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

Stockton, CA

April 21, 2009

Lanny Schmid, Director – Environmental Operations
Agenda

• Emissions Trends Summary
• System and Facility Overview
• 2005 Baseline 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
Emission Trends –
DPM Reductions from 2005 Baseline

• 2005 to 2007
  DOWN 53%

Projected to 2020
  DOWN 73%
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
Facility Overview

- 40 +/- acre facility with rail and locomotive maintenance operations
- Yard Includes:
  - Receiving Tracks
  - Departure Tracks
  - Tracks for Locomotive and Railcar Service and Repair
- Facility Operates 24 Hours a Day, 365 Days a Year
- About 6 Trains a Day Originate or Terminate at the Stockton Yard
- About another 35 Commuter Trains Originate or Terminate at the Stockton Yard per Day
## 2005 Baseline Emissions Inventory

<table>
<thead>
<tr>
<th>Equipment Category</th>
<th>DPM Emissions (tpy)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locomotives</td>
<td>6.5</td>
</tr>
<tr>
<td>- Line Haul</td>
<td>1.7</td>
</tr>
<tr>
<td>- Switch</td>
<td>3.6</td>
</tr>
<tr>
<td>- ACE Commuter Trains</td>
<td>0.4</td>
</tr>
<tr>
<td>- Service and Load Testing</td>
<td>0.8</td>
</tr>
<tr>
<td>Diesel-Fueled Trucks</td>
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</tr>
<tr>
<td>Diesel-Fueled Heavy Equipment</td>
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</tr>
<tr>
<td>ACE Aux. Generator Sets</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td><strong>6.8</strong></td>
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</table>
Current UP Emission Reduction Measures

• Continued Aggressive Acquisition & Use of Tier 2 Road Locomotives With Advanced Emission Controls
  – 1,189 Tier 2 Locomotives thru October 2008
  – 5,680+ Tier 0, 1, or 2 Locomotives in the Fleet

• Continued Remanufacture of Older Locomotives With New, Lower Emitting Components
  – 2,800 Units Since 2000
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
  - 45% of UPRR Total Fleet
  - All New Locomotives Since 2001 Have Factory ICD’s

- Supported research and development efforts
  - UPRR has invested > $37M in locomotive R&D since 1989

- Aggressive Conservation = Lower Emissions
  - A 12% improvement in fuel efficiency achieved since 1995
Current UP Emission Reduction Measures, Cont.

• Use of cleaner fuels – only Ultra Low Sulfur Diesel (ULSD) is dispensed in CA
• Employee Training
  – Fuel Conservation Via Use of Simulators
  – Locomotive Shutdown Procedures
  – Stopping Visible Emissions
Proposed Future Emission Reduction Measures

• 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
  – Stopping Visible Emissions
DPM Emissions by Source (Calendar Years 2005-2020)

Emissions (Tons / Year)

- Other
- On-road Diesel-fueled Trucks
- Heavy Equipment
- Locomotives

<table>
<thead>
<tr>
<th>Year</th>
<th>Emissions</th>
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<tbody>
<tr>
<td>2005</td>
<td>6.8</td>
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<tr>
<td>2005-Adj</td>
<td>6.8</td>
</tr>
<tr>
<td>2007</td>
<td>3.2</td>
</tr>
<tr>
<td>2010</td>
<td>2.8</td>
</tr>
<tr>
<td>2015</td>
<td>2.3</td>
</tr>
<tr>
<td>2020</td>
<td>1.9</td>
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Criteria for Evaluation of Mitigation Measures

- Safe
- Technologically Feasible
- Consistent w/ Legal Requirements (i.e. – FRA)
- Operationally Feasible
- Cost Effective
- Other Yard Specific Considerations
UPRR is Reducing Emissions

• Since 1989, UPRR has invested more than $37M in locomotive research and development and we continue to look for innovations.

• Result is the most comprehensive & aggressive program of identification, evaluation, development, acquisition, deployment, optimization, & utilization of new & evolving technologies of any RR in No. America.
THE ROAD TO THE FUTURE ISN'T A ROAD AT ALL.