

PASSENGER TRANSPORTATION WHITE PAPER

DRAFT - August 5, 2014

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II. BACKGROUND

1. The regional passenger transportation system today
 - General description (transportation modes, mobility, etc.)
2. Air quality impacts of passenger transportation sources
 - Regional
 - Local
3. Emission reduction progress to date
4. Attainment challenge
 - Regional emissions by source category in attainment deadline years
 - Regional emission reductions needed to attain NAAQS, and general implications for passenger transportation sector
 - Focus on NO_x
5. Climate connection
6. Other planning efforts
 - SCAG Regional Transportation Plan
 - SB 375
 - Federal Surface Transportation Legislation
 - Other

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III. Passenger Transportation Sources, Criteria Pollutant Emissions, Emission Control Programs

1. Commute – Automobile, Light-Duty Trucks, SUVs, Passenger Vans
2. Work-Related/Non-Goods Movement – Automobile, Light-Duty Trucks, Cargo Vans
3. Transit System (Buses/Shuttles)
4. Student Transportation
5. Commuter Rail (Metrolink/Amtrak/Light-Rail)
6. Aircraft (Commercial/General Aviation)
7. Ferries

IV. Potential Emission Reduction Technologies and Efficiency Measures

1. CARB Advanced Clean Cars Reports
2. Alternative Fuels, Biofuels
3. Specific source categories: measures and potential emission reduction percentages
 - On-Road Vehicles (All Vehicle Types)
 - Aftertreatment and engine modifications
 - EGR, SCR, DPF (generally implemented already)
 - Alternative fuels and power
 - Natural gas, biofuels, etc.
 - BEV, hybrid-electric, PHEV, hybrids with zero emission miles, fuel cells, etc.
 - Combinations
 - alt fuel-electric hybrids, alt fuels with advanced aftertreatment, etc.
 - Efficiency measures
 - Intelligent transportation systems, etc.
 - Passenger Locomotives
 - Aftertreatment and engine modifications
 - Tier 4
 - Fuels and power
 - Catenary electric, hybrid-electric, battery tender car, LNG, etc.
 - Combinations
 - LNG with advanced aftertreatment, etc.
 - Efficiency measures

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- Oceangoing Vessels (Cruise Ships)
 - Aftertreatment and engine modifications
 - IMO Tier 3, EGR, water scrubbing, etc.
 - At-berth emissions capture and control
 - Fuels and power
 - LNG, emulsified fuels etc
 - Shore power
 - Efficiency measures
 - Heat Recovery Systems
 - New Hull Designs, etc.
 - Harbor Craft (Ferries, Excursion Vessels)
 - Aftertreatment and engine modifications
 - SCR, DPF, etc.
 - Fuels and power
 - Hybrid-electric, LNG, biofuels
 - Efficiency measures
 - New Hull Designs, etc.
 - Aircraft Engines (Commercial, Air Taxis, General Aviation)
 - Engine modifications
 - New Engine Development to Meet ICAO/
U.S. EPA Emission Standards
 - New Engine Research – FAA CLEEN Program
 - Fuels and power
 - Biofuels, Fuel Cell Technologies
 - Efficiency measures
 - Wing and Hull Designs
 - LTO Operations, etc.
 - Ground Service Equipment
 - Aftertreatment and engine modifications
 - SCR, DPF, etc.
 - Fuels and power
 - Electrification, Hybrid-electric, Alternative fuels, biofuels
 - Efficiency measures
4. System-wide Efficiency
- Intelligent Transportation Systems, etc.

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V. NO_x Emissions Reduction Scenarios

Potential approaches:

- 1) Working Back from Attainment – Determine emission reductions for each source category needed to attain regional NO_x carrying capacities in attainment deadline years.
 - At least one scenario would assume even distribution of emission control obligations across source categories; other scenarios would modify that distribution based on factors relating to feasibility.
 - Various scenarios could be designed to achieve specific purposes, e.g. minimize needed technology changes between 2023 and 2032 attainment deadlines, or illustrate emission tradeoffs between various penetration rates
- 2) Looking Forward – Assume a range of performance standards and deployment rates, and project emissions in attainment deadline years.

VI. NO_x Emissions Reduction Scenario Assessment

1. Aggregate potential reductions, and adequacy to meet attainment needs
 - Preliminary discussion of extent each scenario has potential for—
 - business case
 - co-benefits for toxics, GHG, energy, mobility, local economy
 - Preliminary discussion of implementation challenges for each scenario, e.g.—
 - technology feasibility
 - cost
 - infrastructure needs
 - operational impacts

VII. Recommended Actions

1. Studies
2. Technology development and demonstration
3. Foster clean technology markets and technology deployment
 - Outreach, funding, incentives, project conditions, regulations
4. Infrastructure
 - Electricity Generation/Charging
 - Alternative Fuels
 - Transportation (Roads, etc.)
5. Funding
 - Public and private investments
6. Federal Assistance
7. Interagency Coordination
8. Public/Private Partnerships
9. Additional Recommendations??

References

Appendices