Proposed Research Projects for Fiscal Year 2020-2021

DECEMBER 13, 2019

CALIFORNIA
AIR RESOURCES BOARD

Strategic Guidance

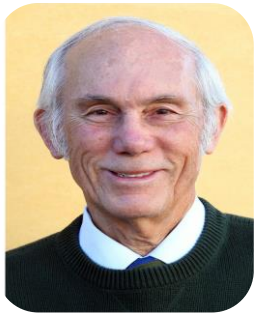
- 22 Research initiatives
- Guides annual project selection
- In-house, collaborations, and contracted projects

April 2018

Building on the Success of the Triennial Plan

- Address anticipated challenges holistically
- Larger near-term investments to prepare for long-term goals
- Leverage in-house expertise and cutting edge technology

Research Screening Committee



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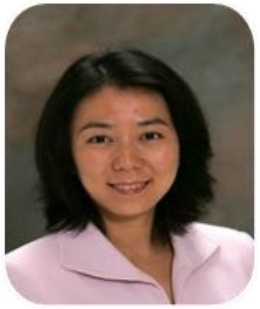

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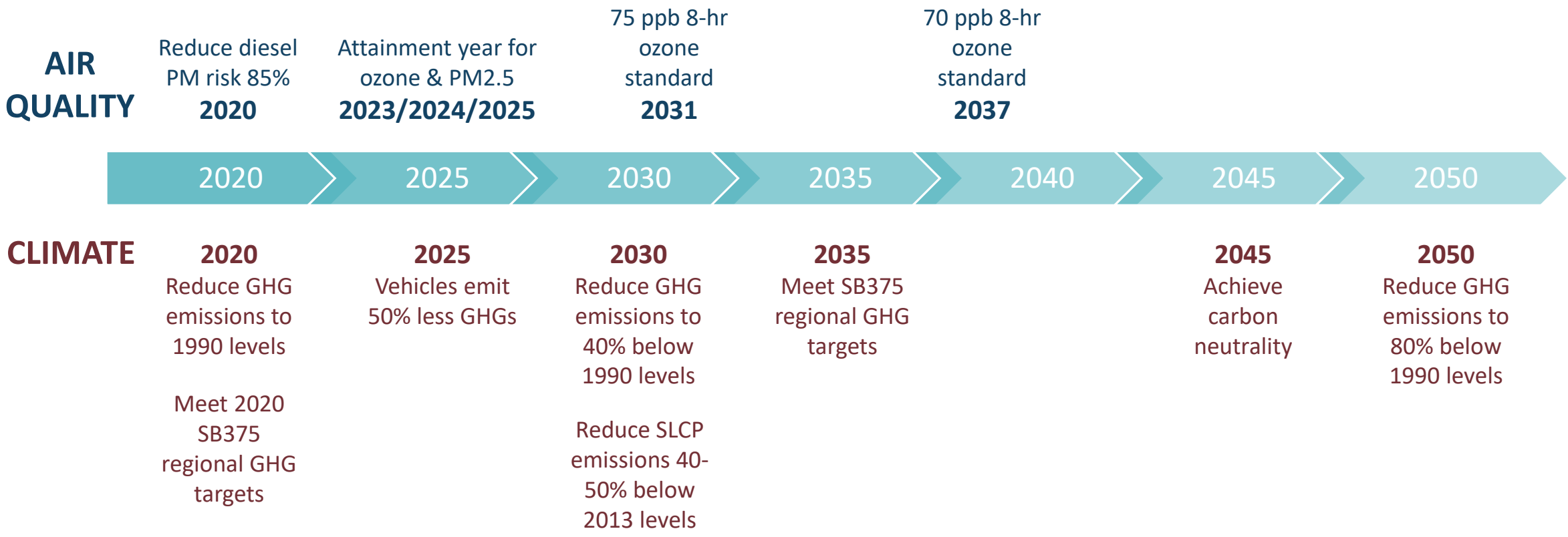
Planning Considerations



Planning Timeline

Board Approval
Proposed Projects
FY 2020-21
December

Board Approval
Proposed Projects
FY 2020-21
&
Triennial Plan
FY 2021-2024
December

RESEARCH
PLANNING

2019 2020

ENGAGEMENT

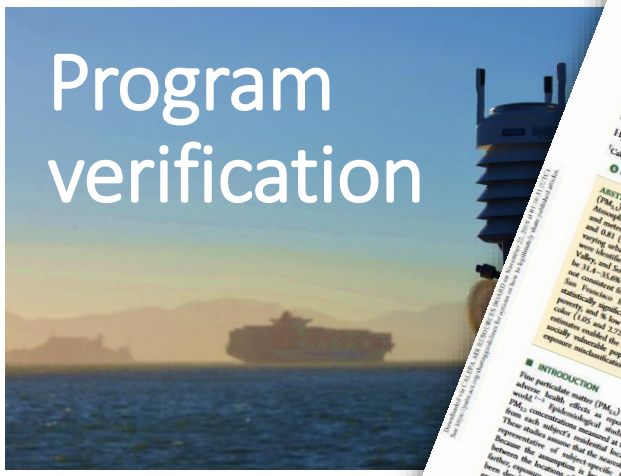
June
Public
Concepts

October
Research
RoundTable

March
Public
Workshops

June
Public
Concepts

CARB Expertise



Advancing science

Proposed Projects for FY 2020-2021

Large projects: Real World Verification

1. Improving air quality in a changing climate - $950k
2. Real-world vehicle emission monitoring - $900k
3. VMT strategies implementation gap - $500k
4. Total exposure in disadvantaged communities- $800k
5. Facilitate lower-polluting consumer choices - $650k

Total - $3.8M

6. Low-carbon transportation incentive strategies - $1M

Total - $4.8M

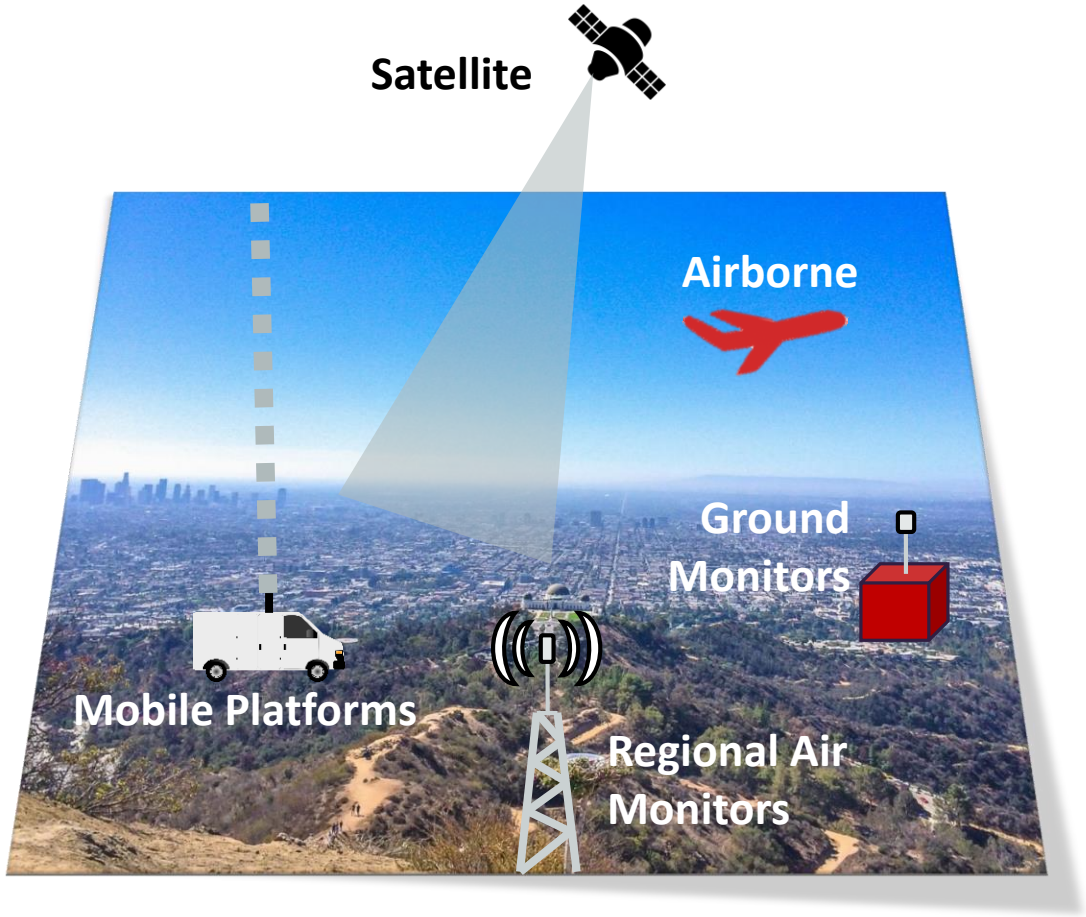
Leveraged Funds
$5 M

1. Improving air quality in a changing climate

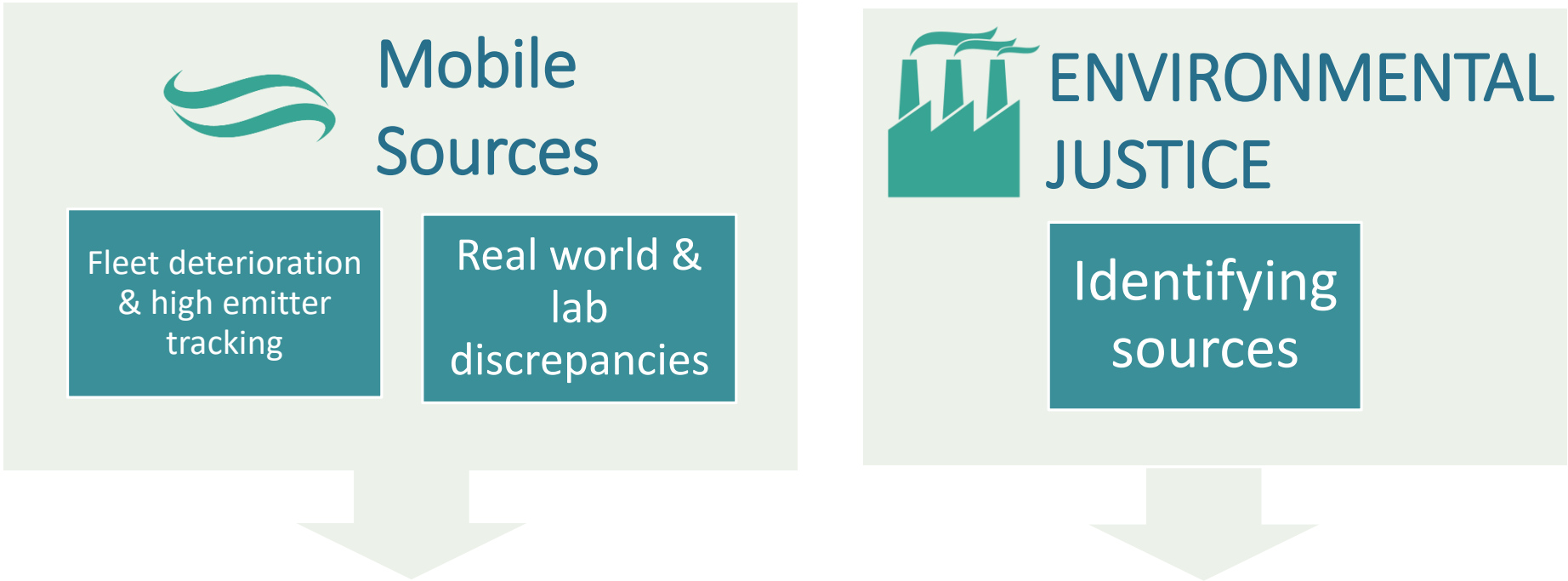
What is the optimal path toward meeting future SIP targets in a changing climate?

What is the path to SIP targets in a changing climate?

- Determine sources of VOCs in the South Coast Air Basin
- Assess how increased temperatures impact future air quality
- Improve our understanding of O_3 and PM2.5 formation



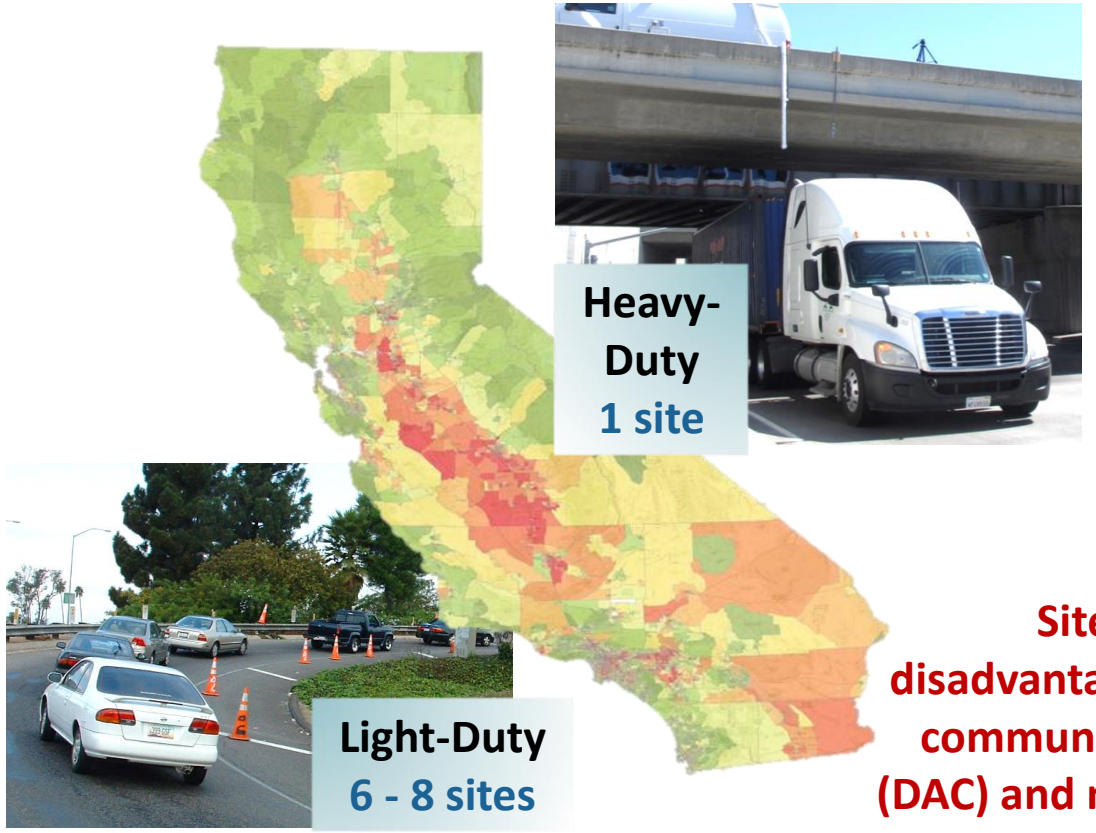
2. Real-world vehicle emission monitoring



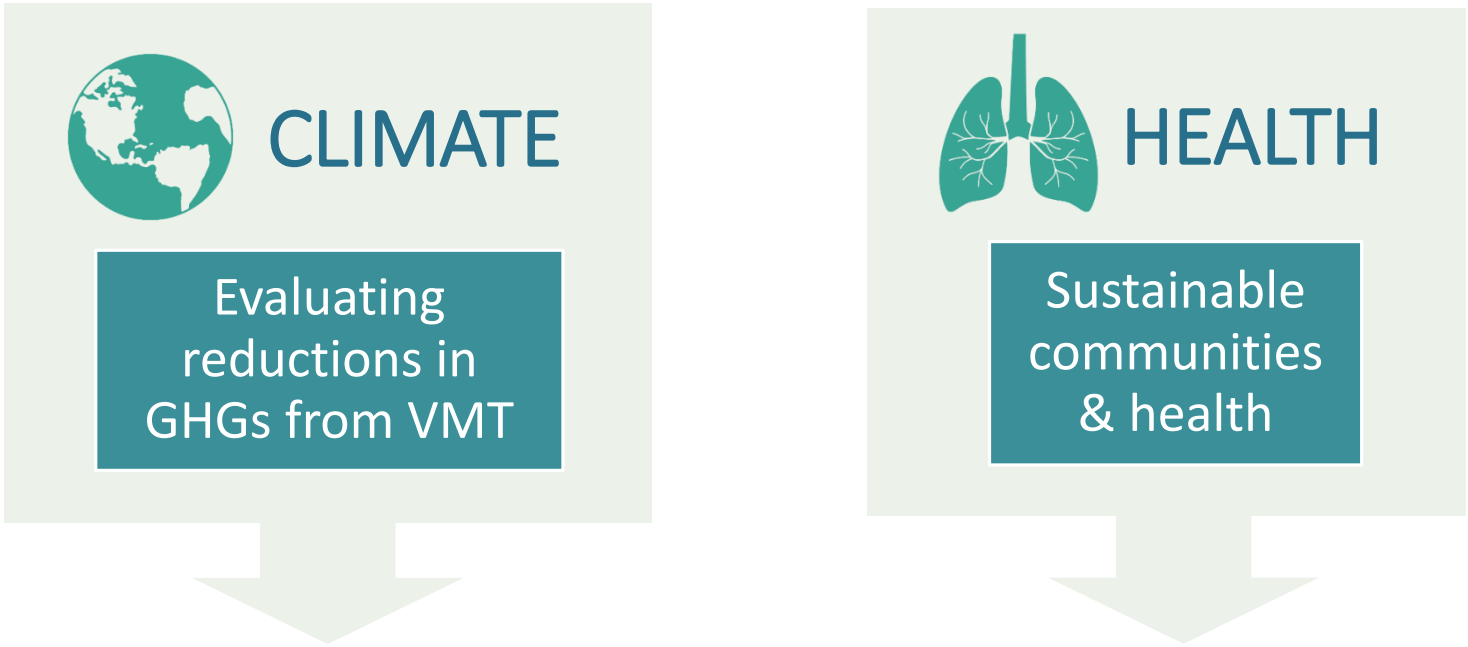
How and why are real world vehicular emissions different than expected?

Are real world vehicular emissions different than expected?

- Use remote sensing for roadside measurements
- Identify conditions that make emissions vary from the standards
- Inform emission reduction strategies to reduce health impacts
- Ensure that the benefits of rules and regulations are realized



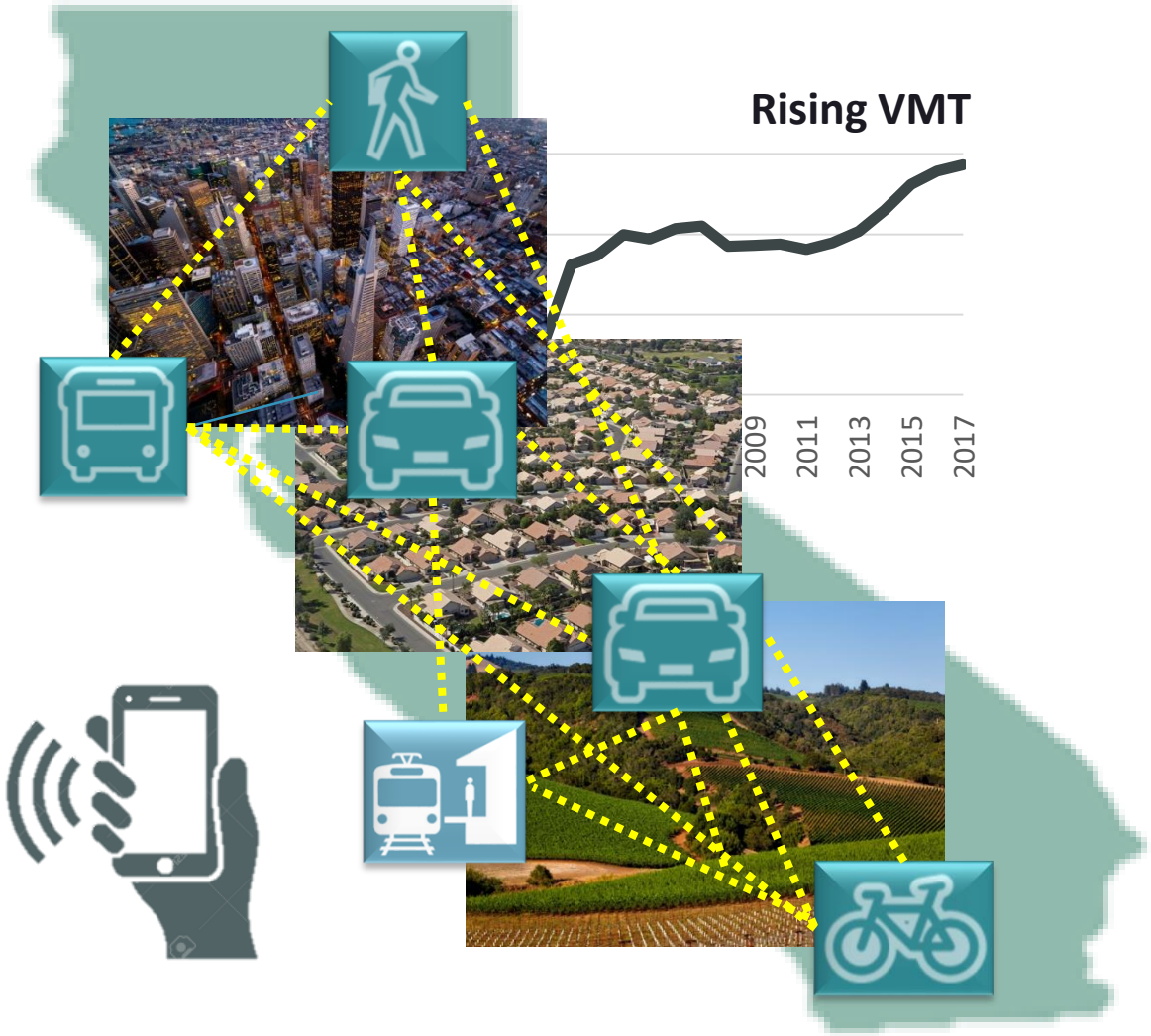
3. Strategy Evaluation for Vehicle Miles Traveled (VMT) Reduction



What is the potential to reduce VMT through transportation projects?

What is the potential to reduce VMT through transportation projects?

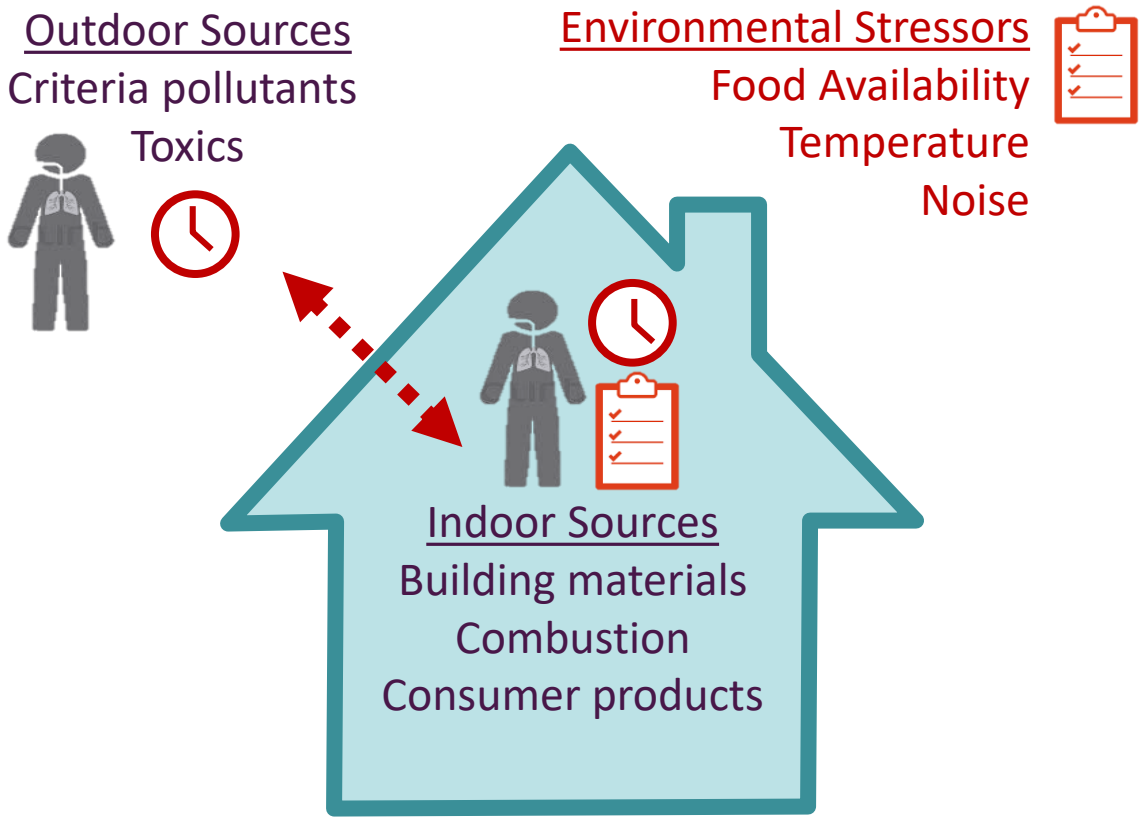
- Leverage big data to identify VMT reduction successes
- Assess the scalability of successes and remaining barriers
- Improve alignment of climate and transportation policies



4. Total exposure in disadvantaged communities

What are the indoor and outdoor pollutant exposures and health risks for residents in disadvantaged communities?

What are the air pollution exposure and health risk disparities across the State?



- Monitor outdoor and indoor sources and other stressors
- Quantify exposure patterns in disadvantaged communities
- Determine if risk for adverse health effects is elevated
- Assess if elevated risk necessitates additional protection

5. Facilitating lower-polluting consumer choices

How can we couple comprehensive program metrics with a better understanding of decision drivers to facilitate lower-polluting consumer choices?

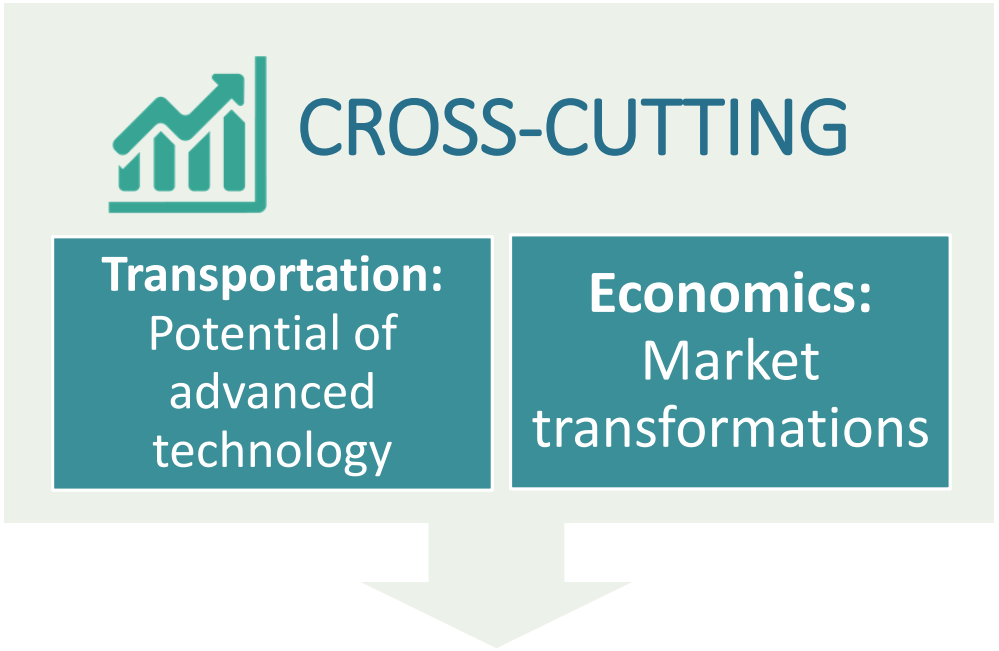
How can we facilitate lower-polluting consumer choices?

- Expand metrics for the social cost of carbon to improve program evaluation
- Create a framework a metric for the Social Cost of Criteria & Toxic Emissions

- Conduct surveys to better understand key consumer choice drivers in key markets

- Identify optimal and meaningful ways to convey the benefits of lower-polluting consumer choices

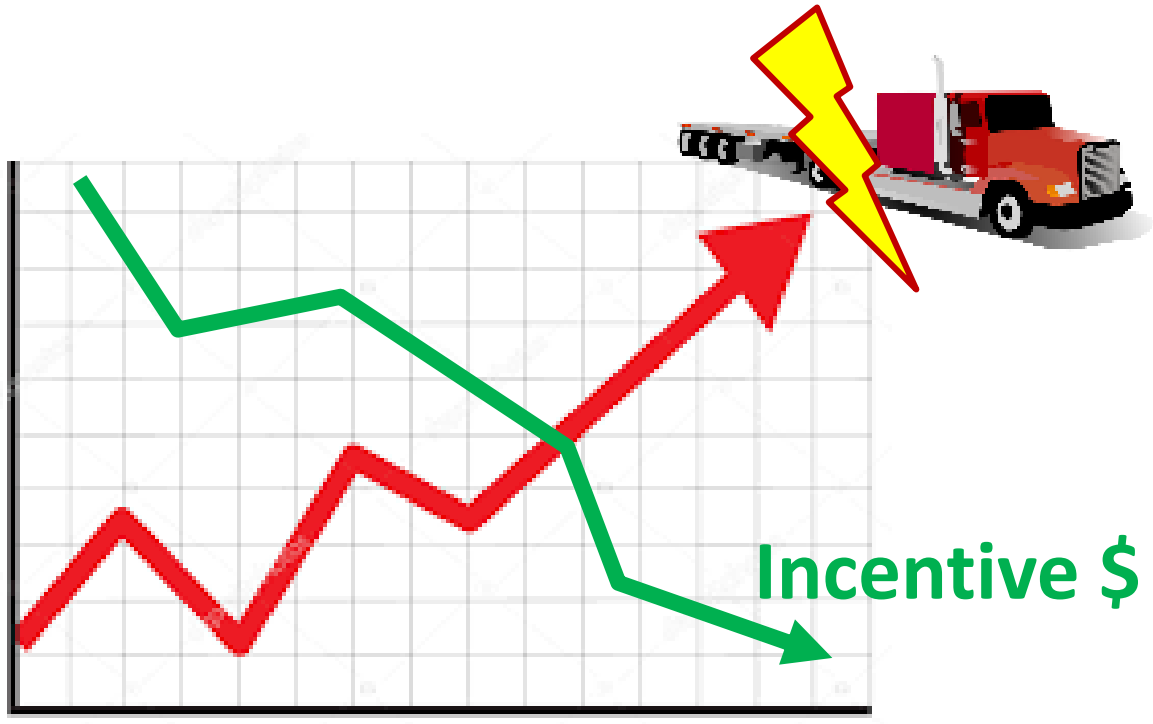
6. Low-carbon transportation incentive strategies



How can low-carbon transportation incentive strategies ensure market growth?

How can low-carbon transportation (LTC) incentive strategies ensure market growth?

- Design incentives that promote greater adoption of LCT that positively impact equity, health, and the economy
- Assess incentive program influence on markets, socioeconomics, and barriers



Proposed Projects for FY 2019-2020
White Papers: Ushering in the Future

1. Integrate air quality monitoring data streams
2. Opportunities for the application of big data analytics
3. Leverage biomonitoring data to mitigate toxic exposure
4. Create a monitoring framework to quantify carbon fluxes
5. Identify policies to improve the built environment

Engagement on Emerging Priorities

- What are the health impacts of extreme events caused by climate change?
- How can big data be leveraged?
- How can housing and climate policy be better aligned?
- Can additional metrics improve lifecycle analysis?

Staff Recommendation

- Approve:
  - Research projects for FY 2020-2021
- Next Steps:
  - Develop full proposals and execute contracts