2011 AQMD Priorities

1. Commence demonstration/deployment of a zero-emission cargo container movement system.

2. Incentivize five megawatts of in-basin renewable distributed electricity generation and storage to support electric technology applications.

3. Make substantial progress in creating programs to facilitate construction of new and modified stationary sources in areas where the supply of emissions offsets is limited, consistent with AQMD’s clean air objectives.
Air Quality Technology Symposium

• Discuss and Identify Potential Technologies and Control Strategies for 2012 AQMP
  – Reduce Size of “Blackbox”

• Technology Areas
  – On-Road
  – Goods Movement
  – Off-Road
  – Stationary
Air Quality Technology Symposium

• Partners
  – Government
  – Industry
  – Environmental Organizations
  – Public
  – Universities
Key Regional Air Quality Challenge: Reducing Nitrogen Oxides from Mobile Sources

- Attaining federal ozone and PM$_{2.5}$ standards will require substantial NOx reductions *beyond adopted rules*
- Ozone standard will likely require the greatest reductions
  - Attainment Deadlines:
    - **2023** (80 ppb standard)
    - **2032 (?) timeframe** (75 ppb standard)
South Coast Air Basin
Top 15 NOx Categories: 2023 NO_x Emissions With Adopted Rules
Preliminary SCAQMD Estimates*

* Preliminary emissions estimates based on data updated from 2007 AQMP where available: CARB 2010 emissions projections for trucks and off-road equipment; IMO Tier 1 – 3 for ocean vessels; EPA 2008 rule for locomotives; 2007 AQMP short-term measures for other categories. Range for oceangoing vessels based on varying deployment assumptions for IMO Tier 2 and 3 vessels and range of ports’ cargo forecasts.
South Coast Air Basin

Top 15 NOx Categories: 2023 NOx Emissions With Adopted Rules
Preliminary SCAQMD Estimates¹

1. Preliminary emissions estimates based on data updated from 2007 AQMP where available: CARB 2010 emissions projections for trucks and off-road equipment; IMO Tier 1 – 3 for ocean vessels; EPA 2008 rule for locomotives; 2007 AQMP short-term measures for other categories. Range for oceangoing vessels (20 -52) based on varying deployment assumptions for IMO Tier 2 and 3 vessels and range of ports’ cargo forecasts.

South Coast Air Basin

Landside Transportation Sources

2023 NO\textsubscript{x} Emissions

With Rules Adopted (Preliminary Estimates)\textsuperscript{1}

\textbf{1. Preliminary emissions estimates based on data updated from 2007 AQMP where available: EPA 2008 locomotive rule; updated 2010 CARB truck emissions data.}
South Coast Air Basin

Marine & Aviation Sources

2023 NO\textsubscript{x} Emissions

With Adopted Rules (Preliminary Estimates) \(^1\)

1 Preliminary emissions estimates based on data updated from 2007 AQMP where available: IMO Tier 1 – 3 for ocean vessels; EPA 2008 rule for locomotives; 2007 AQMP short-term measures for other categories. Range for oceangoing vessels based on varying deployment assumptions for IMO Tier 2 and 3 vessels and range of ports’ cargo forecasts.
Pathway Toward Zero-Emissions

- Heavy-duty battery truck
- Battery Bus
- Medium-duty battery truck
- Electric car (Nissan Leaf)
- Electric/diesel passenger train
- Catenary electric bus (Los Angeles 1948)
- Catenary mining truck
Autos

- Plug-In Hybrids (Chevy Volt and Toyota Prius)
- Battery-Electric (Nissan Leaf)
- Fuel Cell (Honda Clarity)
Trucks

- Hybrid Electric (Meritor)
- Fuel Cell Hybrid (Vision)
- Medium-Duty Battery Electric (Fed Ex: Smith Electric)
- Heavy-Duty Battery Electric (Balqon)
- Vision Fuel Cell
- Siemens eHighway
Transit Buses

• Battery-electric with quick charge (Foothill Transit: Protera)
• Hydrogen fuel cell (Sunline Transit: Van Hool, UTC Fuel Cell)
Rail

- Electrified Freight
- Dual-mode Locomotives
- Linear Synchronous Motor
Clean Fuels Program
Strategy for Technology Advancement

Regulate
Incentives & Funding
Technology Demonstrations
Technology Providers
End-Users
Clean Fuels Program Technologies

**Near-Term**
- Aftertreatment
- Emulsified Diesel
- HD Natural Gas Engines
- Natural Gas Fueling Infrastructure
- Advanced Diesel Engines
- Hybrid Vehicles (Plug-in & Hydraulic)
- Gas to Liquid Fuel
- Renewables/Biofuels
- H2 Technologies & Refueling
- Fuel Cell Vehicles

**Longer-Term**
Meeting Goals

• Present Zero- and Near-Zero Emission Projects
  – Discuss
  – Seek Input
  – Propose Projects and Technologies
    • AQMD 2011 Priorities
    • AQMP Control Strategies
    • Clean Fuels Program