Cap and Trade in Practice:
Barriers and Opportunities for Industrial Emissions Reductions in California

Climate Policy Initiative

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Key findings

The Cap and Trade Program is making a difference in how firms approach emissions reductions. Cement firms are factoring the carbon price into investment decisions and are exploring options to reduce emissions.

However, the impact of the carbon price on a decision to abate emissions also depends on a range of other factors. In most cases, the carbon price is not the most important factor in making an emissions reduction decision financially attractive.

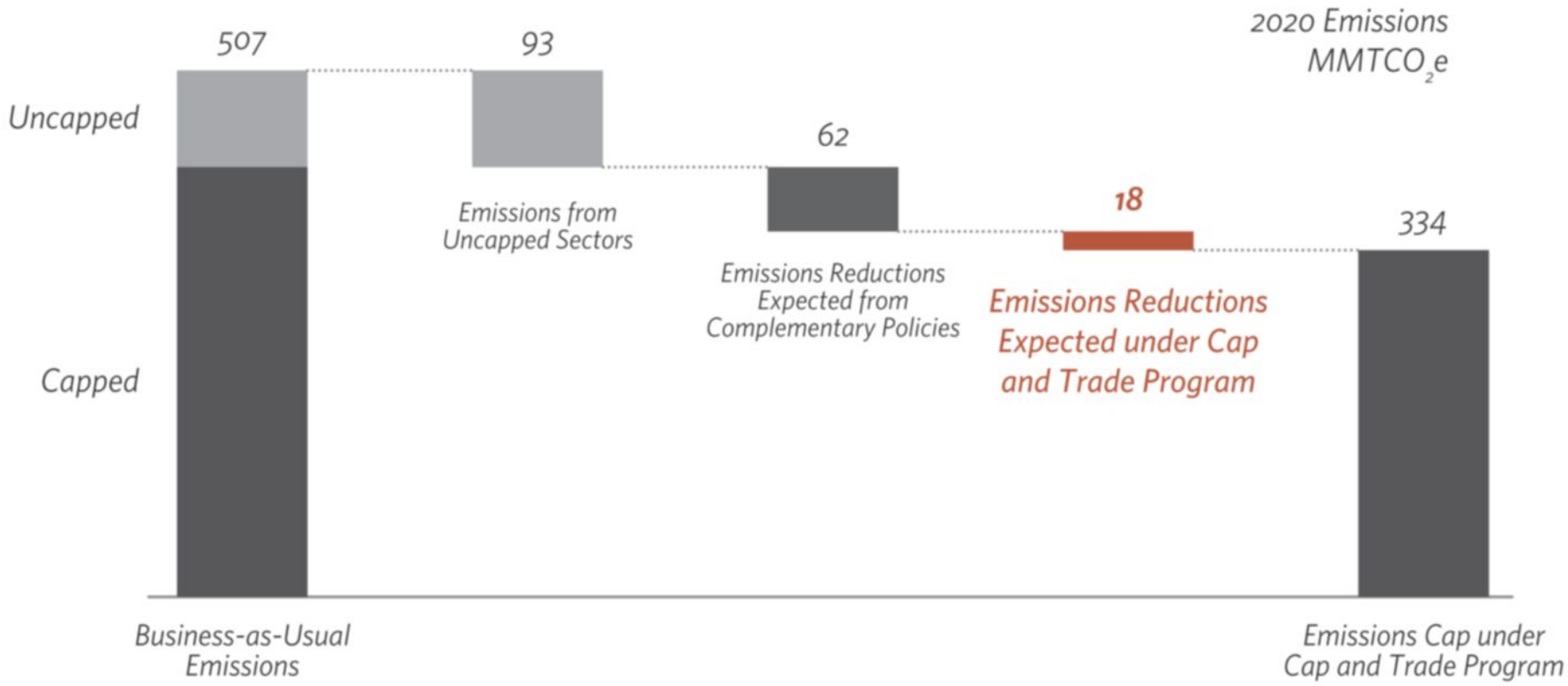
Key findings

Under the Cap and Trade Program, California will meet its emissions reduction target as long as the cap is enforced. But policymakers can reduce the cost of meeting the target by taking further action to lower barriers to low-cost or cost-saving abatement options.

AB32 already takes this approach through sector-specific "complementary policies," but policymakers can do more.

Background

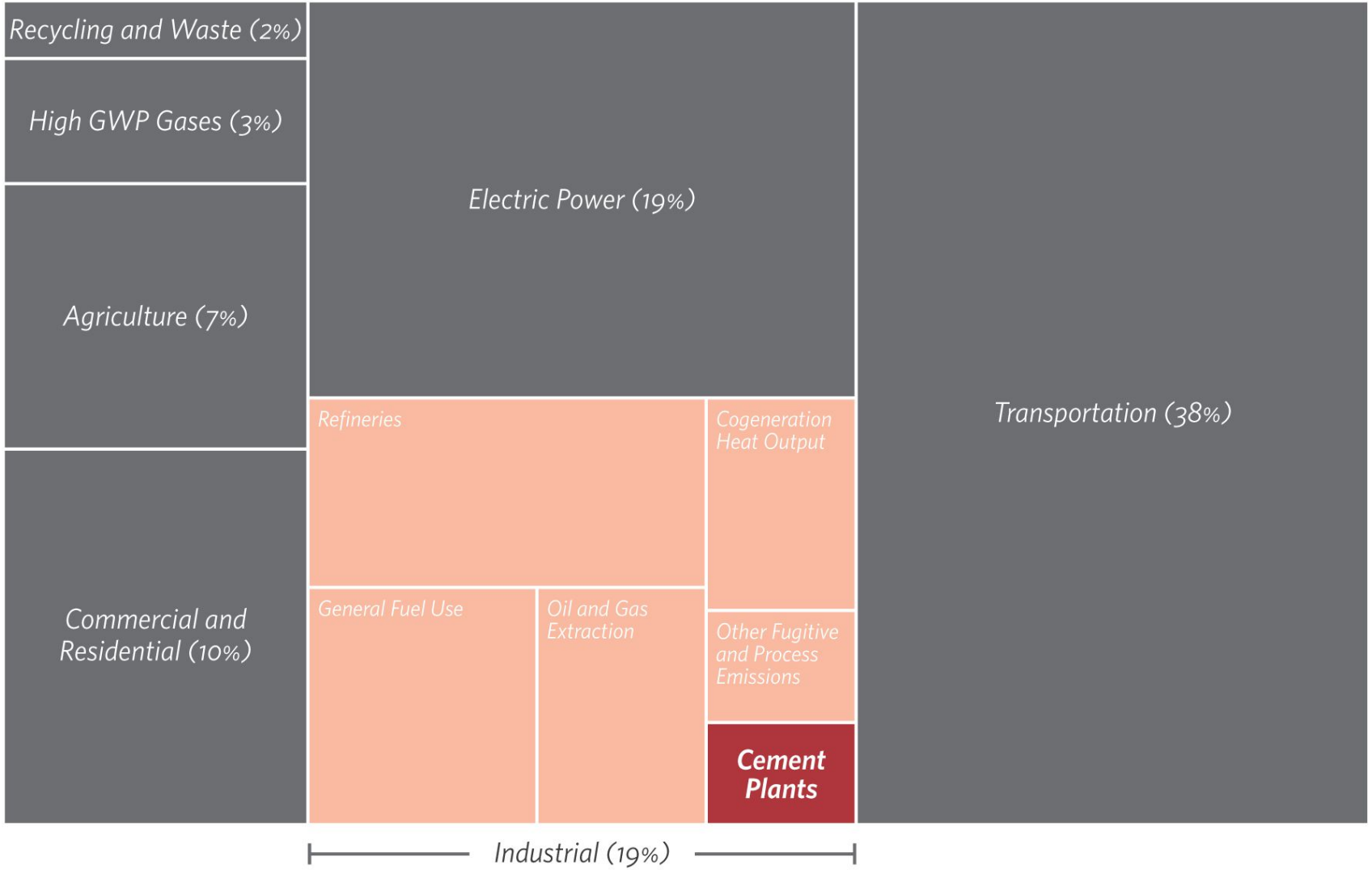
The Cap and Trade Program is a relatively small but important part of California's climate strategy



Under AB32, the Cap and Trade Program wraps around a set of sector-specific policies, including the Renewable Electricity Standard and vehicle GHG standards. The Cap and Trade Program serves as a backstop to ensure that California meets its emissions reduction goals.

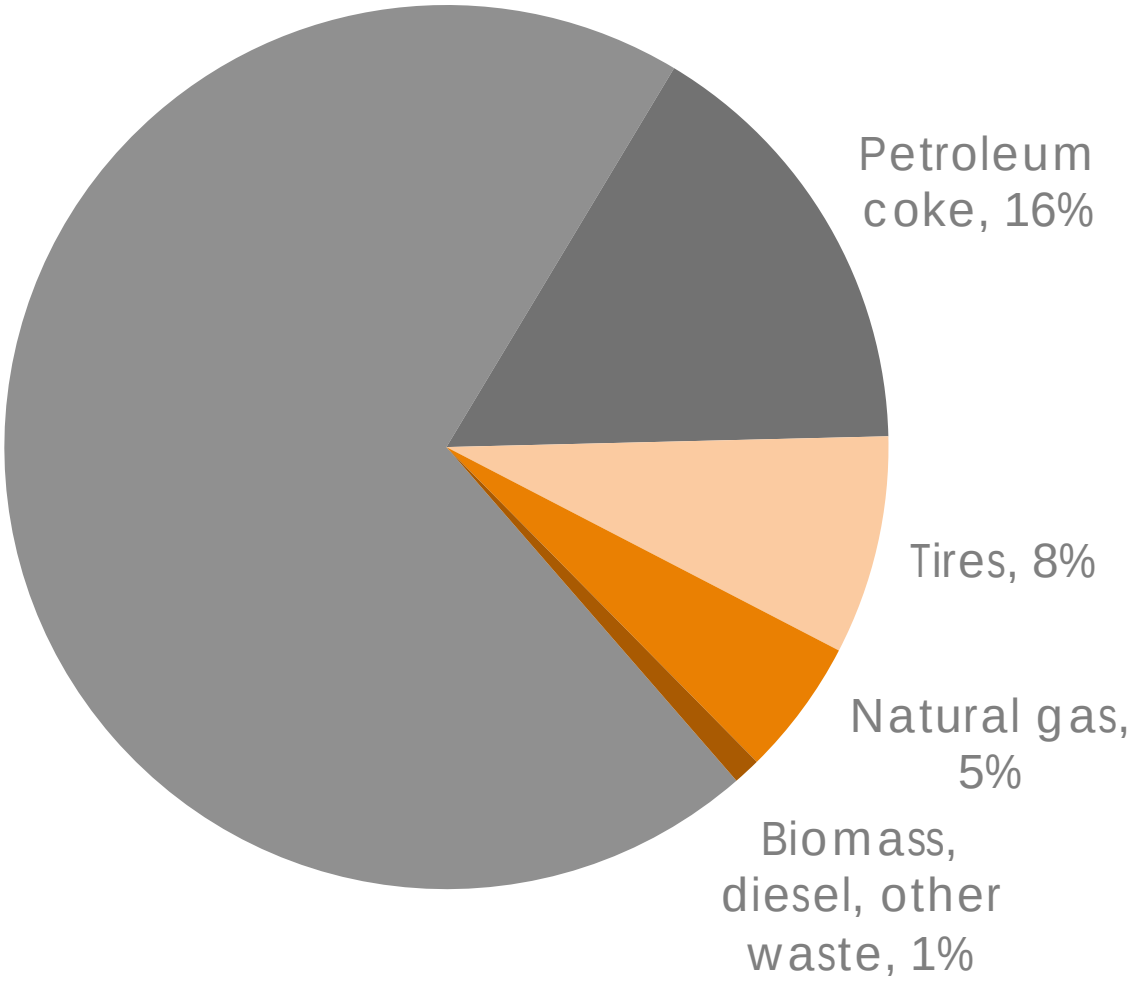
The cement industry is a key industrial emitter in California and many other states

~2% of emissions statewide; similar to national figure



Cement plants are the largest coal consumers in California

Fuel burned in California's cement kilns (2009)



Methods

How do business decisions influence achievement of emissions reductions under cap and trade?

Our research questions:

- Are California's cement firms likely to take the steps commonly discussed as abatement options for their industry?
- How large a role does the carbon price play in driving abatement decisions, relative to other factors such as energy prices and non-price barriers?
- What are the barriers to abatement in the cement industry that are not addressed by the carbon price? What other policy levers could address these barriers?

We modeled a set of representative abatement options under a range of carbon price scenarios

1. Energy efficiency
2. Fuel switching: biomass, tires, natural gas
3. Blending of alternative materials

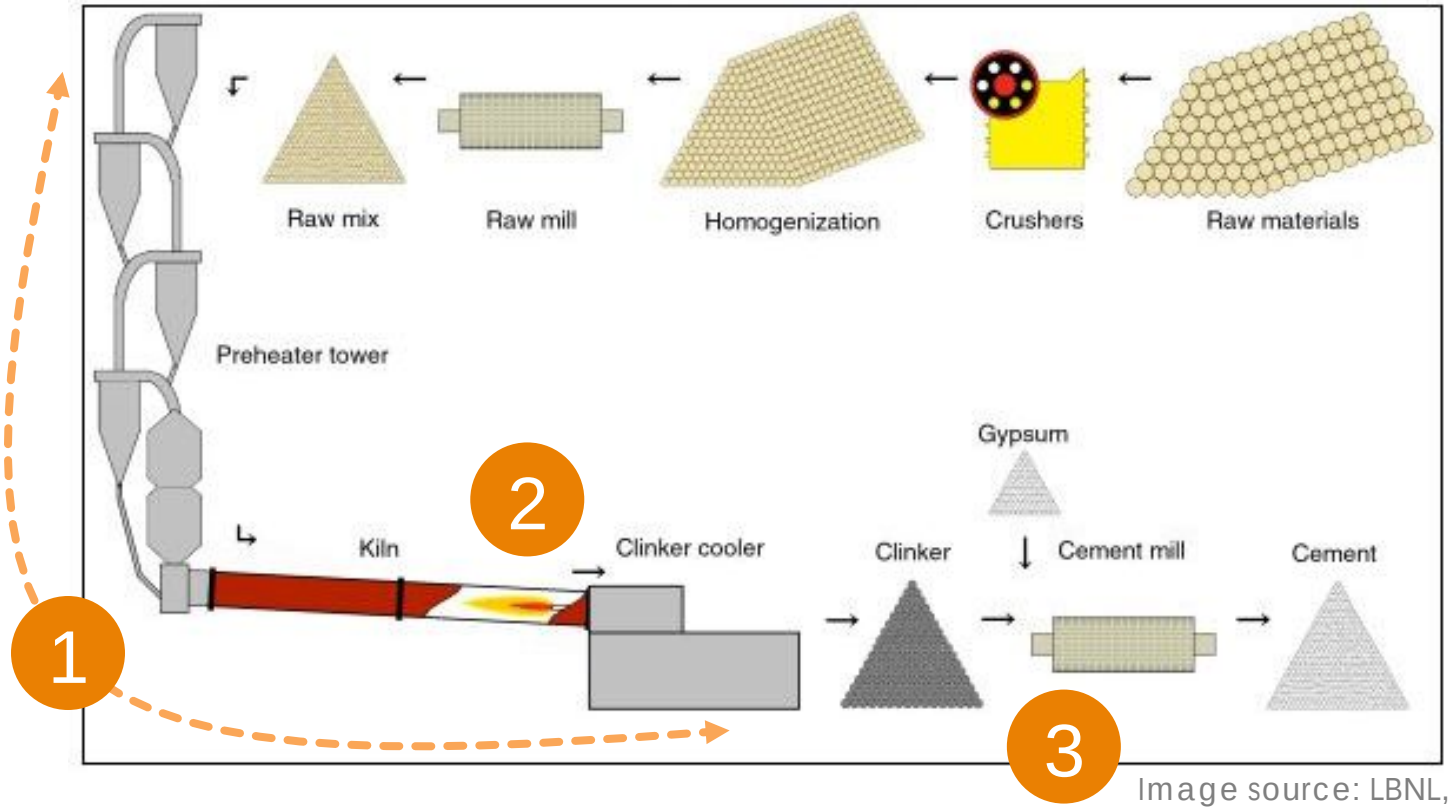
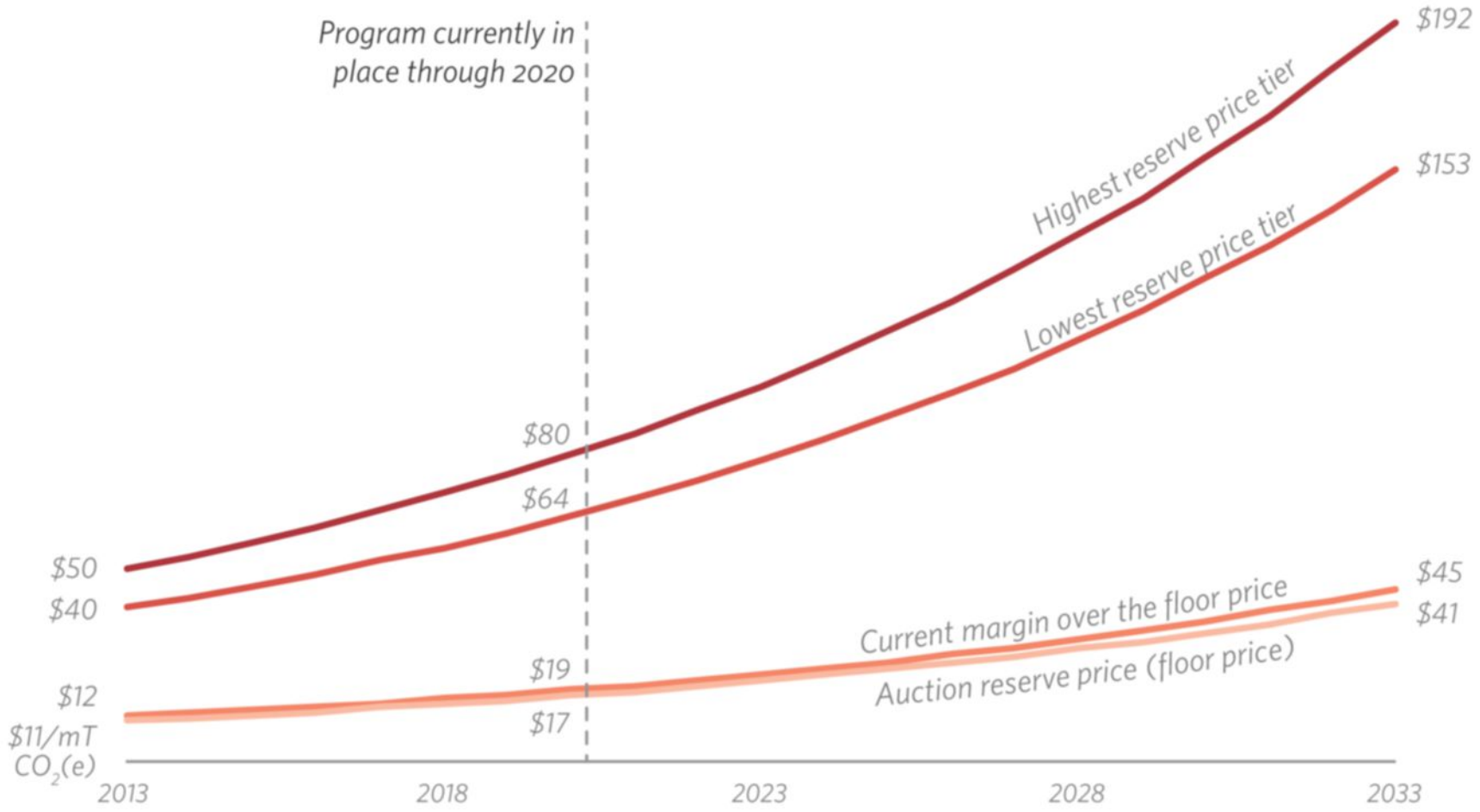


Image source: LBNL, "Opportunities for Energy Efficiency and Demand Response in the California Cement Industry"

Carbon price scenarios based on Cap and Trade Program regulation

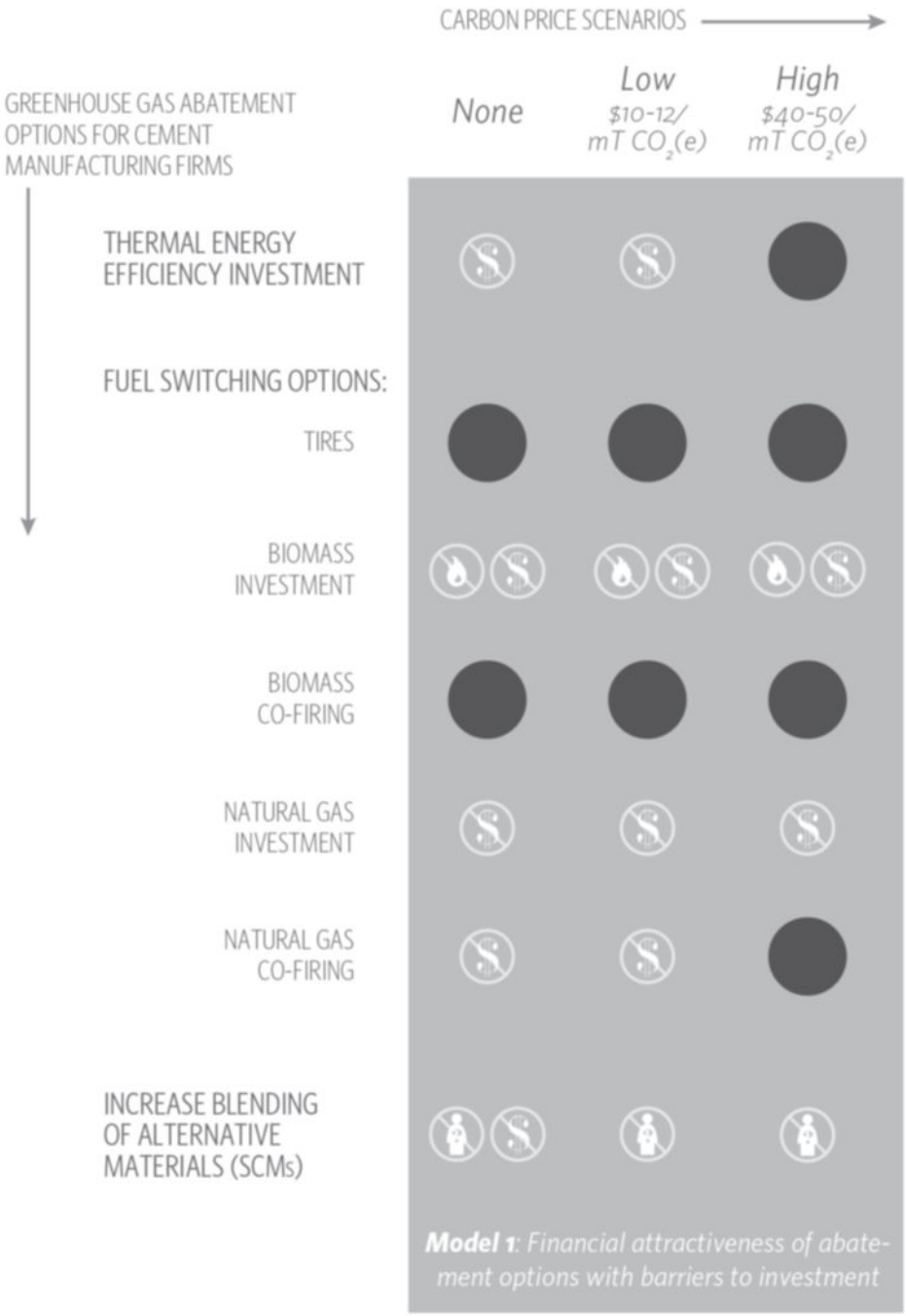


Findings

The Cap and Trade Program is a salient factor in business decisions.

California's cement firms factor the carbon price into their investment models and are exploring options to reduce emissions.

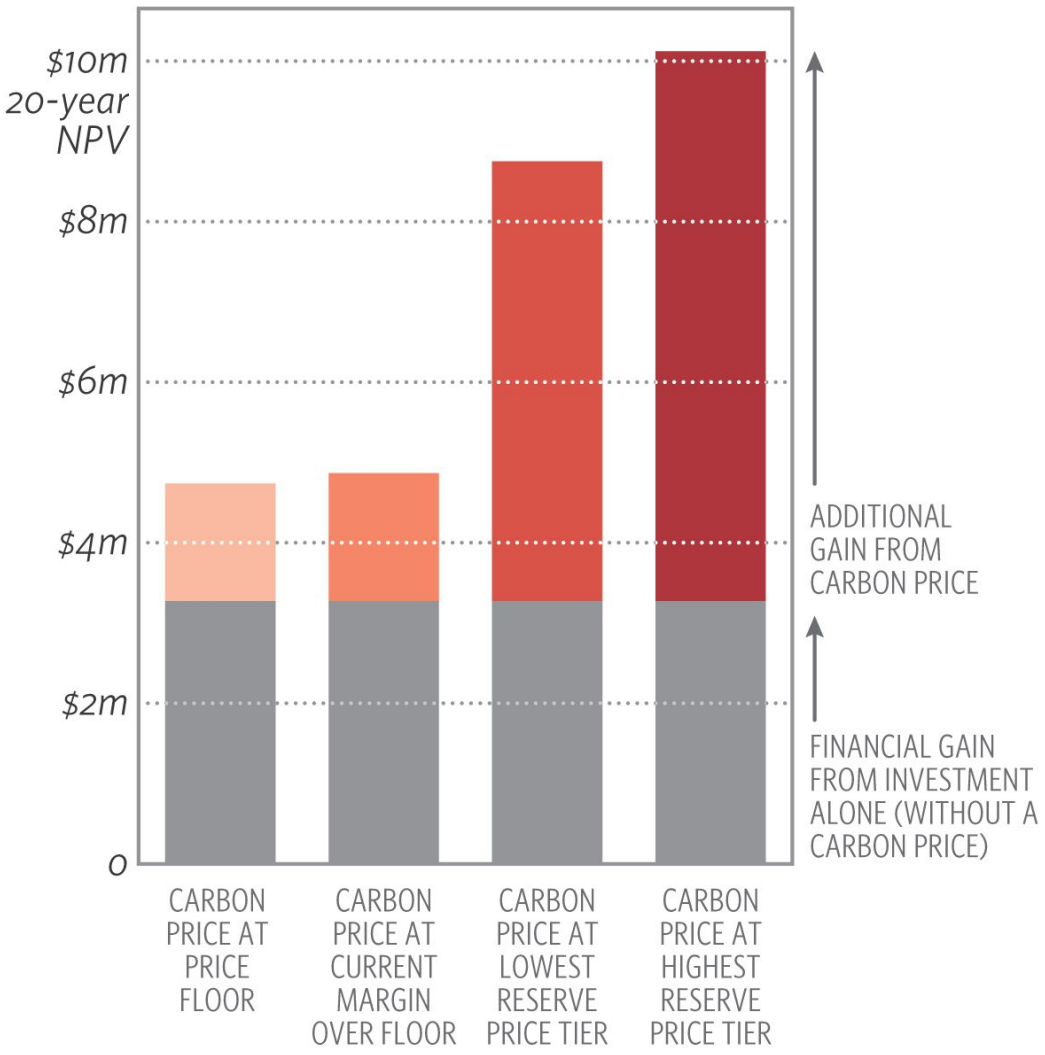
Most abatement options do not meet firms' investment criteria at low carbon prices, but more do at high carbon prices.



Model 1: *Financial attractiveness of abatement options with barriers to investment*

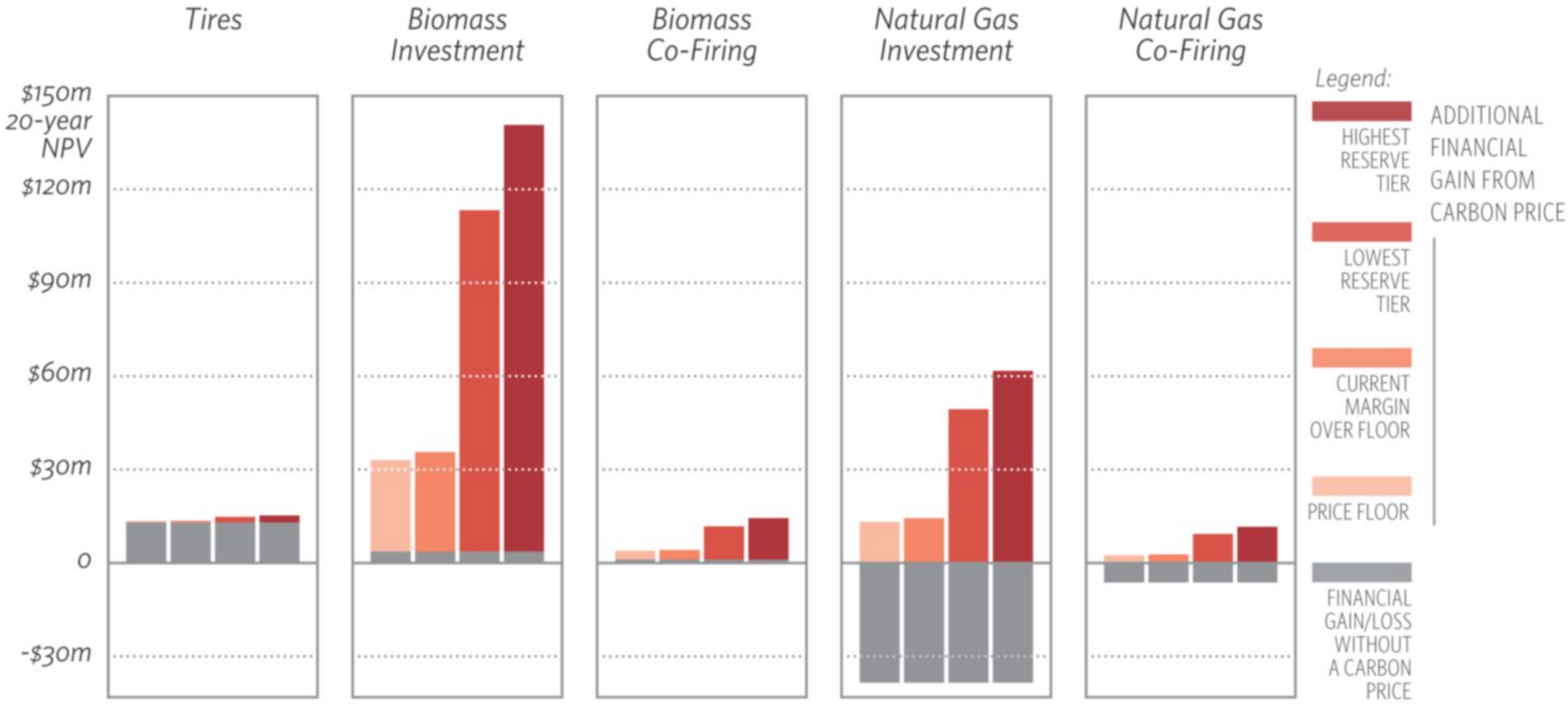
- Abatement option meets firms' stated criteria for investment:
  - Payback under 3 years (capital investments)
  - Profitable immediately (operational changes)

Energy Efficiency



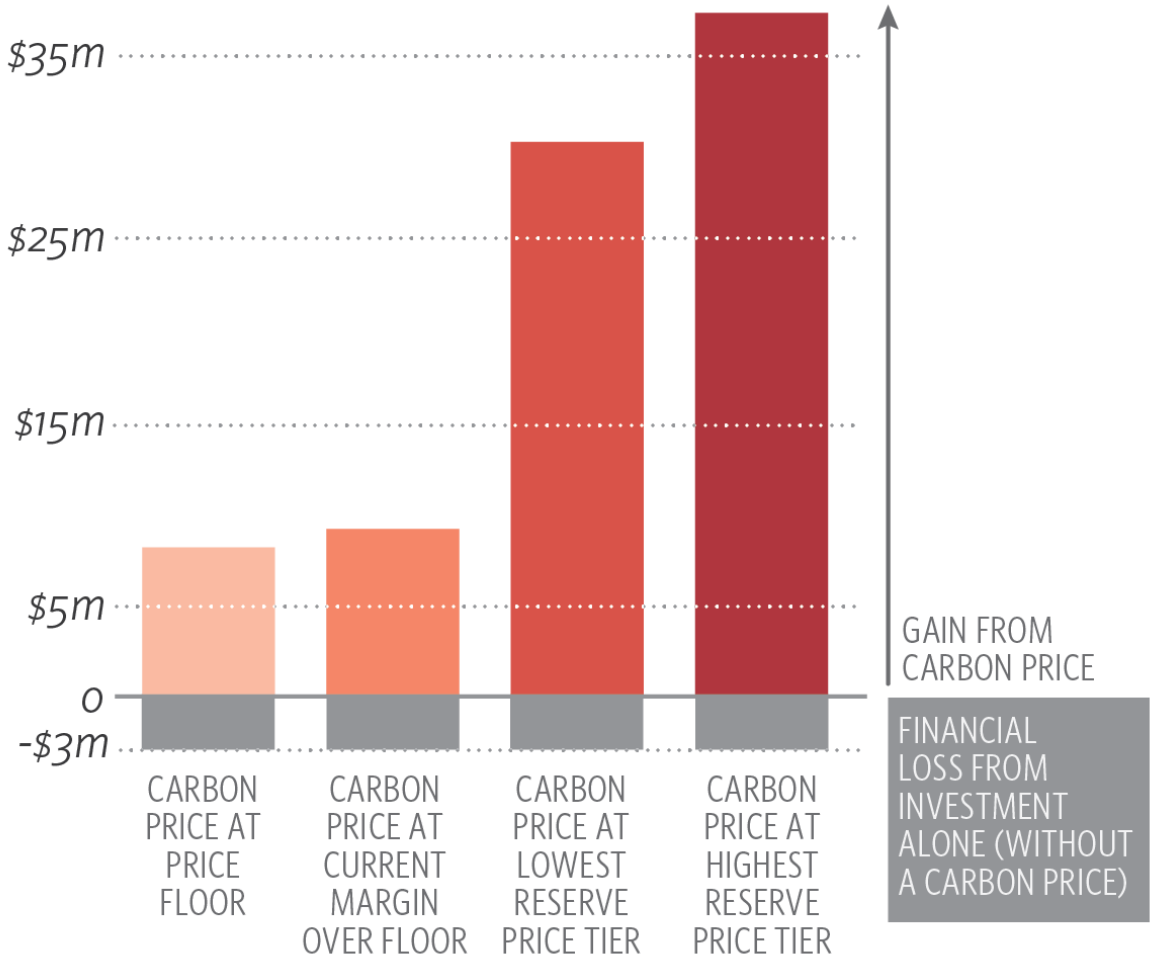
The carbon price makes already-profitable investments in energy efficiency more financially attractive. However, firms' internal priorities and short required payback periods for investment will continue to limit investment, especially if carbon prices remain low.

Fuel Switching



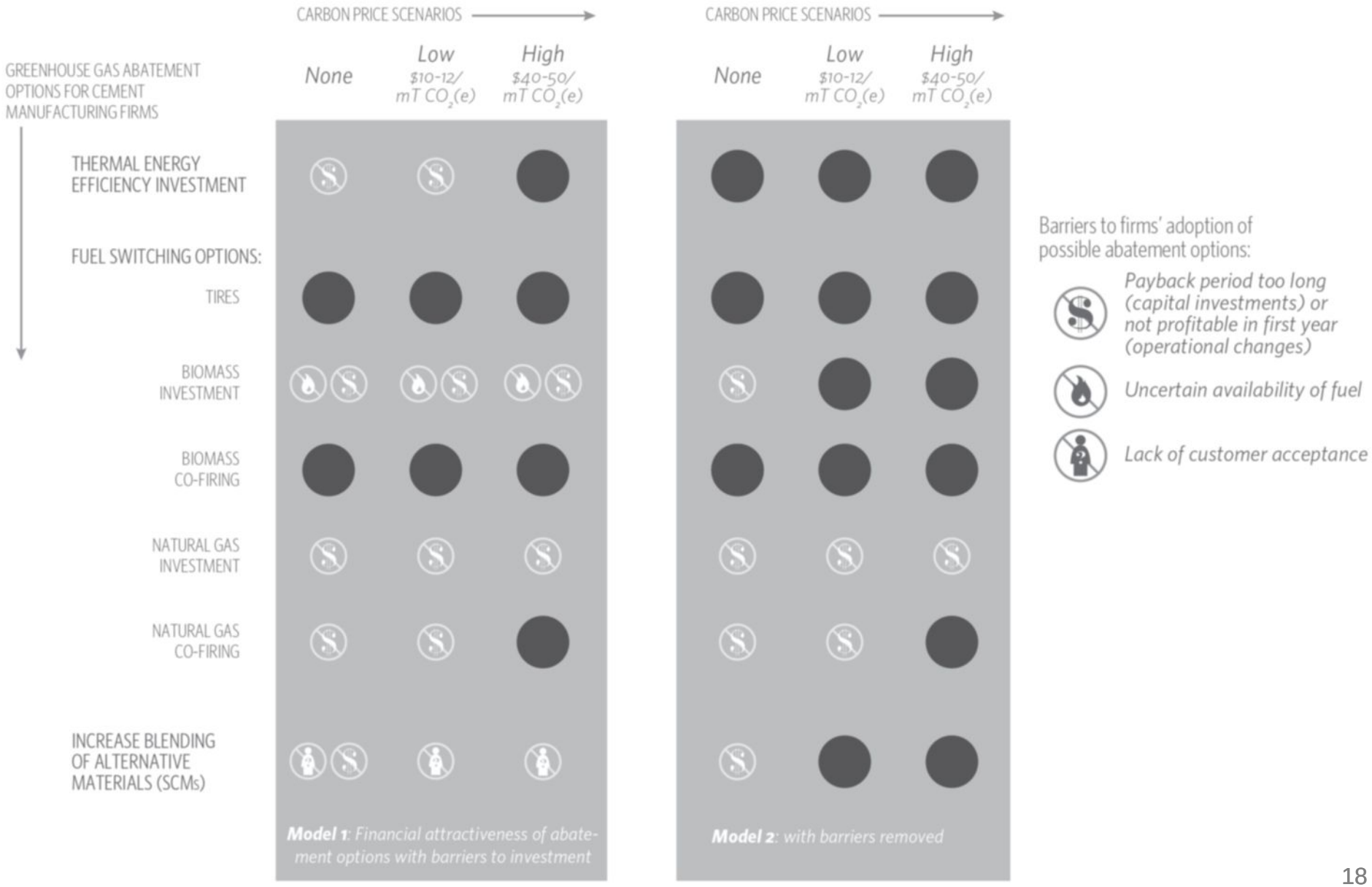
Some fuel switching options appear very financially attractive with a carbon price. However, some promising options involve lower-carbon fuels that are not yet widely used in California. Firms require more certainty about future fuel availability and prices before making major investments.

Blending of Alternative Materials



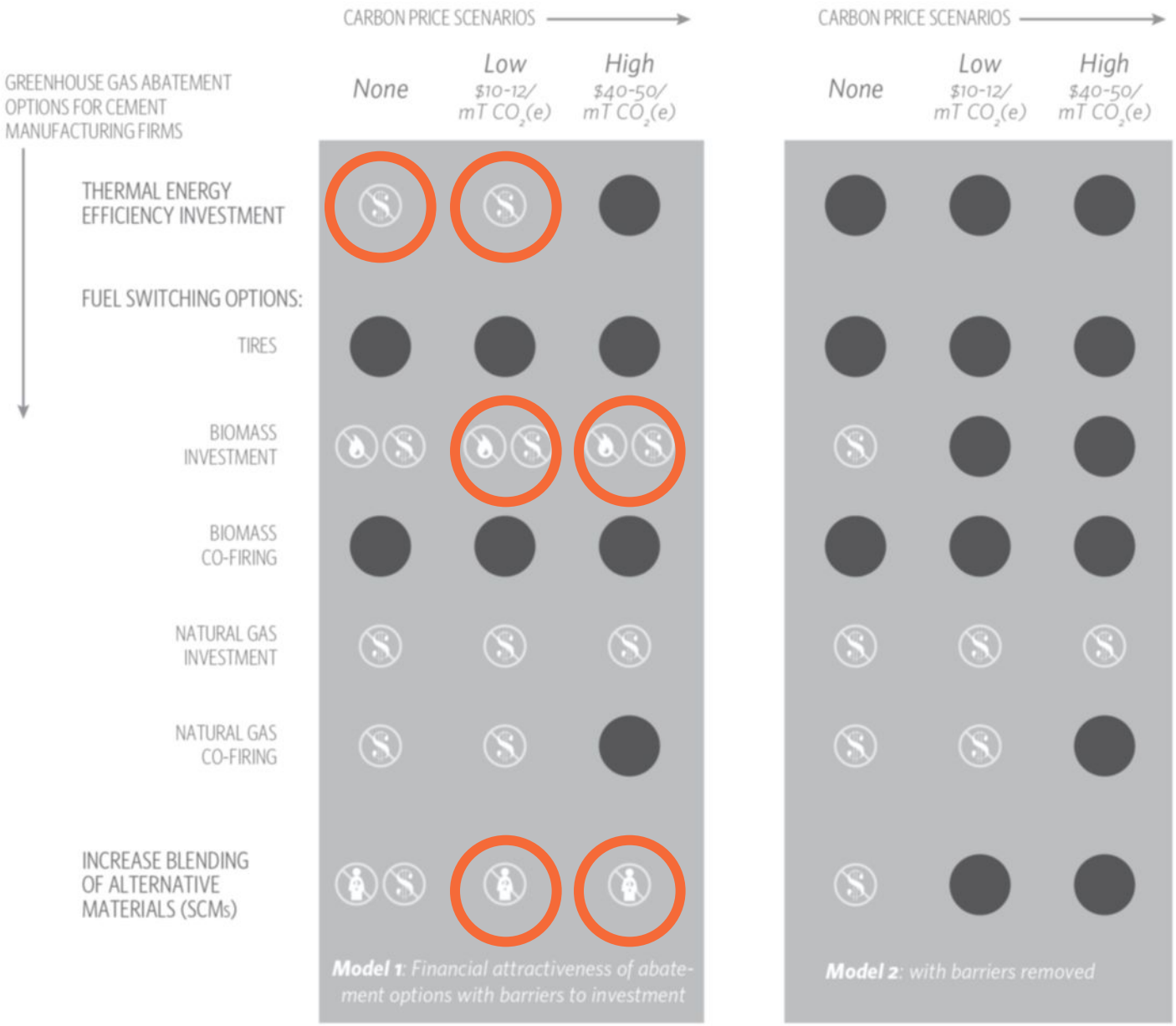
The carbon price makes blending of supplementary cementitious materials (SCMs) financially attractive. However, the primary barrier to increasing SCM blending is technical specifications used by state agencies and other customers, which the carbon price alone will not address.

Non-price barriers are a significant obstacle to cost-effective abatement options

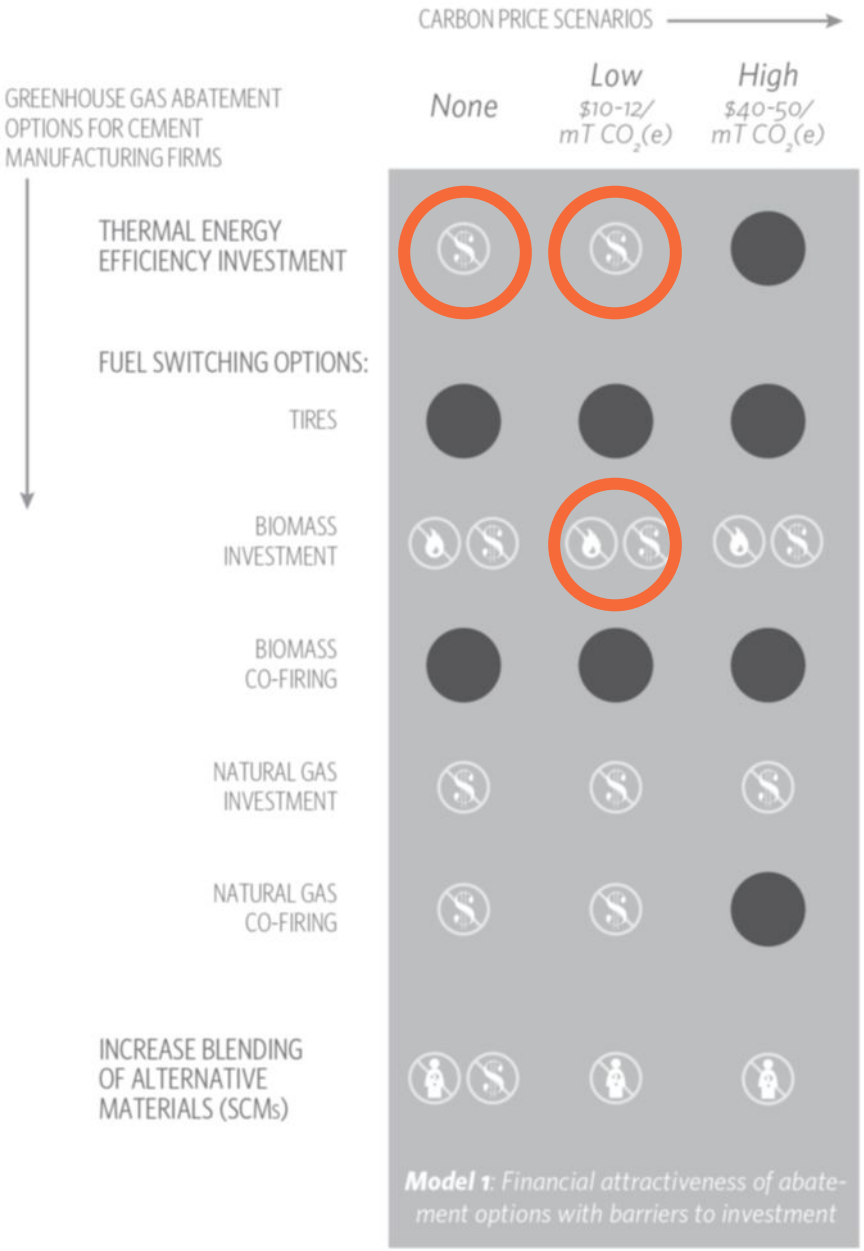


Policy Implications and Recommendations

The carbon price alone will not address these barriers, but other policy measures could help bring them down



Barrier: Short required payback period

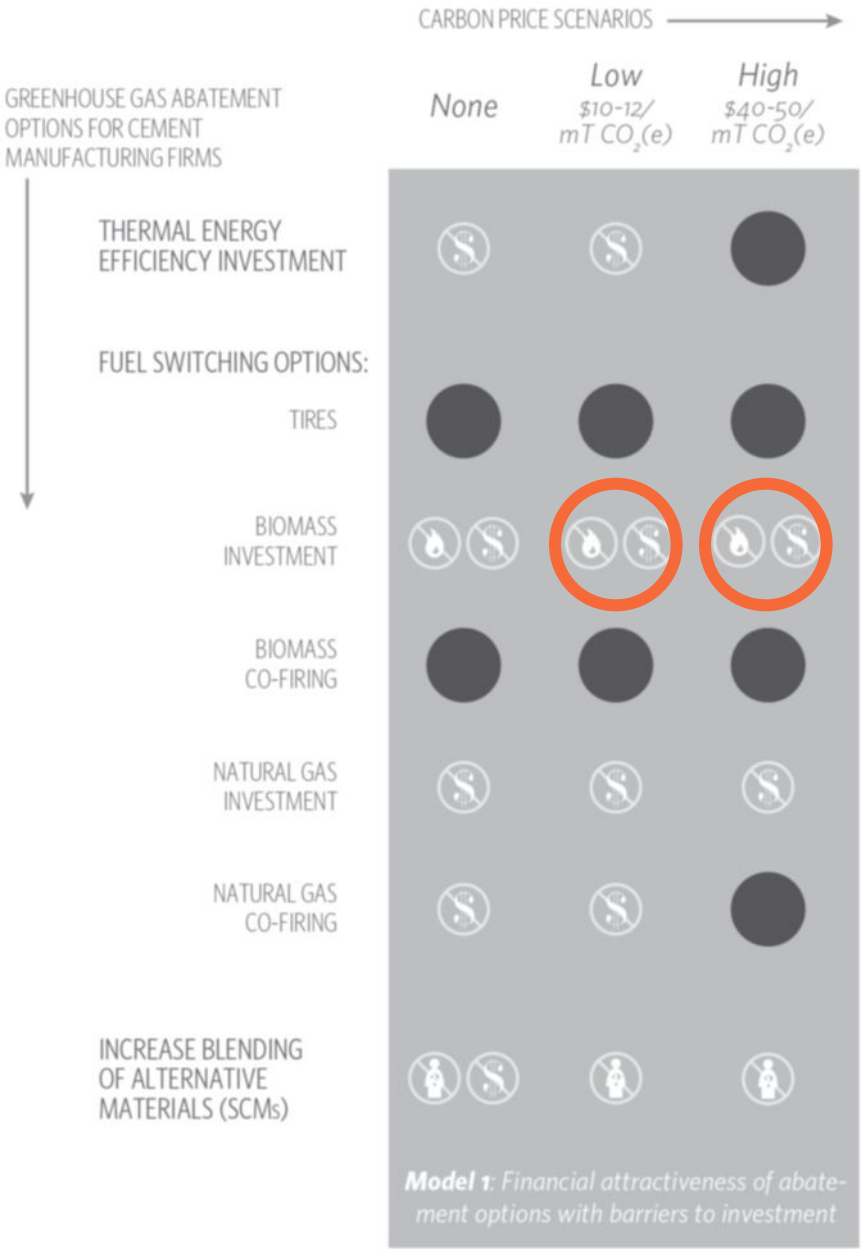


Model 1: *Financial attractiveness of abatement options with barriers to investment*

Solution:

Financial support (e.g., subsidized loans, leases) could give firms an incentive to invest in projects that reduce emissions and save money, but take longer to pay back

Barrier: Lack of alternative fuel supply



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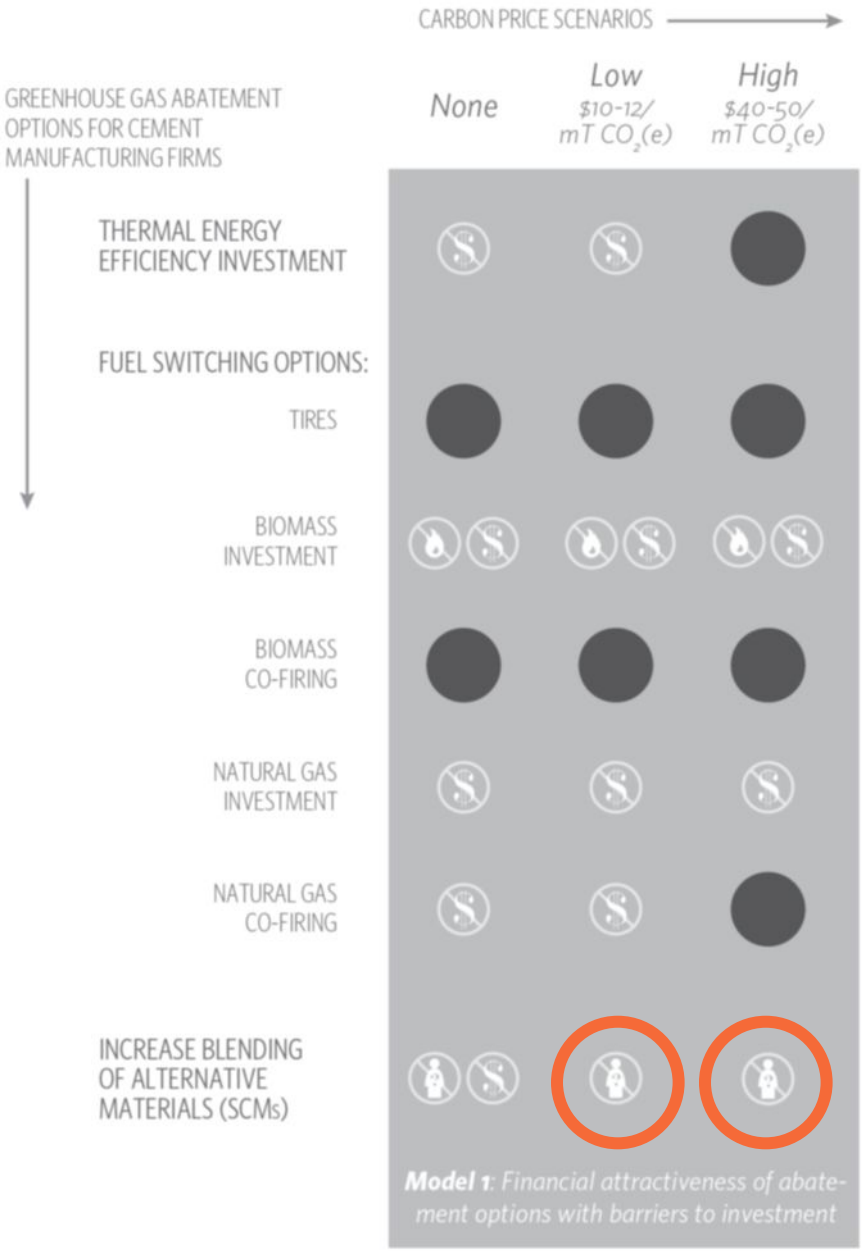
Solutions:

Public investment could accelerate commercialization of alternative fuels

Guarantees could help provide certainty to firms considering fuel-switching investments

Barrier: Inflexible customer demand



Model 1: *Financial attractiveness of abatement options with barriers to investment*

Solutions:

Customer education and outreach could promote use of performance-based rather than prescriptive standards

Government procurement could expand the market for cement with more SCMs

Research and engagement with standard-setting institutions could expand the potential uses of blended cement

Takeaway message: Think beyond the carbon price

Under the Cap and Trade Program, California will meet its emissions reduction target as long as the cap is enforced. But policymakers can reduce the cost of meeting the target by taking further action to lower barriers to low-cost or cost-saving abatement options.

AB32 already takes this approach through sector-specific "complementary policies," but policymakers can do more.

Visit the California Carbon Dashboard for updates and information on AB32

http://calcarbondash.org

Download the full report:
http://climatepolicyinitiative.org/publication/cap-and-trade-in-practice-barriers-and-opportunities-for-industrial-emissions-reductions-in-california

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