Emission Inventory Development

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What is an Emissions Inventory?

- Listing of air pollutants emitted per unit time per source type
- Used to quantify what goes into the air
Types of Sources

- Stationary
- Area-Wide
- Mobile
- Non-Anthropogenic
Stationary Sources

Point

Gas ‘Em Fast

Aggregated Point
Area-Wide
Mobile

On-Road

Non-Road
Non-Anthropogenic
Who Prepares Inventories?

- Local Districts
  - Develop Local Point Source Inventory
  - Estimate Emissions for ~1/3 of Area Source Categories

- ARB
  - Estimate Mobile Source Emissions
  - Estimate Emissions for ~2/3 of Area Source Categories
  - Develop and Report Statewide Inventory
Why Prepare Emissions Inventories?

- Control strategy development
- Rule development
- SIP development
- SIP tracking/Rate of Progress
- Public notification
- Emission reduction credit program
Types of Inventories

- Planning
  - Baseline
  - Projected
  - Seasonal

- Modeling
  - Gridded
  - Episode-specific
Compiling Emissions Inventories

- Some emissions are directly measured at the source (large stationary sources)
- Most are estimated using emission factors & activity levels
How Do We Estimate Emissions?
Emission Calculation

Process Rate (Activity) \times \text{Emission Factor} = \text{Total Emissions}

Number of Units

Emissions per Unit
Emission Forecasting

Emissions trends over time are adjusted (grown) to reflect economic growth and decreased (controlled) to reflect implementation of rules and regulations.
Emission Forecasting (cont.)

Sources of Growth Information
- District data supplied by COGs
- Economic activity studies contracted by ARB
- Demographic data

Sources of Control Information
- District rules
- ARB regulations
- Other regulatory agencies (e.g., EPA, Calif. Dept. of Pesticide Reg.)
Emissions are Evaluated from Several Perspectives

- By source category (stationary, mobile, area, etc.)
- Over time (trends showing growth and controls)
- Over space (county, region, air basin, etc.)
2005 Estimated Summer Average Emissions of Oxides of Nitrogen (ROP Plan December 2002)

- Manufacturing & Industrial: 10%
- Oil & Gas: 6%
- Ag & Food Processing: 9%
- Other Stationary: 10%
- Area: 1%
- On-road Mobile: 37%
- Other Mobile: 27%

492 Tons NOx/day

- Oil & Gas: 14%
- Ag & Food Processing: 10%
- Stationary - Other: 3%
- Area - Livestock Waste: 18%
- Area - Solvents: 10%
- Area - Other: 16%
- On-road Mobile: 21%
- Other Mobile: 8%

439 Tons ROG/day
NOx Inventory 1990-2005

(ROP Plan Summer Seasonal Inventory – December 2002)
ROG Inventory 1990-2005

(ROP Plan Summer Seasonal Inventory - December 2002)
Total 2002 precursor emissions ROG+NOx (tpd) by county & category
SJVAB Inventory Status

- Planning inventories being obtained from ARB for 1990, 2002, 2005, 2008 and 2010 for inclusion in plan
- Modeling inventories being developed for episodes of interest
- At some point inventory is “locked” and plan proceeds w/ this inventory
Summary

- Emission inventories are used for planning and modeling
- Planning inventories are grown and controlled in future years
- SJVAB planning inventory shows reductions over time, mobile source dominance of inventory