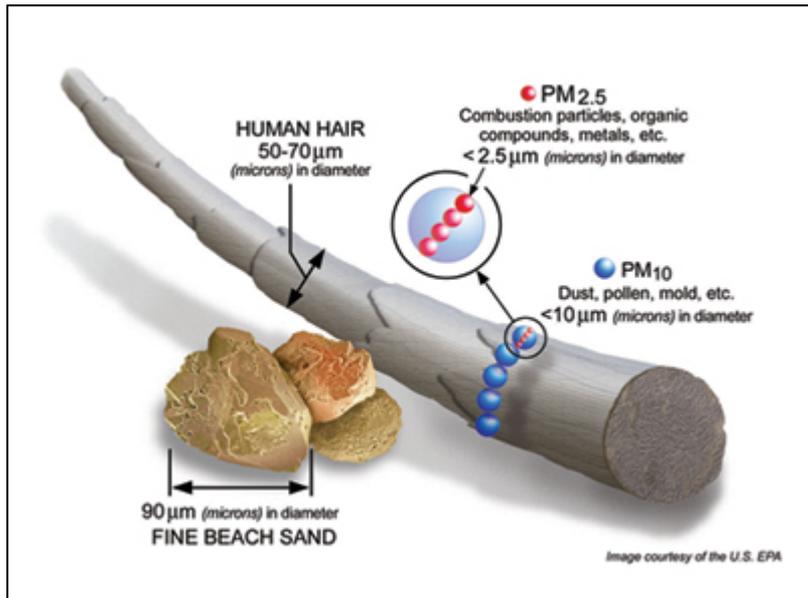


Air Pollution: What is it and where does it come from?

Particulate Matter



Particulate Matter (PM) comes from tail pipe exhaust and wood burning as well as braking and tire wear. Exposure to PM can exacerbate respiratory illnesses, and ultrafine PM can enter the blood stream and cause/worsen cardiovascular and other diseases.

Ozone

How ozone is created

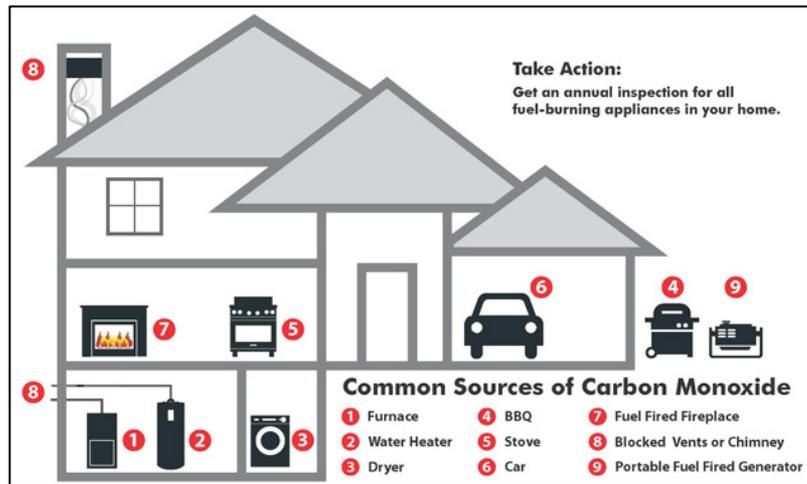
Ozone is formed in the atmosphere through chemical reactions between pollutants emitted from vehicles, factories and other industrial sources, fossil fuels combustion, consumer products, evaporation of paints, and many other sources.



Ozone can damage the tissues of the respiratory tract, causing inflammation and irritation, and result in symptoms such as coughing, chest tightness and worsening of asthma symptoms.

Ozone causes substantial damage to crops, forests and native plants.

Ozone can also damage materials such as rubber and plastics.

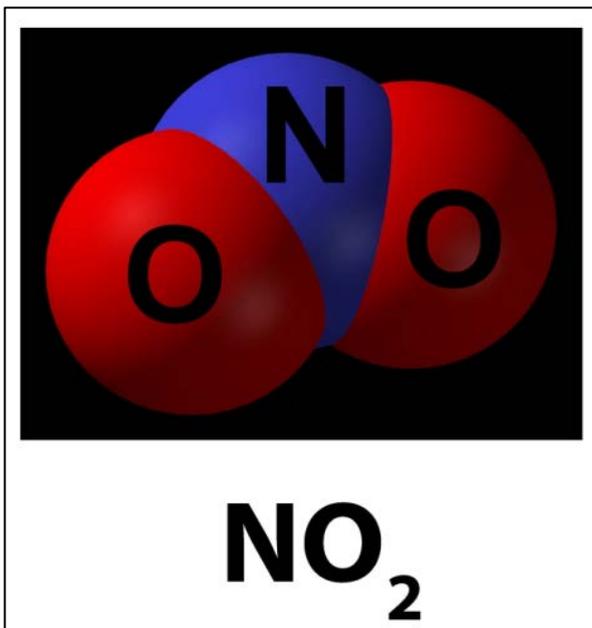


Carbon Monoxide (CO)

Carbon monoxide (CO) is a colorless, odorless gas. It results from the incomplete combustion of carbon-containing fuels such as gasoline or wood, and is emitted by a wide variety of combustion sources.

Exposure to CO can lead to fatigue, headaches, confusion, and dizziness. CO exposure has been associated with aggravation of angina pectoris and other aspects of coronary heart disease, decreased exercise tolerance in people with peripheral vascular disease and lung disease, impairment of central nervous system functions, and possible increased risk to fetuses.

Nitrogen Dioxide (NO₂)



NO₂ is one of the nitrogen oxides emitted from high-temperature combustion processes. NO₂ comes from trucks, cars, power plants, home heaters, and gas stoves.

In the presence of sunlight, complex reactions of nitrogen oxides with ozone and other air pollutants produce the majority of NO₂ in the atmosphere.

Exposure to NO₂ associated with respiratory symptoms, episodes of respiratory illness and impaired lung functioning.

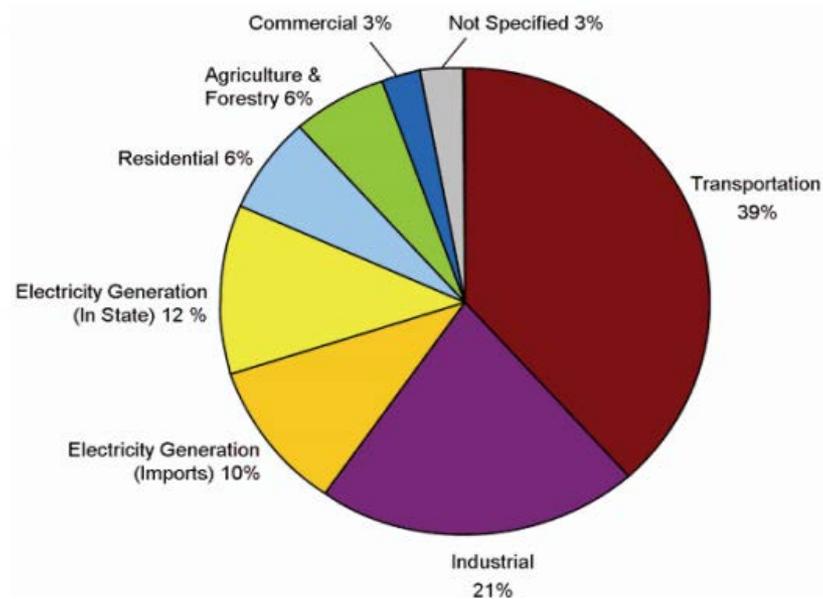
Toxic Air Contaminants

| Compounds |
|---|
| ACETALDEHYDE |
| ASBESTOS |
| BENZENE |
| BENZO[A]PYRENE |
| 1,3-BUTADIENE |
| CADMIUM |
| CARBON TETRACHLORIDE |
| CHLORINATED DIOXINS |
| CHLOROFORM |
| PARTICULATE EMISSIONS FROM DIESEL-FUELED ENGINES |
| ENVIRONMENTAL TOBACCO SMOKE |
| ETHYLENE DIBROMIDE |
| ETHYLENE DICHLORIDE |
| ETHYLENE OXIDE |
| FORMALDEHYDE |
| HEXAVALENT CHROMIUM |
| INORGANIC ARSENIC |
| INORGANIC LEAD |
| METHYLENE CHLORIDE |
| NICKEL |
| PERCHLOROETHYLENE |
| TRICHLOROETHYLENE |
| VINYL CHLORIDE |

A "toxic air contaminant" is an air pollutant which may cause or contribute to an increase in mortality or an increase in serious illness, or which may pose a present or potential hazard to human health.

Potential health impacts ...

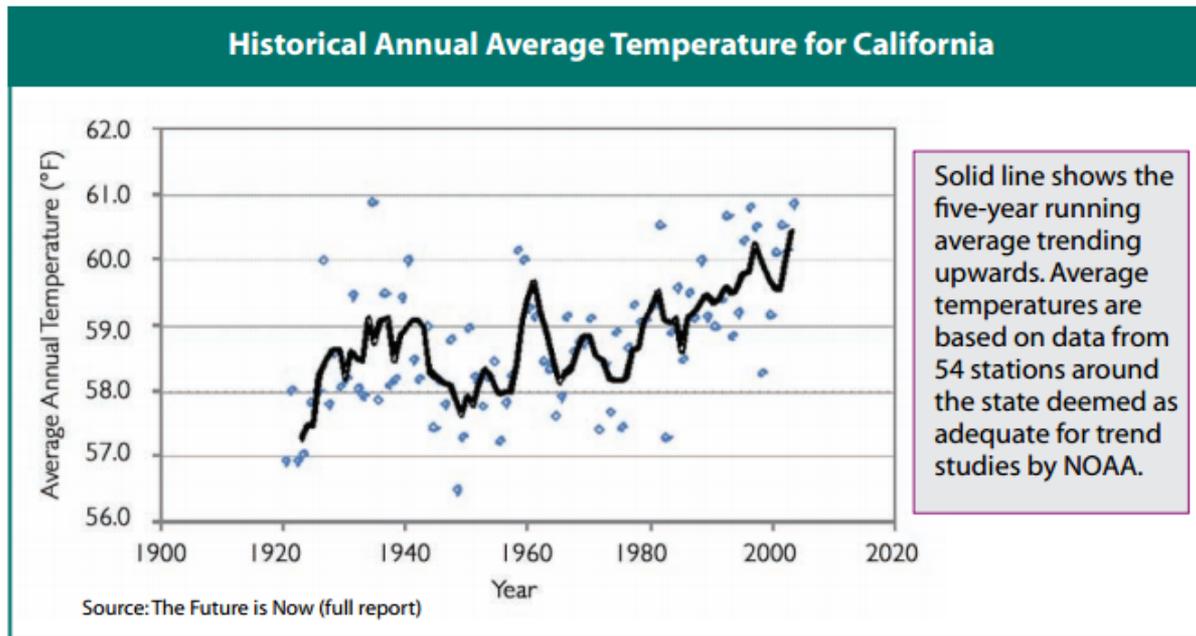
Greenhouse Gas Emissions



Atmospheric gases such as water vapor, carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and others trap radiation in the Earth's atmosphere. This is known as the "greenhouse effect". Rapid increases in these gases in modern times have changed the natural balance, increasing the Earth's surface temperatures and resulted in climate change.

**Why does controlling air pollution
matter for my community?**

Climate Change in California



Greenhouse gas emissions have contributed to the gradual increase in the Earth's average temperature. This increase in temperature changes our ocean levels, makes it harder for us to store water, and increases the likelihood of flooding and extreme weather events.

Health Impacts from Pollution

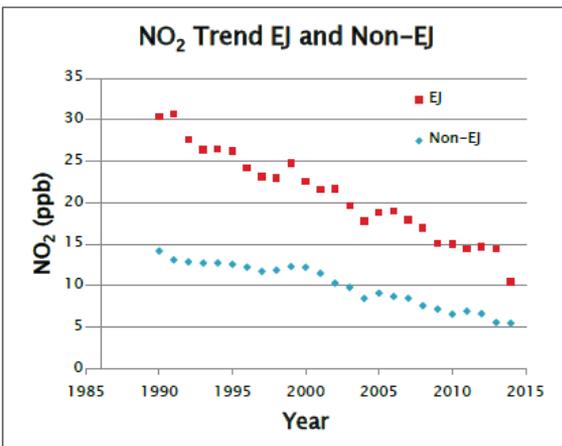
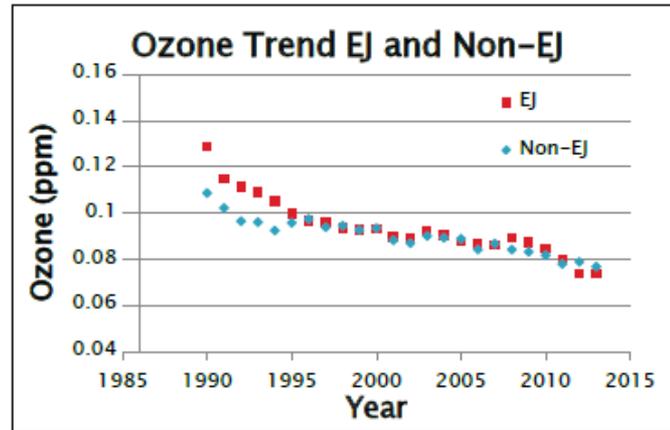
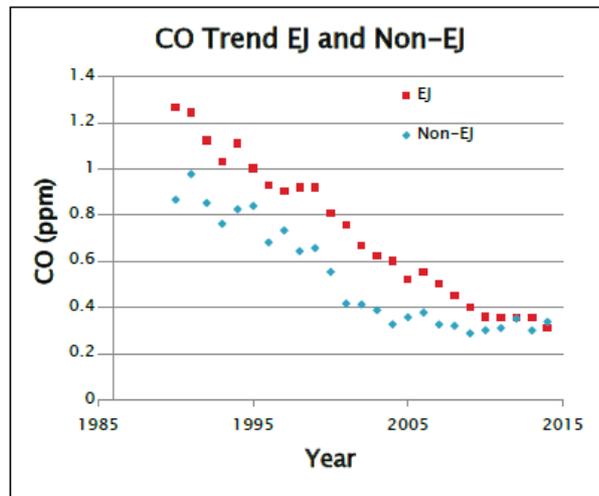
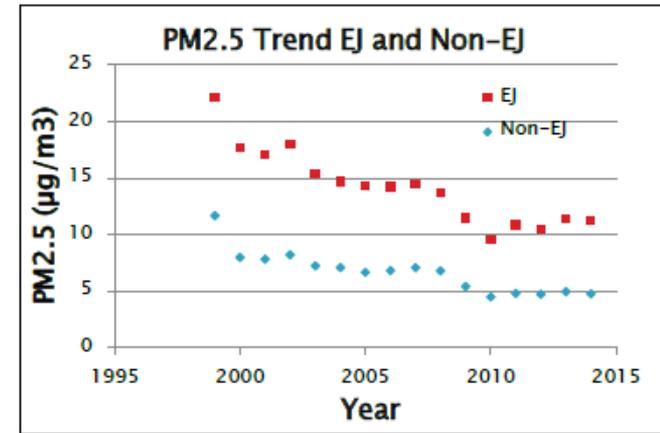
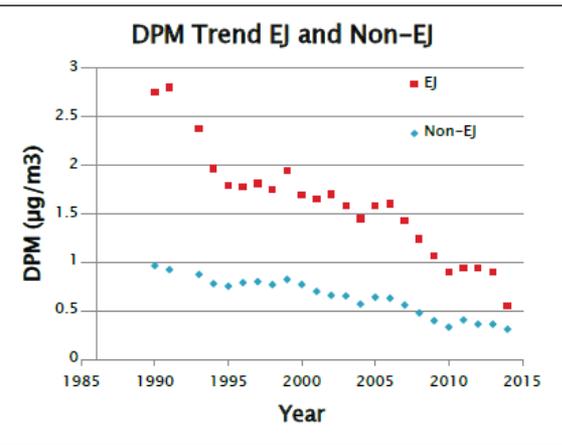
Exposure to air pollution is known to cause many health problems. These problems are more severe in children, elderly, and those already suffering from disease.

Health problems include:

- Respiratory Illness (Asthma, COPD)
- Cardiovascular Disease
- Cancer

| | MAJOR SOURCES | HEALTH EFFECTS | ENVIRONMENTAL EFFECTS |
|-----------------------|--|---|---|
| SO₂ | Industry | Respiratory and cardiovascular illness | Precursor to acid rain, which damages lakes, rivers, and trees; damage to cultural relics |
| NO_x | Vehicles; industry | Respiratory and cardiovascular illness | Nitrogen deposition leading to over-fertilization and eutrophication |
| PM | Vehicles; industry | Particles penetrate deep into lungs and can enter bloodstream | Visibility |
| CO | Vehicles | Headaches and fatigue, especially in people with weak cardiovascular health | |
| Lead | Vehicles (burning leaded gasoline) | Accumulates in bloodstream over time; damages nervous system | Fish/animal kills |
| Ozone | Formed from reaction of NO _x and VOCs | Respiratory illness | Reduced crop production and forest growth; smog precursor |
| VOCs | Vehicles; industrial processes | Eye and skin irritation; nausea; headaches; carcinogenic | Smog precursor |

Impacts to Environmental Justice Communities



What does ARB propose to do to address air pollution between now and the year 2030?

2030 Target Scoping Plan

In 2006, the Legislature passed the California Global Warming Solutions Act of 2006 (AB 32), which created a comprehensive, multi-year program to reduce greenhouse gas (GHG) emissions in California.

AB 32 required the California Air Resources Board to develop a Scoping Plan that describes the approach California will take to reduce GHGs to achieve the goal of reducing emissions to 1990 levels by 2020. The Scoping Plan was first approved by the Board in 2008 and must be updated every five years.

ARB is updating the Scoping Plan to reflect the 2030 target to reduce greenhouse gas emissions to 40% below 1990 levels by 2030 and 80% below 1990 levels by 2050.

The Scoping Plan has 8 Sections:

Transportation

Energy

Water

Industry

Natural and working lands

Agriculture

Waste management

Green buildings

Transportation



Mobile sources (cars, trucks, buses, rail, etc.) are the largest source of pollution in California.

Goals:

- **Fuels:** reduce petroleum use, increase renewable fuels, reduce carbon intensity of fuels
- **Vehicles:** increase efficiency of cars, rail electrification
- **Demand:** promote sustainable community development and active transportation investment, community education

Energy



Greatest source of energy demand is housing.

Goals:

- **Expand/improve grid infrastructure**
- **Meet requirements for renewable power generation**
- **Regulate fugitive emissions from aging fossil fuel infrastructure**
- **Improve technologies for energy storage and micro grids**
- **Enhance existing regulations**
- **Look to local communities for guidance/support on additional approaches**

Water



Future water sources will come from improved conservation, improved efficiencies, better management of surface and groundwater, use of recycled water, groundwater remediation, desalination, and greater water storage.

Goals:

- **Reduce energy needed to move and treat water in California.**
- **Increase appliance efficiency (faucets, toilets, urinals, showers)**
- **Water conservation targets for urban and agriculture**

Industry



Industry refers to stationary sources (extraction, manufacturing, production, refining) as well as the transportation of goods throughout production.

Goals:

- **Explore cap and trade, carbon tax, and command/control methods of reducing industry pollution.**
- **Continue existing programs to reduce impact of refrigerants**

Natural and Working Lands



Figure 1: Examples of Existing Wetland and Riparian Habitat Restoration Goals

California Water Plan Roadmap for Action

Reestablish 1,000,000 acres of contiguous natural riparian, wetland, and floodplain habitat that is subject to periodic flooding

The Central Valley Flood Protection Plan

Restore 7,100 acres of riparian habitat in the Sacramento Basin and 7,900 acres in the San Joaquin Basin

San Francisco Baylands Goals

Restore 30,000 acres of publicly owned coastal wetlands in the San Francisco Bay Area

Southern California Wetland Recovery Project Workplan

Restore 5,000 acres of riparian habitat and 11,000 acres of coastal wetlands

Goals:

- Protect farmland, rangeland, and forests from conversion
- Enhance carbon resilience and ecological function through management and restoration
- Innovation to improve ecosystem health and agricultural efficiencies
- Urban forestry and green infrastructure

Agriculture



Goals:

- Increase use of drip irrigation
- Decrease use of diesel water pumps or equipment
- Promote composting and fuel management that reduces need for fertilizer or other additional energy

Waste Management



Over 40% of landfills are organic material. Not only are we running out of space for landfills, but there are also considerable emissions from these facilities.

Goal: divert 75% organics from landfills by 2020 and 90% by 2025. Statute already requires diversion at sites with a lot of waste production. Additional strategies include food rescue programs and new infrastructure for composting, anaerobic digestion.

Green Buildings



The California Energy Commission (CEC) is working on a plan to retrofit existing buildings. Current goals for new construction: all new residential will be zero net energy by 2020, and all new commercial will be zero net energy by 2030.

Goal: move beyond zero net energy buildings by developing guidance for zero net carbon buildings; LEED certify buildings.

Tell us what you think!

What matters most to you and your community?

What do you like about this plan?

What do you think is missing or concerning about this plan?

How will we measure success?

10 minutes at each table:

1. Transportation
2. Energy
3. Water
4. Industry
5. Natural and working lands
6. Agriculture
7. Waste management
8. Green buildings