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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</thead>
<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>
</tr>
<tr>
<td>UP Mira Loma</td>
<td></td>
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<tr>
<td>UP Stockton</td>
<td></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 San Diego Railyard with One-Mile Off-Site Boundary
Prepare Railyard Emissions Inventory

Diesel PM Emission Inventory

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

<table>
<thead>
<tr>
<th>Diesel PM Emission Sources</th>
<th>BNSF San Diego Railyard</th>
<th>Off-Site Emissions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tons Per Year</td>
<td>Percentage*</td>
</tr>
<tr>
<td><strong>LOCOMOTIVES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Arrival/Departure</td>
<td>1.63</td>
<td>98%</td>
</tr>
<tr>
<td>- Switching</td>
<td>0.16</td>
<td>10%</td>
</tr>
<tr>
<td>- Fueling</td>
<td>0.005</td>
<td>&lt; 1%</td>
</tr>
<tr>
<td><strong>OFF-ROAD VEHICLES AND EQUIPMENT</strong></td>
<td>0.02</td>
<td>1%</td>
</tr>
<tr>
<td><strong>TRANSPORT REFRIGERATION EQUIPMENT</strong></td>
<td>0.02</td>
<td>1%</td>
</tr>
<tr>
<td><strong>OFF-SITE MOBILE SOURCES</strong></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>OFF-SITE STATIONARY SOURCES</strong></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>1.67</td>
<td>100%</td>
</tr>
</tbody>
</table>

* Numbers may not add precisely due to rounding.
**Summary of Nearby Non-Railyard Diesel PM Emission Inventory**

<table>
<thead>
<tr>
<th>Emission Sources</th>
<th>Tons per Year</th>
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</thead>
<tbody>
<tr>
<td>Mobile Sources</td>
<td>6.0</td>
</tr>
<tr>
<td>Stationary Sources</td>
<td>5.6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>11.6</strong></td>
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</tbody>
</table>
Comparison of Local Diesel PM Sources with Regional Sources
(Tons per Year in 2005)

<table>
<thead>
<tr>
<th>Sources</th>
<th>Locomotive</th>
<th>On-Road Trucks</th>
<th>Off-Road Vehicles and Equipment</th>
<th>Other (e.g Ships, Refriger. Trailers)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Diego Air Basin</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>1,800</td>
</tr>
<tr>
<td>BNSF San Diego Railyard</td>
<td>1.63</td>
<td>--</td>
<td>0.02</td>
<td>0.02</td>
<td>1.67</td>
</tr>
<tr>
<td>Nearby Stationary Sources</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>5.6</td>
</tr>
<tr>
<td>Nearby Roadways</td>
<td>--</td>
<td>6.0</td>
<td>--</td>
<td>--</td>
<td>6.0</td>
</tr>
</tbody>
</table>
BNSF San Diego Railyard

Estimated Average Cancer Risk (Chances in a Million)

Average Risk
Ambient Background

* Cancer Risk Range (Chances in a Million)

- > 100*
- 50 - 100*
- 25 - 50*
- 10 - 25*

Estimated Exposed Population Per Cancer Risk Range:
- 0: 600, 157
- 563: 600, 70
- 2678: 600, 34
- 13272: 600, 15
Estimated Potential Cancer Risks for BNSF San Diego 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
  - Proposition 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

- **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

≈15-20%
≈50-65%
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
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➢ ARB Railyard HRA Website:
  – http://www.arb.ca.gov/railyard/hra/hra.htm