Presentation Overview

- Background
- Methodology
- Results
- Actions to Reduce Health Risks
- Next Steps
Background

➢ Part of our commitment to address pollution impacts on communities
  – Implementation of the ARB Goods Movement Plan
  – 2005 Railroad Agreement between ARB/UP/BNSF

➢ State’s goals
  – Reduce exposure to diesel PM as quickly as possible
  – Reduce risks by at least 85 percent by 2020
  – Obtain the emission reductions needed to attain air quality standards
# Health Risk Assessment Timelines

<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>BNSF Commerce/Eastern</td>
<td>UP Colton</td>
</tr>
<tr>
<td>BNSF Hobart</td>
<td>UP ICTF/Dolores</td>
</tr>
<tr>
<td>BNSF Richmond</td>
<td>UP Industry</td>
</tr>
<tr>
<td>BNSF Stockton</td>
<td>UP Oakland</td>
</tr>
<tr>
<td>BNSF Watson</td>
<td>BNSF Barstow (draft)</td>
</tr>
<tr>
<td>UP Commerce</td>
<td>BNSF San Bernardino (draft)</td>
</tr>
<tr>
<td>UP LATC</td>
<td>BNSF San Diego (draft)</td>
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<tr>
<td>UP Mira Loma</td>
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<tr>
<td>UP Stockton</td>
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Methodology and Scope of the Study

- **Two major parts:**
  - Estimation of diesel particulate matter air concentrations by computer modeling
    - Baseline emission inventory
  - Health risk assessment for significant diesel sources

- **Focus on diesel PM** - other toxics evaluated, small relative to diesel PM
BNSF Barstow Railyard with One-mile Off-site Boundary
Prepare Railyard Emissions Inventory

Diesel PM Emission Inventory

- Locomotives (line-hauls, switchers, & services)
- On-road Trucks & Vehicles
- Off-road Equipment
- Stationary Sources (point & area)
# Summary of BNSF Barstow Railyard
## 2005 Diesel PM Emissions

<table>
<thead>
<tr>
<th>DIESEL PM EMISSION SOURCES</th>
<th>On-site Emissions</th>
<th>Off-site Emissions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tons/Year</td>
<td>Percentage</td>
</tr>
<tr>
<td><strong>LOCOMOTIVES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Line Haul Locomotives</td>
<td>27.1</td>
<td>97%</td>
</tr>
<tr>
<td>Arriving and Departing Trains</td>
<td>19.1</td>
<td>68%</td>
</tr>
<tr>
<td>Freight Movement on Adjacent Line</td>
<td>14.8</td>
<td>53%</td>
</tr>
<tr>
<td>Adjacent Line Commuter Rail Operations</td>
<td>4.3</td>
<td>15%</td>
</tr>
<tr>
<td>Switch Locomotives</td>
<td>0.03</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Service/Testing/Refueling</td>
<td>0.04</td>
<td>&lt;1%</td>
</tr>
<tr>
<td><strong>OFF-ROAD EQUIPMENT/VEHICLES</strong></td>
<td>0.64</td>
<td>2%</td>
</tr>
<tr>
<td><strong>STATIONARY SOURCES</strong></td>
<td>0.11</td>
<td>&lt;1%</td>
</tr>
<tr>
<td><strong>ON-ROAD TRUCKS</strong></td>
<td>0.04</td>
<td>&lt;1%</td>
</tr>
<tr>
<td><strong>CARGO HANDLING EQUIPMENT</strong></td>
<td>0.03</td>
<td>&lt;0.1</td>
</tr>
<tr>
<td><strong>OFF-SITE MOBILE SOURCES</strong></td>
<td>-</td>
<td>-</td>
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<tr>
<td><strong>OFF-SITE STATIONARY SOURCES</strong></td>
<td>-</td>
<td>-</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td>27.9</td>
<td>100%</td>
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</table>
Nearby Non-Railyards Diesel PM Emission from Mobile Sources at 26 Tons per Year
## Comparison of Local Diesel PM Sources with Regional Sources
(tons per year in 2005)

<table>
<thead>
<tr>
<th>Sources</th>
<th>Locomotive</th>
<th>Cargo Handling Equipment</th>
<th>On-Road Trucks</th>
<th>Other (e.g. Ships, Refrig. Trailers)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mojave Desert AQMD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1,072</td>
</tr>
<tr>
<td>BNSF Barstow Railyard</td>
<td>27.1</td>
<td>0.03</td>
<td>0.04</td>
<td>0.75</td>
<td>27.9</td>
</tr>
<tr>
<td>Nearby Roadways</td>
<td>--</td>
<td>--</td>
<td>26</td>
<td>--</td>
<td>26</td>
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</tbody>
</table>
Estimated Potential Cancer Risks for BNSF Barstow Railyard
Estimated Potential Cancer Risks for Non-Railyard Sources (Off-Site)
Actions to Reduce Health Risks
Approach to Reduce Emissions

- ARB regulations
  - Fuels (CARB diesel fuel)
  - Cargo handling equipment
  - Transport refrigeration units
  - Heavy-duty diesel on-road trucks and off-road vehicles
- U.S. EPA regulation
  - Locomotives
- Voluntary agreements
  - 1998 South Coast Fleet Average
  - 2005 Statewide
- Railyard locomotive replacement program
- Funding programs
  - Carl Moyer Incentives
  - Prop. 1B: Goods movement emission reduction program
Benefits of California Railyard Diesel PM Emission Reduction Measures

- **2005-2007**
  - CARB diesel fuel for intrastate locomotives
  - 2005 railyard agreement
  - About 15-20% reduction

- **2005-2010 (Additional Measures)**
  - 1998 NOx locomotive fleet average agreement (in South Coast Air Basin)
  - ARB cargo handling equipment regulation
  - ARB on-road heavy-duty truck regulation
  - ARB transport refrigeration unit regulation
  - ARB port and intermodal railyard drayage truck regulation
  - About 50-65% reduction
Possible Additional Measures

- **2005-2020:**
  - U.S. EPA locomotive rulemaking (March 14, 2008)
  - California replacement of switch locomotives

≈65-80%
Next Steps

- Begin public comment period
- Submit written comments to ARB
- Meet with interested stakeholders
- Evaluate any additional feasible mitigation measures
ARB Railyard Contacts

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➢ ARB Railyard HRA Website:
   – http://www.arb.ca.gov/railyard/hra/hra.htm