Cargo Handling Equipment Emissions Inventory Update

February 23, 2011



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Overview

- Why update the original (2005) inventory?
  - Original inventory based on 2004 survey
  - New information available
    - Complete population of CHE vehicles
    - Improved activity profiles
  - Recession
    - Reduction in activity
    - Updates to industry growth projections

New Information

- CHE Regulation Reporting Requirement
  - Required for all CHE equipment
- Ports of Los Angeles / Long Beach Annual Emissions Inventories
  - Annual information from 2005 to 2009
- Rail Yard Health Risk Assessments, 2005
- Port of San Diego Emissions Inventory, 2006
- Port of Oakland Emissions Inventory, 2005

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Updated Inventory Inputs

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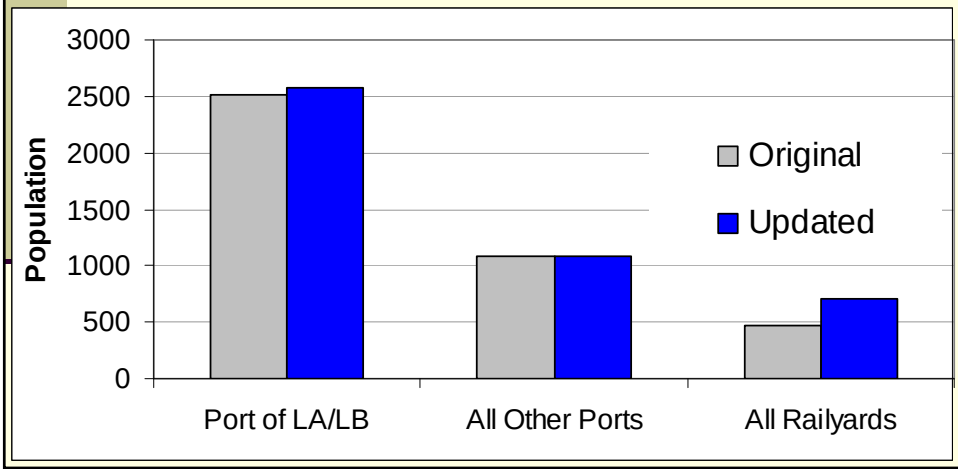
CHE Population

- Directly based on reporting data



2006 Base Population Comparison: Ports and Railyards

Equipment Type	Original	Updated
Yard Tractor	2441	2368
Forklift	485	778
Container Handling Equipment	559	525
Crane	360	342 (RTG Only)
Construction Equipment	135	195
Other General Industrial Equipment	46	164
Total	4026	4372

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Note: The CHE regulation was modified to exclude sweepers/scrubbers.

Average Age of Baseline Population (2006)

Equipment Type	Original	Updated
Yard Tractor	3.6	4.6
Forklift	4.1	12.7
Container Handling Equipment	5.2	5.9
Crane	7.0	6.7 (RTG Only)
Construction Equipment	5.4	13.6
Other General Industrial Equipment	4.6	13.1
Total	4.2	7.1

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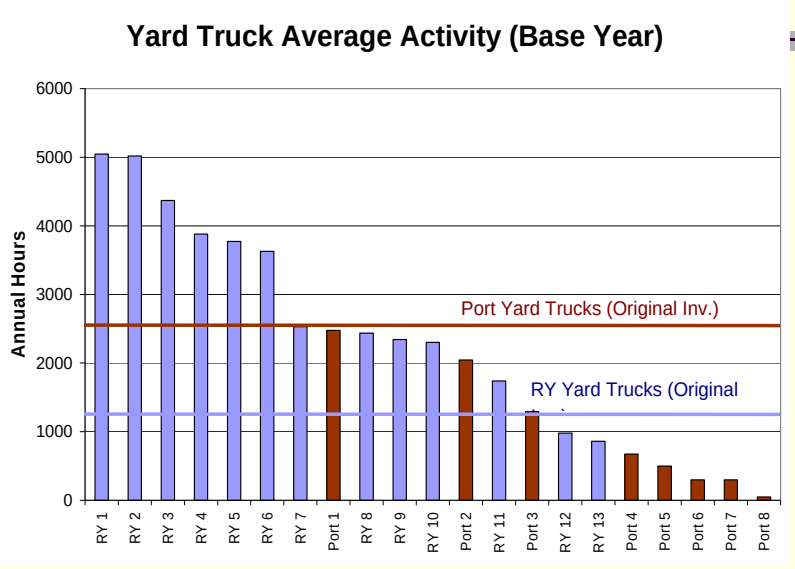
Activity

- New data provides information on activity by equipment type, age and location.
- Utilized reporting data, Port emissions inventories and Health Risk Assessments

Activity Variation by Facility



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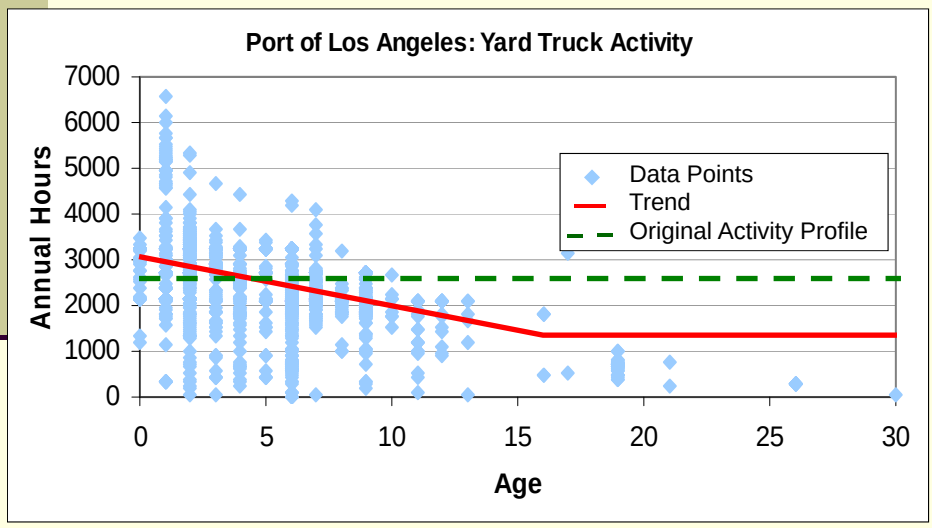
Activity Methodology

- As shown, activity for each location varies significantly
- Each vehicle type at each facility was reviewed individually
  - Where data demonstrated a trend of activity by age, a unique activity profile was assigned
  - Where data did not demonstrate a trend by age, activity values were averaged
  - Larger facilities with more data points were most likely to demonstrate trends

Activity Modeled by Age Profiles



Average Activity: Ports
(hours/year)

Equipment Type	Original	Updated
Yard Tractor	2,536	2,036
Forklift	1,098	699
Container Handling Equipment	2,388	1,879
RTG Crane	1,371	1,569
Construction Equipment	1,084	1,497
Other General Industrial Equipment	693	1,265

Average Activity: Railyards
(hours/year)

Equipment Type	Original	Updated
Yard Tractor	1,289	3,638
Forklift	803	2,234
Container Handling Equipment	2,388	1,705
RTG Crane	1,632	3,398
Construction Equipment	755	141
Other General Industrial Equipment	1,632	1,024

Recession and Recovery

- Analyzing container throughput at the Ports and container lifts at rail yards as a surrogate for growth.
  - Assess impact of recession

Recession and Recovery

- Recession impact: Change in container throughput 2006 to 2009
  - Port of LA/LB: 29 percent decrease
  - Port of Oakland: 15 percent decrease
- Several recovery scenarios being considered:
  - Fast: Recover by 2017
  - Slow: Maintain previous growth rate but never return to pre-recession trend
  - Average: Average of Fast and Slow recovery scenarios

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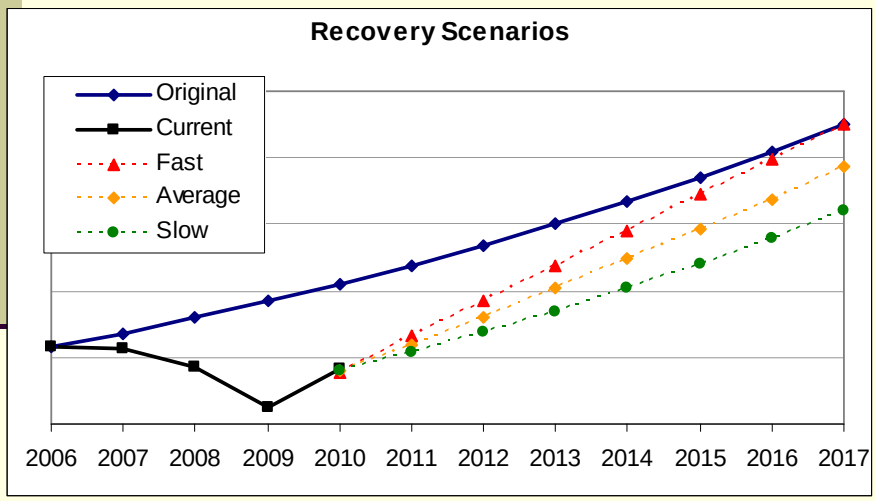
Recession and Recovery



Load Factors

- Updated based on Port of LA/LB inventory studies
- Yard trucks: Reduced from 0.65 to 0.39
  - Yard trucks represent 60% of the total population.
- RTG Cranes: Reduced from 0.43 to 0.20
  - RTG cranes represent 8% of the total population

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Emissions

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Baseline Emissions

- Baseline PM emissions down by 20 percent
- Baseline NOx emissions down by 27 percent