

**DOCKETED**

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# Assessment of Buildings Sector GHGs Overview

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# CA GHG Emission Reduction Policies

- **AB 3232 (Friedman, 2018), Assessment of Buildings GHGs**
- **AB 32 (Nuñez, 2006) CA Global Warming Solutions Act**
- **SB 350 (De León, 2015) Clean Energy and Pollution Reduction**
- **SB 32 (Pavley, 2016) CA Global Warming Solutions Act**
- **SB 100 (De León, 2018) CA RPS Program: Emissions of GHGs**
- **SB 1477 (Stern, 2018) Low-Emissions Buildings**



# AB 3232 Directives

- **Assess the potential for the state to achieve a 40% reduction in buildings GHG emissions**
- **Residential and Commercial building stocks**
- **New and existing buildings**
- **CARB, CPUC and CAISO are collaborators**



# AB 3232 Requirements

- **Draft report by Fall 2020, Final due January 1, 2021**
- **Best available data and analysis**
- **Cost-effective strategies to reduce GHGs**
- **Challenges for low-income, multi-family housing**
- **Collaborate with CARB, CPUC and CAISO**



# AB 3232 Work Timeline

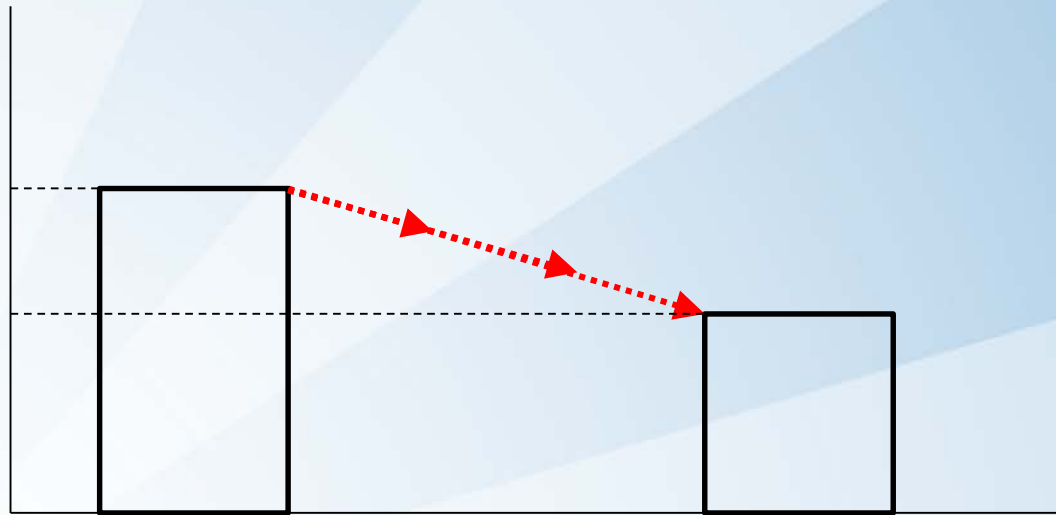
## 2019

- (Q1-3) Phase 1, 1990 Baseline and GHG Benchmarks
- (Q3-4) Phase 2, Data Assessment, Methods and Assumptions

## 2020

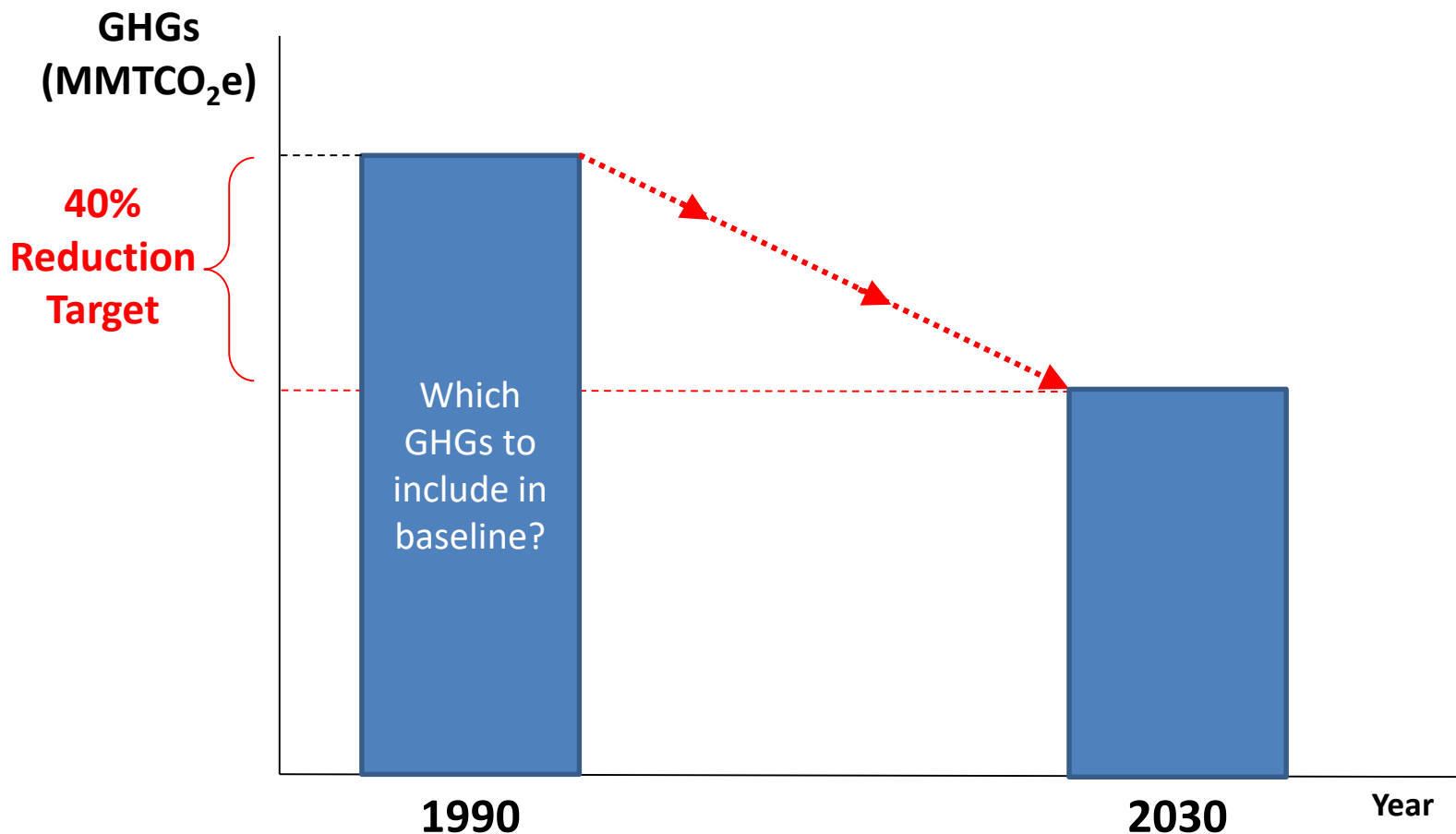
- (Q1-2) Phase 3, Impacts and Technology Assessment
- (Q3-4) Phase 4, Draft and Final Assessment

# Selecting a 1990 GHG Baseline





# Which GHGs to include in the baseline for AB 3232?

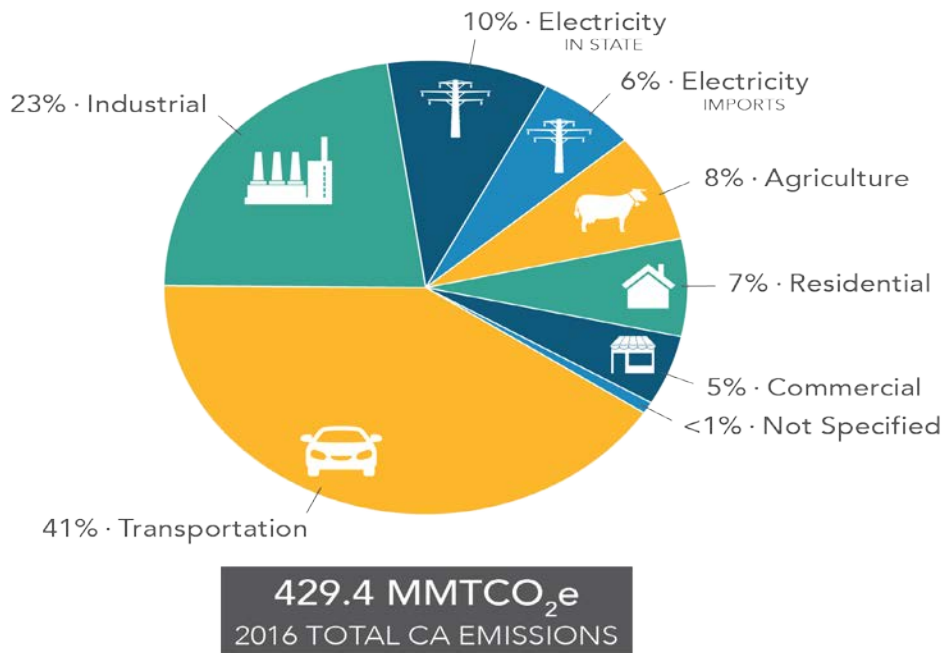




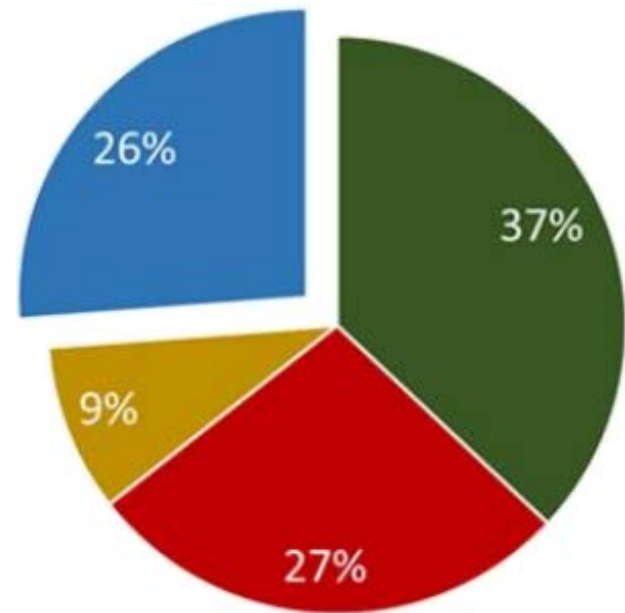


# Scope of Building Emissions

## CARB: 2016 GHG Emissions by Economic Sector



## CEC: 2016 GHG Emissions by Sector



■ transportation ■ industry ■ agriculture ■ buildings

Note: Air Resources Board updated their inventory on August 14, 2019 and reports 2017 emissions.

Source: California Energy Commission using data from the California Air Resources Board 2018 GHG Inventory and the 2017 IEPR Electricity Demand Forecast



# Building Emissions - Overview

Scope, data handling, and confidence of the various emissions to be considered:

Direct emissions reported in CARB inventory	Estimated value based on CARB inventory and CEC analysis	Non-zero estimate with uncertainty interval based on CARB's inventory, CEC data, other existing data
<ul style="list-style-type: none"><li>➤ <b>On-site fuel combustion</b></li><li>➤ <b>Substitutes for ozone-depleting substances (ODS)</b> (Hydrofluorocarbons, HFCs, from refrigeration and air conditioning, etc.)</li><li>➤ <b>Residential fuel use fugitive emissions</b> (CARB 2000-2017)</li></ul>	<ul style="list-style-type: none"><li>➤ Emissions attributed to buildings from <b>electricity generation</b></li></ul>	<ul style="list-style-type: none"><li>➤ Volume of <b>fugitive emissions</b> or leakage attributed to buildings from downstream natural gas distribution infrastructure</li><li>➤ <b>Incomplete combustion</b> (emissions from behind the meter at a building site)</li></ul>

**High Confidence** **Low Confidence**



# Baseline Approaches

- **Direct Emissions**

- + Aligns with CARB's GHG inventory categorization
- + Need to consider the emissions generated from increased electricity loads
- Most electricity demand-side management activities will not affect a direct emissions baseline

- **Holistic**

- + Considers all emissions attributable to buildings
- Concerns that the building sector would need little effort to reach the 40% GHG reduction goal through existing decarbonization policies and efforts in the electricity generation sector



# Current Direction and Next Steps

- Exploring a direct emissions approach
- Coordinate with CARB to verify baseline calculation and handling of increased electricity loads
- October workshop to discuss and receive comment on potential baseline recommendation

# Questions?

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Source information for “Scope of Buildings Information” slide:

- *California Greenhouse Gas Emissions Inventory – 2018 Edition*.  
<https://ww3.arb.ca.gov/cc/inventory/data/data.htm>. Accessed 8/5/2019.
- California Energy Commission staff. 2018. Draft 2018 Integrated Energy Policy Report Update. California Energy Commission. Publication Number: 100-2018-001-V2-CMF. Page 19.  
<https://efiling.energy.ca.gov/getdocument.aspx?tn=226392> .