist.asp</a> toll free:1-888-457-4847 email: <a href="mailto:info@californiahvip.org">info@californiahvip.org</a></td>
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<td>On-Road Heavy Duty Diesel Truck Subsidies</td>
<td>Grants and loan assistance available to California-based fleets of 3 or fewer trucks for truck replacement or retrofit.</td>
<td>Participating dealers or retrofit installers: <a href="http://www.arb.ca.gov/msprog/moyer/voucher/dealerlist/dealerlist.htm">http://www.arb.ca.gov/msprog/moyer/voucher/dealerlist/dealerlist.htm</a> Dealer information also available from ARB at (916) 322-1520 or (toll free) 1-866-6-DIESEL (1-866-634-3735)</td>
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<tr>
<td>Local Air District Vehicle and Equipment Incentive Funds</td>
<td>Incentives for replacing or retrofitting older engines to cleaner-than-required emission levels. Eligible projects include cleaner on-road, off-road, marine, locomotive and agricultural engines.</td>
<td>Local Air Districts: <a href="http://www.arb.ca.gov/msprog/moyer/voucher/dealerlist/dealerlist.htm">http://www.arb.ca.gov/msprog/moyer/voucher/dealerlist/dealerlist.htm</a> Additional information also available from ARB at (toll free) 1-866-6-DIESEL (1-866-634-3735)</td>
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| Consumer Assistant Program (CAP)             | Incentive to retire and scrap currently registered CA automobiles; repair assistance tied to household income eligibility. | Department of Consumer Affairs: toll free: 1-866-272-9642  
http://www.bar.ca.gov/80_BARResources/01_CAP&GoldShield/Factsheets/Website%20CAP%20FAQs.pdf |
| Vehicle Buy Back Program                     | Incentive for scrapping currently registered, road-worthy, older California automobiles. | Currently available in the following air pollution control districts:  
Antelope Valley Air Quality Management District  
(Northeast portion of Los Angeles County). For more information, visit www.avaqmd.ca.gov, or call 1-800-717-7624  
San Luis Obispo Air Pollution Control District  
For more information, visit the San Luis Obispo APCD website at http://www.slocleanair.org or call the Vehicle Buy Back Program at 1-800-717-7624  
Mojave Desert Air Quality Management District  
Includes the northern portion of San Bernardino County and Eastern portion of Riverside County. For more information visit http://www.mdaqmd.ca.gov or call the Vehicle Buy Back Program at 1-800-717-7624.  
Districts currently on hold:  
Santa Barbara County Air Pollution Control District  
Bay Area Air Quality Management District  
South Coast Air Quality Management District |