

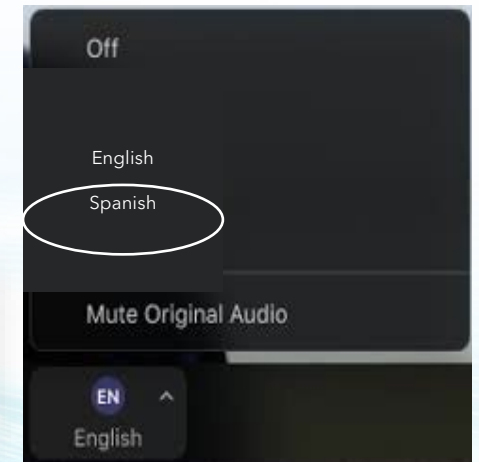
Language Interpretation through Zoom

- **Spanish Interpretation is being provided**
- **Note:** The Interpretation feature requires downloading the Zoom application to your desktop.
- All attendees are asked to find and click on the Interpretation Icon.
 - English: select Off
 - Spanish: select Spanish, then Mute Original Audio



Interpretación de Idiomas en Zoom

- **Tendremos servicio de interpretación.**
- **Advertencia:** Para usar la función de interpretación de idioma, los participantes tienen que descargar la aplicación de Zoom en su desktop (escritorio).
- A todos los participantes se les pide que busquen y opriman el ícono de interpretación (Interpretation)
 - Para inglés, tiene que hacer clic en inglés (English) y luego hacer clic en Silenciar Audio Original (Mute Original Audio).
 - Para español, tiene que hacer clic en español (Spanish) y luego hacer clic en Silenciar Audio Original (Mute Original Audio).





Public Meeting - Setting Research Priorities for the Next 5 Years

November 18 and 20, 2024

Today's Agenda

- Brief introductions
- CARB's Research Program
- Break-out sessions:
 - Summary of our research drivers and current research focus
 - List of FY25-26 projects
 - List of proposed research initiatives in the 5-year Plan
- Break-out rooms:

Health

Air Quality

Climate

Mobile Sources
and Sustainable
Communities

Spanish-First
Room

CARB Priorities

Air Quality Standards



Environmental Justice



Climate Change



Mobile Sources



Sustainable Communities



How CARB works with federal and local air quality agencies

FEDERAL



US EPA

Sets & enforces national air quality standards.
Regulates interstate transportation.



TRAINS



PLANES



SHIPS

STATE



Regulates mobile sources of air pollution,
greenhouse gases & consumer products.



CARS



TRUCKS



BUSES

LOCAL



Local Air Districts

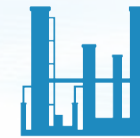
Regulates stationary & local
sources of air pollution.



FIREPLACES



FACTORIES



REFINERIES



POWER PLANTS

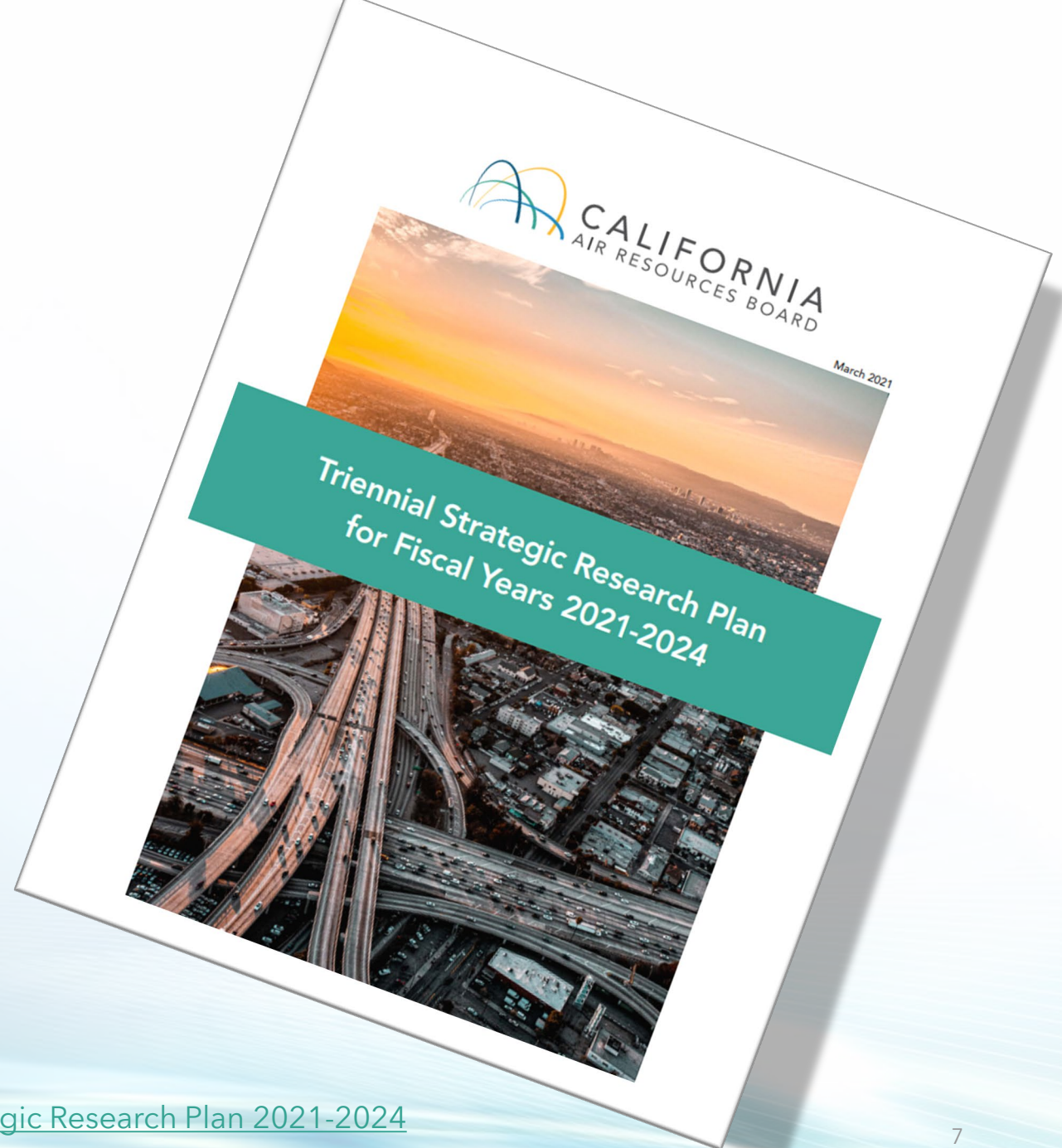
CARB Research Program

- Legislatively mandated research program
- Sound science to support CARB programs
- Oversee in-house, contracted, and collaborative research efforts



5-Year Strategic Research Plan

- Public process
 - Public meetings
 - Collaborative effort with Community Based Organizations
 - Surveys
- Priorities
- Strategic
- Project selection
- Racial equity and environmental justice
- Planning

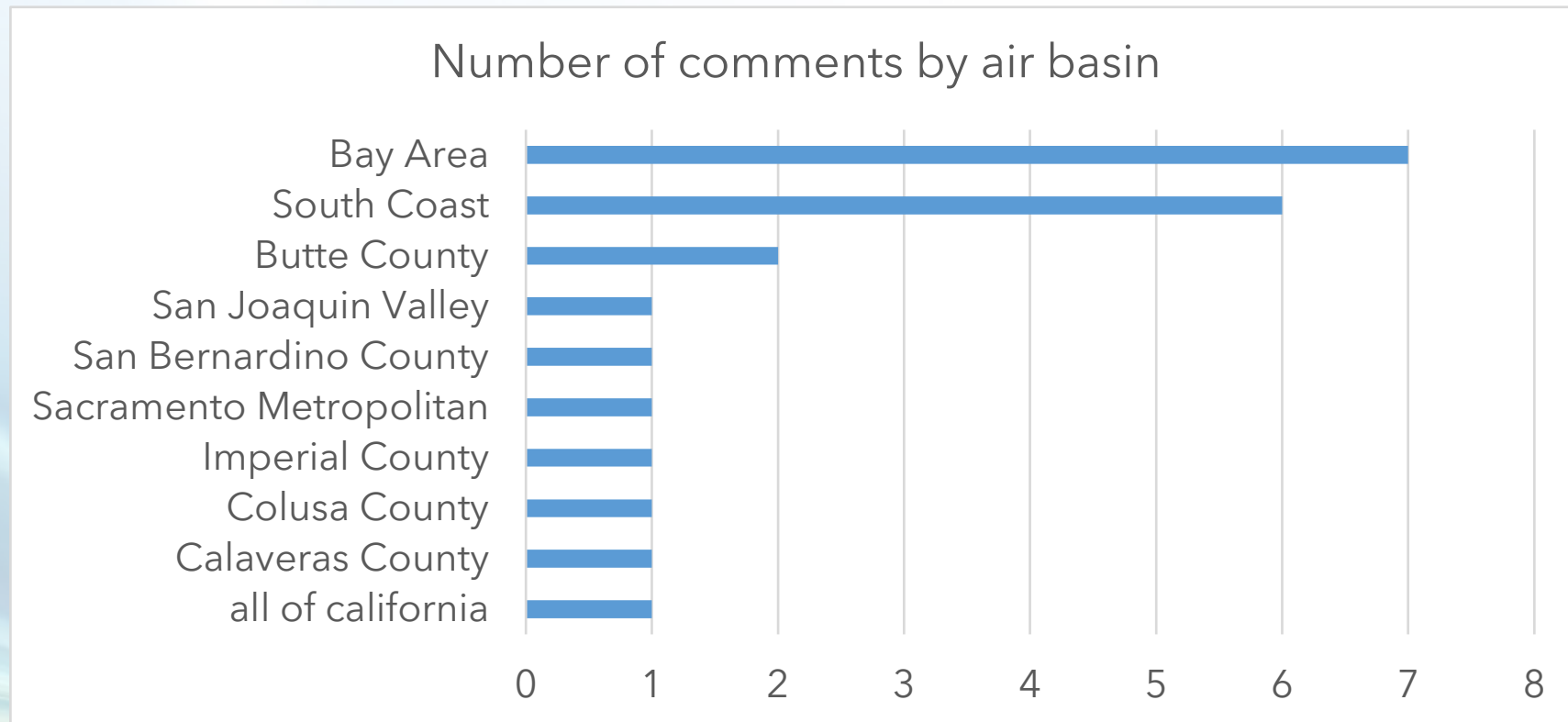


CARB's Annual Research Planning Process



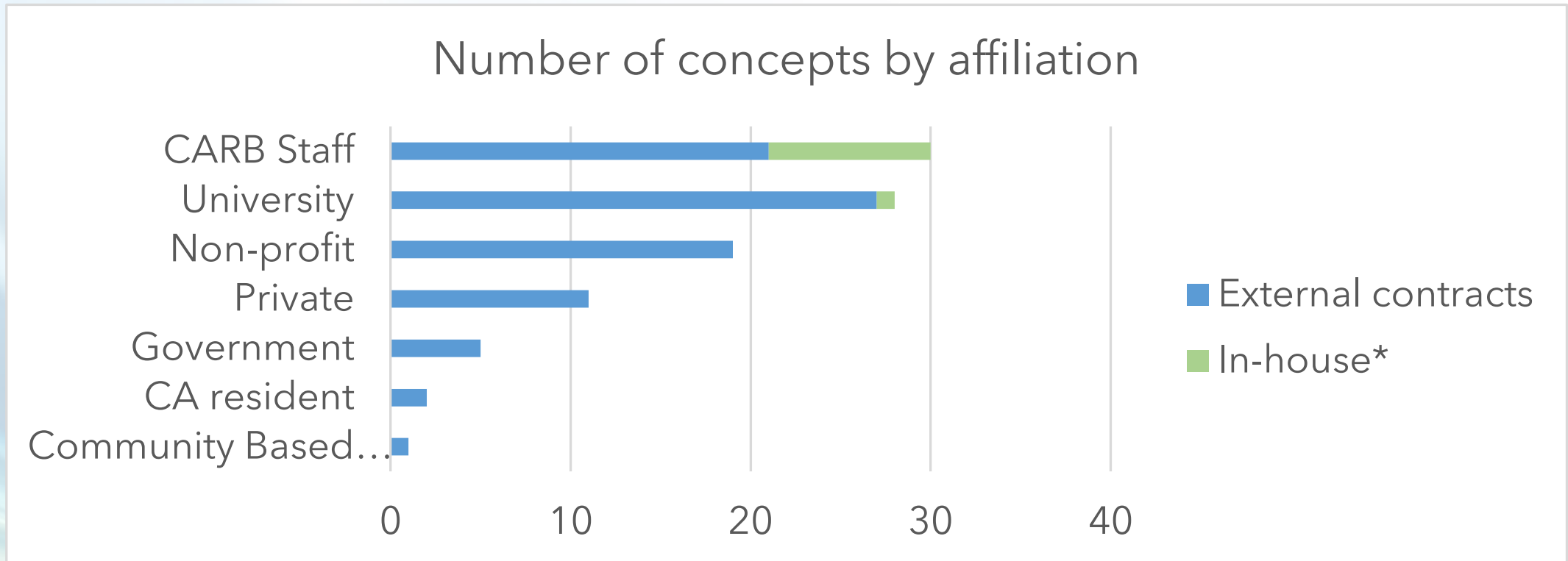
Summary of FY25-26 Comment/Concept Survey

- 121 Total Submissions: 70 public concepts, 21 public comments, 30 concepts from CARB



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Key Considerations

- Program relevance
 - Will results will easily integrate into program work?
 - Is it policy relevant?
- Is this project novel and does it push the science?
- Is it multidisciplinary?
- Does this project address long-term anticipated challenges?
- Does it have a community engagement component or a strong equity component?
- Is it cost-effective and/or leverage existing efforts?
- Is it appropriate for the timeline?
- Is it technically viable?

Summary of Top Projects

Health

- 4 projects - indoor air filtration, toxics, wildfire impacts

Air Quality

- 6 projects - improved tools, emissions from soils, cooking emissions, improved ambient air quality understanding

Climate

- 1 project - natural carbon sources and sinks

Mobile Sources

- 2 projects - real-world emissions, non-exhaust from advanced technology vehicles

Sustainable Communities and Transportation

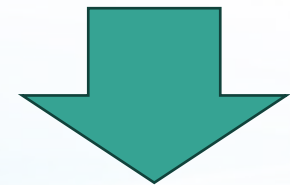
- 1 project - impacts of warehouses on priority communities

Program Assessment

- 1 project - improve surveys

Total Cost - \$10M

Projected Budget:
\$4-8M



Seeking Public Input

Important Dates

November 27, 5pm, 2024

- Submit comments - email to research@arb.ca.gov
- Fill out online poll on proposed projects

January 2025

- Take the project ideas for approval to the Executive Office

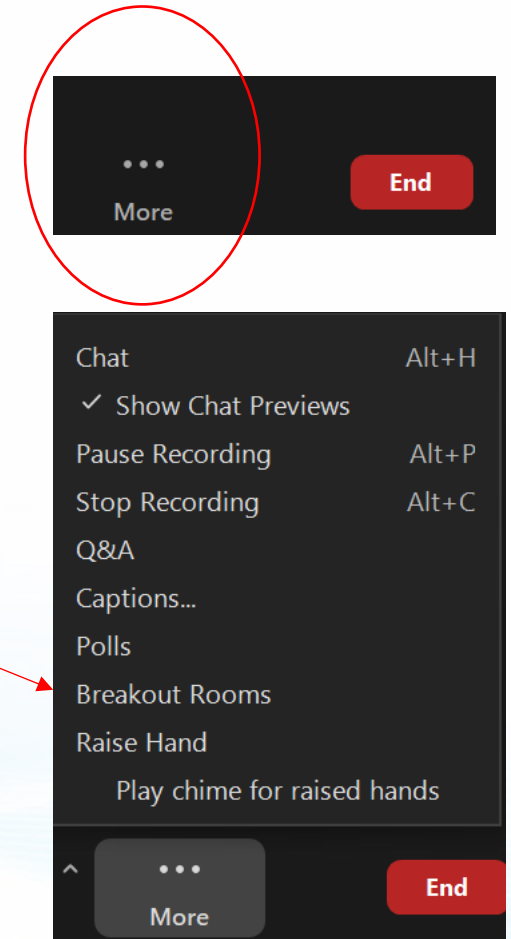
March 2025

- Solicit pre-proposals
- Hold pre-proposal workshop for fiscal year 2025-2026 research plan

Sign up for our listserv!

Break-out Room Instructions

- A prompt will ask you to join one of 3 break out rooms
- In case the prompt doesn't come up, hit the "More" button and choose the "Breakout rooms" option.
- Hit the "Join" button for your top discussion room choice





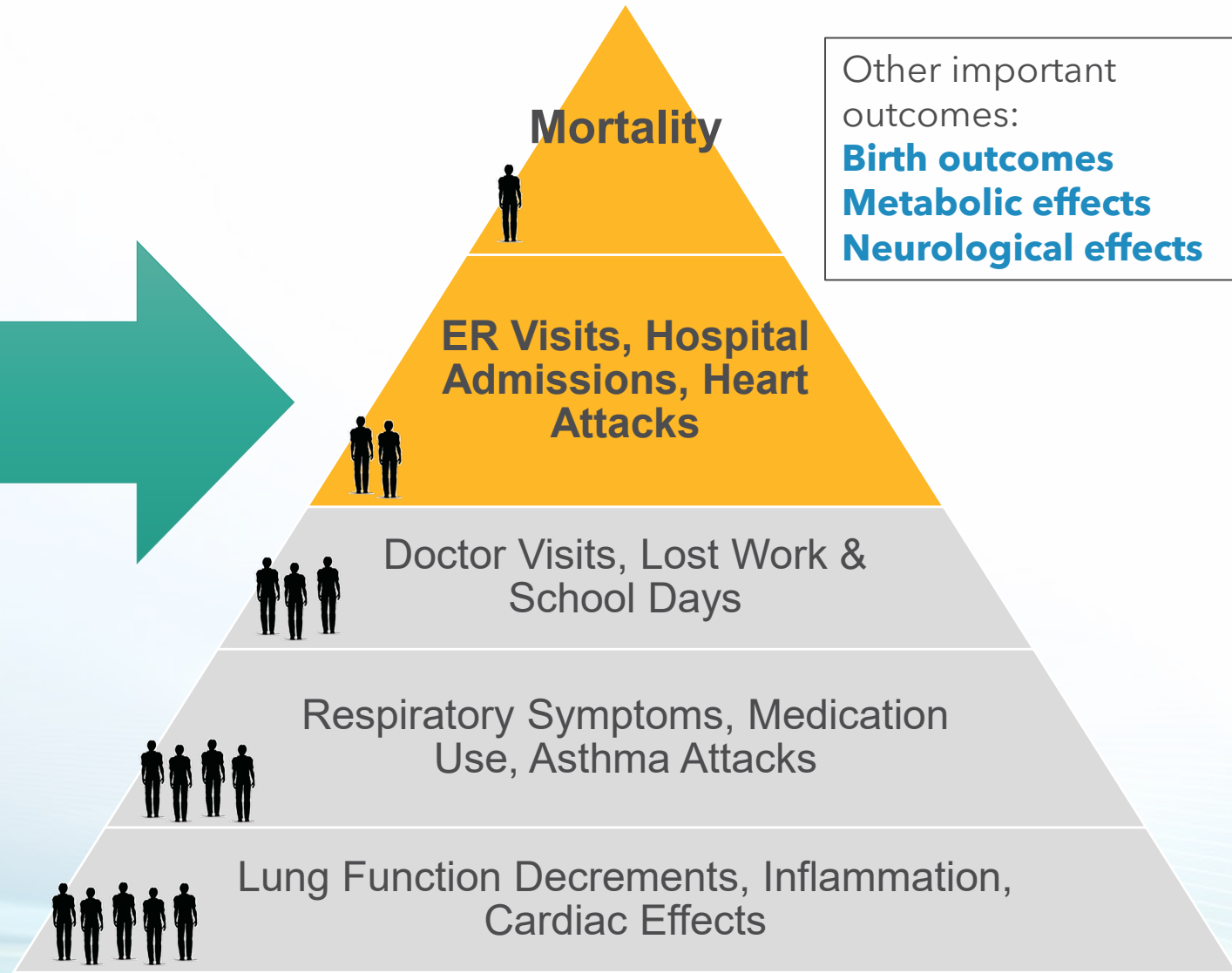
Health Research for FY25-26 and for 5-Year Plan

Break-out sessions

Health Research Needs and Drivers

- CARB's Mission
 - Protect public health
- National Ambient Air Quality Standards (NAAQS)
 - Health based
- Regulatory health benefits analysis
- Inform the public
- Toxics health risk assessment
- Health impacts of climate change and mitigation

Air Pollution and Health Impacts



Current Areas of Focus in Health

- Health analysis
- Indoor air quality
- Impacts of short-term exposures to smoke
- Health impacts in over-burdened communities
- Exposure disparities and environmental justice
- Multiple climate stressors and health
- Toxics

Proposed Research for FY25-26

- Identification and prioritization of emerging air toxic pollutants
 - \$500,000
- Assessing the effectiveness of filtration strategies for reducing indoor exposures to odor and toxic air pollutants
 - \$600,000
- What are the wildfire smoke exposures and long-term health effects on mothers and infants living in wildfire-affected areas during pregnancy? Insights from the California B-SAFE Study.
 - \$700,000
- What is the potential long-term health impact of repeated wildfire exposure on intergenerational health?
 - \$700,000

Proposed Research Initiatives for 5-Year Plan

- Health impacts of climate change and wildfire smoke
- Indoor air pollution sources, exposure, and mitigation
- Health Analysis: Expanding understanding of health outcomes and environmental justice factors
- Air Toxics
- Community-level exposures and equity



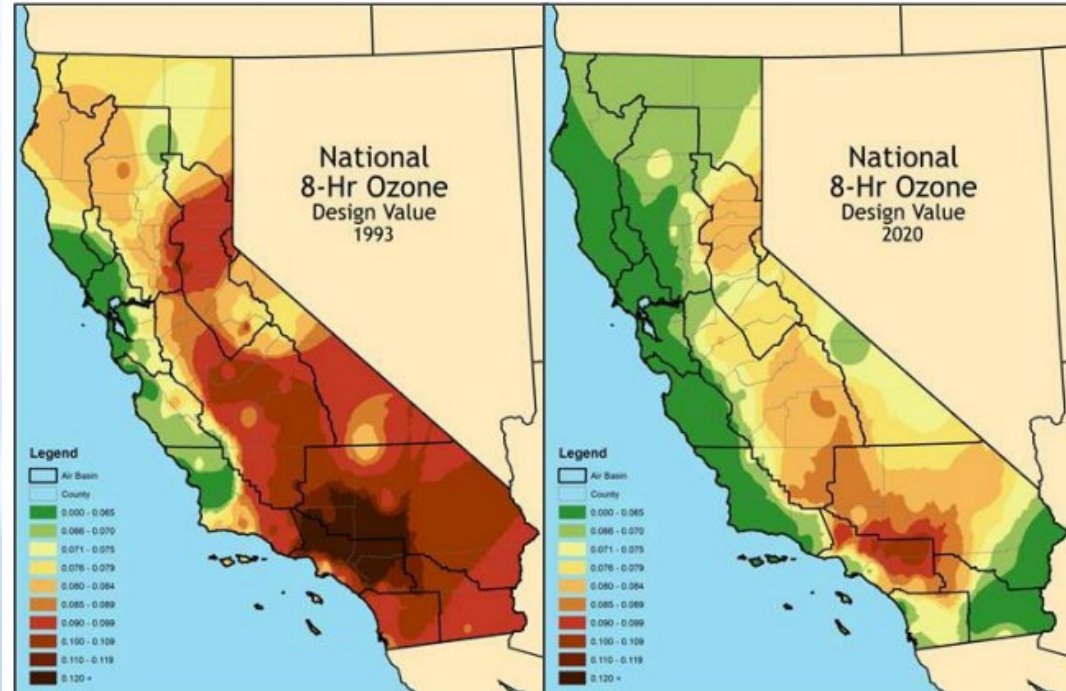


Air Quality Research for FY25-26 and for 5-Year Plan

Break-out sessions

Air Quality Research Drivers

Air Quality Targets



Ozone air quality progress in CA (Fig 1 - 2022 SIP)

2025



- Attainment year for ozone and PM2.5 (2023/2025)
- Identify toxics in communities
- Improve tools to guide decisions for the Air Toxics Program

2030



- Attainment year for 12 $\mu\text{g}/\text{m}^3$ PM2.5

2032



- 75 ppb 8-hr ozone standard
- Obtain lasting emissions reduction in AB 617 communities
- Reduce toxics of major concern

2037



- 70 ppb 8-hr ozone standard

- 9 $\mu\text{g}/\text{m}^3$ PM2.5 annual standard

Current Areas of Focus in Air Quality

- Sources and formation of air pollution in different regions
- New tools and methods for air quality monitoring
- Emission factors from previously uncharacterized sources
- Impacts from climate change on air quality



Ozone non-attainment areas - 2022 SIP Strategy

Proposed Research for FY25-26 - Emissions

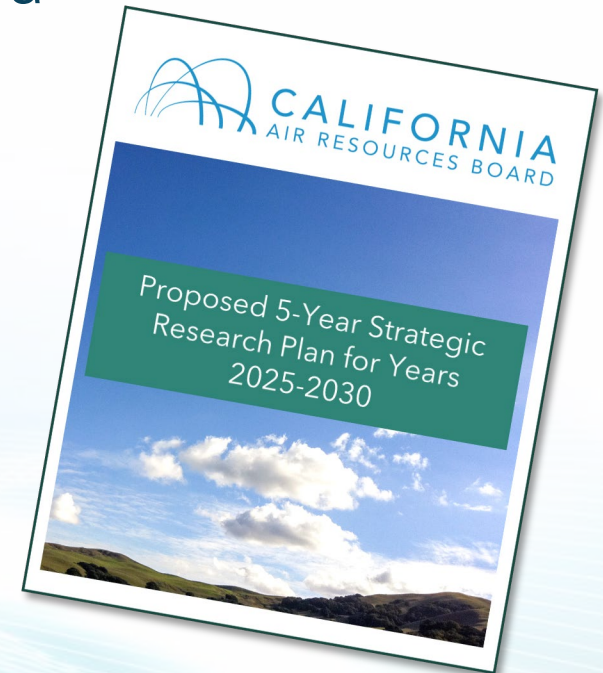
- What are the real-world emissions of NO_x from soils?
 - \$800,000
- What are the potential air quality impacts of cooking emissions?
 - \$750,000
- Operationalize PM_{2.5} Measurement and Source Characterization in Non-Attainment Areas to Support NAAQS Compliance
 - \$900,000

Proposed Research for FY25-26 - Tools and Methods

- How do we improve measurement tools and methods for real-time detection of toxic air contaminants in communities burdened by air pollution?
 - \$900,000
- What monitoring and sample analysis improvements do we need to report nitrates in PM_{2.5} accurately?
 - \$400,000
- What detailed chemical mechanisms must we understand to better model atmospheric PM formation?
 - \$450,000

Proposed Research Initiatives for 5-Year Plan

- Understanding the drivers of future ambient PM2.5 formation
- Understanding the challenges of meeting NAAQS in a changing climate
- Air quality impacts of ambient Volatile Organic Compounds
- Air Quality Impacts from Dairy and Agricultural Operations
- Reducing air quality disparities





Climate Research for FY25-26 and for 5-Year Plan

Break-out sessions

Climate Research Drivers

- Program Drivers
 - AB 32 - CARB lead agency
 - SB 32 - 40% below 1990 levels by 2030
 - AB 1279 - Carbon neutrality by 2045
 - [2022 Scoping Plan for Achieving Carbon Neutrality](#)

GHG


Greenhouse gases

↓85%



Air pollution

↓71%

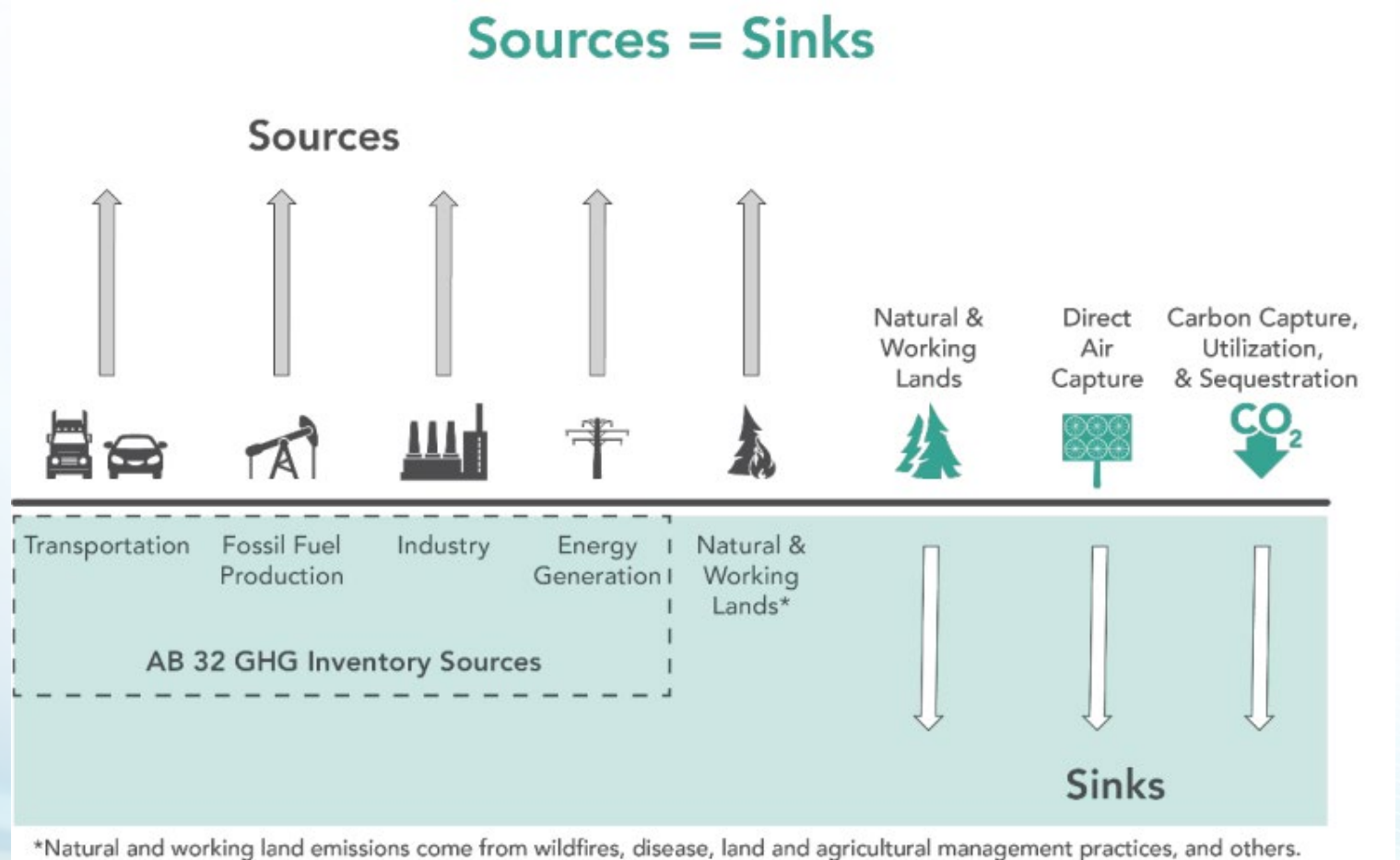


Petroleum demand

↓94%

Climate Research Areas of Focus

- Natural and working lands
- Methane and short-lived climate pollutants
- Supporting our GHG inventory needs
- Equity impacts and community needs
- Co-pollutants and health implications

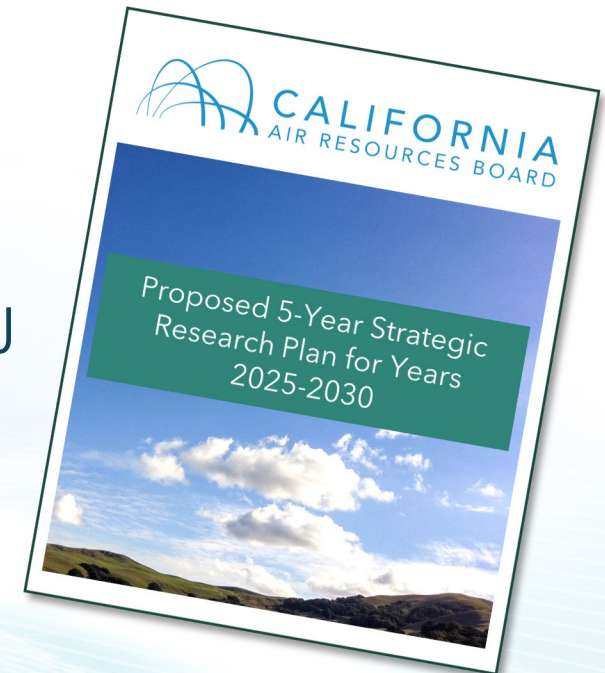


Proposed Research for FY25-26

- Improving emission inventories on coastal wetland and various vegetation types
 - \$800,000

Proposed Research Initiatives for 5-Year Plan Climate

- Greenhouse Gas Emissions and Sinks from Natural and Working Lands
- Approaching continuous measurement systems of GHGs on relevant scales
- Dairy emissions from changes in management practices
- New Refrigerant Technologies and Recycling of Existing Refrigerants
- Wildfire emissions in a changing world and impacts on EJ outcomes
- Effect of net zero climate strategies on air quality
- Equitable transition to a low-carbon future

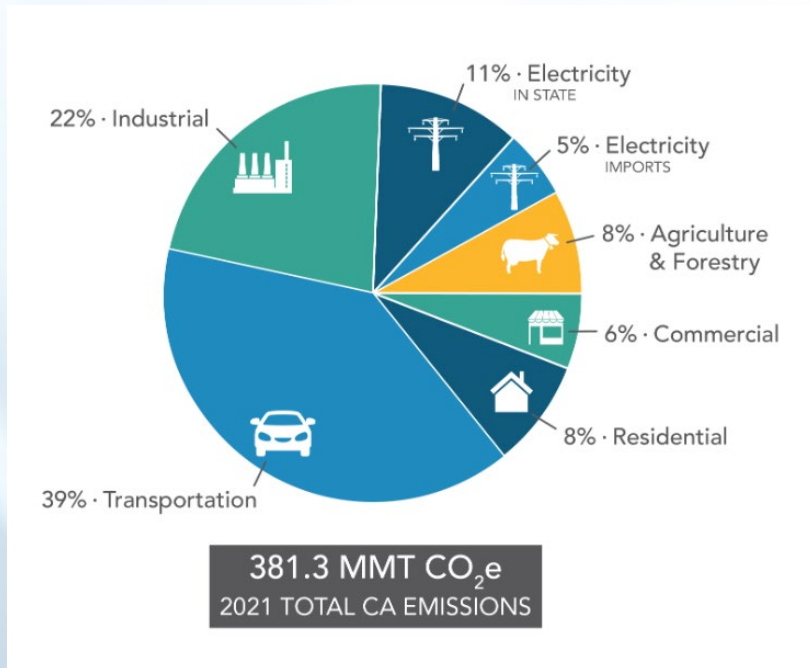




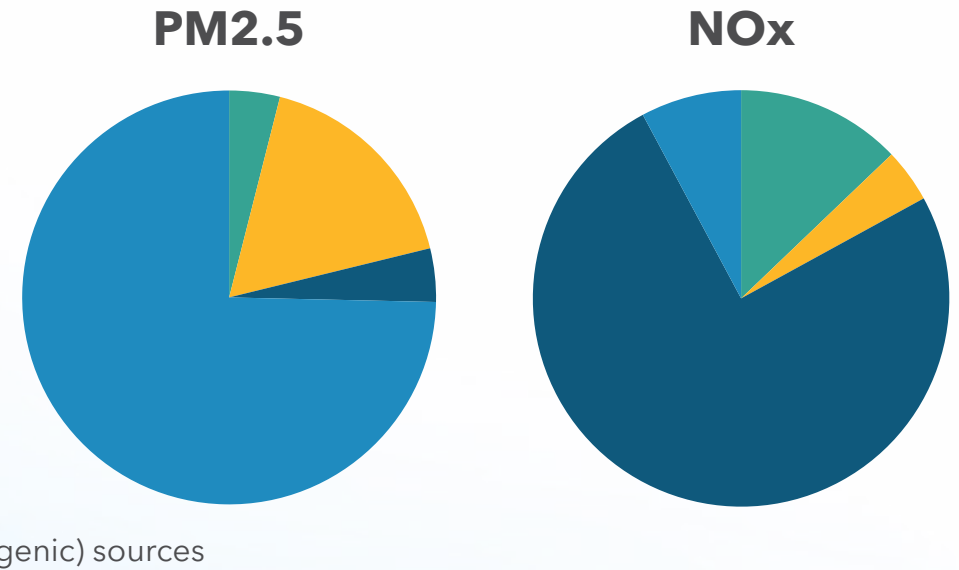
**Mobile Sources and Sustainable
Communities Research for FY25-26 and for
5-Year Plan**

Break-out sessions

Mobile Source Research Drivers



[Current California GHG Emission Inventory Data | California Air Resources Board](#)



[Statewide Emissions | California Air Resources Board](#)

Current Areas of Focus in Mobile Sources

- Low NOx vehicle testing
- Advanced sensor technology and monitoring
- Non-exhaust emission sources
- Advanced technologies
- Electric vehicle energy efficiency
- Continuing impacts from high emitters, especially in environmental justice communities

Sustainable Communities and Transportation Research Drivers

MPO	Targets for 2020	Targets for 2035
MTC/ABAG	-10%	-19%
SACOG	-7%	-19%
SANDAG	-15%	-19%
SCAG	-8%	-19%
Fresno COG	-6%	-13%
Kern COG	-9%	-15%
Kings CAG	-5%	-13%
Madera CTC	-10%	-16%
Merced CAG	-10%	-14%
San Joaquin COG	-12%	-16%
Stanislaus COG	-12%	-16%
Tulare CAG	-13%	-16%
AMBAG	-3%	-6%
Butte CAG	-6%	-7%
San Luis Obispo COG	-3%	-11%
Santa Barbara CAG	-13%	-17%
Shasta RTA	-4%	-4%
Tahoe MPO	-8%	-5%



Sustainable Community Strategies

- Infill
- Affordable housing
- Transit oriented housing
- Transit
- Active transportation

Metrics

- VMT reductions
- GHG by region
- Mode shift
- Housing units and types added
- Accessibility
- Housing costs
- Transportation investments

[Regional Plan Targets | California Air Resources Board](#)

Current Areas of Focus in Sustainable Communities and Transportation

- Anti-displacement strategies
- Factors impacting changes in VMT
- Impacts of affordable infill housing
- Integrated frameworks - nexus of climate, air quality and transportation
- Building decarbonization
- Zero emission vehicles
- Equitable access to all proposed solutions

Proposed Research for FY25-26

- How can we mitigate community impacts from nearby warehouse proliferation?
 - \$400,000
- Analyzing brake-wear emissions from conventional and zero-emission vehicles.
 - \$900,000
- Validating the accuracy of vehicle purchase surveys
 - \$50,000
- Do the passenger vehicles driven in socioeconomically disadvantaged communities (DAC) pollute more than vehicles driven in non-DACs?
 - \$250,000

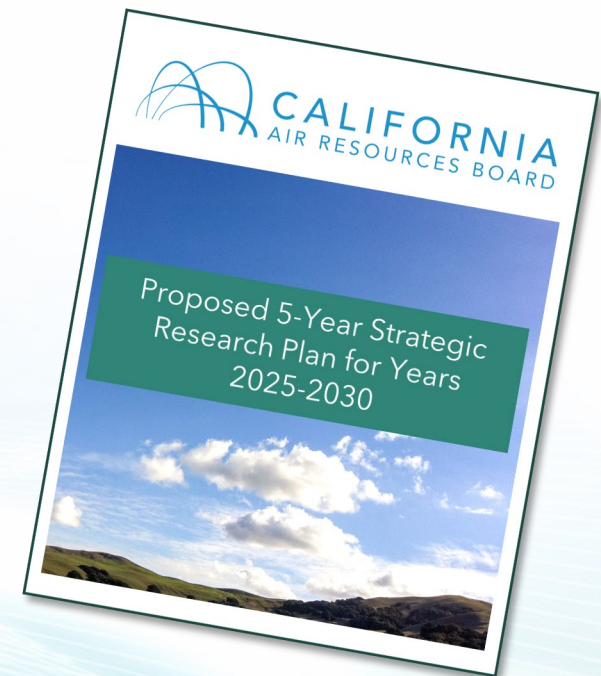
Proposed Research Initiatives for 5-Year Plan Mobile Sources

- Long-term trends in NOx and GHG emissions
- Advances in Mobile Sources Monitoring
- Understanding mobile source emission disparities
- Activity and vehicle energy analysis
- Controlling and monitoring off-road in-use emissions
- Improving understanding of non-exhaust emission



Proposed Research Initiatives for 5-Year Plan Sustainable Communities, Transportation and Housing

- Sustainable Communities and Climate Mitigation
- Transit, Active Transportation, and Reductions in Vehicle Miles Traveled
- Buildings, Electrification and the Built Environment
- Incentives, Electric Vehicles, and Charging Infrastructure



Next Steps

- FY25-26 Research
 - Fill out poll or send us email (closes November 27)
 - Choose list of projects that fit projected budget
 - Get final approval
 - Solicit proposals in Spring 2025
- 5-Year Strategic Research Plan
 - Full Draft Plan available Spring 2025
 - Submit comments through public docket
 - Spring Board hearing on Plan

How to contact us

- Sign up for our listserv:
<https://public.govdelivery.com/accounts/CARB/subscriber/new>
 - Select "Research Activities" from the options provided
- E-mail us: research@arb.ca.gov