

Investigating the Feasibility of Greenhouse Gas Mitigation in Santa Barbara County



By: Alex Brotman, Lily Brown, and Cassandra Squiers

Advisor: Sangwon Suh

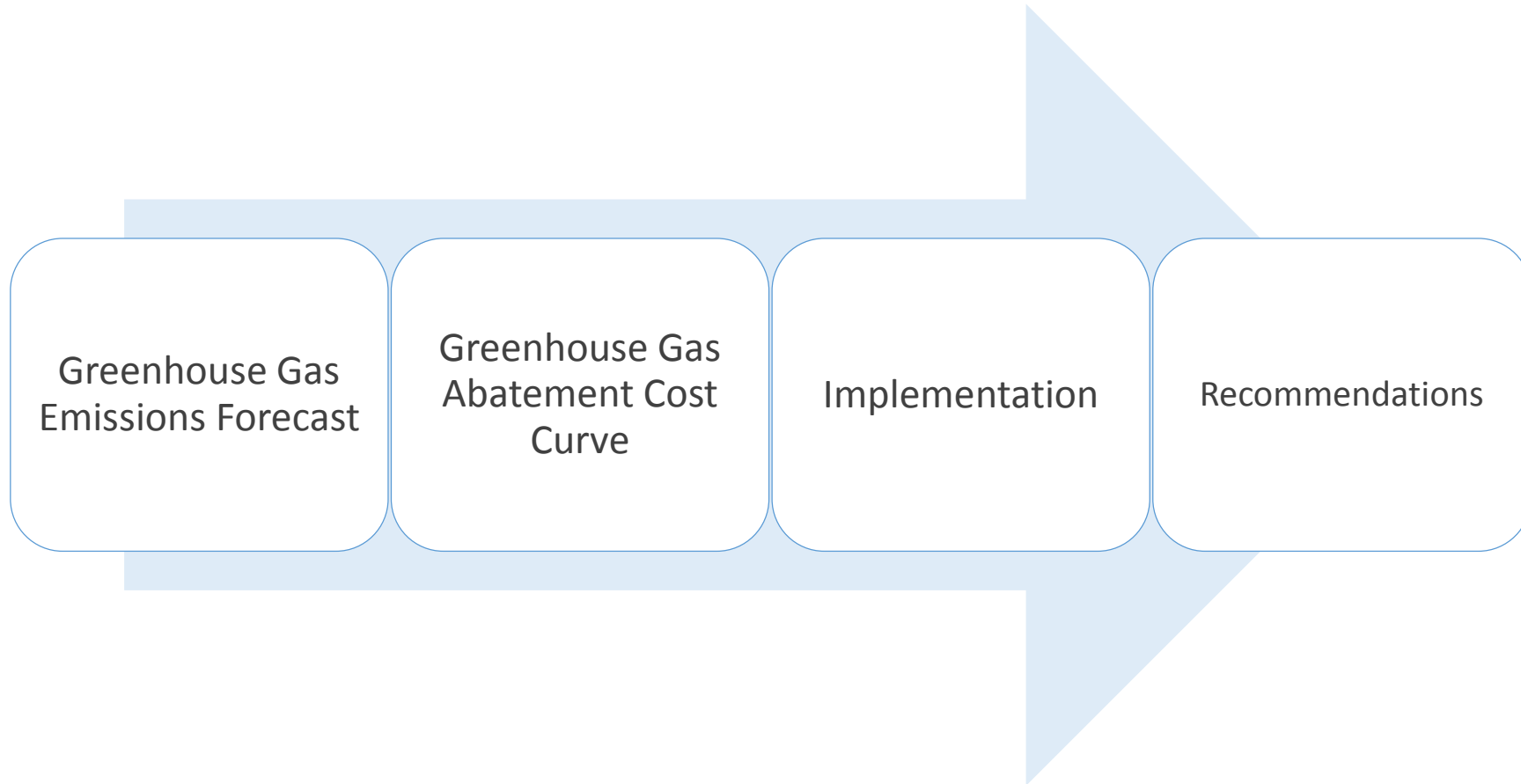
Project Motivation

Statewide GHG reductions are required under AB-32 and local reductions can generate local benefits

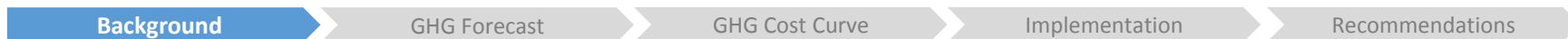
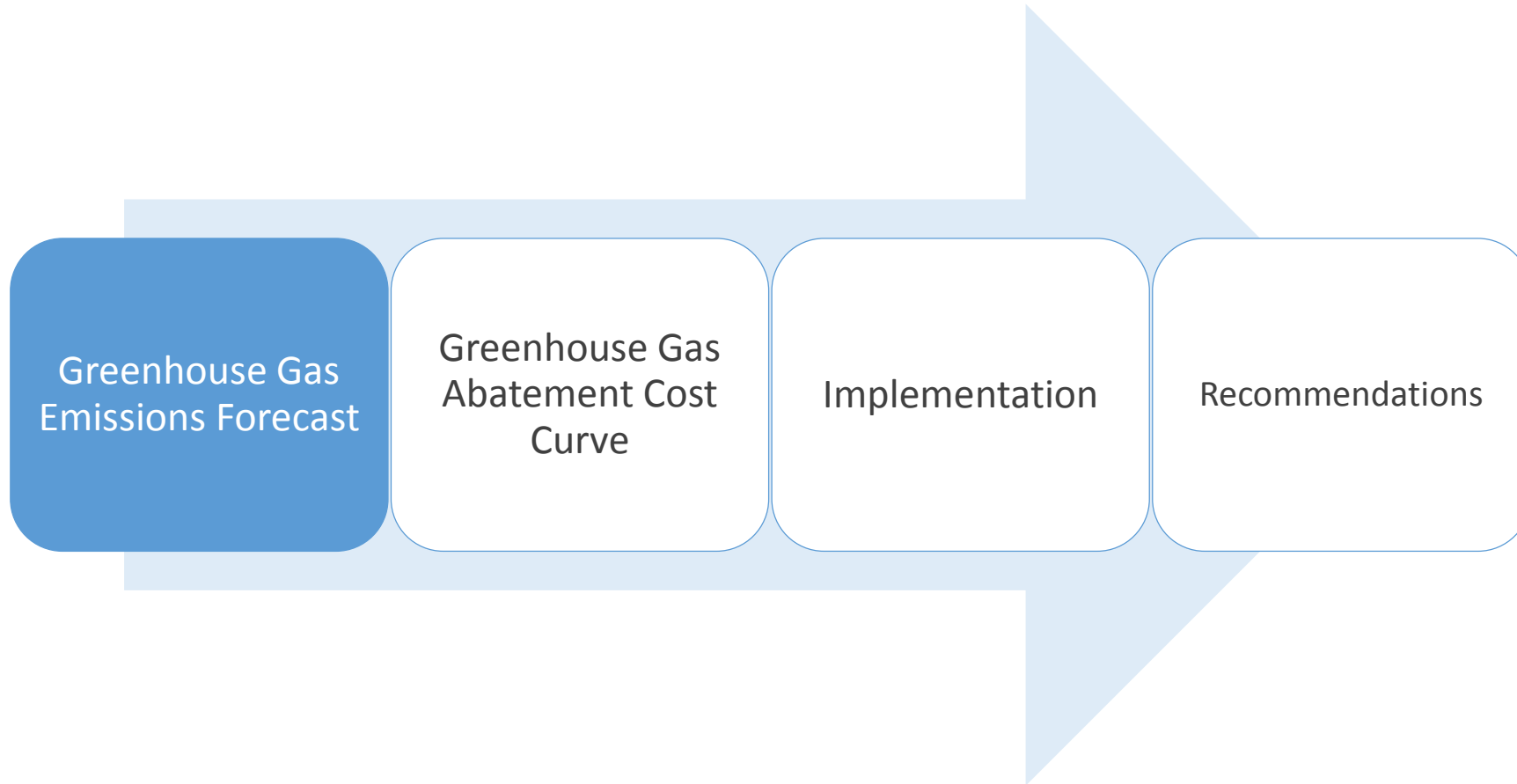
Project Objective

Determine which greenhouse gas mitigation projects are best-suited for Santa Barbara County

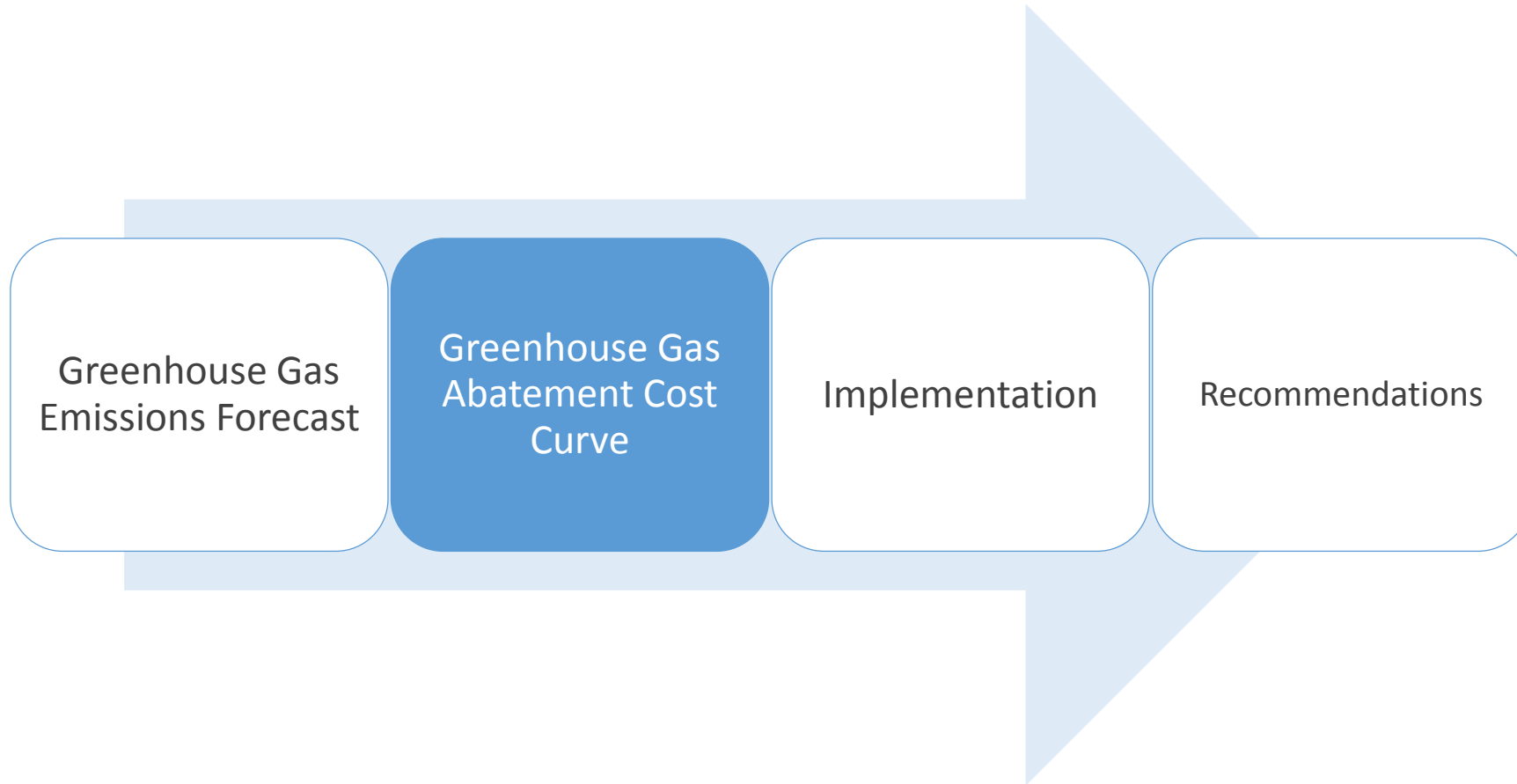
Project Phases



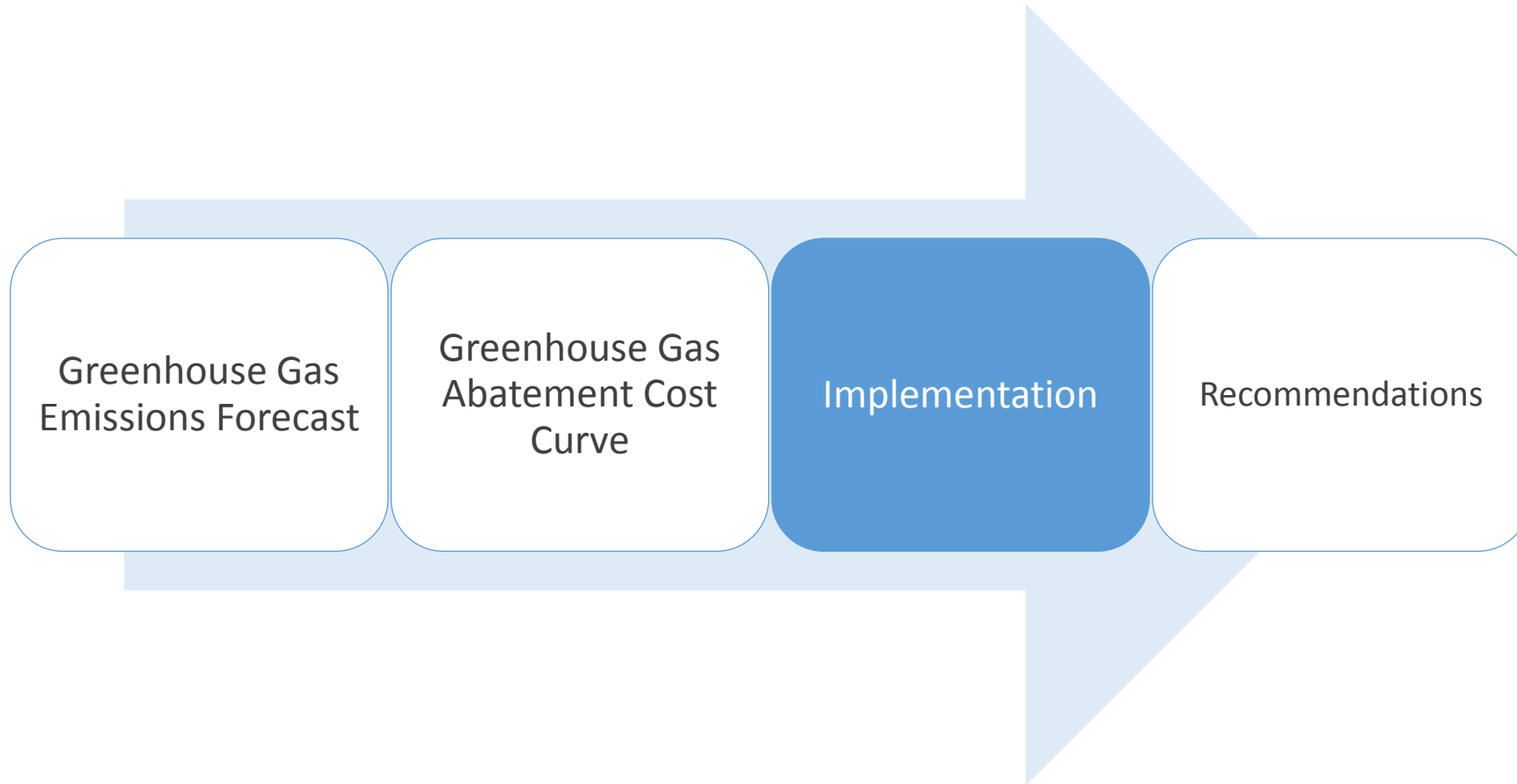
Project Phases



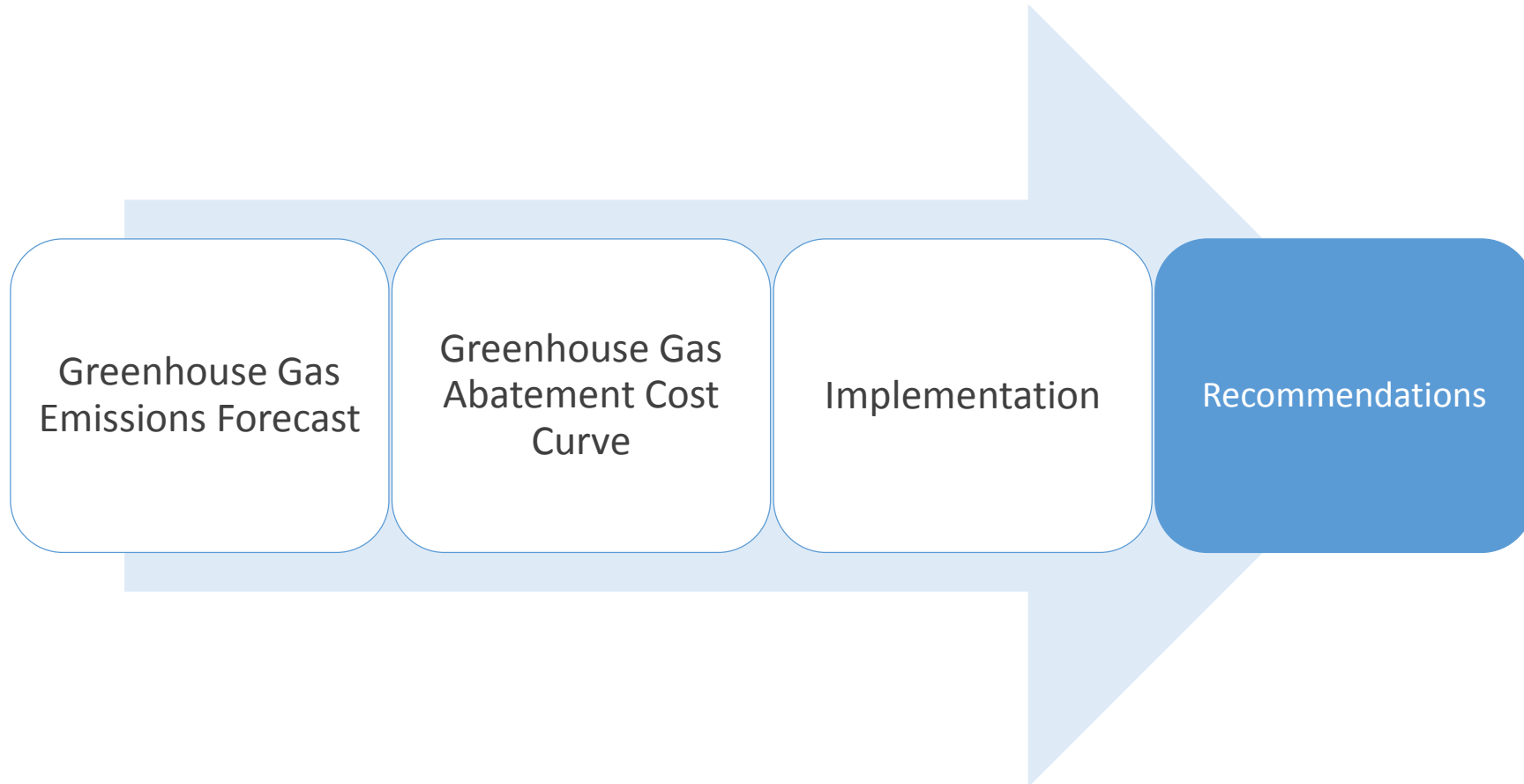
Project Phases



Project Phases

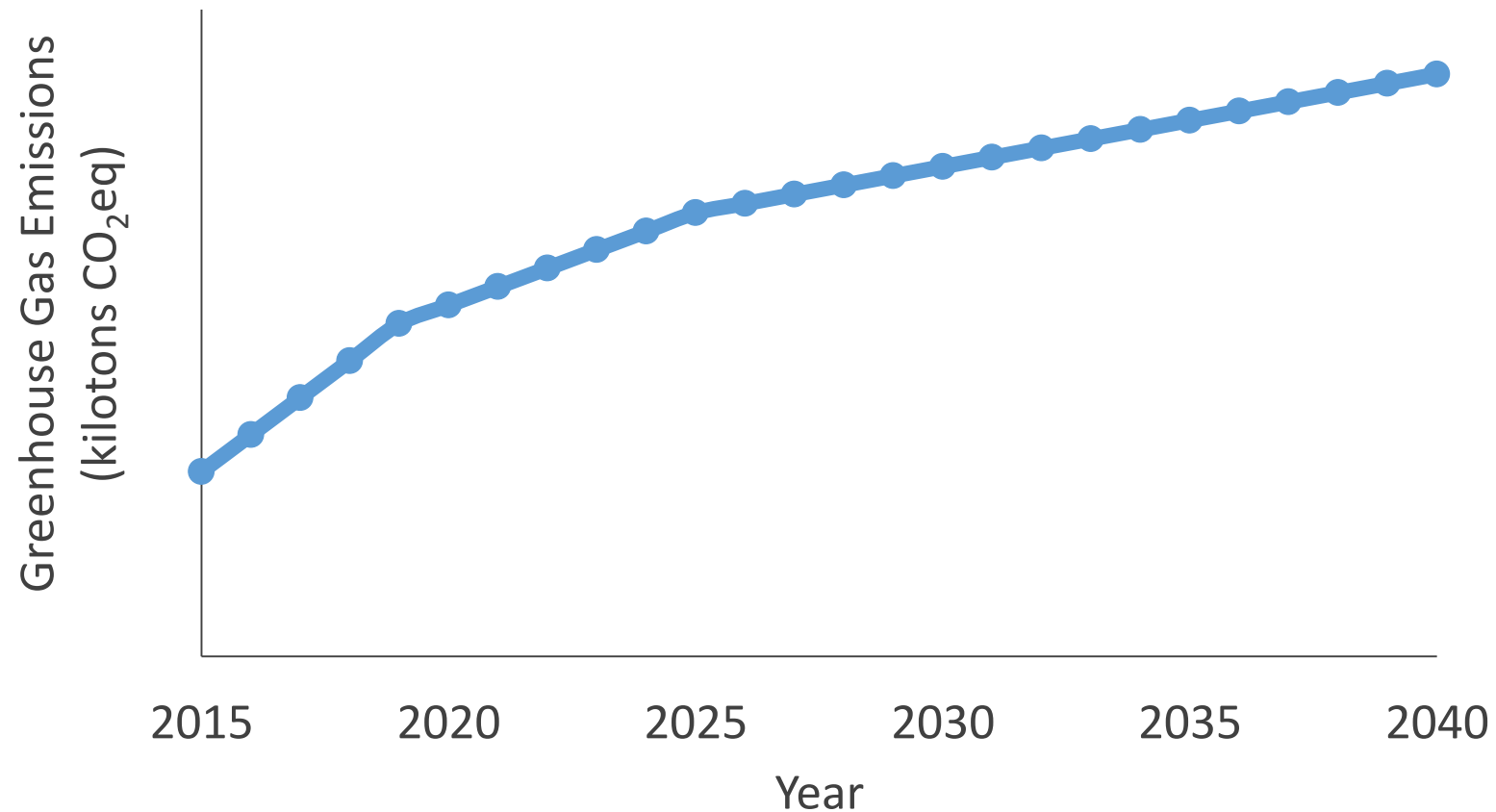


Project Phases



Greenhouse Gas Emissions Forecast

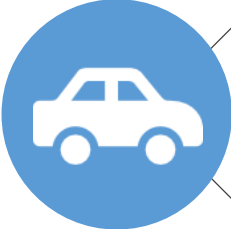
A greenhouse gas emissions forecast estimates future greenhouse gas emissions



Sectors and sources included in our emissions forecast




Agriculture Engines



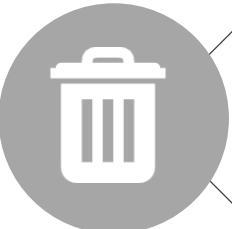
All On-Road Transportation




Oil & Gas Flares



Residential Electricity & Natural Gas

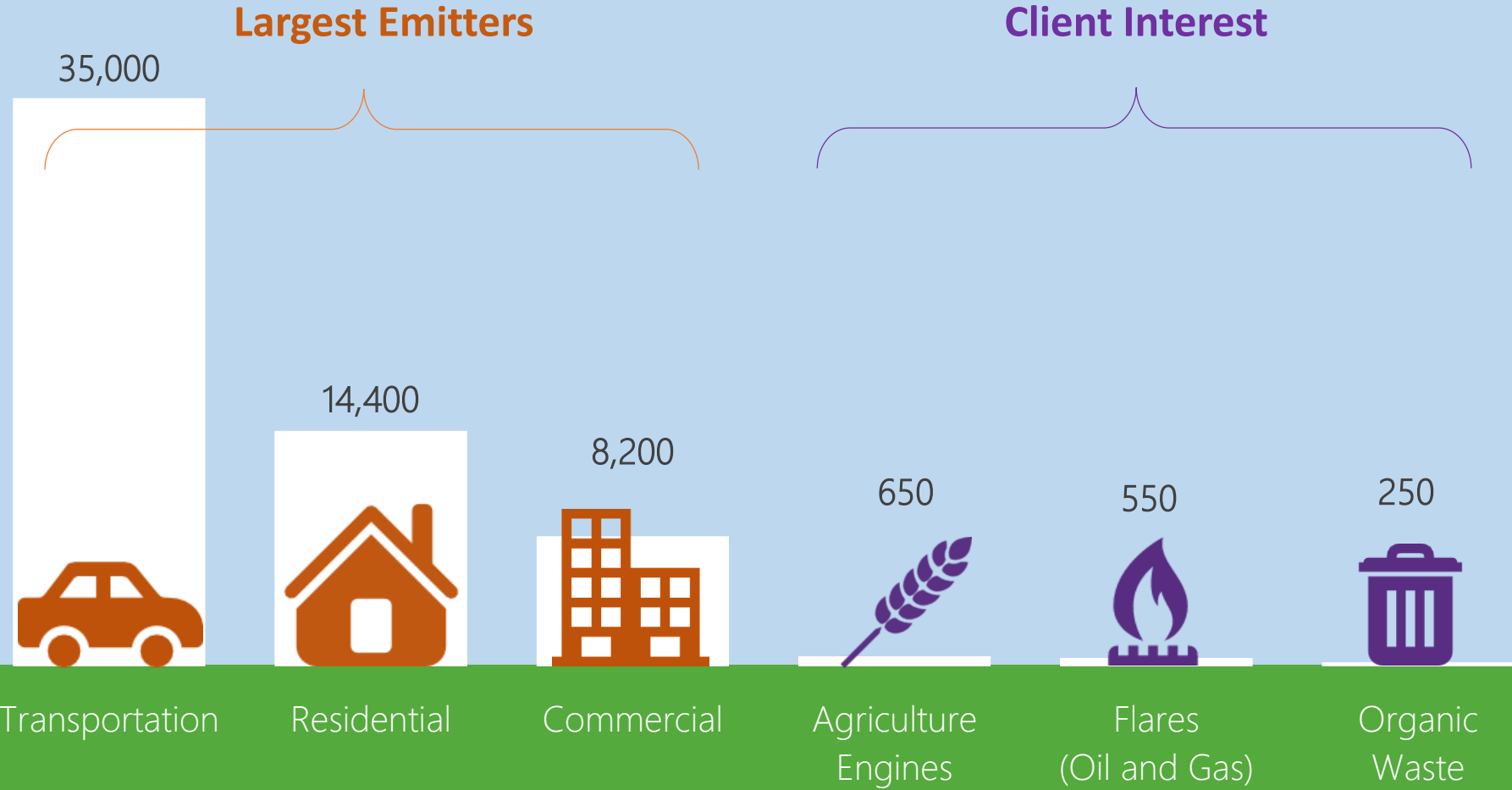


Organic Waste



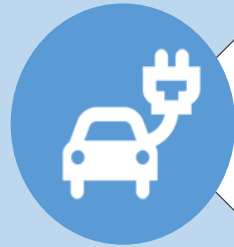
Electricity & Natural Gas for Hotels, Motels, and Offices

Santa Barbara County Greenhouse Gas Emissions for 2015-2040 (kilotons CO₂e)

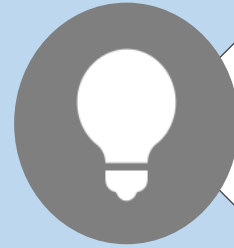


Greenhouse Gas Abatement Cost Curve

Greenhouse Gas Mitigation Strategies for Santa Barbara County



Electric
Vehicles



Energy Efficiency
Retrofits



Commuter
Benefits



Solar
Photovoltaics



Transportation



Residential



Commercial

Background

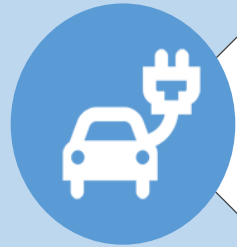
GHG Forecast

GHG Cost Curve

Implementation

Recommendations

Greenhouse Gas Mitigation Strategies for Santa Barbara County



Electric
Vehicles



Energy Efficiency
Retrofits



Commuter
Benefits



Solar
Photovoltaics



Transportation

Background

GHG Forecast

GHG Cost Curve

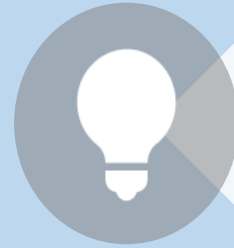
Implementation

Recommendations

Greenhouse Gas Mitigation Strategies for Santa Barbara County



Electric
Vehicles



Energy Efficiency
Retrofits



Commuter
Benefits



Solar
Photovoltaics



Transportation

Background

GHG Forecast

GHG Cost Curve

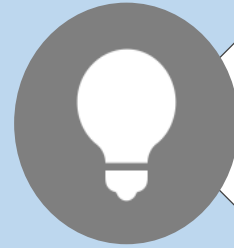
Implementation

Recommendations

Greenhouse Gas Mitigation Strategies for Santa Barbara County



Electric
Vehicles



Energy Efficiency
Retrofits



Commuter
Benefits



Solar
Photovoltaics



Residential



Commercial

Background

GHG Forecast

GHG Cost Curve

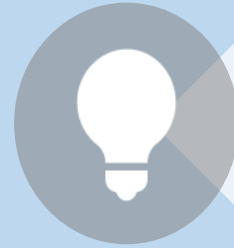
Implementation

Recommendations

Greenhouse Gas Mitigation Strategies for Santa Barbara County



Electric
Vehicles



Energy Efficiency
Retrofits



Commuter
Benefits



Solar
Photovoltaics



Residential



Commercial

Background

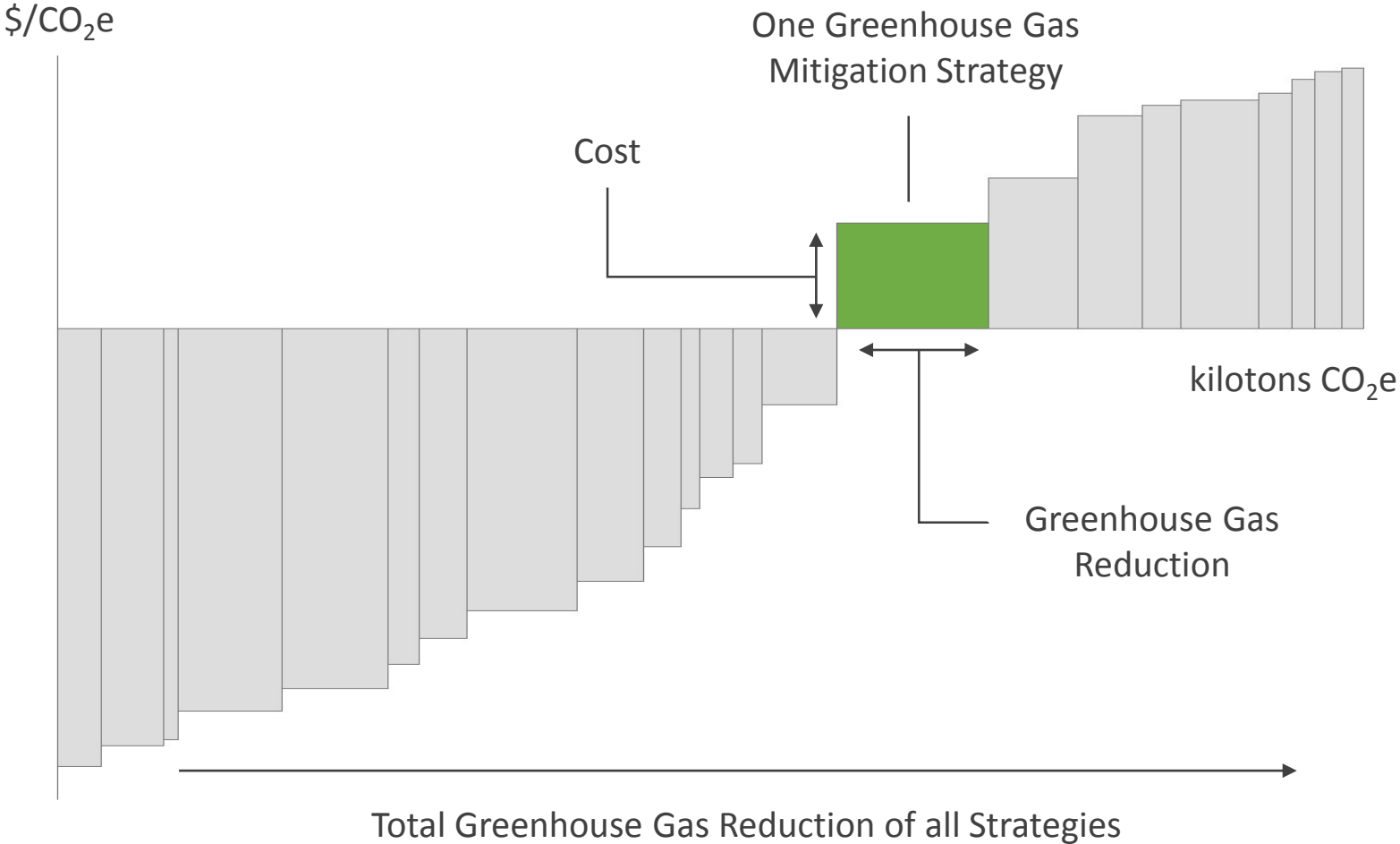
GHG Forecast

GHG Cost Curve

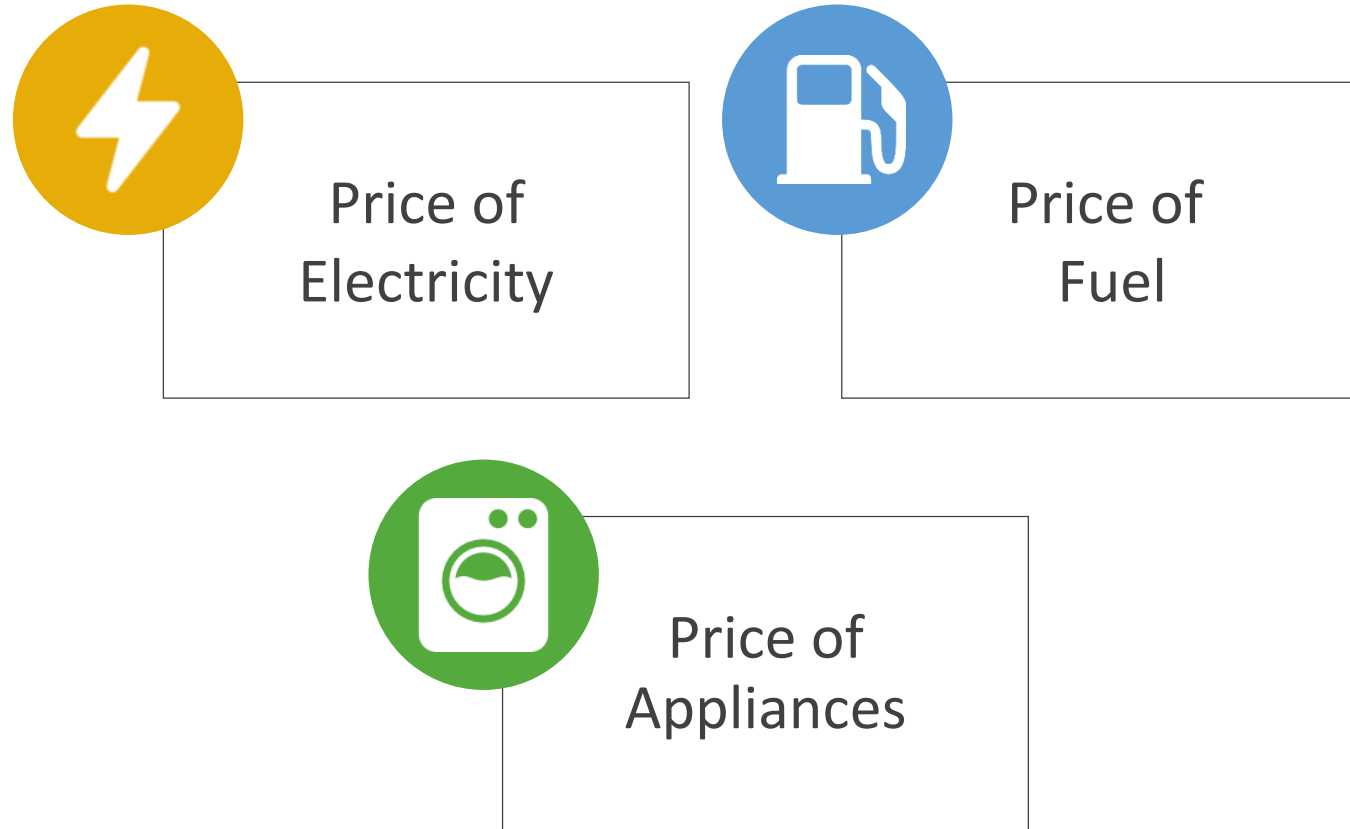
Implementation

Recommendations

What is a Greenhouse Gas Abatement Cost Curve?



To calculate costs, we made a number of assumptions



To calculate GHG reduction potential, we made a number of assumptions



Background

GHG Forecast

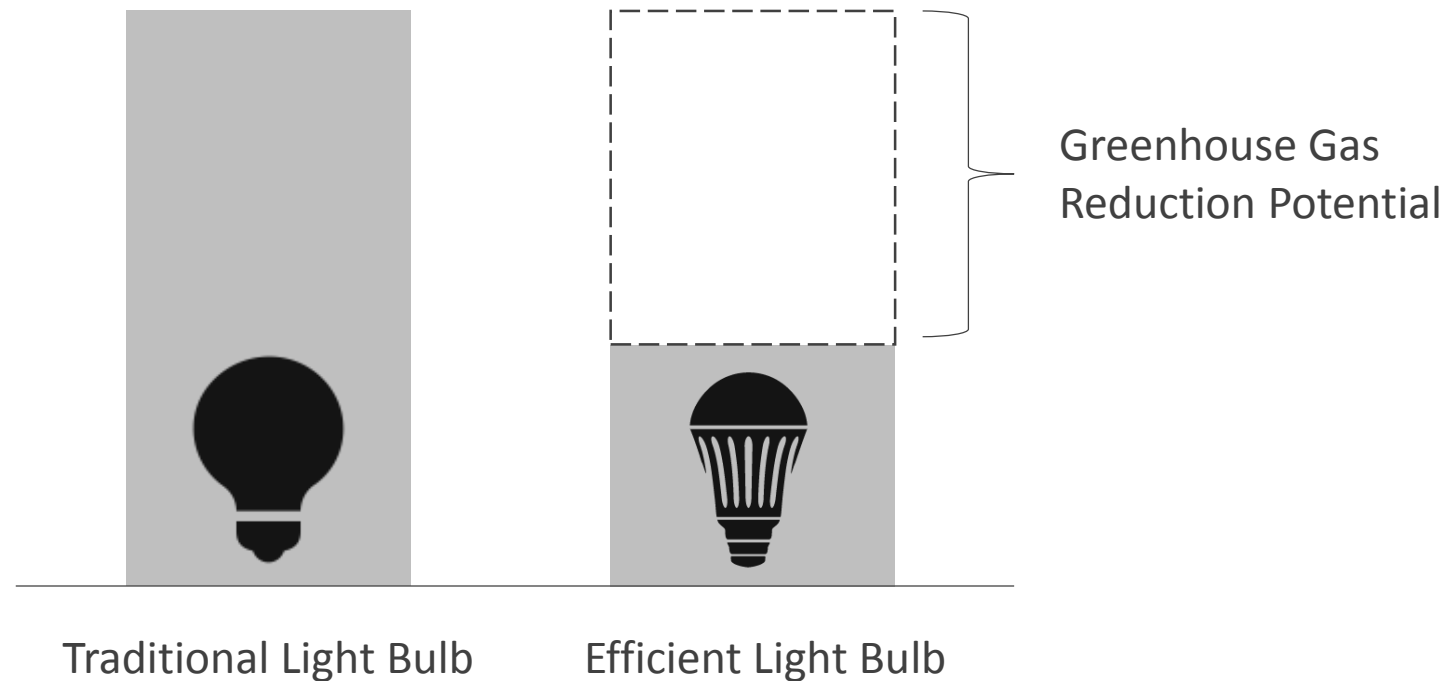
GHG Cost Curve

Implementation

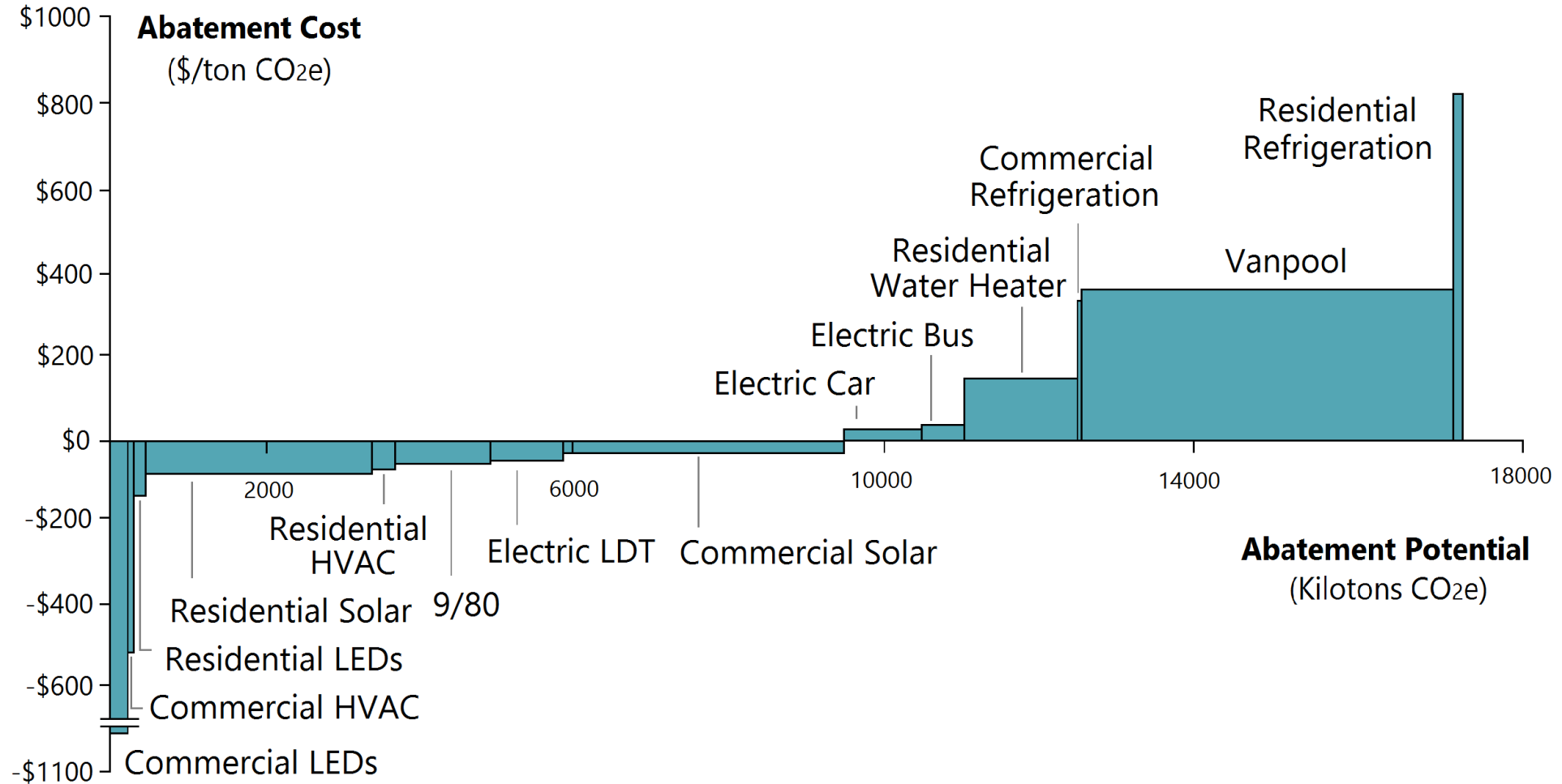
Recommendations

Greenhouse gas reductions were calculated as reductions from the norm

Greenhouse Gas Emission (2015-2040)



Santa Barbara County Greenhouse Gas Abatement Cost Curve (2015-2040)



Implementation

Implementing GHG Mitigation

Barriers

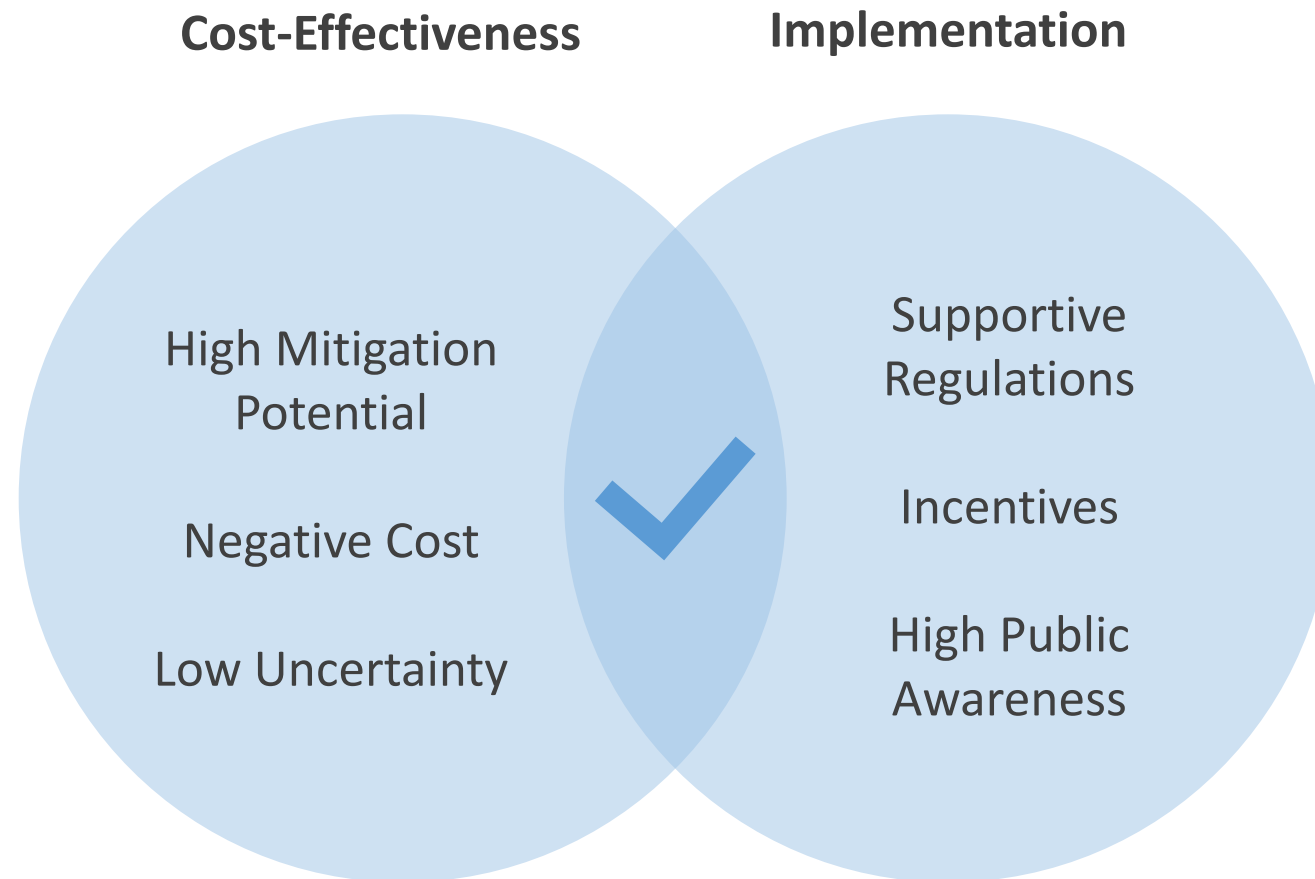
- Low Customer Awareness
- High Upfront Costs

Opportunities

- Rebates & Incentives
- Facilitator Programs

Recommendations

The best strategies are those that are cost-effective and easy to implement



Background

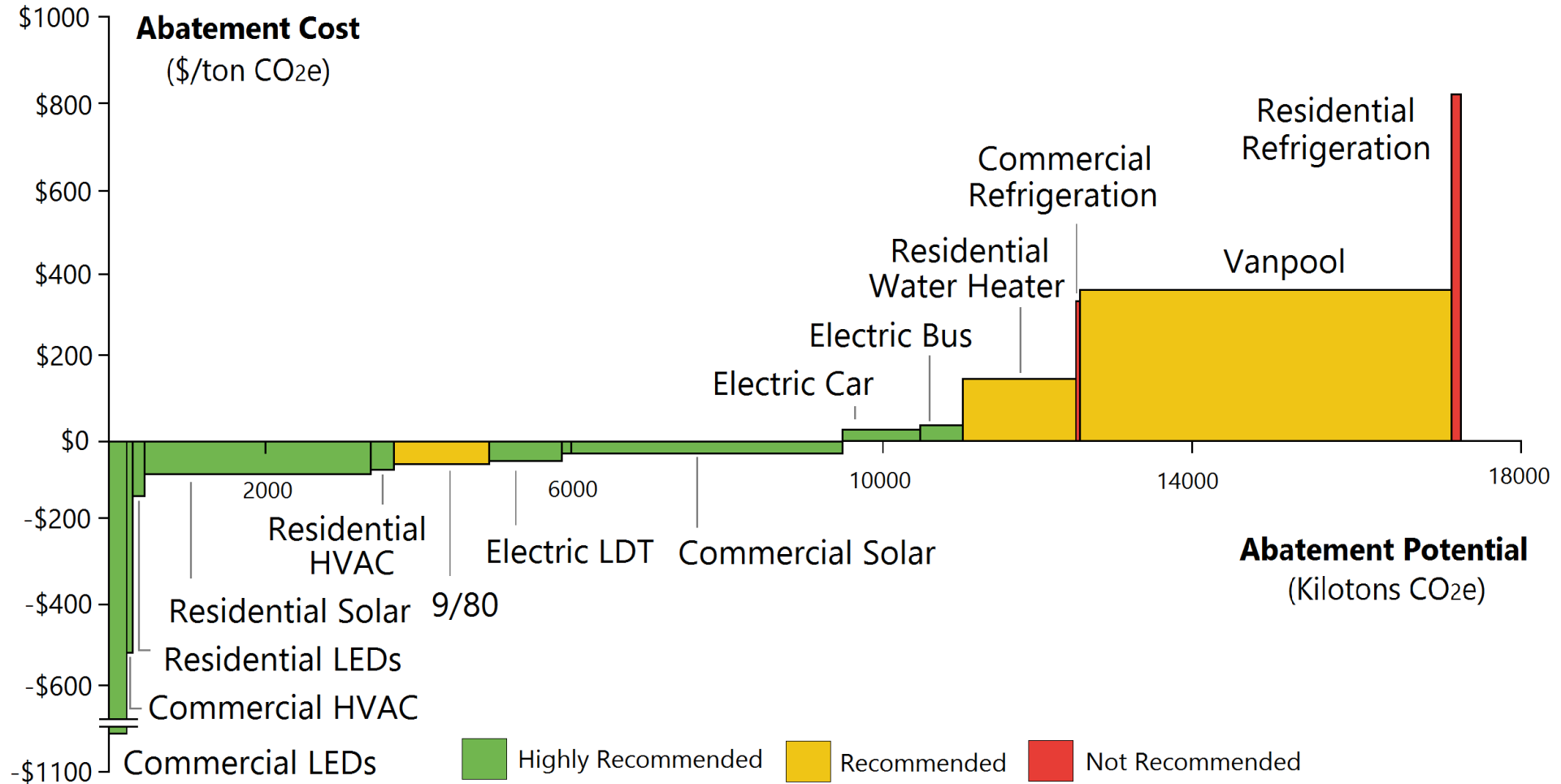
GHG Forecast

GHG Cost Curve

Implementation

Recommendations

Recommendations



Acknowledgements

Advisor

Sangwon Suh

External Advisors

Andrew Plantinga & David Raney

Client

Santa Barbara County Air Pollution Control District:
Molly Pearson, Brian Shafritz, & Carly Wilburton



For access to the full report:

<http://www2.bren.ucsb.edu/~sbcoffsets/>