

AIR POLLUTION RESEARCH

July 21, 2005

California Environmental Protection Agency



Air Resources Board

Presentation Overview

- **Research Program Overview**
- **Strategic Plan for Research, 2001-2010**
- **Planned Air Pollution Research, FY 2005/06**

Research Program Overview

- Established by Health and Safety Code, 1971
- Basis for regulatory actions
- Overseen by Research Screening Committee
- Managed by ARB's technical staff

Role of Research Screening Committee

On behalf of the Board:

- **Provides guidance on research plans**
- **Reviews and provides technical comments on:**
 - **Research proposals**
 - **Final reports**
 - **Other aspects of the research work**

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Strategic Plan for Research 2001-2010



**10-year roadmap
for
air pollution
research**

Objectives

- **Reduce Emissions and Exposure to Particulate Matter**
- **Characterize and Reduce Community Exposure to Air Pollutants**
- **Promote Zero and Near-Zero Emission Technologies**

Regulatory and Policy Drivers

- Ambient Air Quality Standards
- Environmental Justice Program
- State Implementation Plans
- Diesel Risk Reduction Plans
- Climate Change Mitigation

Categories

- **Health and Welfare Effects**
- **Exposure Assessment**
- **Technology Advancement and Pollution Prevention**
- **Global Air Pollution**

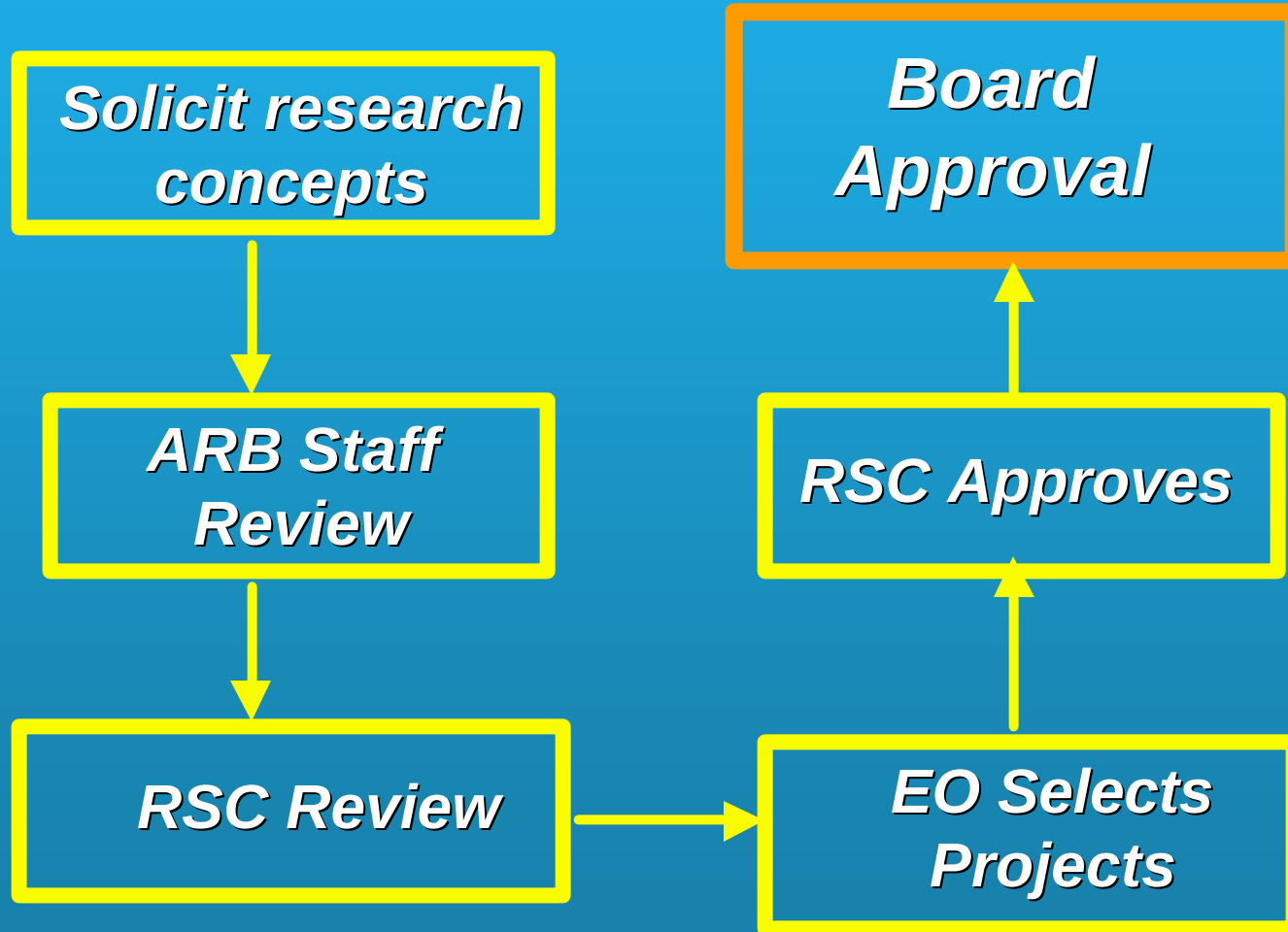
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- Research Program Overview
- Strategic Plan for Research, 2001-2010
- **Planned Air Pollution Research for 2005/06**



Planned Air Pollution Research Fiscal Year 2005-2006

Research Planning Process

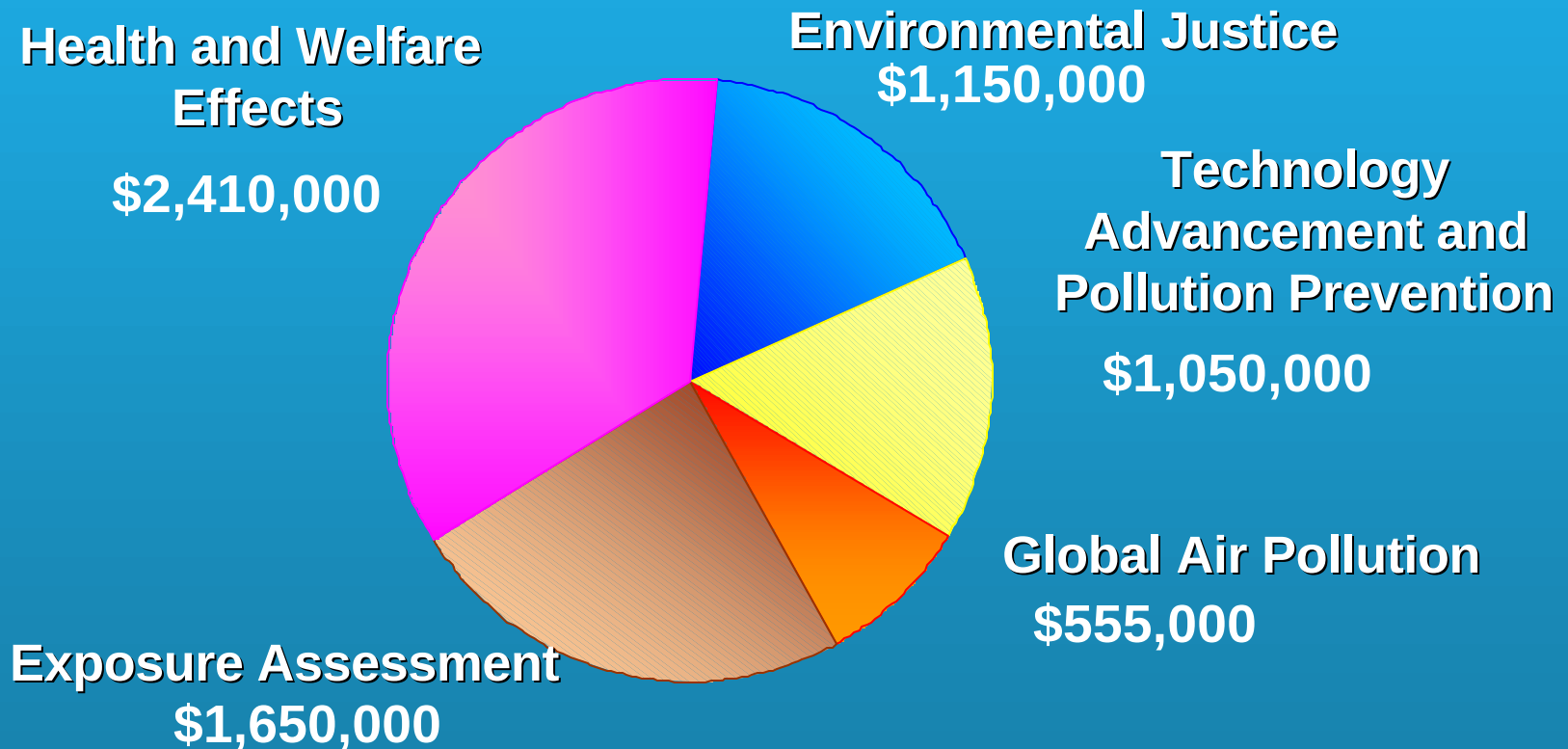


Proposed Research Projects

- 27 Recommended Projects
- 5 Research Categories
- Budget Allocations
- Specific Projects

Research Division Budget

\$6,800,000



Annual Plan Presentation

- 5 categories
- Project listing under each category
- Highlight specific projects
- Recommend acceptance

Environmental Justice Projects

- Saturation monitoring of selected pollutants in Wilmington
- Community scale spatial variability of ultrafines
- Mobile monitoring of ultrafine PM near roadways

Saturation Monitoring of Selected Pollutants in Wilmington



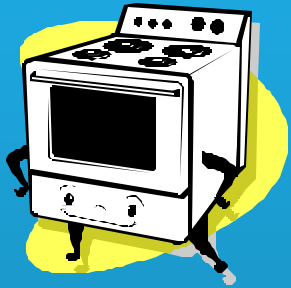
What is the
actual
exposure to
pollution in an
EJ community?

Health and Welfare Effects Projects

Health Effects from PM

- Health impacts of PM from indoor sources
- Effects of ultrafine particles on lung growth
- Health effects of short-term PM exposure
- Continuation of Fresno Asthmatic Children's Environment Study (FACES)

Health Impacts of PM from Indoor Sources



To what extent do indoor sources contribute to PM health effects?



Health and Welfare Effects Projects

(continued)

Cost Analysis

- Life-cycle cost analysis of air pollution regulations
- Follow-on to car purchase model
- Economic value of avoiding air pollution related health outcomes
- Health benefits of improvements in air quality

Exposure Assessment Projects

Atmospheric Processes

- Impact of halogen gases in coastal areas on downwind ozone levels
- Effects of freeway barriers on PM dispersion

Exposure Assessment Projects

(continued)

Emission Inventory

- Process-based emission farm model for dairies
- Measuring agricultural fumigant pesticide emissions
- Species profiles from diesel combustion in ships
- On-road measurements from light & heavy duty vehicles

Exposure Assessment Projects

(continued)

Personal and Indoor Exposure

- Ultrafine particle concentrations in schoolrooms and homes
- Survey of ozone-generating air cleaners

Processed Based Farm Model



How do we
obtain
accurate
emission
rates from
dairies?

Technology Advancement and Pollution Prevention Projects

Enhanced Emission Monitoring

- Evaluate Europe's particle number emissions methodology
- Characterize light-duty high PM emitters
- CO₂ emission quantification from vehicle A/Cs
- Hourly monitoring of acrolein in ambient air

Evaluate European Particle Number Emission Methodology

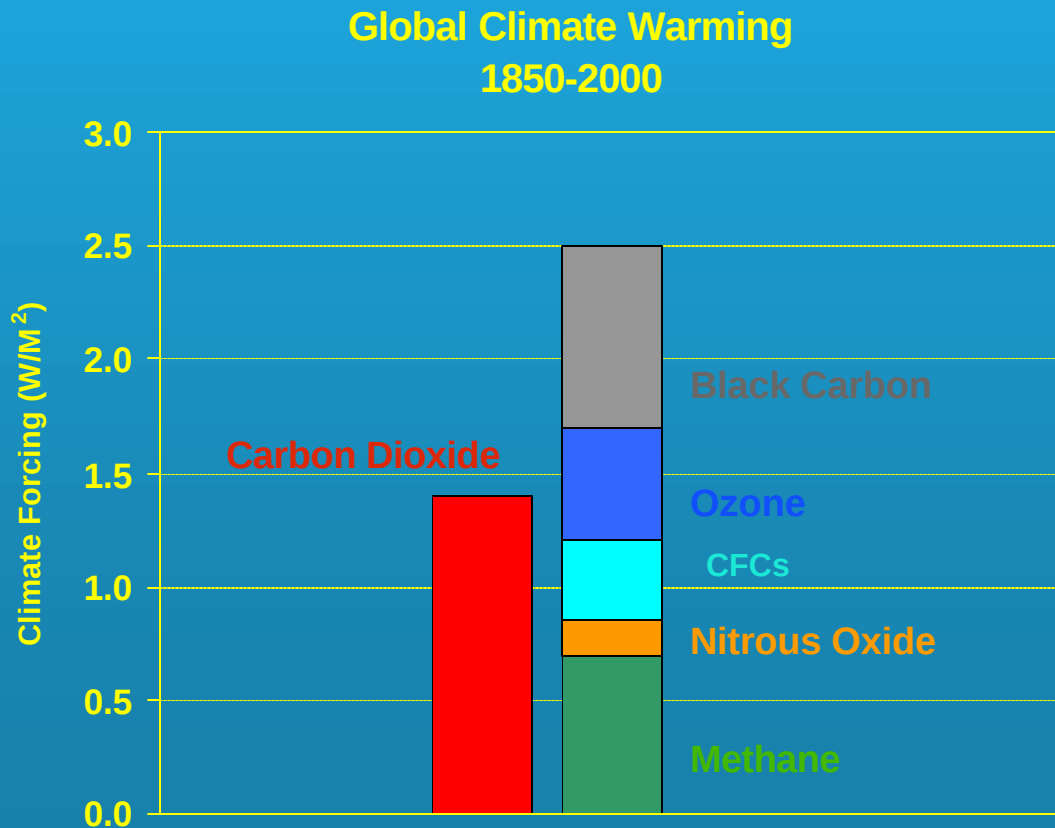


Can California potentially use the PMP method for in-use compliance testing?

Global Air Pollution

- Evaluate greenhouse gas emissions from the petroleum sector
- Improve CO₂ emission estimates from fossil fuel combustion
- Clearinghouse of technological options for reducing non-CO₂ greenhouse gas emissions
- Climate change impact on urban air quality in California

Clearinghouse of Options for Reducing Greenhouse Gas



What
technology
options are
available for
reducing
non-CO₂
emissions?

Recommendation

**Approval of the
Planned Air Pollution Research for
Fiscal Year 2005-06
(Resolution No. 05-36)**



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RESEARCH PROPOSAL

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Health Benefits of Improvements In Air Quality (Augmentation)

University of California, Berkeley
Professor Ira Tager
\$175,000

Objective: Refine technique to quantify the health benefits associated with air quality improvements and application of additional pollutants and health end points.

Expected Results: Health benefits associated with reducing PM and ozone.

Recommendation

**Approval of the
Research Proposal**

**“Health Benefits of Improvements in
Air Quality”**

(Resolution No. 05-37)

RESEARCH PROPOSAL

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