BNSF Railroad Initial Draft Diesel PM Mitigation Plan for the Barstow Railyard

California Environmental Protection Agency

Air Resources Board

February 24, 2009
Overview of Meeting

• ARB
  • Background on the BNSF Barstow railyard health risk assessment
  • Process for the development of draft railyard mitigation plans
  • Explain existing locomotive and railyard regulations and agreements

• BNSF
  • Present initial draft railyard mitigation plan for BNSF Barstow railyard
  • Discuss next steps to identify and discuss additional mitigation measures

• Community members encouraged to discuss and provide comments
Background

• This effort is part of our commitment to address pollution impacts on communities
  • ARB Goods Movement Plan
    • Reduce risks by at least 85 percent by 2020
  • ARB/UP/BNSF Railroad Agreement
    • Reduce exposure to toxic diesel PM as quickly as possible
• Railyard health risk assessments
  • 18 railyard health risk assessments finalized by July 2008
Railyard Mitigation Plan Process

- Railroads prepare initial draft railyard mitigation plans
  - Pursuant to the 2005 Agreement
- ARB provides technical review of draft plans
  - No ARB endorsement or approval of the draft plans
- Public meeting to discuss the draft plans and additional mitigation measures
- Revise the plans based on public comments
- BNSF finalizes the plans
Existing Control Measures

- **Locomotives:**
  - Statewide Railroad Agreement (2005)
  - ARB Diesel Fuel Regulation of Intrastate Locomotives (2007)
  - 1998 South Coast Locomotive NOx Fleet Average Agreement (2010)

- **Non-Locomotives:**
  - ARB Cargo Handling Equipment Regulation (2007)
  - ARB On-Road Heavy Duty Diesel Truck Regulation (2007)
  - ARB Port and Intermodal Railyard Truck Regulation (2010)
  - ARB ATCM for Transport Refrigeration (2010)
  - ARB Private Truck Fleet Regulation (2010)
  - ARB Tier-4 Non-road Diesel-Fueled Emission Standards (2011-15)
Statewide Locomotive DPM Emissions

- Baseline (without controls): 6.2 TPD
- Baseline (with existing controls): 5.0 TPD
- 2008 EPA Rulemaking: 2.2 TPD

Year:
- 2000
- 2005
- 2010
- 2015
- 2020
- 2025

1) 1998 US EPA Locomotive Rulemaking
2) 2005 ARB /Railroad Statewide Agreement
3) 1998 Locomotive NOx Fleet Average Agreement in the SCAB
4) 2007 CARB Diesel Fuel Regulation for Intrastate Locomotives
Distribution of 18 Railyard Diesel PM Emissions by Source Category

8 Intermodal Railyards DPM Emission Inventory (2005)
- Locomotives: 39%
- HDD Trucks: 26%
- Cargo Handling Equipment: 22%
- TRUs: 11%
- Other: 2%

10 Classification Railyards DPM Emission Inventory (2005)
- Locomotives: 96%
Diesel PM Emissions from 18 Railyards
(Assumes average 80% reduction by 2020)
BNSF Barstow Railyard
BNSF Barstow Railyard Diesel PM Emissions

Year:
- 2005: 27.9 Tons/Year
- 2010: 24.5 Tons/Year
- 2015: 15.7 Tons/Year
- 2020: 10.6 Tons/Year
## Local and Regional Diesel PM Sources

*(Tons per year in 2005)*

<table>
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<th>DPM Sources</th>
<th>Locomotives</th>
<th>Cargo Handling Equip.</th>
<th>On-Road Diesel Trucks</th>
<th>Off-Road Diesel Engines and Others</th>
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<td>26</td>
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</tbody>
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Health Risk Assessments: Estimating Health Effects

Do:
- Provide an estimate of the amount of a pollutant in the air
- Predict or estimate the lifetime cancer risk and other health impacts – in this case for diesel PM

Don’t:
- Actually measure amount of diesel PM in the air
- Gather/use health data on local residents

\[
\text{Cancer Effects} = \text{Estimated Excess Lifetime Cancer Risk} = \text{Predicted Diesel PM Level} \times \text{Cancer Potency}
\]

\[
\text{Non-Cancer Effects} = \text{Estimated Cases per year} = \text{Number of People} \times \text{Health Studies}
\]
BNSF Barstow Railyard

Estimated Changes in DPM Cancer Risks
(from existing measures)

- **MICR** (Maximum Individual Cancer Risk)
  - 450
  - ~ 324 (by 2015)

- **Exposed Population** (> 10 in a million)
  - 22,000
  - ~ 19,000 (by 2015)
Summary

- The mitigation plan provides significant diesel PM emissions reductions from 2010 to 2015 and later
- Diesel PM public health risks are still high in 2015
- However, still need to accelerate and provide more diesel PM emissions reductions
ARBRB Technical Evaluation Document
Strategies to Accelerate and Further Reduce Railyard and California Statewide Locomotive Emissions

• Separate and complementary effort
• Evaluate potential strategies based on the following criteria:
  • Technical feasibility
  • Potential emission reductions
  • Costs and cost-effectiveness
  • Not intended to address implementation issues (i.e., legal, regulatory, agreement, funding)
• Request public comments from
  December 22, 2008 to February 23, 2009
Contact Information
Comments and Questions

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  - http://www.arb.ca.gov/railyard/hra/hra.htm