Part of CARB's Larger Incentive Funding Portfolio

Low Carbon Transportation	Air Quality Improvement Program (AQIP)	VW Mitigation Trust
GHG reductions & priority populations	Criteria pollutant & toxics reductions	NOx mitigation & zero-emissions
$485M for FY 19-20	**$48M for FY 19-20**	**$423M for 2017+**

Community Air Protection (AB617)	Carl Moyer Program	FARMER	Prop 1B Goods Movement
Criteria, toxics, & GHG reductions for community goals	SIP emission reductions	Criteria, toxics, & GHG reductions for ag sector	PM & NOx reductions in goods movement corridors
$245M for FY 19-20	**$94M for FY 19-20**	**$65M for FY 19-20**	**Already awarded**

CARB

Note: These funding amounts are from the FY 19-20 Low Carbon Transportation Investments and AQIP Funding Plan released September 2019

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CARB

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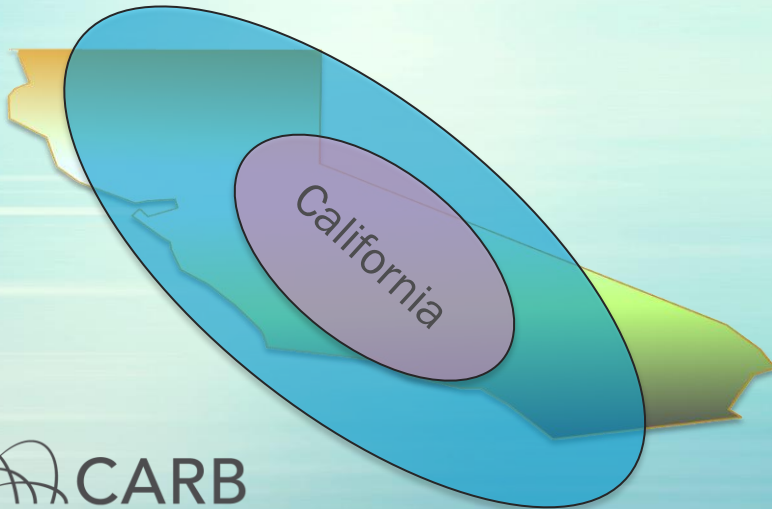
Auction Proceeds Investments for Low Carbon Transportation

- Annual budget appropriation guided by the **priorities** in the Cap and Trade Auction Proceeds Investment Plan

GHG

GHG

GHG

California

CARB

Auction Proceeds Investments for Low Carbon Transportation

- Annual budget appropriation guided by the **priorities** in the Cap and Trade Auction Proceeds Investment Plan
  - Facilitate greenhouse gas (GHG) reductions
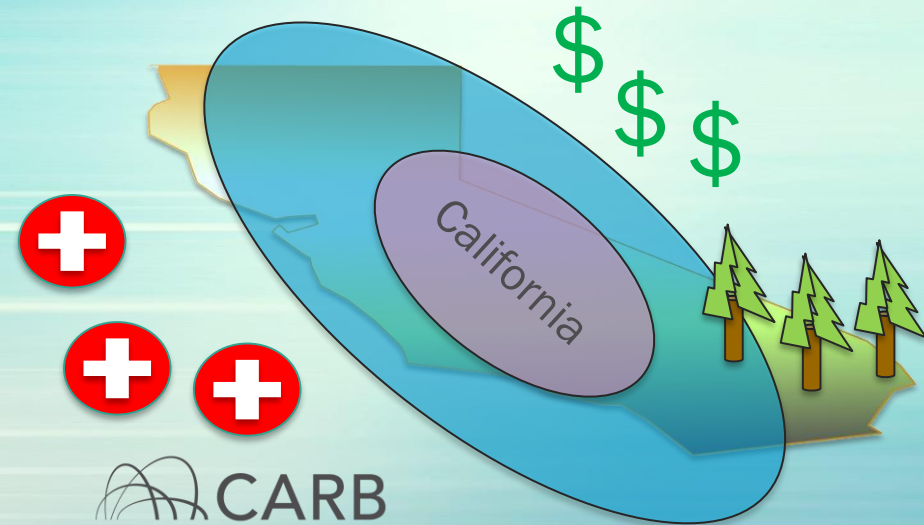
California

CARB

Auction Proceeds Investments for Low Carbon Transportation

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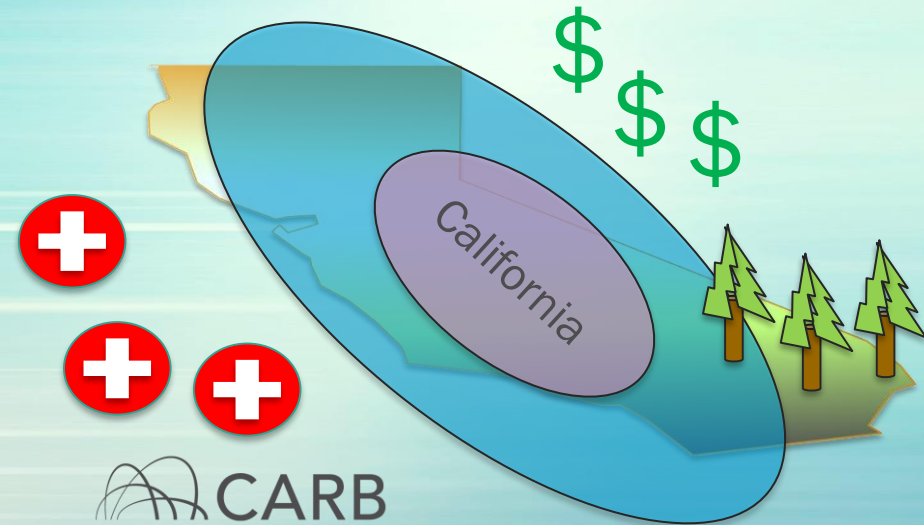
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CARB

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    - Health
    - Economic
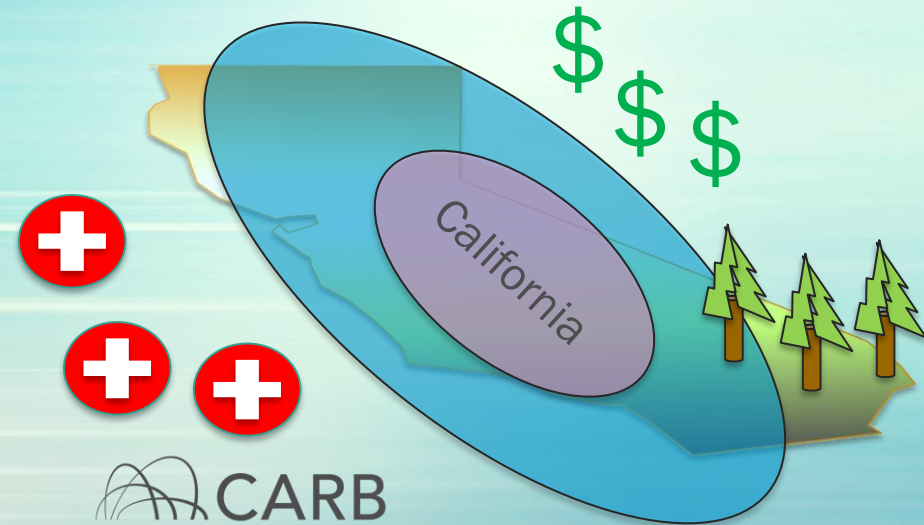   - Environmental

California

$ $ $

CARB

Auction Proceeds Investments for Low Carbon Transportation

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    - Economic
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  - Foster job creation & job training

California

$ $ $

CARB

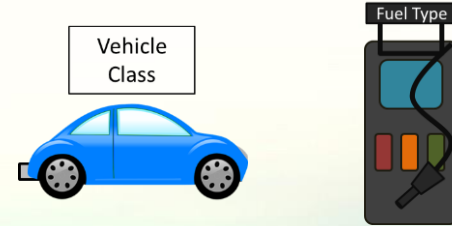# Auction Proceeds Investments for Low Carbon Transportation

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    - Health
    - Economic
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  - Foster job creation & job training

Need means & metrics for estimating/tracking progress

GHG Quantification Methodology

- Emission Factors developed for variety of vehicle classes
  - Fuel economy derived from several sources
  - Fuel economy paired w/Carbon Intensity + Lower Heating Value (LHV)→ WTW GHG emission factors
  - For alternative fuel vehicles, conversion is done by applying energy economy ratio (EER) to baseline fuel type
- Emission Reductions = Baseline – Alternative
- Use Quantification Methodologies to predict and then evaluate results
  - For example, estimate expected emission reductions in Low Carbon Transportation Funding Plan
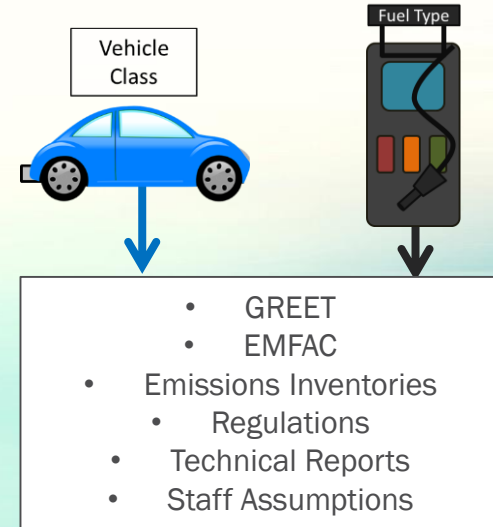 - Revisit those estimates once actual vehicles being funded on road is known

Low Carbon Transportation Funding Plan available here (see Appendix A for methodology): https://ww2.arb.ca.gov/our-work/programs/low-carbon-transportation-investments-and-air-quality-improvement-program/low-1

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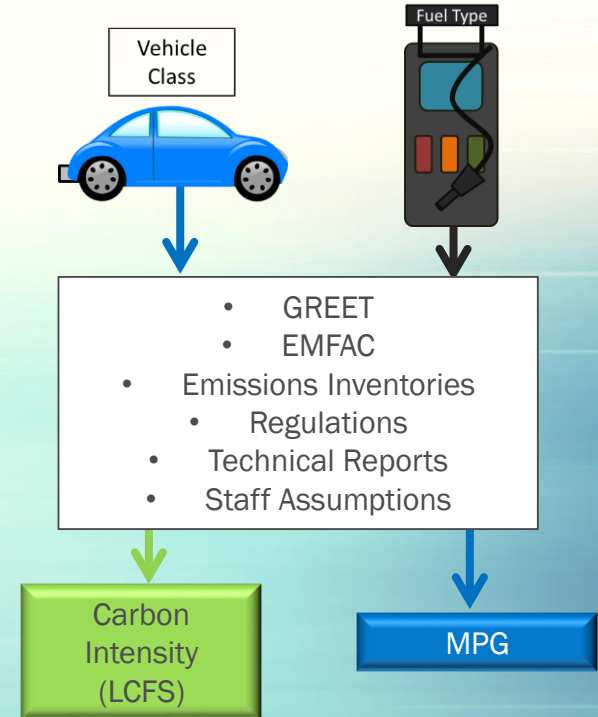 - Revisit those estimates once actual vehicles being funded on road is known

Vehicle Class

Fuel Type

- GREET
- EMFAC
- Emissions Inventories
- Regulations
- Technical Reports
- Staff Assumptions

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CARB

10

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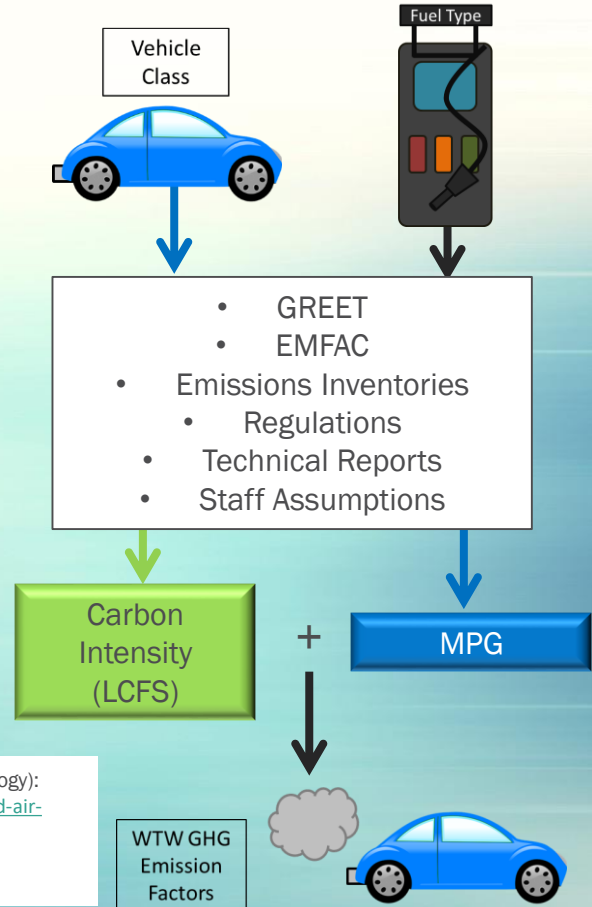 - Revisit those estimates once actual vehicles being funded on road is known

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Carbon Intensity (LCFS)

MPG

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Carbon Intensity (LCFS)

+

MPG

WTW GHG Emission Factors

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12

Criteria Pollutant and Co-Benefit Quantification Methodology

- Emission Factors pulled from EMFAC based on vehicle parameters

- Co-benefits (e.g., fuel savings, cost savings) = f(fuel consumption)
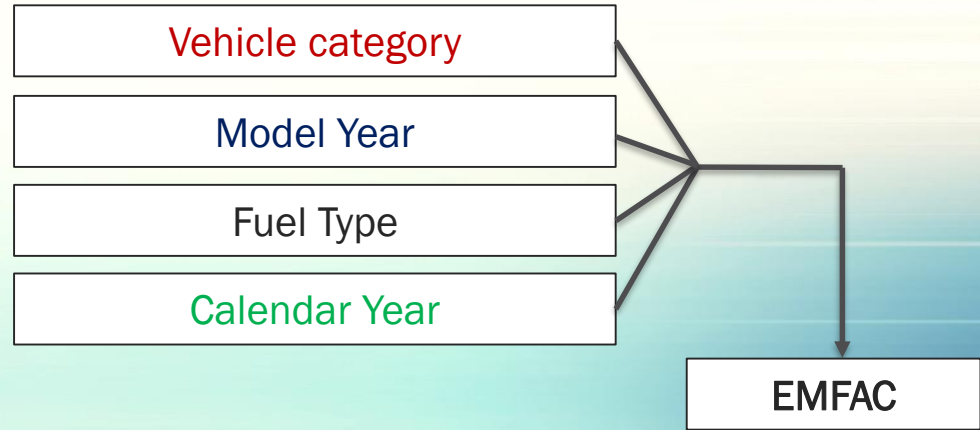 - Methodology leverages key variables for GHG quantification

Vehicle category
Model Year
Fuel Type
Calendar Year

California Climate Investments Co-Benefit methodologies available here: http://www.arb.ca.gov/cci-resources
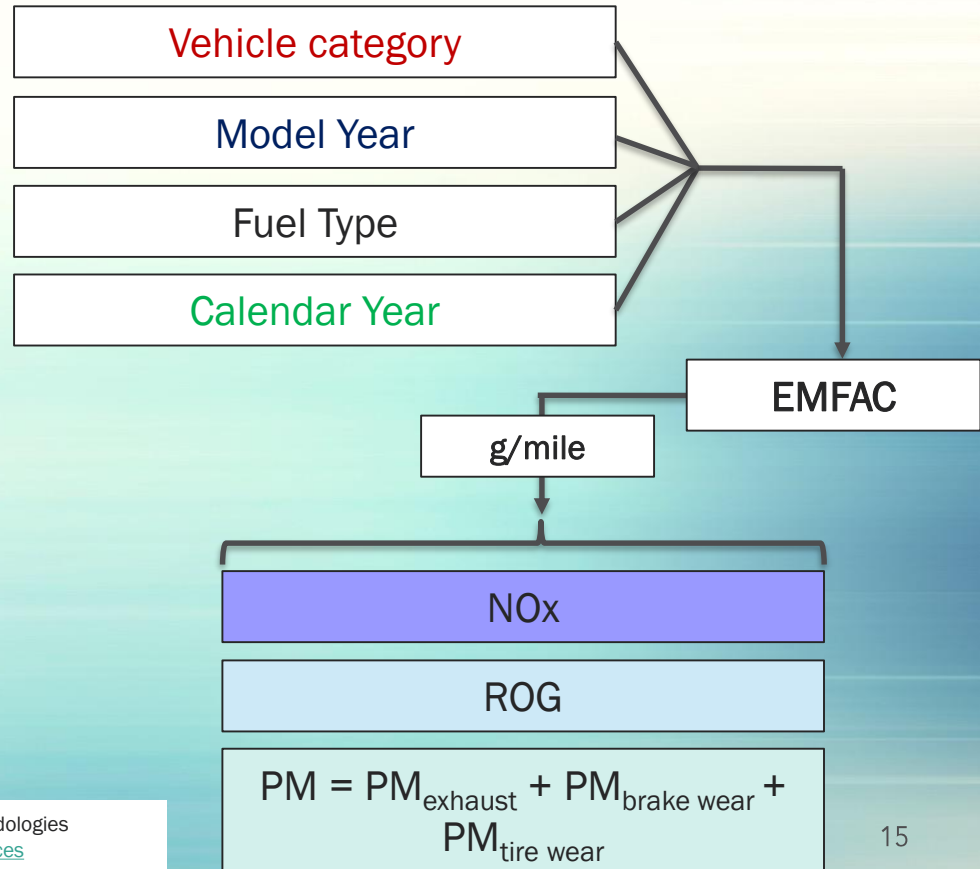
CARB

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| Model Year |
| Fuel Type |
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| EMFAC |

CARB

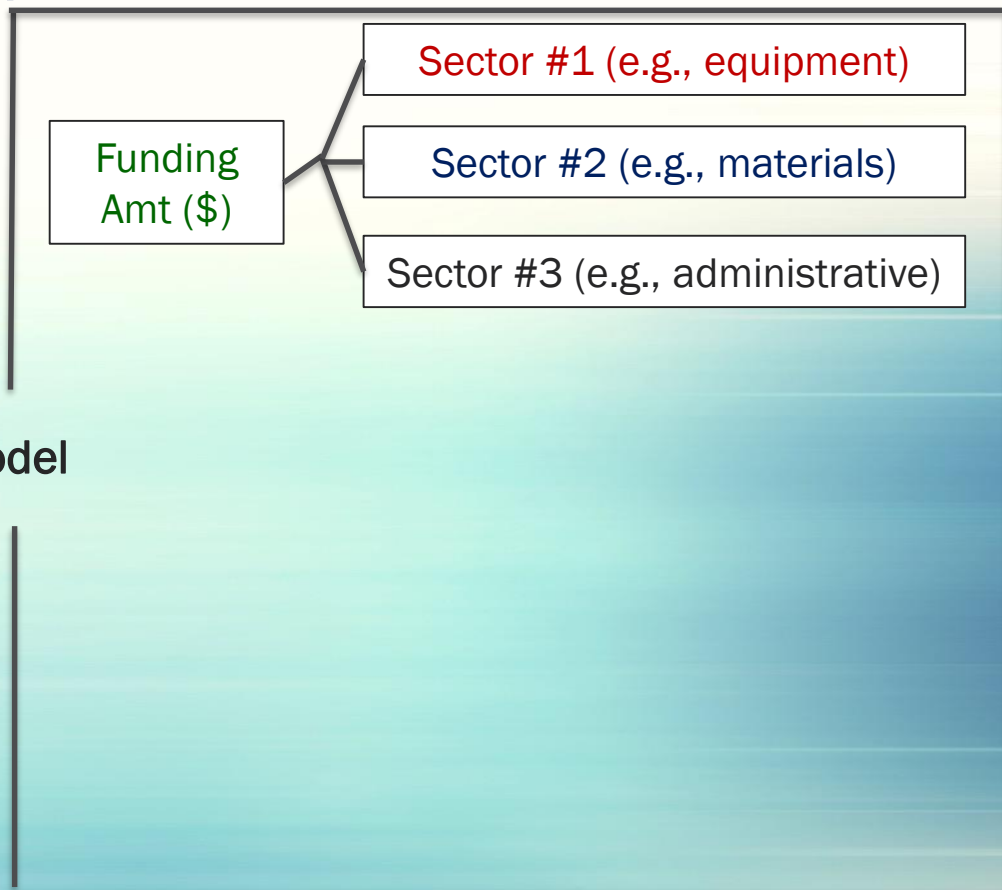# Criteria Pollutant and Co-Benefit Quantification Methodology

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Vehicle category

Model Year

Fuel Type

Calendar Year

EMFAC

g/mile

NOx

ROG

$$PM = PM_{exhaust} + PM_{brake\ wear} + PM_{tire\ wear}$$

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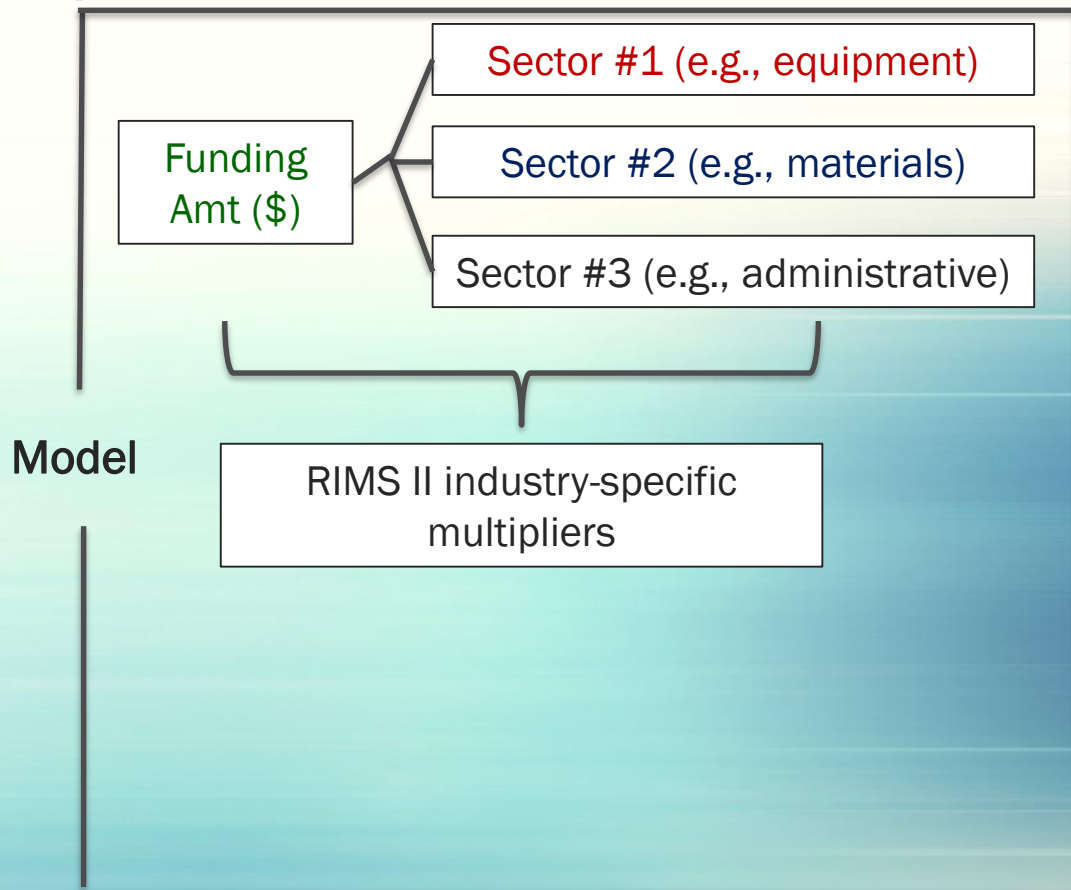
CARB

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Jobs Co-Benefit

- Methodology developed w/UC Berkeley
  - Conducted comprehensive literature review
  - Identified project types where co-benefit is relevant
- CARB used data from Regional Input-Output Modeling Tool (RIMS II)
  - Non-proprietary; available for public use
  - Jobs supported, not only created
- Multi-faceted approach:
  - Also collect real data on actual direct jobs (e.g., wage, benefits provided, education and training, etc.)

Model

Funding Amt ($)

Sector #1 (e.g., equipment)

Sector #2 (e.g., materials)

Sector #3 (e.g., administrative)

CARB

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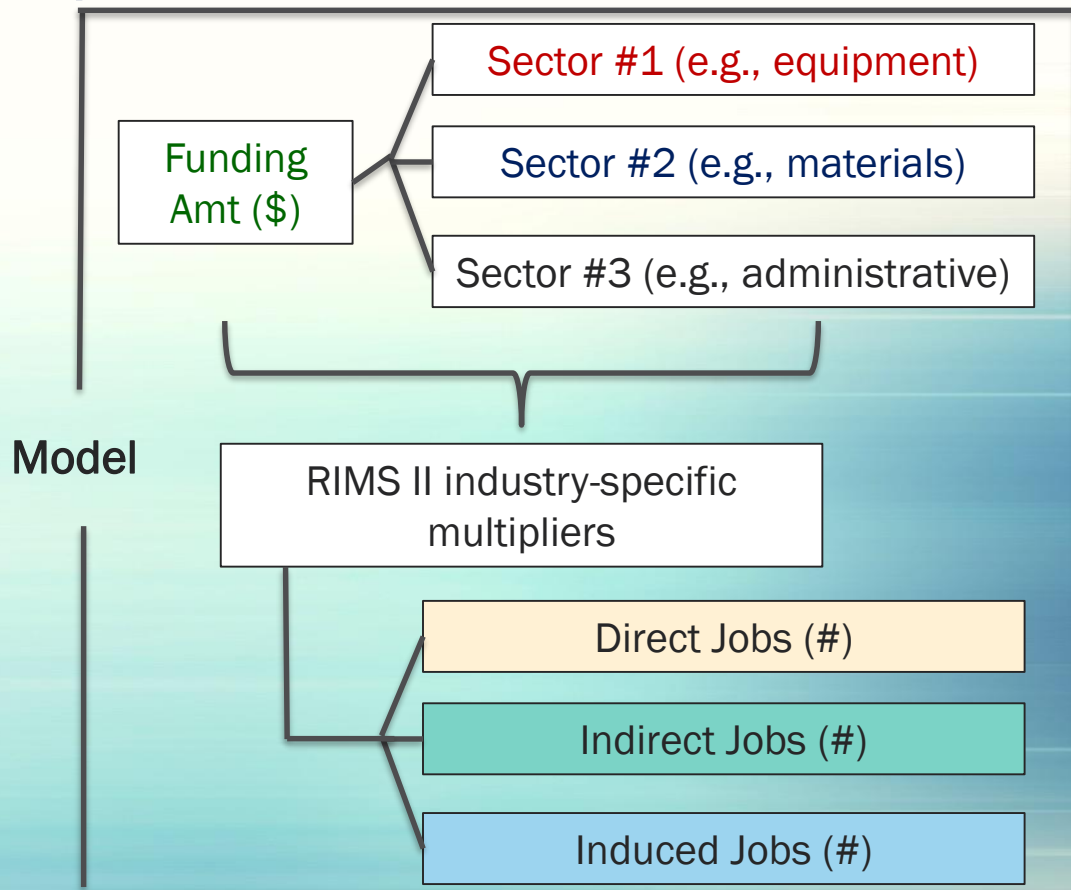
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RIMS II industry-specific multipliers

CARB

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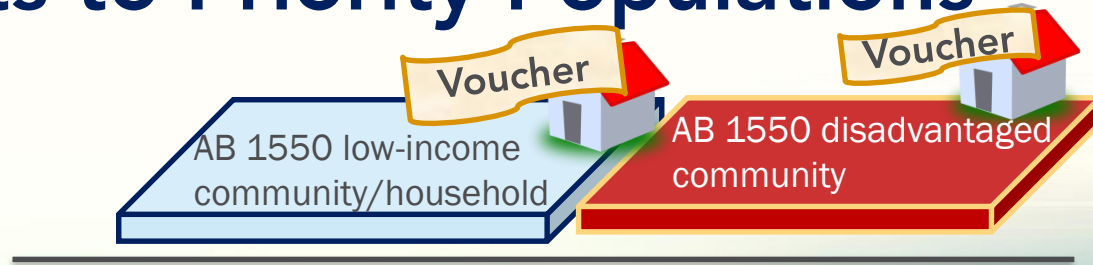

Model

Funding Amt ($)

Sector #1 (e.g., equipment)

Sector #2 (e.g., materials)

Sector #3 (e.g., administrative)

RIMS II industry-specific multipliers

Direct Jobs (#)

Indirect Jobs (#)

Induced Jobs (#)

CARB

Assessing Benefits to Priority Populations

- California Climate Investments Funding Guidelines Benefit Criteria Tables
  - Program specific
  - 3-step evaluation
    - Step 1: Location
    - Step 2: Address a community need?
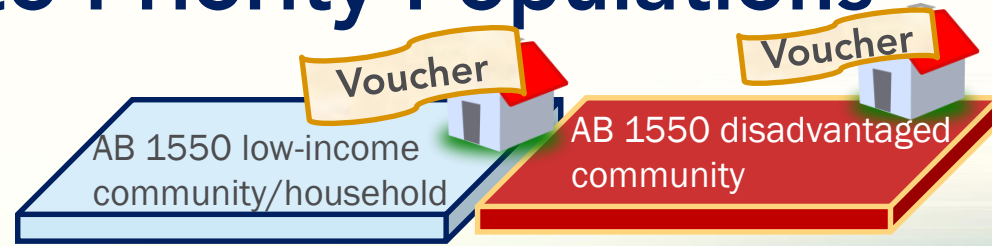   - Step 3: Project benefits?

CARB

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Voucher

Voucher

AB 1550 low-income community/household

AB 1550 disadvantaged community

Evaluation Criteria for Providing Benefits To Priority Populations
CLEAN TRANSPORTATION AND EQUIPMENT

Step 2 – Address a Need. Identify an important community or household need and evaluate whether the project provides a benefit that meaningfully addresses that need.

To identify a need that the project will address, agencies and/or applicants can use a variety of approaches:

- ☐ A. *Recommended Approach:* Host community meetings, workshops, outreach efforts, or public meetings as part of the planning process to engage local residents and community groups for input on community or household needs, and document how the received input was considered in the design and/or selection of projects to address those needs;

- ☐ B. *Recommended Approach:* Receive documentation of support from local community-based organizations and/or residents (e.g., letters, emails) identifying a need that the project addresses and demonstrating that the project has broad community support;

- ☐ C. *Alternative Approach:* Where direct engagement is infeasible, look at the individual factors in CalEnviroScreen that are most impacting an identified disadvantaged or low-income community (i.e., factors that score above the 75th percentile), and confirm that the project will reduce the impacts of at least one of those factors; or

- ☐ D. *Alternative Approach:* Where direct engagement is infeasible, refer to the list of common needs for priority populations in CARB's Funding Guidelines Table 5 and confirm that the project addresses at least one listed need.

Describe identified community or household need(s):

If the project addresses a community or household need as described in Step 2, proceed to Step 3. If the project does not address a community or household need, it will not count toward statutory investment minimums and no further evaluation is needed.

20

Assessing Benefits to Priority Populations

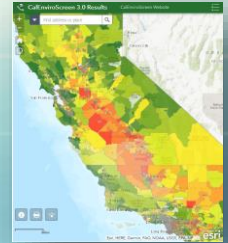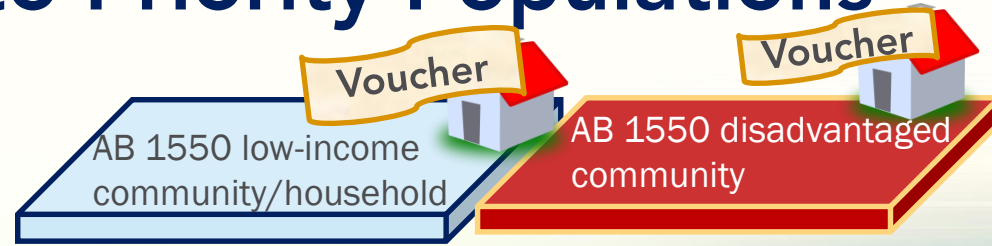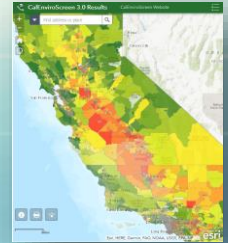- California Climate Investments Funding Guidelines Benefit Criteria Tables
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Host **community meetings, workshops, outreach efforts, or public meetings** to engage local residents and community groups

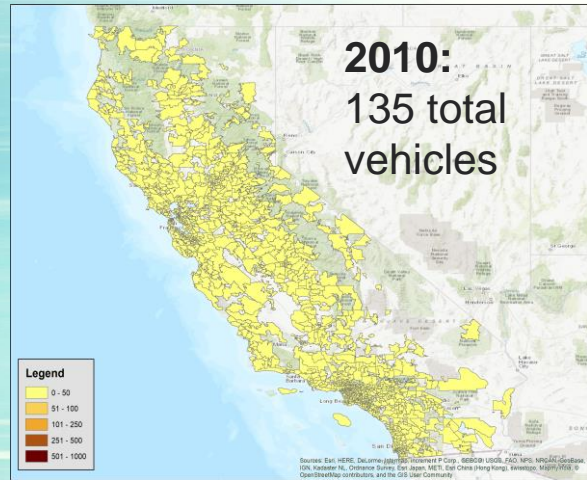Receive **documentation of support** from local community-based organizations and/or residents

Look at **factors in CalEnviroScreen 3.0** that are most impacting AB 1550 priority populations

Assessing Benefits to Priority Populations

- California Climate Investments Funding Guidelines Benefit Criteria Tables
  - Program specific
  - 3-step evaluation
    - Step 1: Location
    - Step 2: Address a community need?
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CLEAN TRANSPORTATION AND EQUIPMENT

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Projects provide broad benefits to these communities (NOx ↓, $PM_{2.5/10}$ ↓, energy & transportation savings ($), mobility access...)

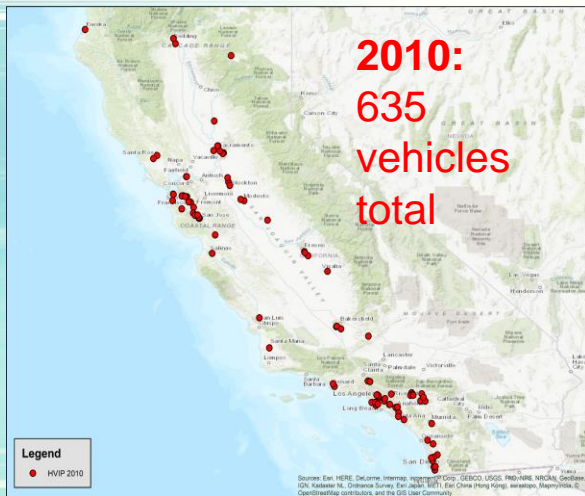AB 1550 Community

Tracking Market Transformation

2010:
135 total
vehicles
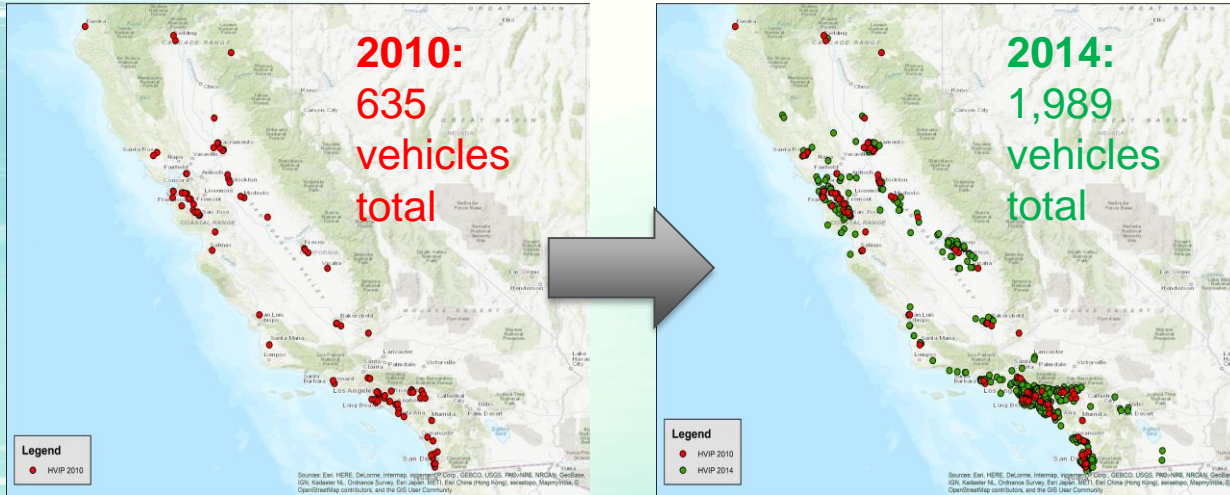
Legend
- 0 - 50
- 51 - 100
- 101 - 250
- 251 - 500
- 501 - 1000

- Clean Vehicle Rebate Project (CVRP)
  - Track spatial and temporal growth of program impact
  - See areas where more outreach is needed
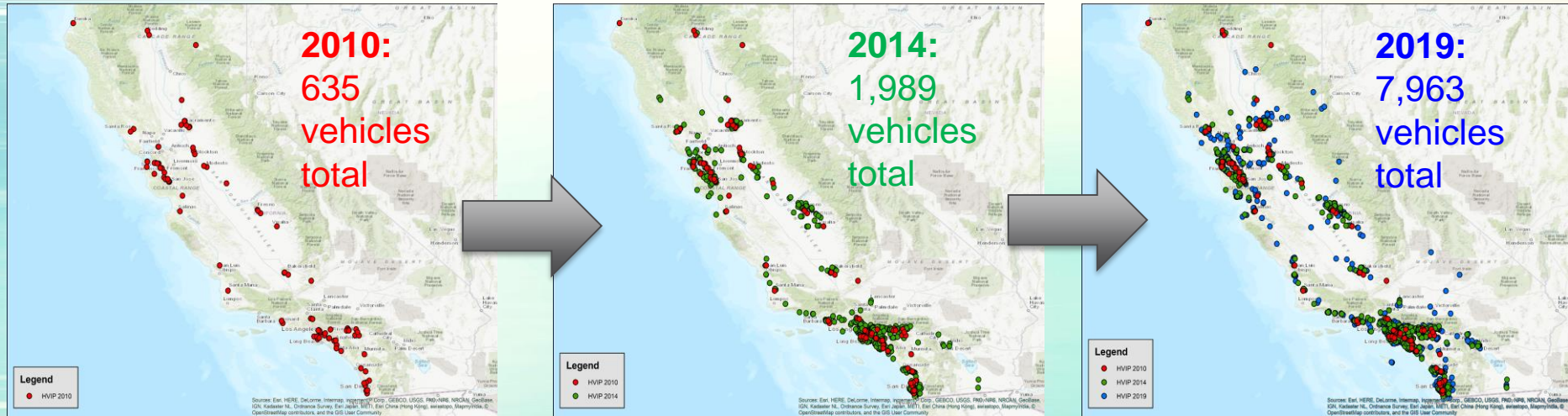
CARB

Tracking Market Transformation

2010: 135 total vehicles → 2014: 88,729 total vehicles

- Clean Vehicle Rebate Project (CVRP)
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CARB

Tracking Market Transformation

2010: 135 total vehicles

2014: 88,729 total vehicles

2018: 300,814 total vehicles

- Clean Vehicle Rebate Project (CVRP)
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CARB

Tracking Market Transformation

2010: 635 vehicles total

Legend
● HVIP 2010

- Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP)
  - Track spatial and temporal growth of program impact

CARB

Tracking Market Transformation

2010: 635 vehicles total

2014: 1,989 vehicles total

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Tracking Market Transformation
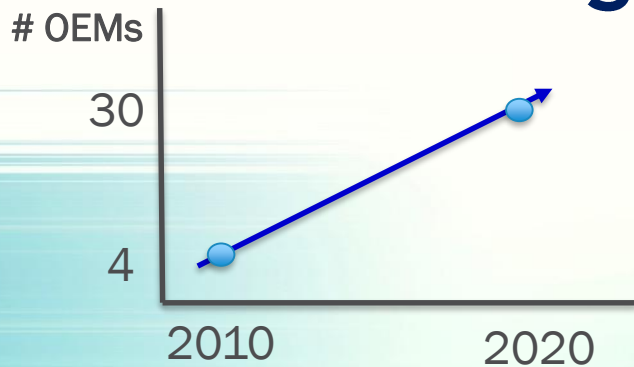
2010: 635 vehicles total

2014: 1,989 vehicles total

2019: 7,963 vehicles total

- Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP)
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CARB

Tracking Market Transformation

OEMs

30 ●

4 ●

2010   2020

1) More OEM participation,
More vehicle models since
incentives began

CARB

Tracking Market Transformation
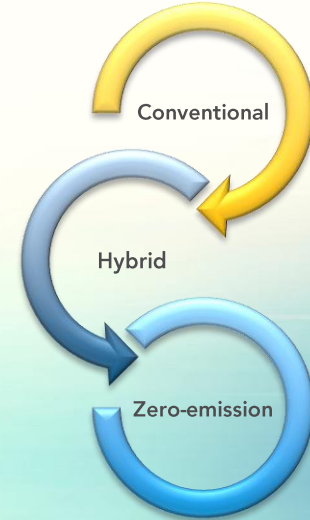
OEMs

30

4

2010   2020

1) More OEM participation, More vehicle models since incentives began

2) Visible shift in predominant technology that applicants pursue vouchers for

Conventional

Hybrid

Zero-emission

CARB

Tracking Market Transformation

 # OEMs

30

4

2010   2020

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Conventional

Hybrid

Zero-emission

3) Anecdotal information that incentives have led to ↑ workforce (e.g., electric UTVs for agriculture)

Tracking Market Transformation

OEMs

30

4

2010   2020

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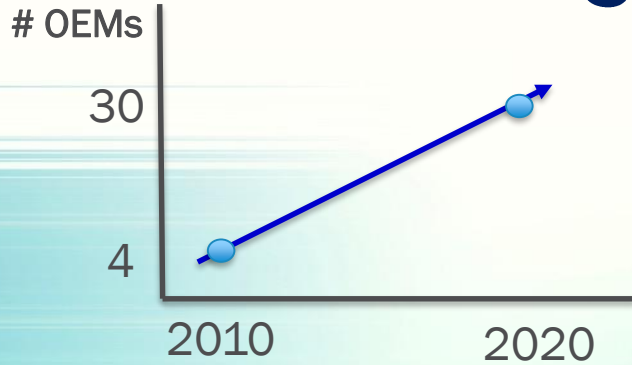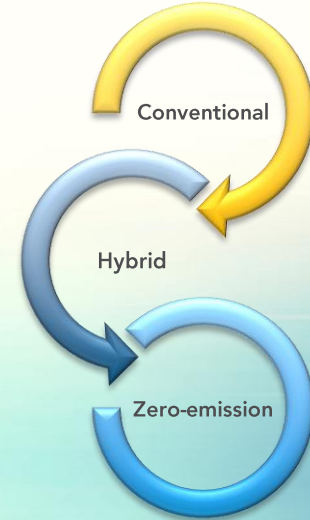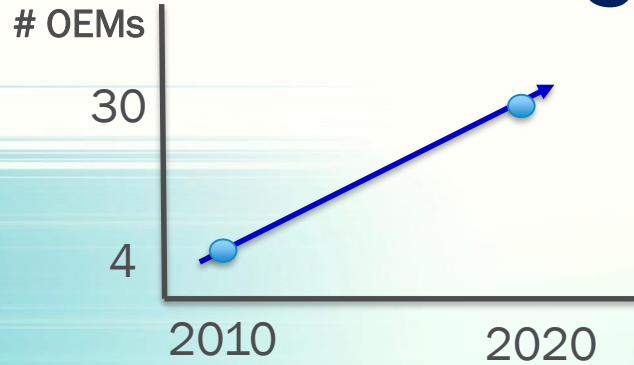
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3) Anecdotal information that incentives have led to ↑ workforce (e.g., electric UTVs for agriculture)

Private match

CARB incentive

Other funding sources

4) Tracking private investment ($) brought in by incentive programs
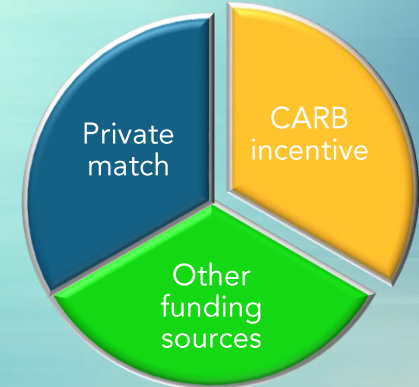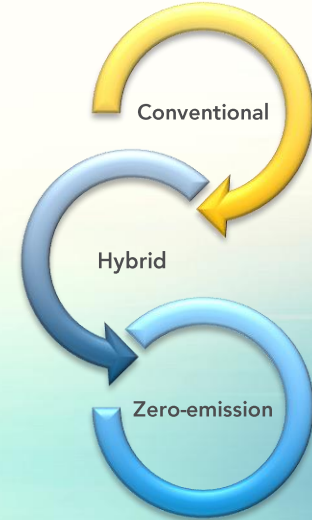
CARB

Reporting on Benefits

- Full data transparency & accountability
- Annual Report to the Legislature

California Climate Investments
Data Dashboard:
https://www.caclimateinvestments.ca.gov/cci-data-dashboard
Annual Report:
http://www.caclimateinvestments.ca.gov/annual-report

CARB

Reporting on Benefits

- Full data transparency & accountability
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- Project profiles

California Climate Investments
Data Dashboard:
https://www.caclimateinvestme
nts.ca.gov/cci-data-dashboard
Annual Report:
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CARB

Reporting on Benefits

- Full data transparency & accountability
- Annual Report to the Legislature
- Project profiles
- Factsheets (legislative, programmatic)

California Climate Investments
Data Dashboard:
https://www.caclimateinvestme
nts.ca.gov/cci-data-dashboard
Annual Report:
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- Online map and data dashboards to show communities where investments are being made

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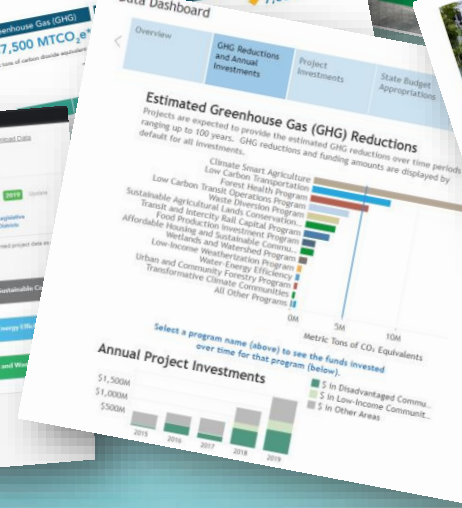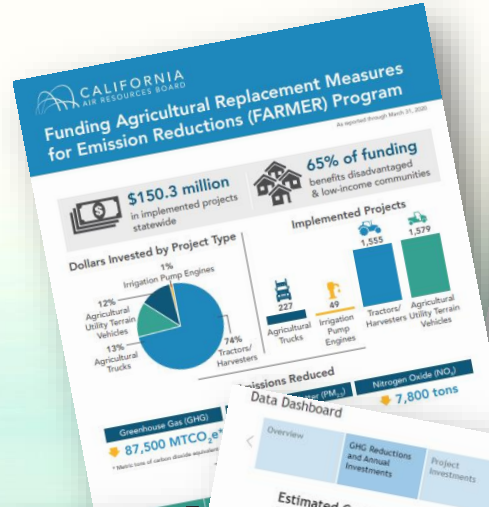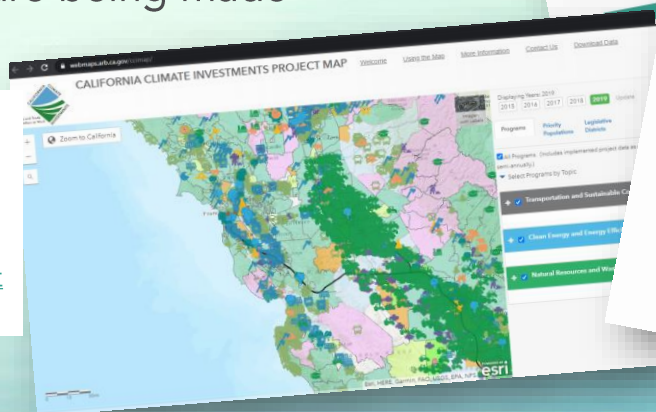
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Thank You | Questions?

Low Carbon Transportation Investments and Air Quality Improvement Program

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