

Investigating the Feasibility of Greenhouse Gas Mitigation in Santa Barbara County

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Background

The California Global Warming Solutions Act (AB-32) directs California to reduce greenhouse gas (GHG) emissions to 1990 levels by 2020 and to 80% below 1990 levels by 2050. In order to comply with AB-32, local governments must reduce GHG emissions at a rate that is consistent with state targets. The Santa Barbara County Air Pollution Control District (APCD), the local agency responsible for air quality monitoring and environmental compliance with responsibilities under AB-32, commissioned this project to determine which GHG reduction strategies are best-suited for Santa Barbara County.

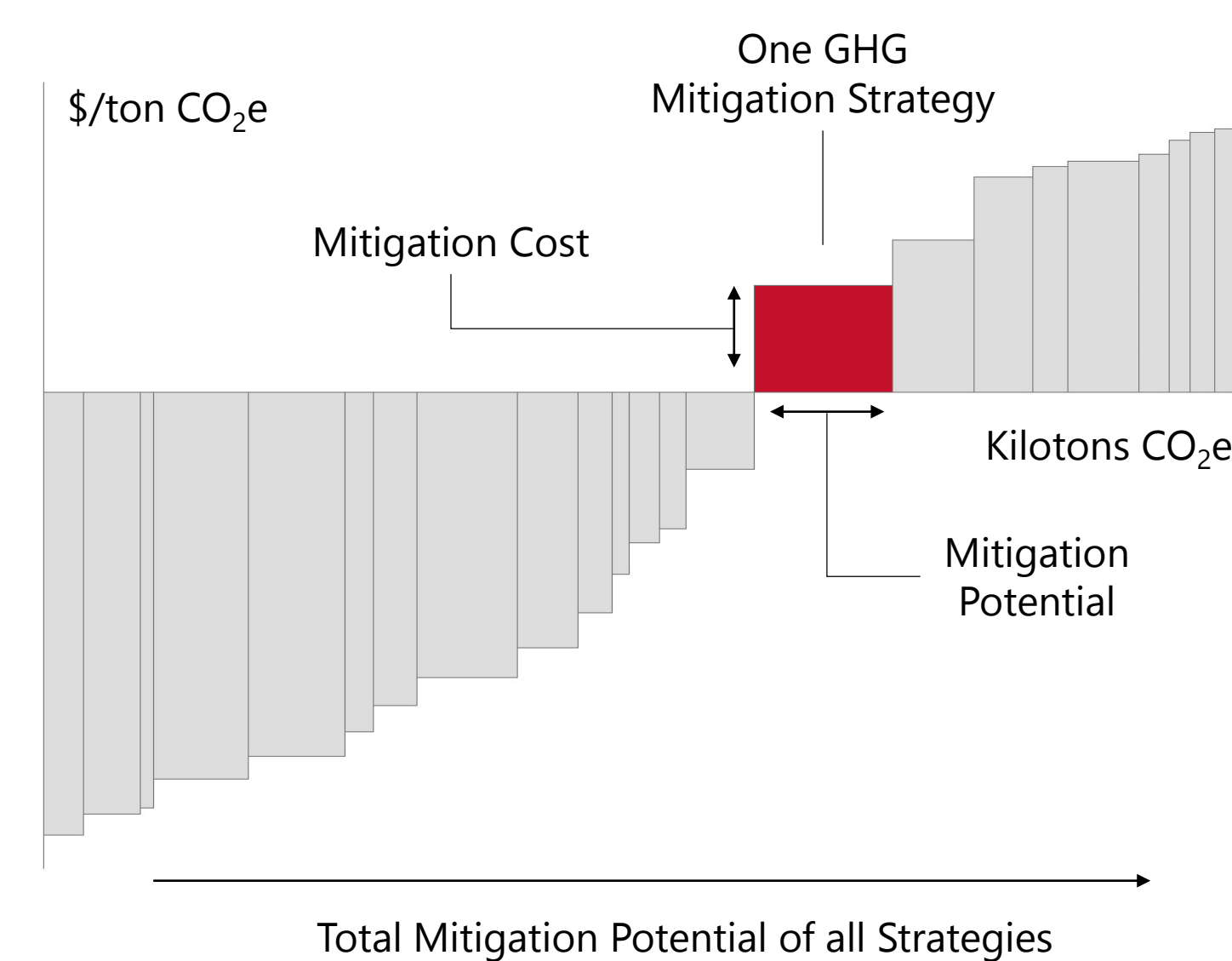
Project Objectives

The objective of this project was to determine the cost-effectiveness and the feasibility of implementing GHG mitigation strategies in Santa Barbara County. This required us to:

- 1 Generate a GHG emissions forecast for Santa Barbara County
- 2 Create a Santa Barbara County-specific GHG abatement cost curve
- 3 Analyze the opportunities and barriers to strategy implementation

What is a GHG Abatement Cost Curve?

A GHG abatement cost curve displays the net cost and GHG mitigation potential of various GHG mitigation strategies over a specified time period. GHG abatement cost curves are used to guide policy-makers in pursuing cost-effective GHG mitigation strategies.



Methods

GHG Emissions Forecast (2015-2040)

Annual GHG emissions were calculated for sectors and sources of interest in Santa Barbara County and projected out to 2040.

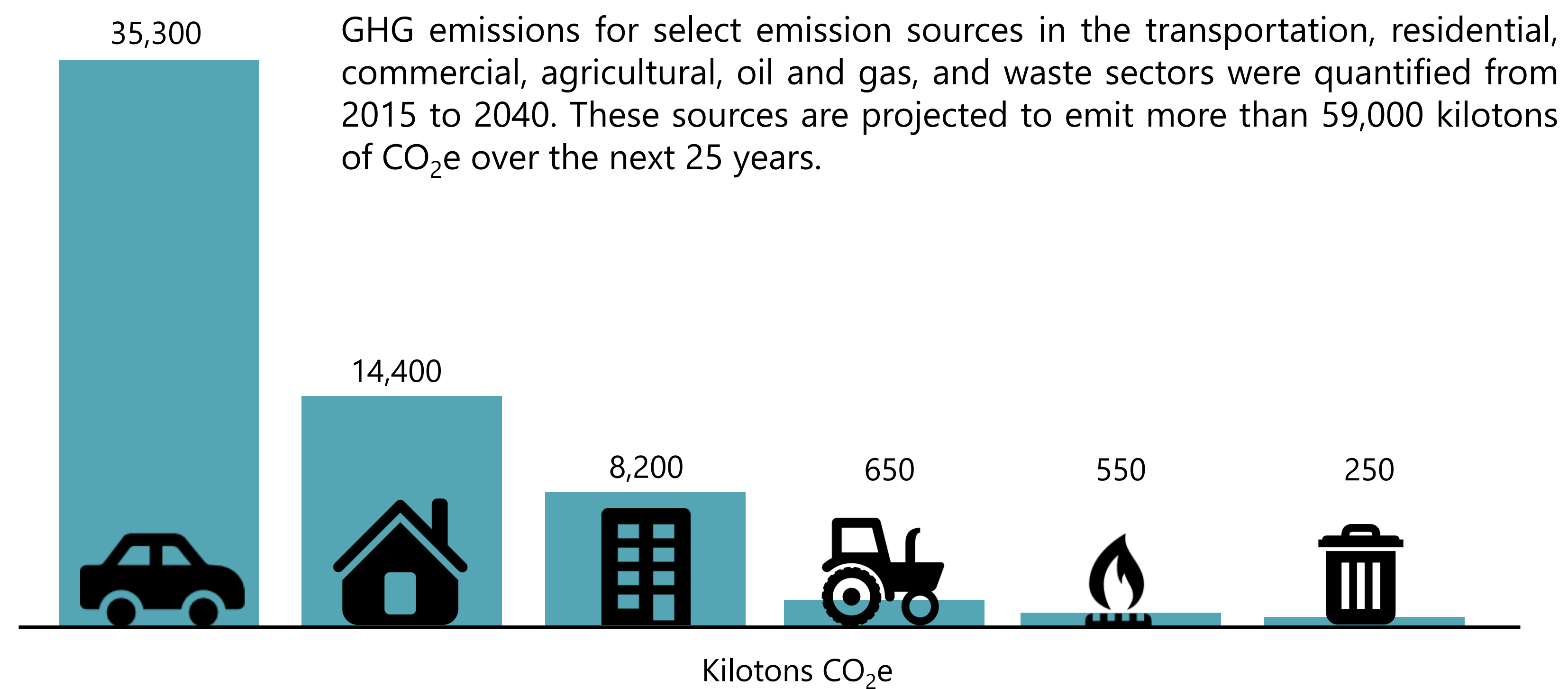
Strategy Cost and GHG Mitigation Potential

The cost of each mitigation strategy was calculated by summing then discounting the annual costs. The mitigation potential for each strategy was also calculated annually then summed over the time horizon.

Opportunities and Barriers to Implementation

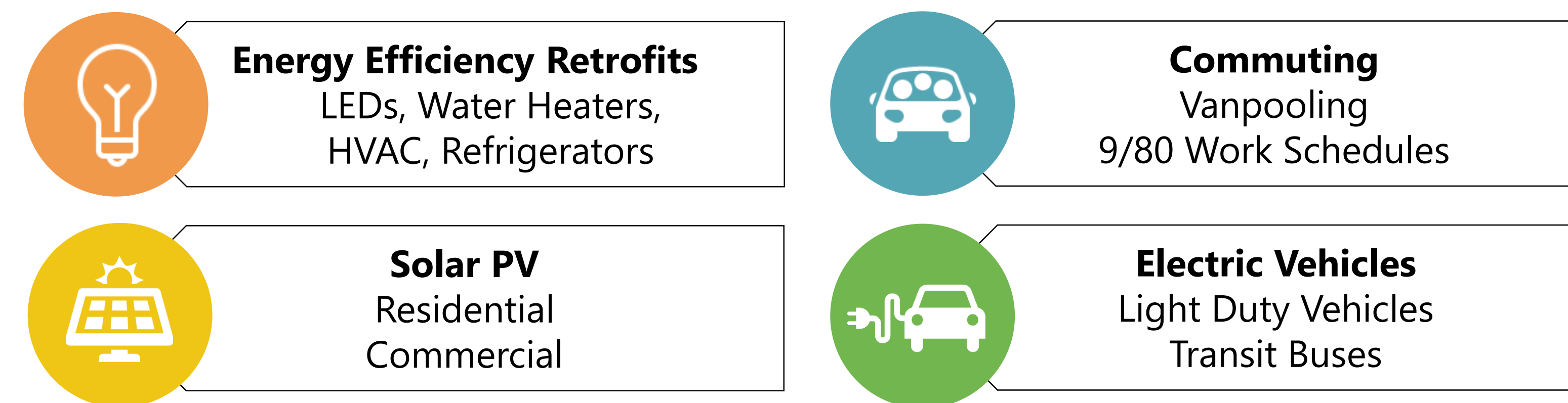
A literature review was conducted to determine the presence of financial incentives, legislation, and programs that could impact the implementation feasibility of the GHG mitigation strategies we analyzed.

Santa Barbara County GHG Emissions (2015-2040)

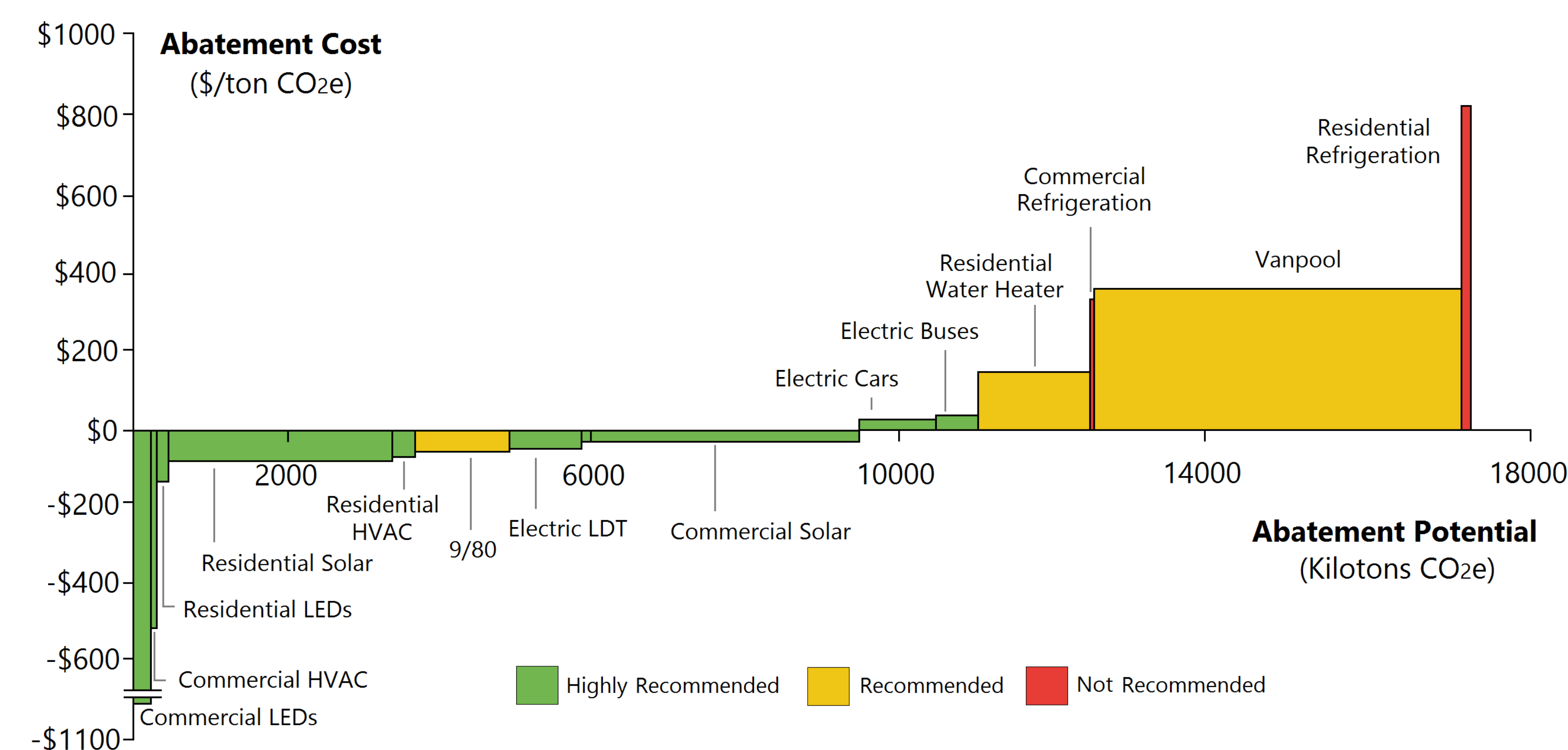


GHG Mitigation Strategies

We focused on GHG mitigation strategies within the transportation, residential, and commercial sectors because they are the highest emitting sectors in our forecast. Based on a literature review and data availability, we chose to examine the following GHG mitigation strategies:

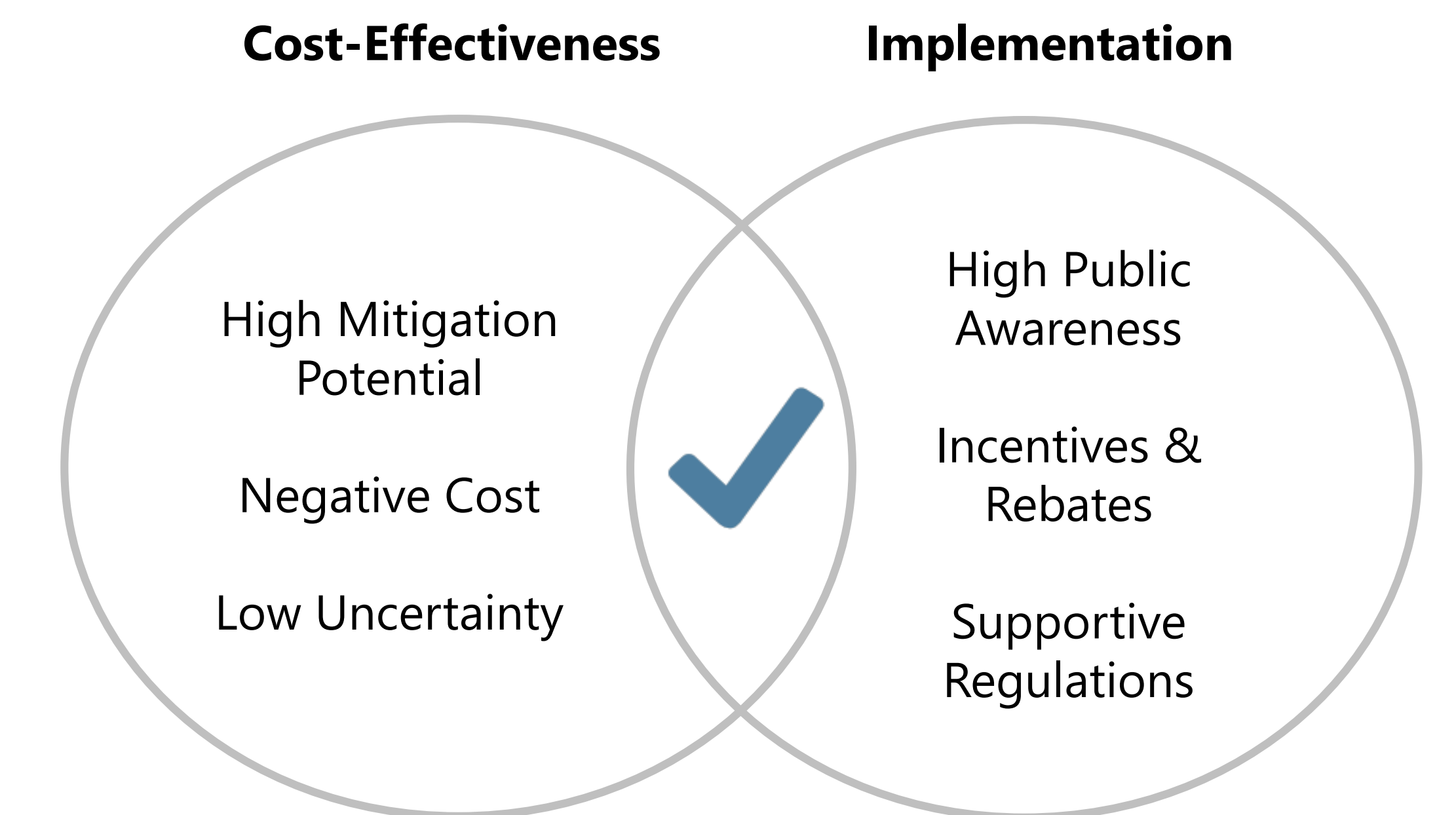


Santa Barbara County GHG Abatement Cost Curve (2015-2040)



Our GHG abatement cost curve reveals that Santa Barbara County can mitigate approximately 10,000 kilotons of CO₂e from 2015 to 2040 at a negative cost and nearly 18,000 kilotons of CO₂e overall. Solar PV and most energy efficiency retrofits have a negative cost over their lifetime, while most of the strategies targeted at the transportation sector have an overall positive cost. Solar PV, vanpooling, and EVs are among the strategies with the highest GHG mitigation potential.

Implementation



Relevant legislation, zoning codes, and other programs and policies have the potential to either facilitate or impede the implementation of GHG mitigation strategies. For example, financing and rebate programs for clean and efficient technologies facilitate adoption by reducing upfront costs. Low awareness of these programs, however, remains a barrier to greater adoption of these strategies.

Recommendations

We recommend that decision-makers focus on electric vehicles, solar PV, and lighting and HVAC retrofits to commercial and residential buildings to reduce GHG emissions in Santa Barbara County. These mitigation strategies can be facilitated by:

- Streamlining permitting processes
- Establishing local incentive and financing programs
- Administering customer education programs
- Purchasing electric fleet vehicles
- Increasing electric vehicle infrastructure
- Making energy efficiency upgrades to county buildings

This analysis is a critical first step to implementing GHG mitigation strategies in Santa Barbara County. Next steps to extend this analysis should include:

- Quantification of all GHG emitting sectors in Santa Barbara County
- Analysis of additional GHG mitigation strategies within the transportation sector
- Investigation into behavioral interventions for mitigating GHG emissions
- Determination of the co-benefits of GHG mitigation, including air pollution reduction and economic effects

Acknowledgements

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