

# **Update on Action Items Reducing Health Risk from Air Pollution at Schools**

Presentation to the  
Facilities Committee

**5/8/08**

Office of Environmental Health & Safety  
Facilities Services Division – Maintenance & Operations

## Update on Action Items

### Reducing Health Risk from Air Pollution at Schools

Action	RP	Status
Establish Priority List of schools near major sources of air pollution.	OEHS	Final Priority List complete and distributed. Input from LA County Public Health and AQMD received and incorporated.
Develop range of options to upgrade existing schools.	FSD / OEHS	Options to upgrade systems developed. Analysis of existing schools underway.
Request CARB and EPA supplement current regulations to better control air pollution sources.	OEHS	Letters sent to legislators and regulators. Communication with agencies ongoing.
Prohibit placement of schools within 500 feet of a freeway or other major mobile source.	Board	Policy implemented.
Require HRA for all new school projects and results be disclosed to Board in CEQA or equivalent document.	Board	Policy implemented.
Collaborate with AQMD to identify and comment on any proposed new sources of air emissions that could impact school occupants.	OEHS	Policy implemented.

# Priority List of Schools Most at Risk from Air Pollution

- Top 200 schools on list
- Priority List criteria:
  - **Ambient Air**  
(from SCAQMD MATES III study)
  - **Major Stationary Sources**  
(factories, etc.)
  - **Transportation Corridors**  
(freeways, etc.)
- Input from LA County Public Health and SCAQMD incorporated into final list

LAUSD School/Property Name*	Board District	Local District	Ambient Air Cancer Risk 20%	Major Stationary Source 10%	Transportation Corridor 40%	Score	Final Rank
Lorena St	2	5	1	152	9	19.3	1
Soto St	2	5	6	152	3	19.4	2
Central LA Area New HS #9*	2	4	3	8	44	19.9	3
2nd St	2	5	11	152	30	32.7	4
Ford Blvd	5	5	15	152	35	36.7	5
Eastman Ave	5	5	9	152	51	40.1	6
Alliance College Ready Academy HS #4	2	5	56	152	4	44.8	7
Carmen Lomas Garza PC*	2	5	5	56	95	46.1	8
Utah St	2	5	11	39	92	46.2	9
Metropolitan High (Cont)	2	5	6	57	95	46.7	10
East LA High School #1*	2	5	11	37	95	47.2	11
Bridge St	2	5	11	46	95	48.1	12
Friedman Occup Ctr	2	Adult	56	137	16	48.1	12
Dena	2	5	10	67	95	49.7	14
San Pedro St	2	5	56	111	37	53.9	15
Pt Fermin	7	8	2	152	95	54.2	16
Heliotrope Ave	5	6	20	63	95	54.3	17
Maywood ES*	5	6	4	152	95	55.2	18
East Los Angeles Occup Ctr	2	Adult	70	30	45	56	19
9th St	2	4	8	152	95	57.2	20
Vernon City	5	6	29	60	95	58.5	21
Maple PC	2	5	38	20	95	59	22
South Region HS #7*	5	6	70	152	22	59	22
Trinity St	2	5	38	34	95	60.4	24
Nevin Ave	2	5	16	152	95	61.2	25
20th St	2	5	16	152	95	61.2	25
Central Region MS #7*	2	5	16	152	95	61.2	25
Jefferson High	7	5	16	152	95	61.2	25
Loma Vista Ave	5	6	27	111	95	62.6	29
Fishburn Ave	5	6	20	152	95	63.2	30
Vista Hermosa HS*	2	4	111	15	17	63.8	31
Breed St	2	5	22	152	95	64.2	32
Hollenbeck Middle	2	5	22	152	95	64.2	32
Nueva Vista	5	6	24	152	95	65.2	34
Woodlawn Ave	5	6	24	152	95	65.2	34
Maywood Academy HS*	5	6	24	152	95	65.2	34
Nimitz Middle	5	6	27	152	95	66.7	37
Pacific Boulevard School*	5	6	29	152	95	67.7	38
Amanecer PC*	5	5	31	152	95	68.7	39
Olympic PC*	2	4	47	152	75	68.7	39
Sunrise	2	5	64	152	54	68.8	41
Stevenson Middle	2	5	32	152	95	69.2	42
Corona Ave	5	6	33	152	95	69.7	43
San Antonio	5	6	33	152	95	69.7	43
Huntington Park ES*	5	6	33	152	95	69.7	43
Martha Escutia PC*	5	6	33	152	95	69.7	43
South Region MS #2	5	6	33	152	95	69.7	43
28th St	2	5	38	152	95	72.2	48
Adams Middle	2	5	38	152	95	72.2	48
Central LA Area New MS #4*	2	5	38	152	95	72.2	48

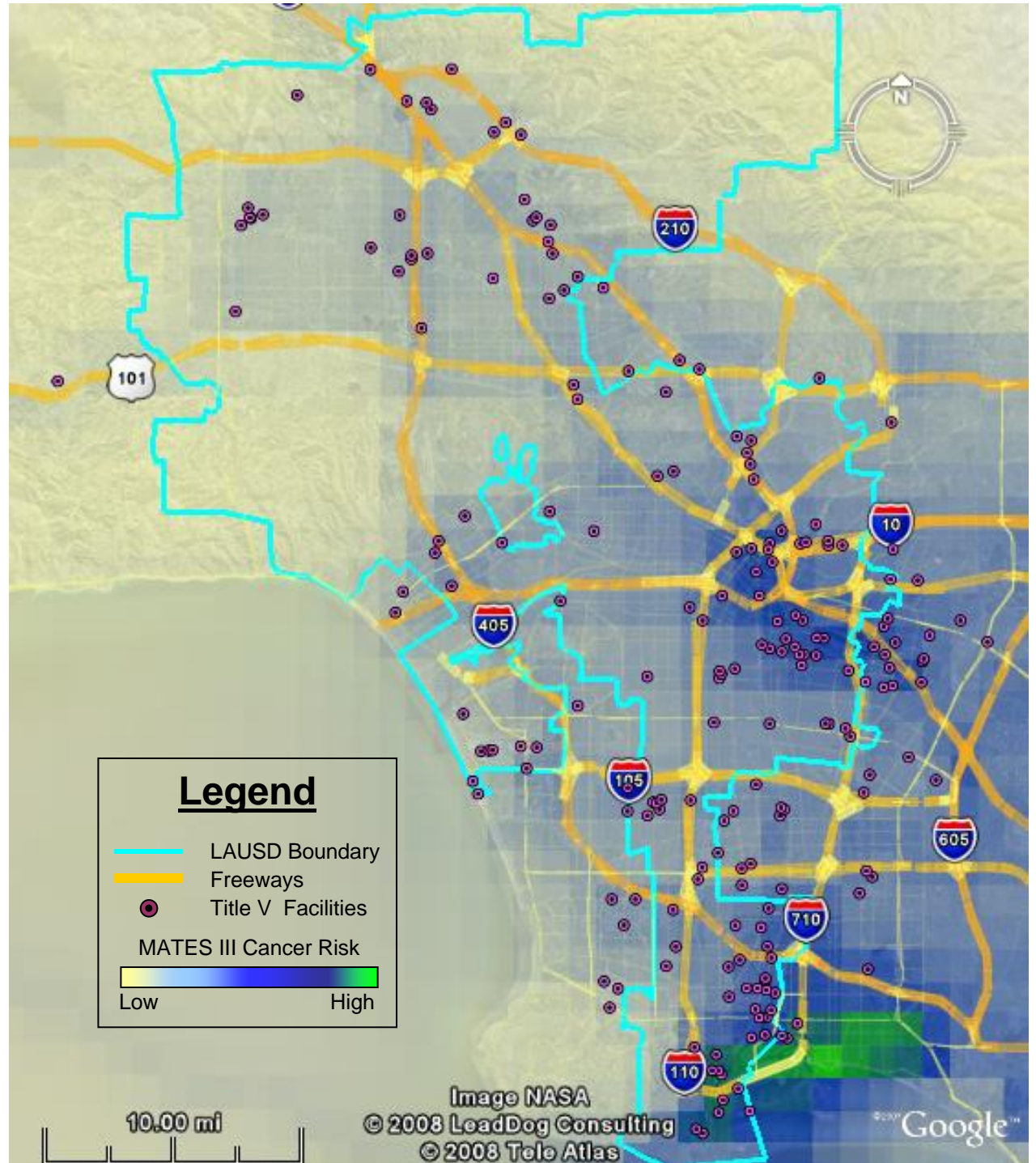
# Sources of Air Pollution in LAUSD

## ➤ Vehicles

- Freeways
- Rail lines/yards
- Ports

## ➤ Industries

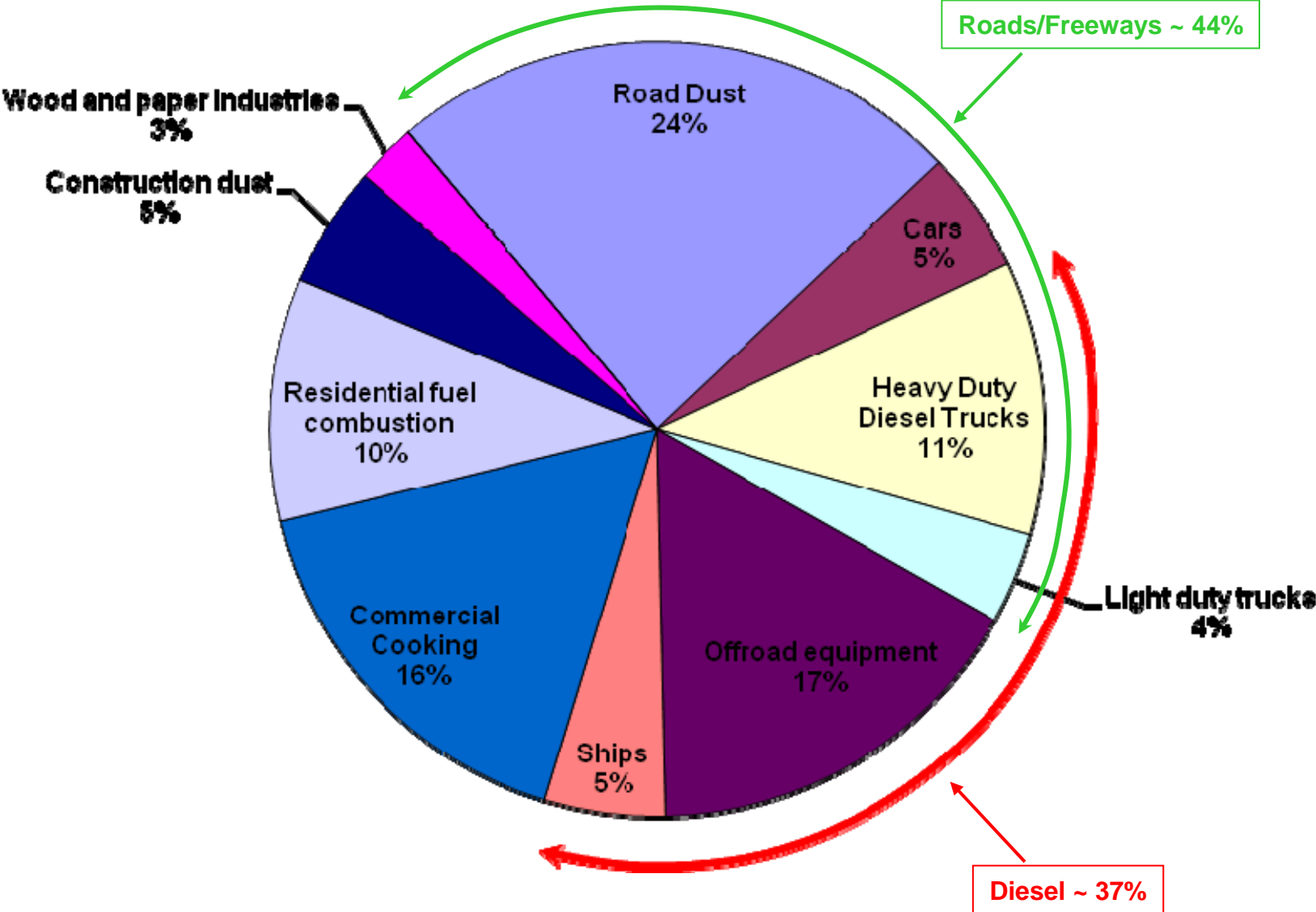
- Manufacturing
- Power plants



# Air Contaminants

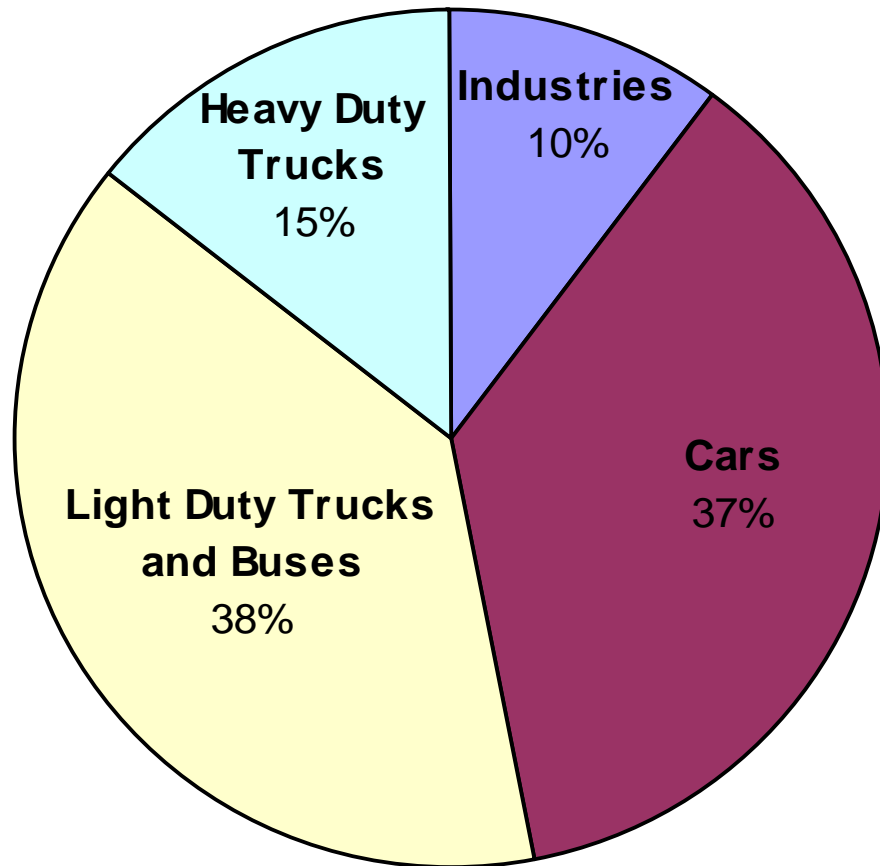
- Particulate Matter (PM)
  - Mixture of solids and liquids suspended in air
  - PM classified by size
    - <10 microns (*coarse* or PM10)
    - <2.5 microns (*fine* or PM2.5)
    - <0.1 microns (*ultrafine* or PM0.1)
- Gases
  - Criteria pollutants
    - NO<sub>x</sub>, CO, SO<sub>x</sub>, O<sub>3</sub>, etc.
  - Volatile organic compounds
    - benzene, formaldehyde, etc.

# Top Ten Primary PM2.5 Sources In South Coast Air Basin



Reference: SCAQMD 2007 Air Quality Management Plan

## Top Four Sources of Benzene in South Coast Air Basin



# Mitigation

- Reduce pollution at its source
- District alternatives
  - Avoid siting schools near pollution sources
  - Upgrade HVAC systems
  - Avoid placing HVAC intakes near air pollution sources
  - Fix building air leaks
  - Reconfigure sites to place occupied areas away from pollution sources
- Develop/support legislation to mitigate health risks

# Existing Conditions

- Surveyed 90 schools near freeways
  - Approximately 5000 pieces of HVAC equipment
    - From central units to window units
  - Minimum filtration
    - MERV 4-7
    - Arrests large particulates
    - Prevents accumulation on A/C system components
    - Generally keep indoors free of outdoor debris

# Facilities Mitigation Options

- Attain MERV 10
  - Particulates 1.0-3.0  $\mu\text{m}$
  - Milled flour, humidifier dust, welding fumes
  - Upgrades filters within existing capacities of fans and filter racks
- Attain MERV 14
  - Particulates 0.3-1.0  $\mu\text{m}$
  - Fine particulates, tobacco smoke, bacteria
  - Must replace/upgrade entire HVAC system
  - Add charcoal filter section

# Facilities Shortfalls

- Does not filter out “ultrafine” particles
  - Particles  $< 0.1 \mu\text{m}$ 
    - Act as the delivery agent for toxin metals and other harmful matters
    - Make up 80% of the number of particles in air
- Requires MERV 17-20 => “clean room”
  - Combination of:
    - High efficiency pre-filter (to remove coarse particles),
    - Hyper HEPA filter (to capture ultra-fine particulates)
    - Charcoal filter (to reduce VOC and sub-micron particles)
  - Not practical for existing schools
    - Entire building must be managed as a system
    - Special materials and a specific type of design
    - Strict access protocol
    - Continuous positive pressure to prevent infiltration
    - HEPA and ULPA technologies required
      - Normally applied to specially designed micro-environments.

# Facilities Mitigation Costs

## OEHS Top 10 Schools

Priority List of Schools Most at Risk from Air Pollution

- Upgrade to MERV 10 now
  - \$1 million
- Upgrade to MERV 14 at end of life
  - \$5.1 million additional costs beyond basic system
- Upgrade to MERV 14 now
  - \$31.7 million total system replacement costs