



2016 AQMP White Paper: PM Controls

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PM White Paper Working Group
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Cleaning The Air That We Breathe...

PARTICULATE MATTER CONTROLS



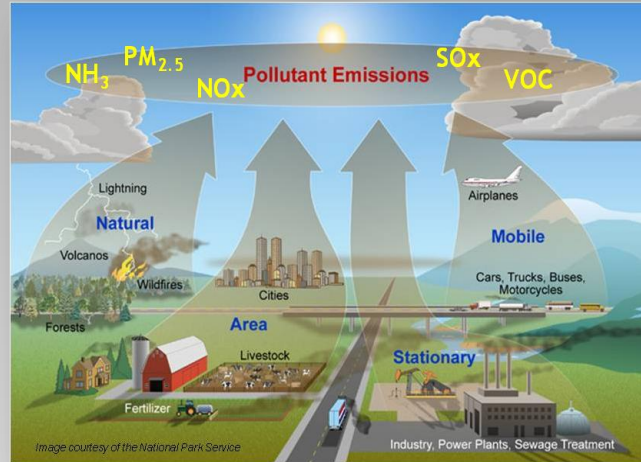
**One of 10 White Papers Under
Development**

White Paper – PM Controls

- Scientific discussion
 - ❑ Pollutant formation
 - ❑ Precursors
 - ❑ Trends
- Paths to attainment: NO_x-heavy controls
- Recommendations on future control strategies
 - ❑ Maximize co-benefits
 - ❑ Time and place controls
 - ❑ Sub-regional or episodic
 - ❑ Outreach and incentives
- Further studies

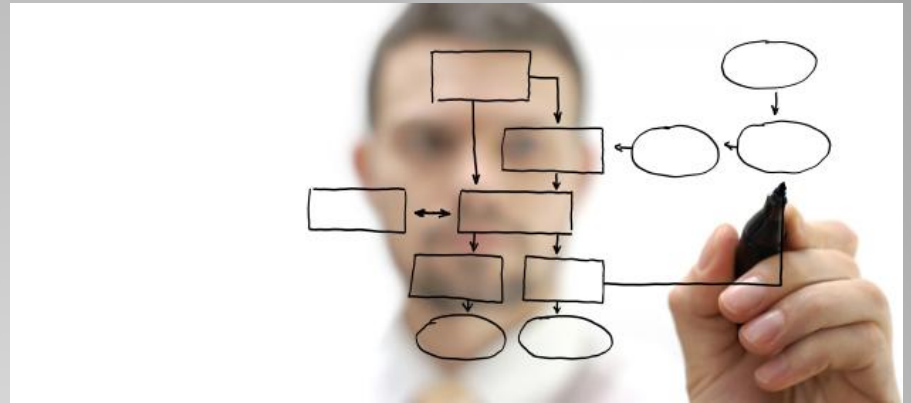


Particulate Matter Formation



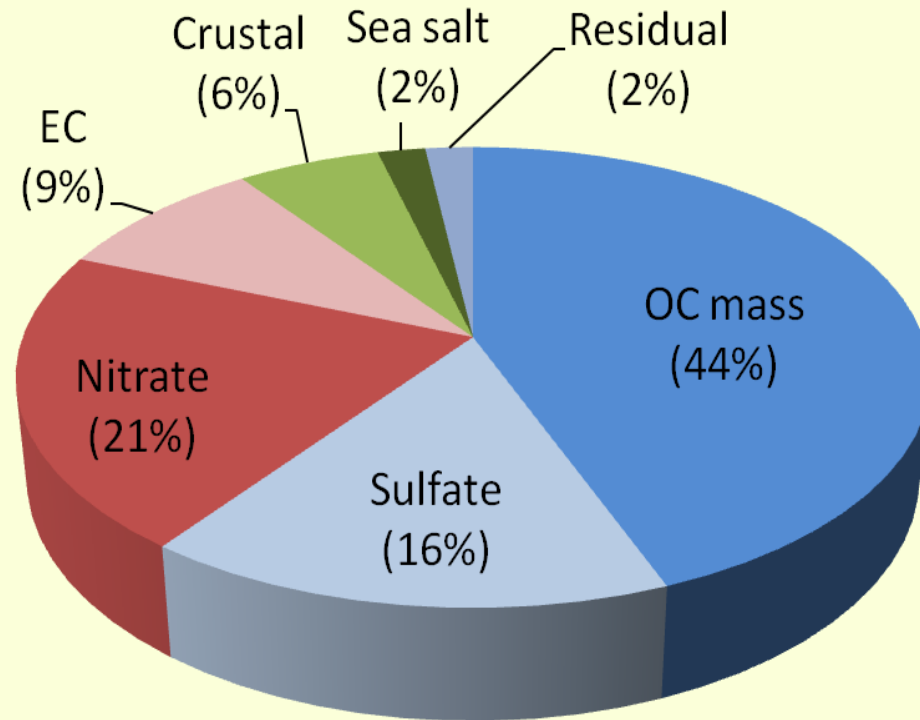
- *Primary particles* – directly emitted (e.g., construction sites, unpaved roads, sea salt, abrasion, fuel combustion, cooking, fires)
- *Secondary particles* – photochemical reactions in the atmosphere (e.g., precursor gases transformed into solid or liquids)
 - ✓ NO_x + SO_x + ammonia = ammonium sulfate or ammonium nitrate salts
 - ✓ VOCs + atmospheric oxidants = secondary organic aerosol (SOA)
 - ✓ Secondary particles make up the majority of ambient PM_{2.5} in Basin

Integrated Path to Attainment



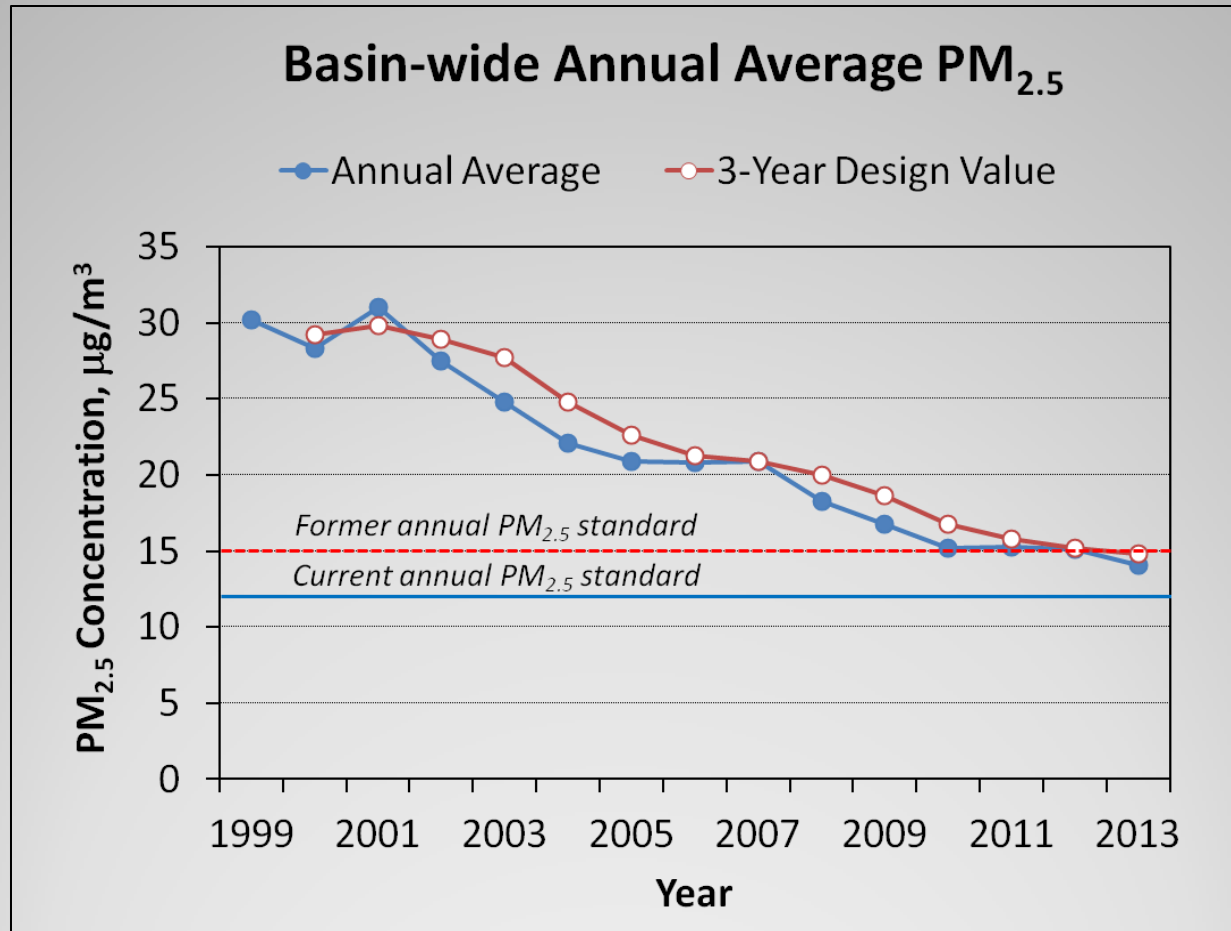
- Attainment paths for both ozone and PM_{2.5} call for heavy NO_x reductions augmented with limited, strategic VOC and PM controls

PM2.5 Speciation Profile

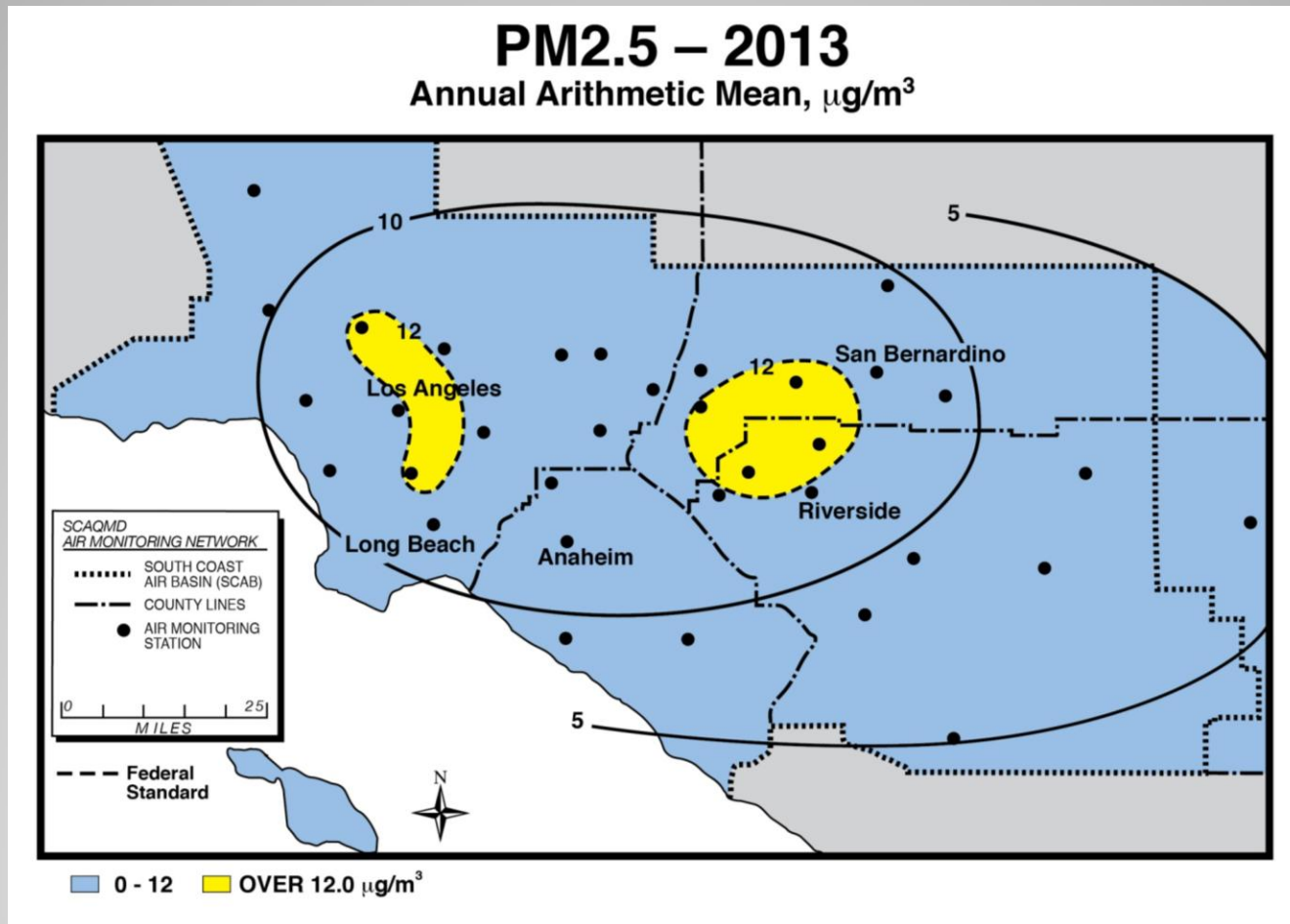


Source: Multiple Air Toxics Exposure Study IV

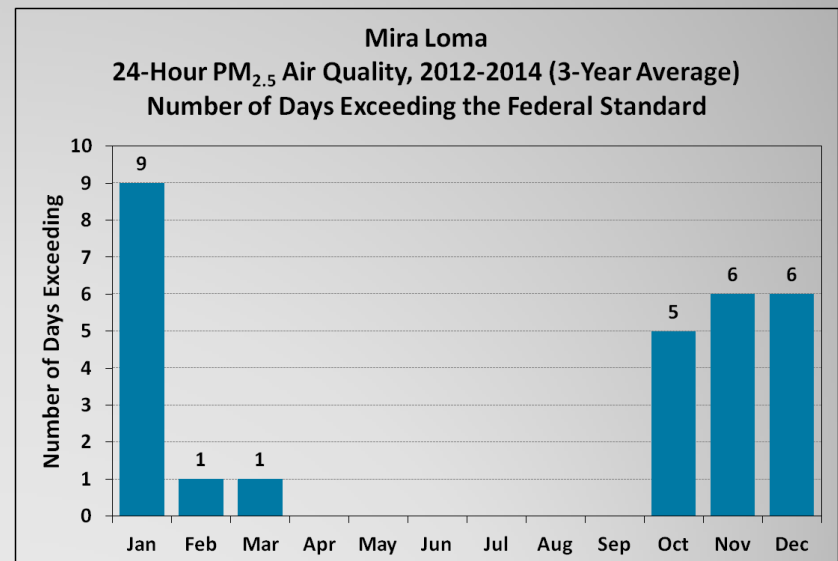
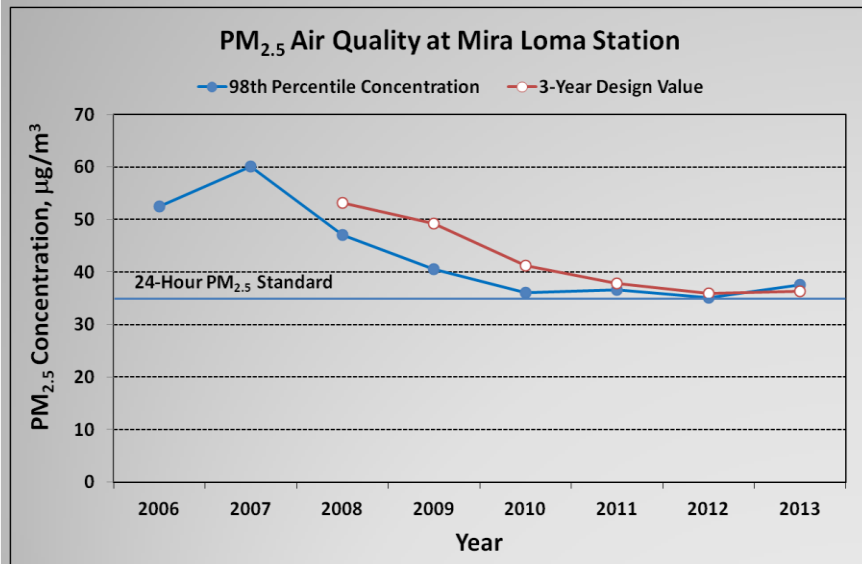
PM_{2.5} Continues Downward Trend



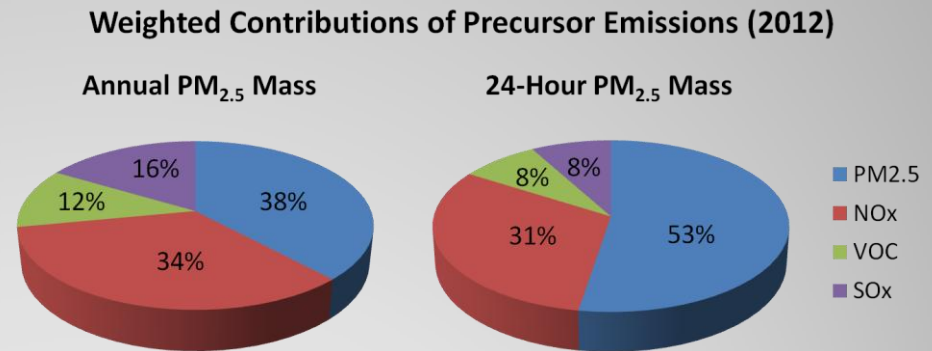
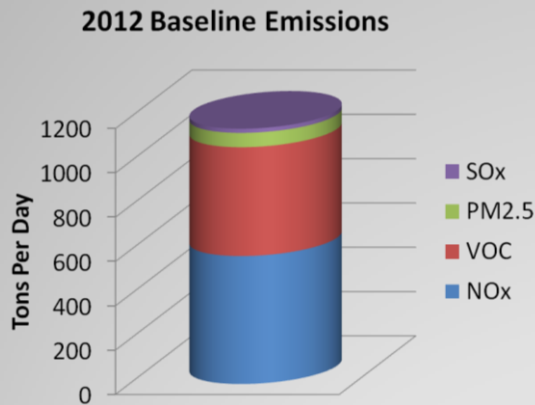
Annual Exceedances Still Occur



Despite Progress, Mira Loma Still Exceeds the 24-hour Standard



2012 Emissions Inventory and Relative PM_{2.5} Contributions

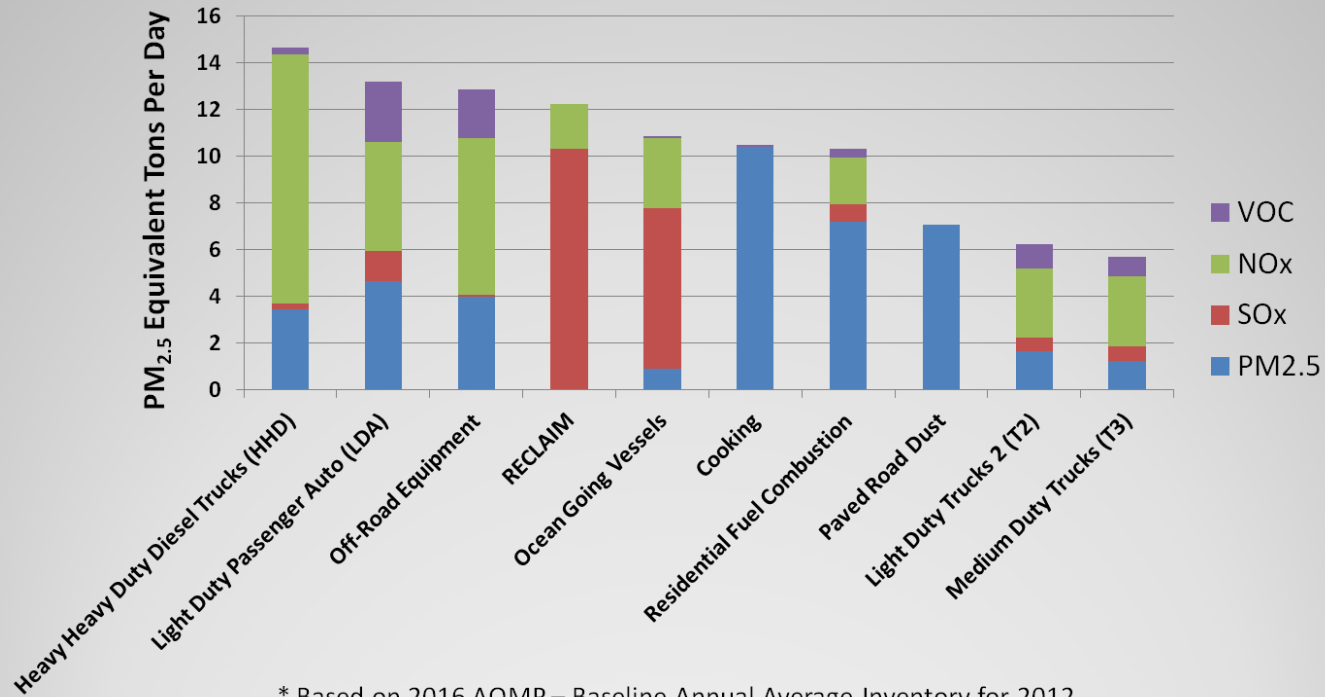


Comparative Effectiveness of Reductions To Achieve Federal PM_{2.5} Air Quality Standards

	NOx	SOx	VOCs	PM _{2.5}
Annual PM _{2.5} Standard	1	15	0.4	10
24-hour PM _{2.5} Standard	1	8	0.3	15

2012 Emissions Inventory Contributions

Emissions Categories Contributing to Annual PM_{2.5} Mass

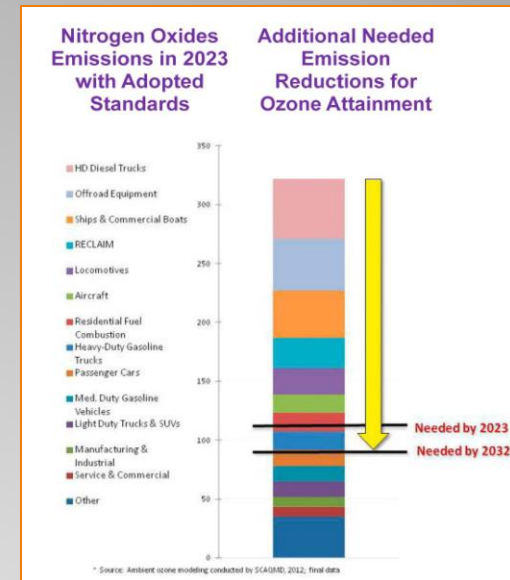


* Based on 2016 AQMP – Baseline Annual Average Inventory for 2012

Recommendations

Prioritized Approach to PM_{2.5} Reduction

- 1) Co-Benefits from the Ozone NO_x Strategy
- 2) Co-Benefits from Climate Change or Air Toxic Control Programs
- 3) Outreach and Incentive Programs
- 4) Additional Measures including early-action measures to ensure PM_{2.5} Attainment



Next Steps

- Incorporate comments received
 - ❑ White Paper Working Groups
 - ❑ AQMP Advisory Group
 - ❑ Other Stakeholders
- Mobile Source Committee in April
- Staff presentation at May Board Meeting
- Finalize May/June
- Overview to be provided at Control Strategy Symposium in June
- Recommendations to guide development of the 2016 AQMP