Union Pacific Railroad Community Meeting
Diesel Particulate Matter Mitigation Plan for the Commerce Yard

Commerce, CA
UPRR Commerce Yard

• Facility Overview
• 2005 Baseline Inventory
• Inventory Updates
• Where We Are Today – 2007 Inventory
• Current and Proposed Mitigation Measures

— We need your help to identify additional ideas for potential emissions reductions

• Emission Trends – Past and Future
• Evaluation of Mitigation Measures
• Tracking Progress
UPRR Commerce Yard
Facility Wide DPM Emission Trend (2005-2020)
UPRR Commerce Yard
Emission Trends

• 29% Reduction From 2005 Baseline to 2007

• 74% Reduction From 2005 Baseline to 2020, including expected growth

• 78% Reduction in DPM Emissions From 2005 to 2020 Per Ton of Cargo Handled, including expected growth
Union Pacific System Overview

Fast Facts

• Miles of Track
  • 32,300 in 23 States
  • 3,455 in California
  • 1,272 in Los Angeles area

• Employees
  • 50,000+ in US
  • 5,900 in California
  • 1,900 in Los Angeles area
UPRR Commerce Yard
Facility Overview

• 160-acre Cargo-handling Facility

• Yard Includes:
  – 5 Receiving Tracks
  – 6 Tracks Used to Sort Rail Cars by Destination
  – 9 Tracks Used to Maintain or Repair Rail Cars or Locomotives
  – 8 Tracks Used to Load and Unload Containers or Trailers From Rail Cars, and for Train Departures

• Facility Operates 24 Hours a Day, 365 Days a Year

• About 40 Trains a Day Operate Through or Originate / Terminate at UP’s Commerce Yard
## UPRR Commerce Yard
### 2005 Baseline Emissions Inventory

<table>
<thead>
<tr>
<th>Equipment Category</th>
<th>DPM Emissions (tpy)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locomotives</td>
<td>4.9</td>
</tr>
<tr>
<td>- Line Haul</td>
<td>1.3</td>
</tr>
<tr>
<td>- Switch</td>
<td>1.9</td>
</tr>
<tr>
<td>- Shop/Service</td>
<td>1.7</td>
</tr>
<tr>
<td>Cargo Handling Equipment</td>
<td>3.9</td>
</tr>
<tr>
<td>Diesel Drayage Trucks</td>
<td>2.0</td>
</tr>
<tr>
<td>Light Duty Trucks</td>
<td>0.02</td>
</tr>
<tr>
<td>Diesel-Fueled Heavy Equipment</td>
<td>0.1</td>
</tr>
<tr>
<td>TRUs and Reefer Cars</td>
<td>0.3</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>11.2</strong></td>
</tr>
</tbody>
</table>
• Continued Aggressive Acquisition & Use of Tier 2 Road Locomotives With Advanced Emission Controls
  – 1,189 Tier 2 Locomotives thru October 2008
  – 5,500+ Tier 0, 1, or 2 Locomotives in the Fleet

• Continued Remanufacture of Older Locomotives With New, Lower Emitting Components
  – 2,000 Units Since 2000

• On Target for Tier 2 Fleet Average in SoCal by 2010
Current UP Emission Reduction Measures, Cont.

- **Ultra Low Emitting Locomotives (ULEL’s)**
  - Reduce NOx & PM Emissions by +/- 85%
  - Reduce Fuel Consumption by Over 16 %

- **Expanded Use of Technologically Advanced Switch Locomotives**
  - Gensets - 10 in or around Commerce
  - Gensets - 61 in South Coast
  - Green Goats - 12 in South Coast
UPRR Commerce Yard
Current UP Emission Reduction Measures, Cont.

• Increased Use of Idle Control Devices (ICD’s) for Auto Start-Stop of Locomotives
  – 100% of CA Intrastate Units Equipped by June 2008
  – 35% of UPRR Total Fleet
  – All New Locomotives Since 2001 Have Factory ICD’s

• Supported research and development efforts
  – Since 1989 UPRR has invested more than $37M in locomotive research and development

• Aggressive Conservation = Lower Emissions
  – A 12% improvement in fuel efficiency has been achieved since 1995
• Use of cleaner fuels – only Ultra Low Sulfur Diesel (ULSD) is used in CA

• Cleaner Cargo Handling Equipment (CHE)
  – In 2007, replaced 3 pieces of higher-emitting equipment with new cleaner units
  – VDECS will be installed on each new unit in 2008

• Employee Training
  – Fuel Conservation Via Use of Simulators
  – Locomotive Shutdown Procedures
  – Visible Emissions
UPRR Commerce Yard
Proposed Future Emission Reduction Measures

• Continued acquisition of ULEL locomotives
• Continued acquisition of Tier 2 locomotives and newer technology (i.e. Tier 3 and 4) when available
• Continued remanufacture and retrofit of older line haul locomotives with lower emitting components
• Continued support of locomotive research and development efforts
• Continued Aggressive Employee Training
  – Fuel Conservation Via Use of Simulators
  – Locomotive Shutdown Procedures
  – Visible Emissions
UPRR Commerce Yard
Proposed Future Emission Reduction Measures, Cont.

• Continued modernization of CHE
  – By 2010, all of the 1988 through 2006 model year lift equipment (17 units) will be replaced or retrofitted.
  – All new units purchased will have the cleanest available engines and be retrofitted with a VDECS to further reduce emissions

• Cleaner drayage fleet
  – Natural fleet turnover
  – Port’s Clean Truck Program
  – CARB’s proposed drayage truck regulation

• Cleaner TRUs
  – Beginning in 2008, TRUs operating at Commerce will be required to meet lower emission standards. Standards are further reduced in 2010.
# UPRR Commerce Yard
## Summary of Reductions by Source

<table>
<thead>
<tr>
<th>Equipment Type</th>
<th>2005</th>
<th>2007</th>
<th>2010</th>
<th>2015</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Line Haul Locomotives</td>
<td>Update UPRR’s Line Haul Fleet to Comply with Rules 213 and 1033</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Genset Switchers, % of Total</td>
<td>0%</td>
<td>&gt;80%</td>
<td>&gt;80%</td>
<td>&gt;80%</td>
<td>&gt;80%</td>
</tr>
<tr>
<td>Cargo Handling Equipment % of Total Upgraded</td>
<td>20 Units 0%</td>
<td>3 of 20 15%</td>
<td>15 of 20 75%</td>
<td>20 of 20 100%</td>
<td>NA 100%</td>
</tr>
<tr>
<td>Drayage Trucks</td>
<td>Truck Owners Must Comply with Either the Port’s Truck Rule, CARB’s Drayage Truck Rule, and/or other appropriate State and Federal Regulations</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TRUs and Reefer Cars</td>
<td>TRU Owners Must Comply with CARB’s Airborne Toxic Control Measure (ATCM) for TRUs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
UPRR Commerce Rail Yard
DPM Emissions by Source (Calendar Years 2005-2020)

Emissions (Tons / Year)

2005: 11.2 Tons
2007: 9.6 Tons
2010: 8.0 Tons
2015: 5.4 Tons
2020: 3.7 Tons

Legend:
- Orange: Other
- Blue: On-Road Diesel-Fueled Trucks
- Light Blue: Cargo-handling Equipment (CHE)
- Green: Locomotives
UPRR Commerce Yard
Criteria for Evaluation of Mitigation Measures

• Safety
• Technologically Feasibility
• Consistent w/ Legal Requirements (i.e. – FRA)
• Operationally Feasibility
• Cost Effective
• Other Yard Specific Consideration
THE ROAD TO THE FUTURE ISN'T A ROAD AT ALL.