




Entrepreneurs in Action

California Cement Industry

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Introduction

- Bob Houston
 - Houston Magnani and Associates
 - 40+ Years of advocacy and government relations
 - Representing both public and private sector clients
- My participation and commentary reflect my own opinion and not necessarily those of my clients





AB 32 - Implementation

- Why was the implementation of AB 32 successful
- CARB and the Cement Industry developed a level of trust
- Cooperative and Transparent Dialogue
- Recognized the need to lower carbon emissions, while respecting the need for economic growth





Uniqueness of Cement

- Acceptance that cement was unique
 - Energy Intensive
 - Trade Exposed
 - Challenging to Decarbonize
- Process Emissions
 - 60% of emissions are irreducible due to the chemistry of production





Cement Industry – Advocacy Organization


- Coalition for Sustainable Cement Manufacturing & Environment (CSCME)
 - Comprised of top executives from each company
 - Engaged research firm with economic expertise and regulatory experience
 - Legal Expertise with experience in international and interstate trade





Cooperative and Open Process - Meetings

- Open dialogue and creativity to regulatory solutions
 - EITE Consideration
 - Mandatory Reporting
 - Per ton of product approach (intensity)
 - Limited abatement opportunities for cement (cap decline)



AB 32/SB 32 Is not without critics

- Cap & Trade
- Legislature
- Environmental NGOs
- Environmental Justice

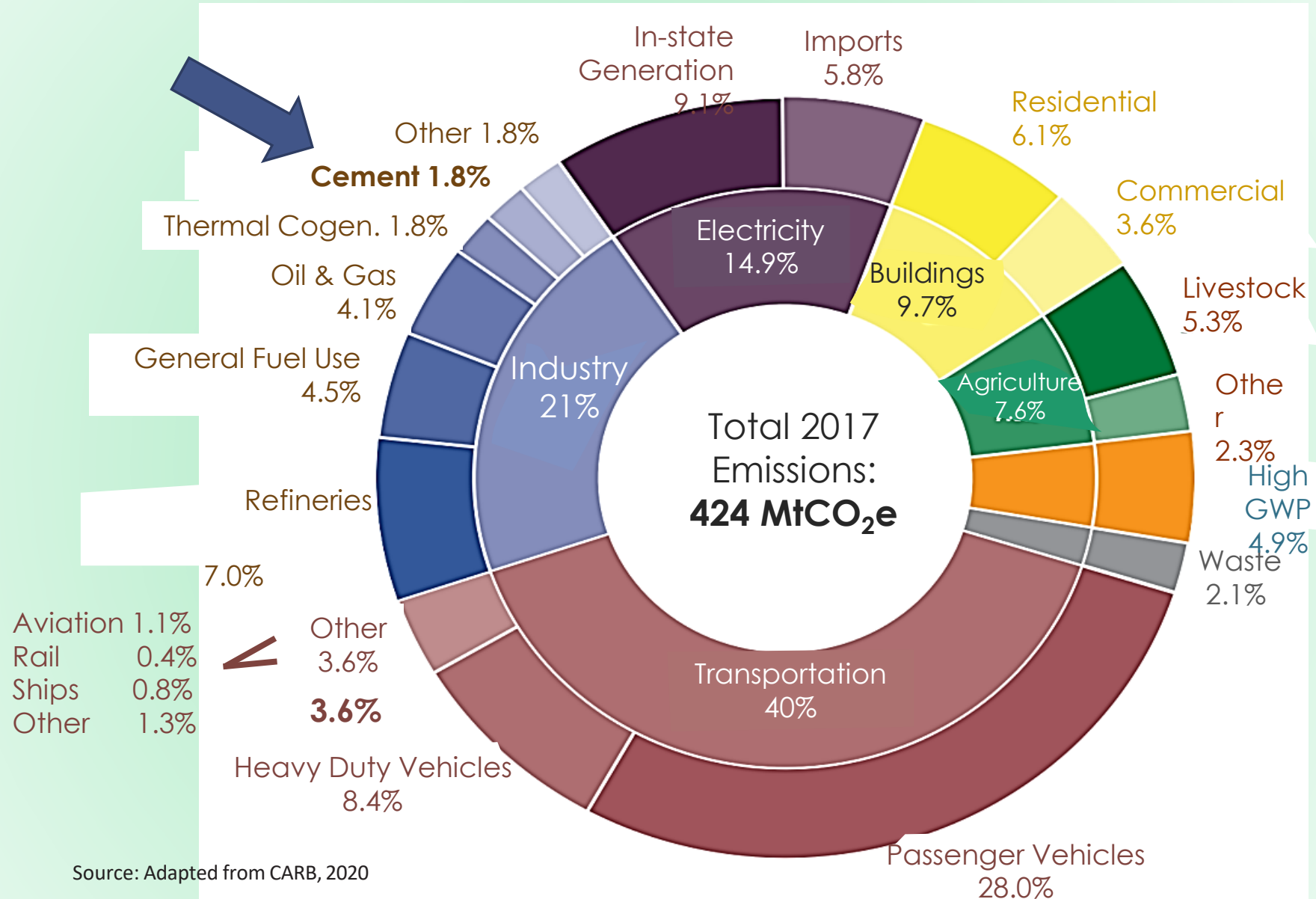




Achieving Carbon Neutrality in the California Cement Industry: Key Barriers & Policy Solutions

CALIFORNIA GREENHOUSE GAS EMISSIONS BY SECTOR AND SUBSECTOR, 2017

Context:
Cement production makes up 1.8% of CA's GHG emissions profile. Industry has worked collaboratively with CARB in implementing AB 32 regulations.



Source: Adapted from CARB, 2020



One Bold Goal. Three Pathways. Nine Levers.

One Bold Goal.



The California cement industry is committed to achieving carbon neutrality by 2045, consistent with the reality that urgent and aggressive emissions reductions are necessary to avoid the worst impacts of global climate change.

Achieving this goal will require:

- A commitment to pursuing an **“all-of-the-above” approach** that unlocks a flexible portfolio of pathways such that each plant can chart a course that aligns with its unique needs and circumstances.
- **Close coordination among stakeholders throughout the cement-concrete value chain**, including cement manufacturers, concrete plants, project owners, developers, engineers, and architects.
- **Constructive engagement among stakeholders throughout the public policy ecosystem**, including legislators, regulators, and other interested parties.

Three Pathways.

✓ = Action is necessary to remove barriers and fully unlock pathway.

Measure	Legislative Assistance	Regulatory Assistance	Public Acceptance	Public Funding	RD&D	Supply Limitations
PATHWAY 1: PROCESS EMISSIONS						
Portland Limestone Cement (PLC)	-	✓	✓	-	-	-
Carbon Capture Use & Storage (CCUS)	✓	✓	✓	✓	✓	-
Alternative Raw Materials (ARM)	-	✓	✓	-	✓	✓
Alternative Cements & Clinkers	-	-	-	-	✓	✓
PATHWAY 2: COMBUSTION EMISSIONS & FUEL SWITCHING						
Natural Gas	✓	✓	✓	-	-	✓
Waste-Derived Fuels	✓	✓	✓	-	-	✓
Biomass-Derived Fuels	✓	✓	✓	✓	-	✓
PATHWAY 3: ELECTRICITY GENERATION						
Waste Heat Recovery	✓	-	✓	-	✓	-
On-Site Renewables	✓	-	✓	-	-	-
	6	8	6	3	3	5

Nine Levers.

Levers	Timing <i>If unlocked, time to deploy</i>	Impact <i>GHG abatement potential</i>	Summary of Key Barriers
Process Emissions: 4 Levers			
Portland Limestone Cement	Near-Term	~10%	Caltrans acceptance necessary (anticipated in October 2021).
Carbon Capture Use & Storage	Long-Term	>50%	Extremely capital-intensive, require significant public sector support. Gaps in existing incentives. Time-intensive & contingent permitting.
Alt Raw Materials	Mid-Term	10%-50%	Constrained (and tightening) supply. Testing & investment in natural pozzolans. Public acceptance necessary.
Alt Cements & Clinkers	Long-Term	<10%	Limited supply and specialized production. Not commercially viable or sufficiently tested for large-scale construction. Scarcity of certain materials. Limited substitution potential.
Combustion Emissions & Fuel Switching: 3 Levers			
Natural Gas	Near-Term	10-50% <i>(total additive potential)</i>	Not frequently cost-competitive. State-wide storage & supply constraints.
Waste-Derived Fuels	Near-Term		Narrow definition of recycling. Burdensome permitting and public acceptance challenges. Classification of engineered fuels constrains availability and creates costs. Competition w/ landfilling.
Biomass-Derived Fuels	Near-Term		Lack of coordinated & concerted support. Regulatory ambiguity. Burdensome permitting. Limited supply due to insufficient collection and distribution network.
Electricity Generation: 2 Levers			
WHR / Cogeneration	Mid-Term	<10%	Financial penalty from departing load charges. Cumbersome permitting with marginal returns. High cost per installed KW.
Renewable Electricity	Mid-Term	<10%	Financial penalty from departing load charges. Limited incentives from rate schedules & electricity programs. High costs (including fees) & limited return.

Aligned with Plan SB 596: Greenhouse gasses – cement

- Assigns the California Air Resources Board to address barriers & incentives
- Cement GHG to be 40% below the 2019 levels by 2035; checkpoint in 2028
- Net-zero or net-negative GHG cement by end of 2045
- Requires accounting for imported cement
- First sector-specific net-zero carbon bill in California

