Proposed 2011 Research Plan

California Air Resources Board

California Environmental Protection Agency

Today's Proposed Action

Approval of 2011 Research Plan

Next Steps

- Development of full proposals
- Research Screening Committee (RSC) review
- Board approval of projects

Outline

- Planning process
- Research Themes
- Proposed projects
- Recommendation

2011 Plan Development

- Board discussion with RSC in February
- Annual public solicitation
- Staff analyses of research gaps
- Interagency coordination

Planning Considerations

- Integrate air quality and climate programs
- Recognize air quality, energy, land use, and transportation linkages
- Identify research gaps focused on ARB program priorities

2011 Research Themes

- Foundational Research
- Air Quality and Energy
- Sustainable Communities
- Behavior and Technology

2011 PROPOSED PROJECTS

FOUNDATIONAL AIR POLLUTION RESEARCH

Foundational Research

- Protecting Health
- Attaining Air Quality Standards
- Meeting Climate Change Targets

PROTECTING HEALTH

Research Highlights

- Provided evidence for biological basis of cardiovascular effects from PM2.5 exposure in animal studies
- Associated roadway exposures with risk of asthma in children
- Identified unhealthful formaldehyde exposures in new homes

Protecting Health

Recommended Research Projects

Assess exposure and efficacy of in-home filtration for children with asthma

Identify the most effective filtration and ventilation systems for homes to support asthma study

Evaluate filtration systems for passenger vehicles and school buses

ATTAINING AIR QUALITY STANDARDS

Research Highlights

- Improved technical basis for ozone and PM2.5 attainment strategies
  - Better understanding of the rate of ozone formation
  - Role of chemistry in PM2.5 formation
- Identified air pollution transport from Asia
- Mapped shipping off west coast to support control programs

Attaining Air Quality Standards

Recommended Research Projects

Show how long-range transport of pollution increases background levels

Dairy feed management practices to reduce emissions

Evaluate heavy-duty diesel control technologies

Better understand sources of PM2.5 pollution

MEETING CLIMATE CHANGE TARGETS

Research Highlights

- An in-depth review of the sources of high-GWP gases
- A study of options and costs for recovering and destroying high-GWP gases
- Assessment of emissions from fertilizer application to soils
- Study of regional black carbon reductions as climate co-benefit of diesel control

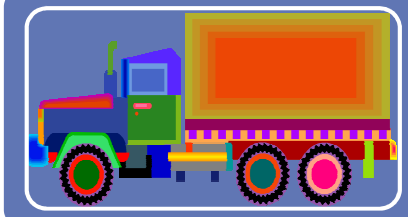
Meeting Climate Change Targets

Recommended Research Projects

Reduce high GWP emissions from appliance and building waste foams

Reduce N_2O emissions from fertilizer use

Measure GHGs to identify sources and track progress



Impacts of black carbon reductions on California climate indicators

BEHAVIOR AND TECHNOLOGY

Behavior and Technology

Recommended Research Projects

Modeling household vehicle choice and usage

Potential benefits of interactive transportation technologies

Consumer attitudes to low-emission vehicles

In collaboration with CEC, CalTrans, and the UC system

SUSTAINABLE COMMUNITIES

Sustainable Communities

SB 375

Directs California's metropolitan planning organizations to develop strategies that:

- Integrate land use, housing, and transportation planning
- Reduce regional GHG emissions

Health Connections

“People who live in neighborhoods with a mix of shops and businesses within easy walking distance have a 35% lower risk of obesity.”

Lawrence Frank et al. American Journal of Preventative Medicine, 2004

Sustainable Communities

Recommended Research Projects

Economics of Smart Growth Strategies

Benefits of Complete Streets Conversions

Pollutant Co-Benefits of Non-Energy Green Building Retrofits

Improving Financing Programs for Building Retrofits

AIR QUALITY AND ENERGY

Air Quality and Energy
Current Research

CEC and CPUC-led research

- Net Zero Energy buildings
- Renewable electricity load balancing
- Electrification scenarios

Gap for ARB to address: Air quality co-benefits

Air Quality and Energy

Recommended Research Projects

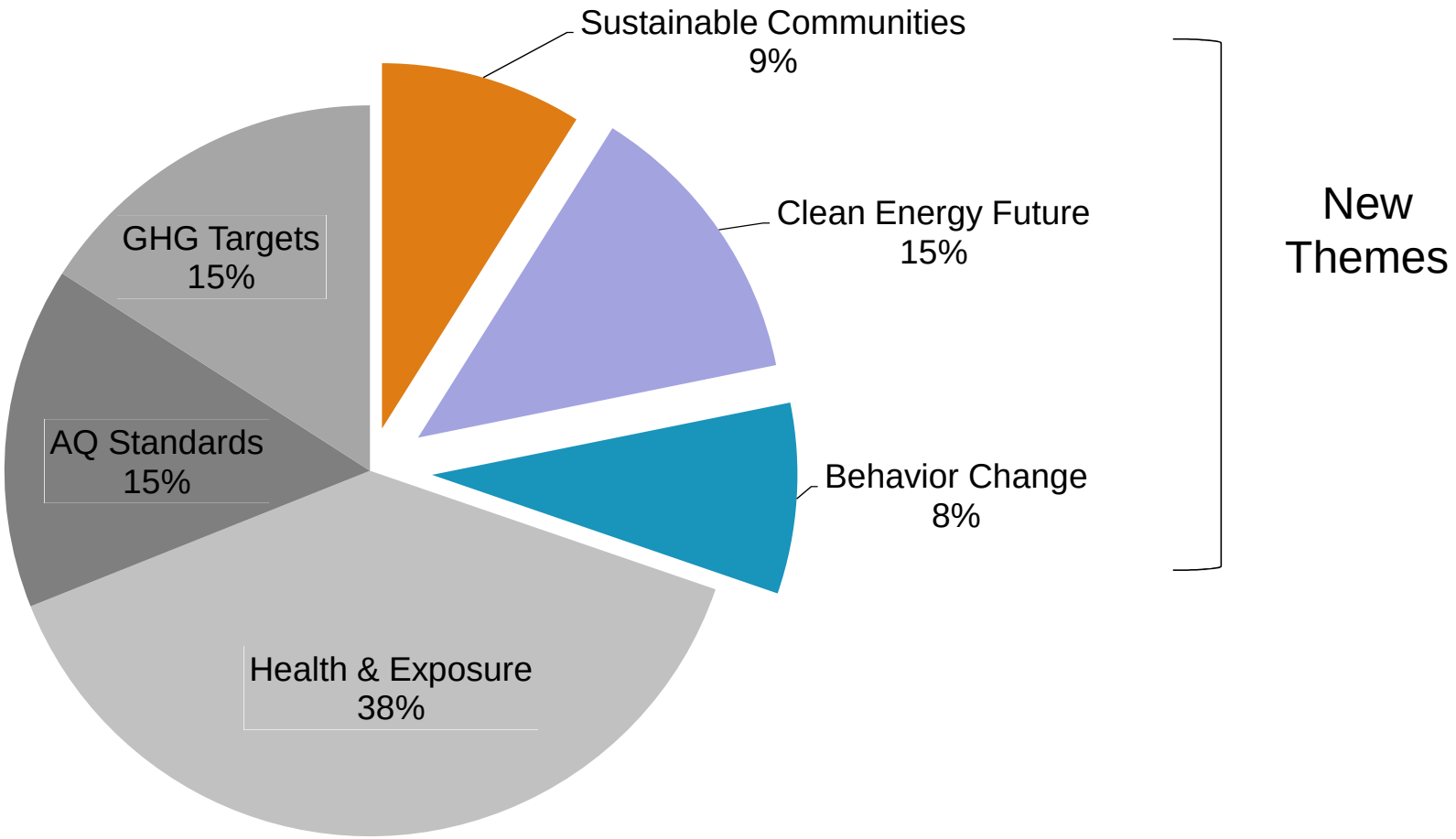
Air quality co-benefits of clean energy

Air quality and energy impacts of biogas from waste

Improved life-cycle assessment (LCA) tools

Goods movement truck travel data collection methods

Proposed 2011-2012 Funding Allocations



Financial Stewardship

- 75% of funds stay in California
- Significant leveraging: $3 to $1 since 2000
- Low overhead rates

Recommended Action

Approve

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