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 29%

Projected to 2020

↓ DOWN 63%
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

LATC Railyard
Facility Overview

- 120+/- Acres for Cargo Handling
- Yard Includes:
  - Receiving Tracks
  - 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 12-13 Trains a Day Operate Through, Originate or Terminate at LATC
## 2005 Baseline Emissions Inventory

<table>
<thead>
<tr>
<th>Equipment Category</th>
<th>DPM Emissions (tpy)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locomotives</td>
<td>3.2</td>
</tr>
<tr>
<td>- Line Haul</td>
<td>0.7</td>
</tr>
<tr>
<td>- Switch</td>
<td>2.5</td>
</tr>
<tr>
<td>Cargo Handling Equipment</td>
<td>2.5</td>
</tr>
<tr>
<td>Diesel Drayage Trucks</td>
<td>1.0</td>
</tr>
<tr>
<td>Diesel-Fueled Heavy Equipment</td>
<td>0.2</td>
</tr>
<tr>
<td>TRUs and Reefer Cars</td>
<td>0.5</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>7.3</strong></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
  - 5,680+ Tier 0, 1, or 2 Locomotives in the Fleet

- Continued Remanufacture of Older Locomotives With New, Lower Emitting Components
  - 2,800 Units Since 2000

- Expanded Use of Technologically Advanced Switch Locomotives
  - 70 ULELs in S. CA
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

- Cleaner Cargo Handling Equipment
  - In 2006, retired 2 higher-emitting cranes.
  - In 2007, an additional higher-emitting crane was retired and placed with a new, cleaner unit. An additional control device will be installed on the new unit in 2009.
  - In mid-2008, a higher-emitting packer was retired and replaced with new, cleaner unit. Addition control will be installed on the new unit in 2009.

- 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
Proposed Future Emission Reduction Measures, Cont.

- Cleaner Cargo Handling Equipment
  - By the end of 2010, all pre-2006 model year cargo handling equipment at the yard will be replaced, repowered, or retrofitted with a control device to meet the requirements of the Rule.

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

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

<table>
<thead>
<tr>
<th></th>
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<th></th>
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</thead>
<tbody>
<tr>
<td>Line Haul Locomotives</td>
<td></td>
<td></td>
<td>Fleet is Continuously Being Improved</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cargo Handling Equipment % of Total Upgraded</td>
<td>8 Units 0%</td>
<td>3 of 8 38%</td>
<td>8 of 8 100%</td>
<td>NA 100%</td>
<td>NA 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>
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<td></td>
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<td></td>
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</tr>
<tr>
<td>Refrigerated Units</td>
<td>Equipment Owners Must Comply with CARB’s Airborne Toxic Control Measure (ATCM) for TRUs</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</table>

Note: UPRR does not own or operate the drayage trucks and/or TRUs and reefer cars.
DPM Emissions by Source (Calendar Years 2005-2020)

Emissions (Tons / Year)

- **2005**: 7.3 tons
  - Other: 1.4 tons
  - On-road Diesel-fueled Trucks: 2.2 tons
  - Cargo-handling Equipment (CHE): 1.4 tons
  - Locomotives: 2.3 tons
- **2005-Adj**: 5.9 tons
  - Other: 1.1 tons
  - On-road Diesel-fueled Trucks: 1.9 tons
  - Cargo-handling Equipment (CHE): 1.1 tons
  - Locomotives: 1.8 tons
- **2007**: 5.2 tons
  - Other: 1.2 tons
  - On-road Diesel-fueled Trucks: 1.7 tons
  - Cargo-handling Equipment (CHE): 1.1 tons
  - Locomotives: 1.2 tons
- **2010**: 4.6 tons
  - Other: 1.0 tons
  - On-road Diesel-fueled Trucks: 1.3 tons
  - Cargo-handling Equipment (CHE): 1.2 tons
  - Locomotives: 1.1 tons
- **2015**: 3.2 tons
  - Other: 0.8 tons
  - On-road Diesel-fueled Trucks: 1.1 tons
  - Cargo-handling Equipment (CHE): 1.0 tons
  - Locomotives: 0.3 tons
- **2020**: 2.7 tons
  - Other: 0.6 tons
  - On-road Diesel-fueled Trucks: 1.0 tons
  - Cargo-handling Equipment (CHE): 1.1 tons
  - Locomotives: 0.0 tons

LATC Railyard
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.