



2012 E2S2 — CARB's New Mobile Equipment Regulations

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Government and Industry Partnership

- Jorge Rodriguez
 - CARB regulatory overview and related URS activities
- Mark G. Weir
 - U.S. Navy Fleet Readiness Center Southwest (FRCSW) organizational compliance program execution

- Population – 37,691,912 (*July 2011 U.S. Census*)
- Vehicles – 31,987,821 (*2010*)
- Several non-attainment areas for 8-hr ozone
- Emission reductions from Mobile sources
- >40,000 trucks/day

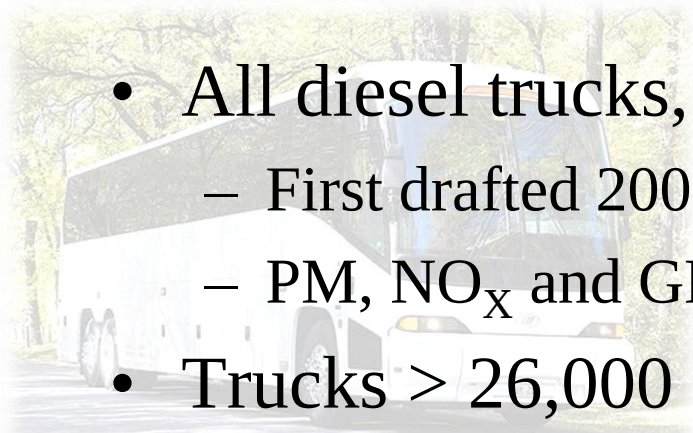


California Air Districts



- In 1998, California Air Resources Board (ARB) identified diesel particulate matter (diesel PM) carcinogenic
- Diesel Risk Reduction Plan (DRRP) – 2000
 - New standards
 - Control technology
- First ATCMs
 - Idling restrictions on school buses (2002)
 - Stationary engine (2003)



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- A faded background image of a white bus parked on a street with trees in the background.
- All diesel trucks, GVWR >14,000 lbs
 - First drafted 2008, Finalized 2011
 - PM, NO_x and GHG
 - Trucks > 26,000 lbs, required retrofits
 - Replace all trucks when 20 years or older
 - EPA MY 2010 standards (NO_x and PM)
 - Exemption:
 - Tactical vehicles
 - Low-use (less than 1,000 miles per year)

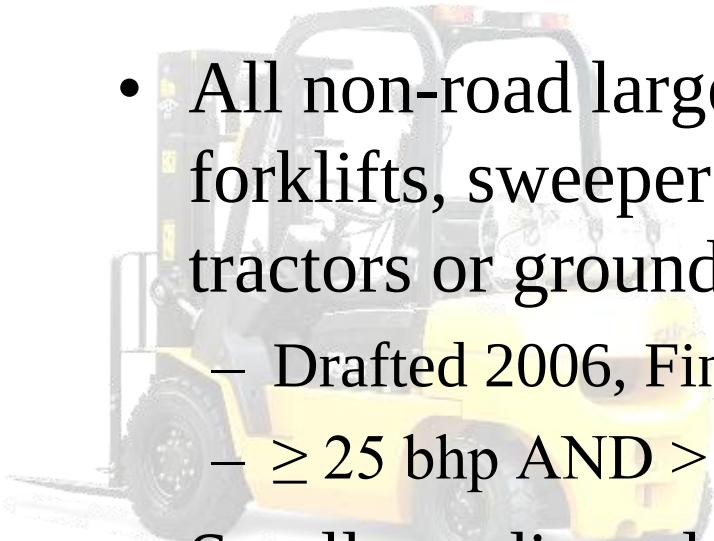


- All non-road mobile diesel equipment, engine $\geq$ 25 bhp
 - First drafted in 2007, final amendments 2011
 - PM and NO_x
- Initial compliance date 1/1/2014
- Small, medium and large fleets
- Fleet averaging (weighted)
- Other requirements:
 - Reporting, labeling, idling

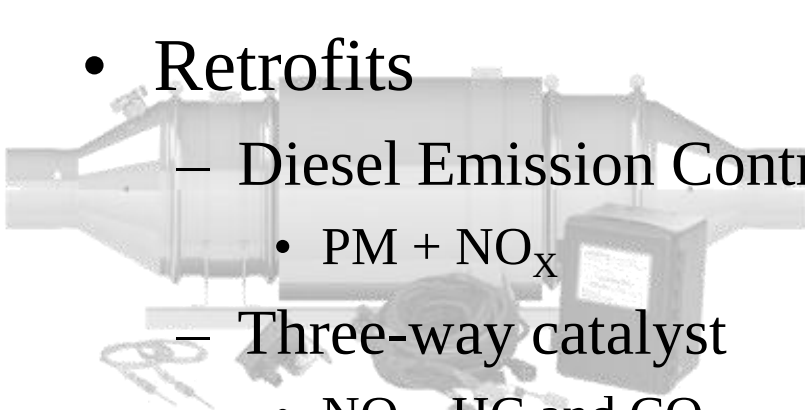


Large Spark-Ignition Regulation

- All non-road large spark-ignition (LSI) engine forklifts, sweepers/scrubbers, industrial tow tractors or ground support equipment (GSE)
 - Drafted 2006, Final amendments 2011
 - ≥ 25 bhp AND > 1.0 L displacement
- Small, medium, large fleets
- Forklift vs. non-forklift
- Fleet averaging



- Retirements
- Replacements
 - T&B: MY 2010 Standard
 - ORD: Tier 4 Non-road Engine Standard
 - LSI: MY 2010 Standard (CA only)
- Retrofits
 - Diesel Emission Control Strategies (DECS)
 - PM + NO_x
 - Three-way catalyst
 - NO_x, HC and CO



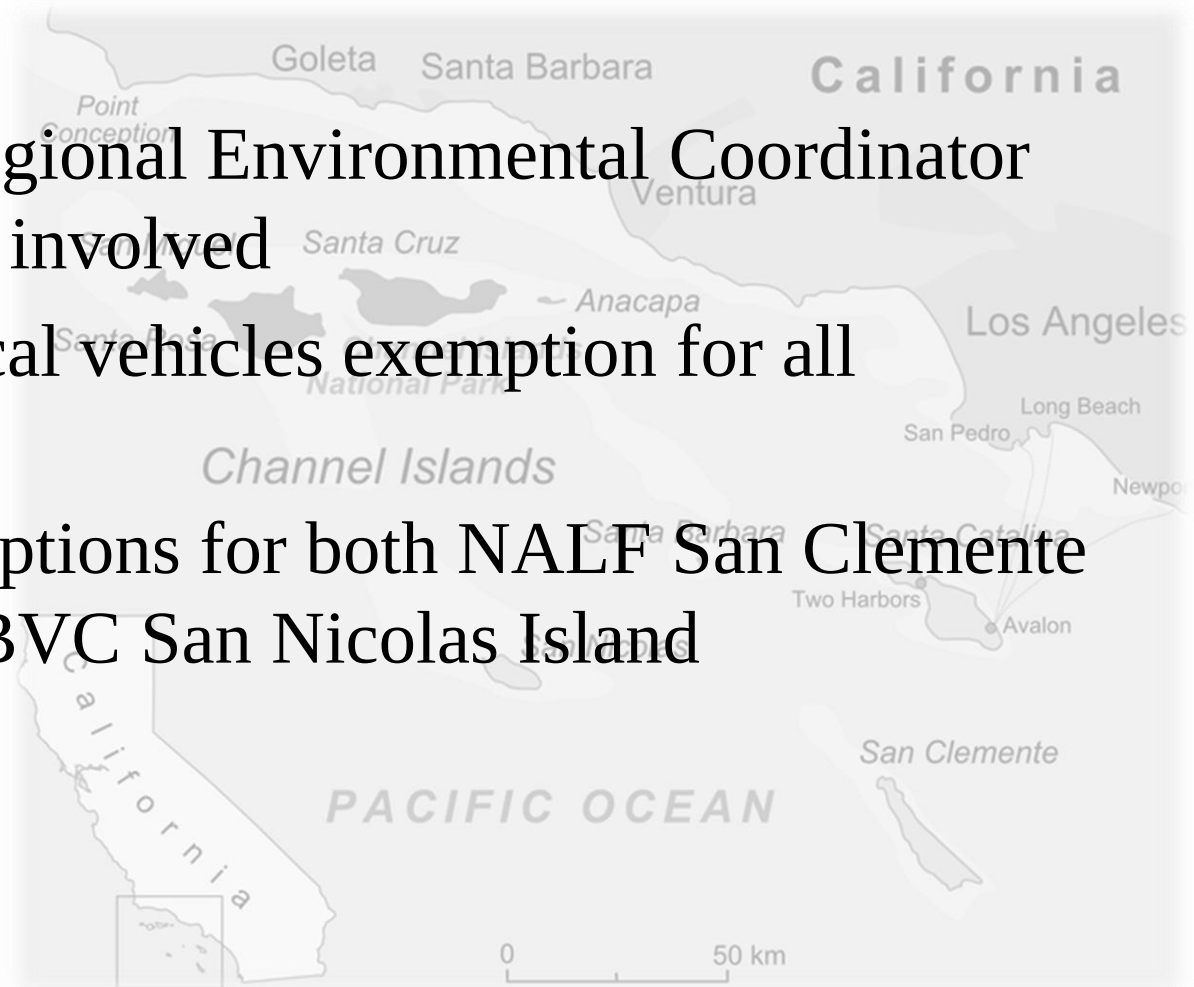


EPA Waivers

California Waivers and Authorizations

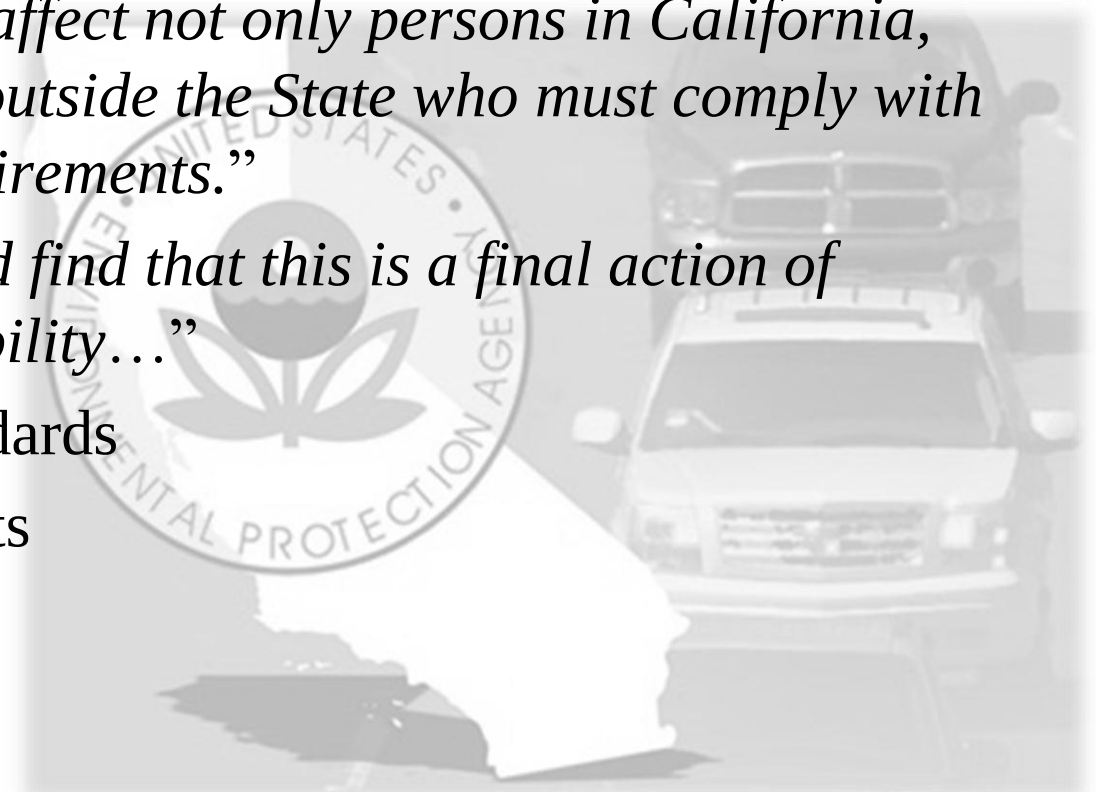
Date/ Volume Number	Title and Action
	Truck and Bus
	Large Spark-Ignition Engines and Fleets
April 4, 2012 Volume 77, Number 65 pp. 20388-20392	– CARB notes request is w/in scope of previous waiver of Federal Preemption
October 31, 2011 Volume 76, Number 210 pp. 67184-67186	– Idling Requirements, approved February 6, 2012
	ORD
	Portable Diesel Equipment
February 9, 2011 Volume 76, Number 27 pp. 7196-7198	– EPA has not granted this waiver (2008)
	LSI
February 9, 2011 Volume 76, Number 27 pp. 7194-7196	– EPA granted CARB waiver on April 4, 2012
	Mobile Cargo Handling Equipment
February 21, 2012 Volume 77, Number 34 pp. 9916-9923	– Standards and fleet requirements

- Region XI Regional Environmental Coordinator (REC) highly involved
- Secured tactical vehicles exemption for all regulations
- Blanket exemptions for both NALF San Clemente Island and NBVC San Nicolas Island



Nationwide Impacts

- CA laws resonates throughout the nation
 - “...decision will affect not only persons in California, but also entities outside the State who must comply with California's requirements.”
 - “...determine and find that this is a final action of national applicability...”
 - New engine standards
 - Fleet requirements





Fleet Readiness Center Southwest, San Diego, CA



Maintenance Repair Organization

- Navy and Marine Corps aircraft and shipborne systems
- Components and Engines
- Manufacturing
- Engineering and Logistics



Fleet Readiness Center Southwest, San Diego, CA

- Diverse industrial workforce of 4,225 personnel
 - 2,675 civil service employees, 550 contractors and 1,000 active duty military
 - 5 labor unions
 - Footprint: 358 acres, 80 bldgs, 45 metric tons CO2E
 - 2009 SECDEF Award for Industrial Installation Sustainability, 2008 Shingo Silver Medallion, 2009 CAPE Eureka Award
 - Registered AS9100, AS9110, ISO 9001 and ISO 14001
- Platforms
 - Aircraft – FA-18, E2/C2, CH-53, H-60
 - Shipborne – LM-2500 gas turbine engines, aircraft carrier catapults, arresting gear and landing systems



California based Naval Stakeholders

- Command Levels
 - All commands within California
- NAVFACSW
 - Provides consolidate support for California ATCM compliance activities
 - Owns, operates and leases to other commands the largest share of Naval Material Handling Equipment (MHE), i.e., forklifts
- CNO N45
 - Maintains oversight of environmental compliance activates



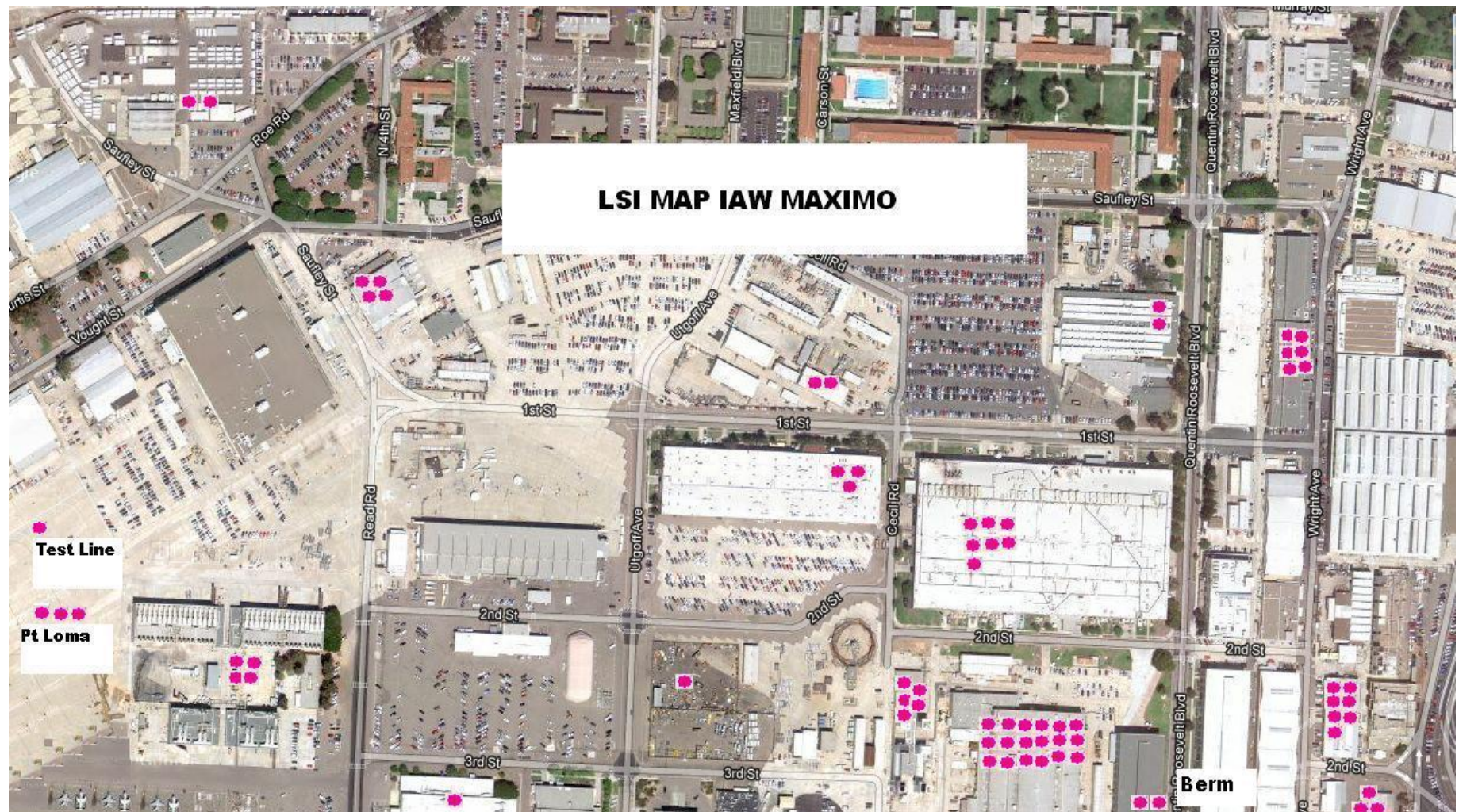
FRCSW Forklifts

LSI Fleet Attributes

- Organizational
 - FRCSW is a Navy Working Capital Fund (NWCF) organization
 - Forklifts owned by 10 industrial operational cost centers within FRCSW
 - Each cost center must budget for and establish their individual product/service/labor rates
- Functional
 - Approximately 60 vehicles
 - Some as old as 28 yrs, some new, average fleet age is 15 yrs
 - Mostly 4K and 6K units
 - Approximately 10 electric units
 - Initial fleet average is **8.5** g/bhp-hr NOx + HC



FRCSW Forklifts Fleet Attributes





LSI Compliance Strategy Short Term

- Normal attrition and replacements – fleet average **5.7** g/bhp-hr
- Low use exempt – approximately 30 units
 - Implement low use management program
 - Investigate the use of a COTS based Centralized Fleet Automated Management System (CFAMS)
- Tactical exempt – approximately 10 units
- Retrofits – none
- Low use and tactical exemptions – result in fleet average of **3.0** g/bhp-hr
- New replacements – 5 units – results in fleet average of **0.9** g/bhp-hr



LSI Compliance Strategy Long Term

- Dispose of older [non-compliant] units
- Implement COTS based Centralized Fleet Automated Management System (CFAMS)
- Pool remaining units and share



Benefits of Phased Strategy Approach

Low Use Exemption Strategy

- Lowers immediate capital replacement costs
- Higher operating and maintenance costs for larger fleet
- Achieves compliance quickly

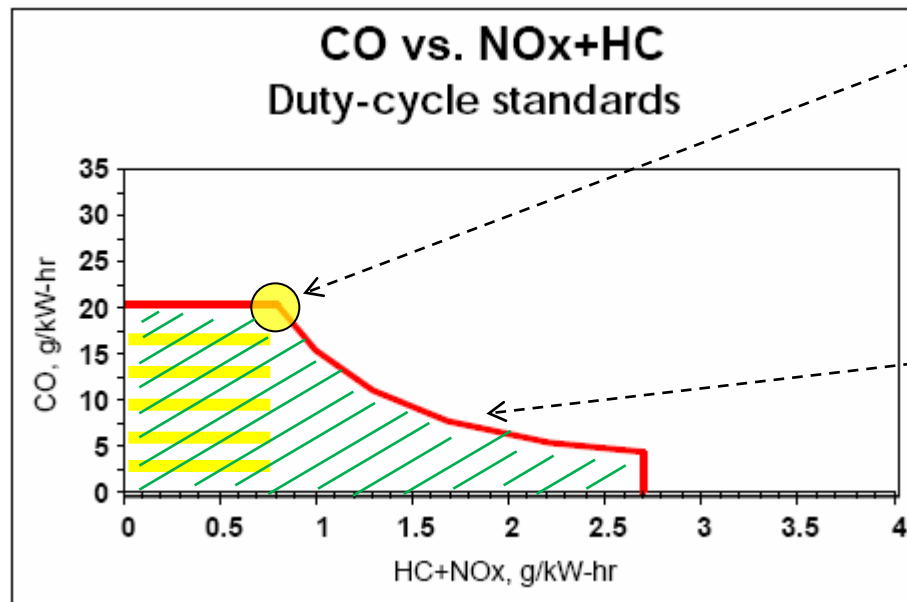
Fleet Reduction Strategy

- Lowers unit cost via shared resources and improved utilization
- Lowers operating and maintenance costs for smaller fleet
- Maintains lifecycle compliance



National Impacts

- California's LSI engine regulation is a refinement of the EPA LSI regulation – it would be fair to say the two regulations are “harmonized”



California regulation is a point on the line segment represented at 0.6 g/bhp-hr HC+NO_x [equivalent to 0.8 g/KW-hr]

EPA regulation is the whole line segment



National Impacts

- Manufacturers who comply w/ California are in compliance w/ EPA
- Most [if not all] manufactures will build engines meeting the California regulation, i.e., they will not build different models engines for California only
- Fleet averaging is required only by CARB in California – necessitating replacements, purchases and/or retrofits. The balance of the Nation will achieve equivalent emissions performance in time as a consequence of natural vehicle attrition.