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

• Actual
  – 9% by 2007
  – 40% by end of 2008 (estimated)

• Projected
  – 74% by 2020, 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
  • 5,860 in California
  • 1,900 in Los Angeles area

South Coast is a Major Gateway
Facility Overview

• 230+/- Acres for Locomotive Servicing & Cargo Handling

• Yard Includes:
  – Receiving Tracks
  – Tracks Used to Maintain Locomotives (Light Repair)
  – Tracks Used to Load and Unload Containers From Rail Cars, and for Train Departures

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

• About 20 Trains a Day Operate Through or Originate / Terminate at UP’s Yards
Comparison with Other Sources of DPM Emissions

Total DPM Emissions – All South Coast Sources: 7750 tons per year
## 2005 Baseline Emissions Inventory

<table>
<thead>
<tr>
<th>Equipment Category</th>
<th>DPM Emissions (tpy)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locomotives</td>
<td>8.0</td>
</tr>
<tr>
<td>- Line Haul</td>
<td>1.2</td>
</tr>
<tr>
<td>- Switch</td>
<td>5.6</td>
</tr>
<tr>
<td>- Shop/Service</td>
<td>1.2</td>
</tr>
<tr>
<td>Cargo Handling Equipment</td>
<td>4.4</td>
</tr>
<tr>
<td>Diesel Drayage Trucks</td>
<td>5.9</td>
</tr>
<tr>
<td>Diesel-Fueled Heavy Equipment</td>
<td>0.4</td>
</tr>
<tr>
<td>TRUs and Reefer Cars</td>
<td>1.5</td>
</tr>
<tr>
<td>Other Stationary Sources</td>
<td>0.06</td>
</tr>
<tr>
<td>TOTAL</td>
<td>20.3</td>
</tr>
</tbody>
</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
  – 5,500+ 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 16 - 37%

- **Expanded Use of Technologically Advanced Switch Locomotives**
  - Gensets - 12 in or around ICTF
  - Gensets - 61 in South Coast
  - Green Goats - 12 in South Coast
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
  - 35% 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

• Cleaner Cargo Handling Equipment (CHE)
  – In 2007, retired 9 pieces of higher-emitting equipment (8 yard hostlers and 1 manlift). The manlift was replaced with a new cleaner unit
  – VDECS will be installed on each new unit in 2008
  – All Diesel-fueled CHE will be replaced by electric Wide Span Gantry (WSG) Cranes by 2012

• Employee Training
  – Fuel Conservation Via Use of Simulators
  – Locomotive Shutdown Procedures
  – Visible Emissions
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
Proposed Future Emission Reduction Measures, Cont.

- Complete replacement of Diesel-fueled CHE
  - By end of 2008, all of the 1999 model year yard hostlers (15 units) will be retired.
  - By 2012, all Diesel-fueled CHE will be replaced by electric WSGs

- Cleaner drayage fleet
  - Natural fleet turnover
  - Reduced idling due to installation of Automated Gate System (AGS)
  - Port’s Clean Truck Program
  - CARB’s proposed drayage truck regulation

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

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Line Haul Locomotives</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Fleet is Continuously Being Improved</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>
<td>&gt;80%</td>
</tr>
<tr>
<td>Cargo Handling Equipment % of Total Upgraded</td>
<td>94 of 94 0%</td>
<td>9 of 94 10%</td>
<td>26 of 94 28%</td>
<td>94 of 94 100%</td>
<td>NA 100%</td>
<td>NA 100%</td>
</tr>
<tr>
<td>Drayage Trucks</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></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>
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<tr>
<td>TRUs and Reefer Cars</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>TRU Owners Must Comply with CARB’s Airborne Toxic Control Measure (ATCM) for TRUs</td>
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</tbody>
</table>

Note: UPRR does not own or operate the drayage trucks and/or TRUs and reefer cars.
### DPM Emissions by Source (Calendar Years 2005-2016)

<table>
<thead>
<tr>
<th>Year</th>
<th>Other</th>
<th>On-road Diesel-fueled Trucks</th>
<th>Cargo-handling Equipment (CHE)</th>
<th>Locomotives</th>
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<tbody>
<tr>
<td>2005</td>
<td>6.5</td>
<td>20.3</td>
<td>12.1</td>
<td>18.4</td>
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<tr>
<td>2007</td>
<td>5.4</td>
<td>18.4</td>
<td>12.1</td>
<td>11.8</td>
</tr>
<tr>
<td>2008</td>
<td>6.5</td>
<td>12.1</td>
<td>11.8</td>
<td>8.0</td>
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<tr>
<td>2010</td>
<td>8.0</td>
<td>11.8</td>
<td>8.0</td>
<td>5.4</td>
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<td>2012</td>
<td>5.4</td>
<td>6.5</td>
<td>6.5</td>
<td>4.5</td>
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<tr>
<td>2014</td>
<td>5.4</td>
<td>4.5</td>
<td>4.5</td>
<td>3.5</td>
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<tr>
<td>2016</td>
<td>5.4</td>
<td>3.5</td>
<td>3.5</td>
<td>2.5</td>
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</tbody>
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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
THE ROAD TO THE FUTURE ISN’T A ROAD AT ALL.